

## SUBTIDAL STUDY NUMBER 7

Study Title:           Assessment of Oil Spill Impacts on Fishery  
Resources: Measurement of Hydrocarbons and Their  
Metabolites, and Their Effects

Lead Agency:       NOAA

### PROJECT JUSTIFICATION

Beginning in late spring of 1989, Subtidal 7 (earlier designated as Fish/Shellfish 24), has systematically evaluated the exposure of several fish species to petroleum hydrocarbons both in Prince William Sound and at numerous sites along the path of the Exxon Valdez oil spill, to Kodiak Island and beyond. Both shoreline and demersal species have been studied. In addition to assessing exposure, reproductive parameters have been measured in Dolly Varden char and yellowfin sole, and histopathological structure has been examined in most species. To date, petroleum exposure has been assessed in over 1,400 fish, and indicators of reproductive function have been evaluated in about 400 adult female fish.

The analyses of fish sampled in 1989 showed that Dolly Varden, Pacific halibut, salmon and three species of flounder (yellowfin sole, rock sole, and flathead sole) had been exposed to petroleum-derived compounds. The degree of exposure was found to have decreased in 1990 in some species (Dolly Varden), but to have remained constant in three benthic species. Preliminary evidence of histopathological alteration of gill epithelium in rock sole was observed. By 1991, exposure to petroleum-derived compounds had generally decreased in all fish species, but the results suggested that some fish continued to be exposed at sites inside Prince William Sound. The data obtained in 1991 do not indicate a substantial impact on reproductive processes in the species examined.

Results of the Subtidal 7 studies indicate that spilled oil from the Exxon Valdez oil spill moved to the benthic environment and benthic fish species showed signs of exposure to oil during the first three years after the oil spill. A detailed examination of all the data collected will provide valuable information concerning the potential impact of the oil spill on demersal fishes.

These studies have generated a large quantity of data showing that substantial portions of the populations of flatfish in areas in or near the path of the Exxon Valdez oil spill have been, and apparently continue to be, exposed to petroleum products. Moreover, some shoreline

species, such as Dolly Varden char, were substantially exposed during the first months following the spill, but exposure had declined markedly by 15 months after the spill. The funding proposed for 1992 is specifically aimed at putting all of these data into a context of how this exposure has been changing with time, and what the implications of such exposure might be. For example, some indications of reproductive changes and histopathological alterations have been noted in the studies funded under Subtidal 7. An examination in detail of all data collected, together with review of available scientific data from 1) other NRDA studies and 2) previously published studies of the effects of oil exposure in fish, will allow for a balanced interpretation concerning the potential impact of the oil spill on demersal fishes.

	BUDGET (\$K)
Salary	\$ 48.5
Travel	2.5
Contracts	2.0
Supplies	0.0
Equipment	0.0
Subtotal	\$ <u>53.0</u>
General Administration	7.4
Total	\$ <u>60.4</u>