

FISH/SHELLFISH STUDY NUMBER 4A

Study Title: Early Marine Salmon Injury Assessment in Prince
William Sound

Lead Agency: ADF&G

Cooperating Agency: NOAA

PROJECT JUSTIFICATION

Recruitment to adult salmon populations appears to be strongly affected by the high mortality during the early marine life stage.

During this period, slow-growing individuals sustain a higher mortality, because they are vulnerable to predators for a longer time than fast-growing individuals. In the laboratory, sublethal hydrocarbon exposure has been shown to cause reduced growth of juvenile salmon. Thus, in the wild, sublethal hydrocarbon exposure is expected to cause reduced growth resulting in increased predation.

Oil contamination may also have reduced survival by decreasing prey populations or disrupting migration patterns. Oil can be toxic to littoral and pelagic macroinvertebrates. Hydrocarbon exposure can injure olfactory lamellar surfaces and cause an avoidance reaction.

During the past decade, five salmon hatcheries have been established within Prince William Sound. These facilities, operated by private non-profit corporations, produced approximately 535 million juvenile salmon in 1989. Approximately one million of these fish were marked with a coded-wire tag (CWT). Recoveries of these marked fish in Prince William Sound has played a major role in our assessment of the impact of the oil spill on salmon.

This damage assessment project has provided evidence of reduced growth and fry-to-adult survival among juvenile salmon in oiled nearshore habitats. However, additional sample and data analysis is needed to quantify the effect of oil contamination on fry growth and fry-to-adult survival and adequately establish that environmental and oil effects are not confounded. This will be accomplished by comparing fry food consumption and food abundance between oiled and non-oiled areas. The data obtained during the three years of field studies will be completely analyzed and conclusions synthesized in a final report.

The final report will synthesize project results and provide data summaries. A fully documented database will be produced for incorporation into the Natural Resource Damage Assessment database being developed by the Alaska Department of Fish and Game.

SCHEDULES AND PLANNING

<u>Date</u>	<u>Activity</u>
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1992

March - August	Conduct otolith, stomach, and zooplankton sample analyses in laboratory
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June - December	Data entry, database documentation, and data analysis
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1993

January 15	Complete all data analysis
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January 31	Complete ADF&G technical data report
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February 28	Complete final report
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BUDGET (\$K)

Salaries		\$ 89.8
Travel		4.0
Contractual		23.0
Supplies		7.0
Equipment		<u>4.2</u>
Subtotal		\$128.0
General Administration		<u>17.2</u>
Total		\$145.2