29769
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EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: RED LAKE SALMON RESTORATION

Justification: (Link to Injured Resource or Service)

Red salmon system injured due to overescapement in 1989 due to Exxon Valdez oil spill. This project is directly related to results found in NRDA #27.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The sockeye salmon run at Red Lake appears to have been damaged by overescapement in 1989 as a result of the Exxon Valdez oil spill. Data gathered under NRDA #27 damage assessment, showed low levels (255,000) of migrant smolt and hydroacoustics biomass (100,000) at Red Lake. In order to counter and mitigate this loss, we propose to improve egg to fry survivals.

In the event that Red Lake's sockeye salmon escapement does not reach 150,000 by August 1, the fish cultural activity will commence. To improve egg to fry survival, a total of 6 million early run Red Lake sockeye salmon eggs will be taken by August 30, 1993. The eggs will be transported and incubated in a module at the Pillar Creek Hatchery in Kodiak. Fry will be reared until emergence and then flown back to Red Lake in May 1994.

Estimated Duration of Project: 1993-1996

Estimated Cost per Year: $72,000

Other Comments: 1994 to 1996: $72,000 per year - Continuation of R113

Name, Address, Telephone

Lorne White
AK Dept of Fish & Game
FRED Division
211 Mission Road
Kodiak AK 99615

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

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EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

RED LAKE SALMON RESTORATION

Justification: (Link to Injured Resource or Service)

Red salmon system injured do to over-escapement in 1989 do to Exxon Valdez oil spill. This project is directly related to results found in NRDA #27.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The sockeye salmon run at Red Lake appears to have been damaged by overescapement in 1989 as a result of the Exxon Valdez oil spill. Data gathered under NRDA #27 damage assessment, showed low levels (255,000) of migrant smolt and hydroacoustics biomass (100,000) at Red Lake. In order to counter and mitigate this loss, we propose to improve egg to fry survivals.

In the event that Red Lake's sockeye salmon escapement does not reach 150,000 by August 1, the fish cultural activity will commence. To improve egg to fry survival, a total of 6 million early run Red Lake sockeye salmon eggs will be taken by August 30, 1993. The eggs will be transported and incubated in a module at the Pillar Creek Hatchery in Kodiak. Fry will be reared until emergence and than flown back to Red Lake in May, 1994.

Estimated Duration of Project: 1993 - 1996

Estimated Cost per Year: $53K - 56K/year

Other Comments: This proposal addresses Options 2,3, and 11 in the Exxon Valdez Oil Spill Restoration Framework, Volume I.

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Name, Address, Telephone:

Lorne White
Ak Dept. of Fish & Game
FRED Division
211 Mission Rd.
Kodiak, AK 99615

Oil spill restoration is ... and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 297 - 69

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category Restoration / Manipulation's Enhancement

✓ Lead Agency ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

297-69

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

See Support letter Kodiak Island Borough
#920615279

"Comment"

* Restoration Framework, 1992, pp 43-44.

29725

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Monitoring for recruitment of Littleneck clams

Justification: (Link to Injured Resource or Service)

Preliminary analysis of data collected under Fish/Shellfish Study 13 indicates that littleneck clam growth was adversely affected by exposure to unrefined hydrocarbons. Clams have been identified as prey items for animals in Bird Study 11, (sea ducks), Marine Mammal Study 6, (sea otters), Restoration Project 71 (harlequin ducks) and are gathered for food by subsistence users in Prince William Sound. It is important to establish if the Exxon Valdez Oil Spill (EVOS) and subsequent treatment of oiled beaches has affected relative population density or recruitment potential.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The proposed study would involve monitoring recruitment and establishing relative population indices for beaches inhabited by littleneck clams and collection of hydrocarbon sediment and tissue samples. To document recruitment to selected beaches in Prince William Sound, we plan to examine areas that were unaffected by EVOS and those beaches where oiling has been documented by Fish/Shellfish Study 13 or other NRDA studies. Beach treatment, as documented by the Alaska Department of Environmental Conservation in 1989 and 1990, will be used to establish treatment levels. These treatments included the use of hot, warm, and cold low and high pressure washes, hand cleaning, raking, bioremediation, Corexit 7664 and no treatment. Sampling will be conducted to determine if littlenecks have recruited to oiled beaches in PWS regardless of treatment, since 1989. Larval traps and plankton tows will be deployed offshore at selected beaches to document the presence of clam larvae thereby establishing the potential for recruitment. Observations will be made on site to document behavior of affected users.

Estimated Duration of the Project: Two years.

Estimated Cost per Year: Year 1 = $ 205,000; Year 2 = $140,000.

Other Comments: The ultimate goal of this study is to monitor reestablishment of clam populations to beaches subjected to treatment. This study is applicable to Restoration Option 14 to accelerate recovery of the upper intertidal zone and Restoration Option 31 to develop a comprehensive monitoring program.

Name, Address, Telephone:
J.D. Johnson
Alaska Department of Fish and Game
P.O.Box 669
Cordova, AK 99574 907-424-3212

ID # 920615297 - 25

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ⓝ N Passed initial screening criteria

_____

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-25

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Monitoring for recruitment of Littleneck clams

Justification: (Link to Injured Resource or Service)

Preliminary analysis of data collected under Fish/Shellfish Study 13 indicates that littleneck clam growth was adversely affected by exposure to unrefined hydrocarbons. Clams have been identified as prey items for animals in Bird Study 11, (sea ducks), Marine Mammal Study 6, (sea otters), Restoration Project 71 (harlequin ducks) and are gathered for food by subsistence users in Prince William Sound. It is important to establish if the Exxon Valdez Oil Spill (EVOS) and subsequent treatment of oiled beaches has affected relative population density or recruitment potential.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The proposed study would involve monitoring recruitment and establishing relative population indices for beaches inhabited by littleneck clams and collection of hydrocarbon sediment and tissue samples. To document recruitment to selected beaches in Prince William Sound, we plan to examine areas that were unaffected by EVOS and those beaches where oiling has been documented by Fish/Shellfish Study 13 or other NRDA studies. Beach treatment, as documented by the Alaska Department of Environmental Conservation in 1989 and 1990, will be used to establish treatment levels. These treatments included the use of hot, warm, and cold low and high pressure washes, hand cleaning, raking, bioremediation, Corexit 7664 and no treatment. Sampling will be conducted to determine if littlenecks have recruited to oiled beaches in PWS regardless of treatment, since 1989. Larval traps and plankton tows will be deployed offshore at selected beaches to document the presence of clam larvae thereby establishing the potential for recruitment. Observations will be made on site to document behavior of affected users.

Estimated Duration of the Project: Two years.

Estimated Cost per Year: Year 1 = $ 186,000; Year 2 = $140,000.

Other Comments: The ultimate goal of this study is to monitor reestablishment of clam populations to beaches subjected to treatment. This study is applicable to Restoration Option 14 to accelerate recovery of the upper intertidal zone and Restoration Option 31 to develop a comprehensive monitoring program.

Name, Address, Telephone:
J.D. Johnson
Alaska Department of Fish and Game
P.O.Box 669
Cordova, AK 99574 907-424-3212

ID # 920610231-06

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Monitoring

____ Lead Agency

ADF&G

____ Cooperating Agency(ies)

____

(Y) N Passed initial screening criteria

____

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

____ Project Number - if assigned ____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

24151

Document ID Number
9206165297
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RPWG
☐ D-PAG
☐ E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: Harlequin Duck Restoration and Monitoring Study

Justification: (Link to Injured Resource or Service) Harlequin ducks are experiencing the third consecutive year of reproductive failure in the oil spill area of western PWS in 1992. Harlequin ducks have reproduced normally to date in 1992; in northern, eastern, and southern PWS.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)
This proposal addresses a 1993 Monitoring Study of the continued reproductive failure of Harlequin ducks in western PWS and includes Harlequin Duck restoration work in eastern PWS. The reproductive failure of Harlequin ducks in the oil spill area is a chronic effect of petroleum exposure to these ducks through contaminated intertidal food resources. Blue mussels (Mytilus) are the postulated agent of transmission of petroleum from the environment to seaducks. Approximately 130 blue mussel beds have been identified in USCG FOSC files as retaining oil in western PWS. Surveys will be conducted to establish areas of use and survey numbers of Harlequin ducks using oiled vs non-oiled streams and mussel beds in eastern and western PWS. This project will use established methodology, including mist-netting Harlequin duck females at PWS stream mouths. If breeding is verified, the number of Harlequin duck broods and feeding areas will be determined by following radio-tagged hens and ducklings through the nesting and brood-rearing cycle. Results will be compared to the Harlequin duck restoration aspects of the study in unoiled eastern PWS. Analysis of Harlequin duck blood and fecal samples will test for evidence of petroleum exposure and/or suppressed immune systems (i.e. presence of Heinz-body anemia; haptaglobins). A workshop of peer reviewers and interested scientists is planned to integrate and synthesize Harlequin duck research results and develop a workplan for future studies.

Estimated Duration of Project: This project is not expected to last more than four (4) years

Estimated Cost per Year: $446,000

Other Comments: It is our intention to cooperate fully with the oiled mussel beds study.

Name, Address, Telephone

Dr. Samuel M. Patten Jr
Alaska Dept of Fish & Game, Wildlife Cons
333 Raspberry Road
Anchorage AK 99518
(907) 267-2376

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 920615297-31

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

~~Damage Assessment~~ Monitoring

✓ Lead Agency

ADF&G

✓ Cooperating Agency(ies)

USFS

Φ N Passed initial screening criteria

Type: Birds

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

960152 97 - 07

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Maricultural Technical Center

Justification: (Link to Injured Resource or Service) Clams, crab, shrimp and other shellfish supported subsistence and commercial fisheries prior to the Exxon Valdez Oil Spill and are major links in the food chain of Prince William Sound. Bivalves especially were destroyed by cleaning practices and others died due to toxic effects of the oil. Subsistence users were denied the benefit not only of those which died but also those which were or were suspected of being contaminated with petroleum hydrocarbons. Bivalves are important in the diets of otters, harlequin ducks, oystercatchers and other birds and mammals. Commercial fisheries for shrimp and crabs are important, but because they are also utilized by many of the injured fish, birds and mammals, recovery of the EVOS-affected ecosystem depends upon their recovery as well.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) The project will construct a mariculture research and hatchery facility within the spill affected area. The facility size would be approximately 3800 sq. ft. with dual saltwater intakes and modular construction allowing multiple species research. A staff four (3 full-time, 1 seasonal) would provide basic center operations. The facility would be utilized for restoration and enhancement programs in the affected areas. Functions include: clam and mussel culture to re-seed impacted populations (including removal of oiled mussels and replacement with cultured ones, and replacing tainted subsistence use stocks), shrimp and crab culture research, providing oyster, clam scallops and other indigenous species seed to subsistence communities.

Estimated Duration of Project: ___Two years with Oil settlement monies.

Estimated Cost per Year: OY 93 $2.2 million, OY 94 $280.0 Thousand

Other Comments:

Name, Address, Telephone:
Jim Cochran, Mariculture Coordinator
Alaska Dept. of Fish and Game
P.O. Box 25526
Juneau, AK 99802 907-465-4160

Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID #96015297 -01

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Enhancement

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

⊗ N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

96015297-07

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29730

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

IDEA FOR RESTORATION PROJECT

Title of Project: Develop Harvest Guidelines to Aid Restoration of Injured Terrestrial Mammals and Sea Ducks

Justification: Legal harvest of injured species is continuing within the area impacted by the oil spill. This is a controllable source of mortality that should be applied as a restoration tool. However, that application cannot occur until reliable population and harvest data are available and until harvest guidelines are developed that integrate population and harvest data with existing injury assessment information.

Description of Project:

Goal: Develop harvest guidelines that will aid recovery of injured brown bear, river otter and harlequin duck populations.

Methods: Harvest guidelines will be developed by identifying population and harvest information needs, collecting additional data to meet those needs, then integrating damage assessment information with population and harvest data.

The following data collection/analysis activities are anticipated for each species. Others will likely emerge as the project proceeds.

Brown Bear. Refine population estimates based upon aerial census, stream surveys or habitat models in areas with heavily oiled intertidal habitat and/or with harvest that is at or near estimated sustainable yield. Refine harvest data analysis for oiled areas.

River Otter. Develop population estimates based upon extrapolation of habitat models and density values obtained by injury assessment studies. Refine harvest data analysis for oiled areas.

Harlequin Duck. Complete yearly brood surveys. Collect data on harvest for the oil spill area using mail surveys of hunters.

Estimated Duration of Project: Five years.

Estimated Cost per Year: $99,000

Source:
Roy Nowlin
ADF&Game, Division of Wildlife Conservation
Cordova, Alaska
424-3212

ID # 920615297-30

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration Management Actions

✓ Lead Agency

ADF&G

✓ Cooperating Agency(ies)

USFWS

Y (N) Passed initial screening criteria

type Birds

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-30

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Document ID Number
920610231-03
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RFWG
☐ D-PAG
☐ E-MISC.

Title of Project:

Genetic Stock Identification for Herring in Prince William Sound (PWS)

Justification: (Link to Injured Resource or Service)

Herring embryos, larvae, adults were injured by the Exxon Valdez oil spill.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Genetic stock identification techniques will be used to estimate the discreetness and distribution of herring stocks inside and outside of PWS. Stock identification will aid in understanding the dynamics of the population and will improve targeting of restoration measures as well as monitoring efforts. The information gained is expected to improve the current stock assessment model employed with the PWS population adding accuracy to forecasting procedures. In addition, the information can be used to study non-spawning aggregations contributing to the fisheries in PWS. Genetic techniques surveying the nuclear and mitochondrial genomes will be used to test the differences between major groupings of spawning and non-spawning herring within PWS and between populations in Cook Inlet, Southeast Alaska, Kodiak, and PWS providing insight to stock mixing and migration.

Estimated Duration of Project: 2 years: full effort in year one; reduced effort and cost during year two.

Estimated Cost per Year: $186,000

Other Comments: This project falls within the category of management of human use since the information derived will be used directly in the stock assessment and management of the resource (Restoration Option No. 2 - Intensify Management of Fish and Shellfish).

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Lisa Seeb, Statewide Geneticist
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333 Raspberry Road
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(907)267-2249

ID # 9206102 31-03

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category Other - Science

~~Restoration - management activity~~

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

type FIS

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29734

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Genetic Stock Identification for Herring in Prince William Sound (PWS)

Justification: (Link to Injured Resource or Service)

Herring embryos, larvae, adults were injured by the Exxon Valdez oil spill.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Genetic stock identification techniques will be used to estimate the discreetness and distribution of herring stocks inside and outside of PWS. Stock identification will aid in understanding the dynamics of the population and will improve targeting of restoration measures as well as monitoring efforts. The information gained is expected to improve the current stock assessment model employed with the PWS population adding accuracy to forecasting procedures. In addition, the information can be used to study non-spawning aggregations contributing to the fisheries in PWS. Genetic techniques surveying the nuclear and mitochondrial genomes will be used to test the differences between major groupings of spawning and non-spawning herring within PWS and between populations in Cook Inlet, Southeast Alaska, Kodiak, and PWS providing insight to stock mixing and migration.

Estimated Duration of Project: 2 years: full effort in year one; reduced effort and cost during year two.

Estimated Cost per Year: $205,000

Other Comments: This project falls within the category of management of human use since the information derived will be used directly in the stock assessment and management of the resource (Restoration Option No. 2 - Intensify Management of Fish and Shellfish).

Name, Address, Telephone:
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(907)267-2249

ID # 920615297-34

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - ~~Enhancement~~ Management

✓ Lead Agency

~~BB~~ ADF&G

_____ Cooperating Agency(ies)

_____

(N) Passed initial screening criteria

_____

type FIS

_____

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

9206152 91-34

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Larval Herring Age and Growth in Prince William Sound (PWS) Using Otoliths

Justification: (Link to Injured Resource or Service)

Herring embryos, larvae, adults were injured by the Exxon Valdez oil spill.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

In 1989, a larval fish trawl survey was conducted resulting in a collection of larval herring from 52 sampling locations within PWS over three depths and a three month period. A selection of approximately 600 otoliths stratified over areas, depths and time could be processed and analyzed for age and daily incremental growth. The information obtained could be used to examine the effects of oil on growth and, with two addition years of data, shed light on processes affecting growth which may in turn affect recruitment. The conclusions from the first year's pilot sampling would go toward designing sample sizes needed to detect and test for differences between areas and years. The information gained would be used in conjunction with results of the larval trawl survey as well as long term population trends in abundance and age composition to further define and understand population dynamics. The conclusions could be used to direct and monitor restoration of the stock. Techniques employed would be similar to those used by Moksness and Wespestad (Fishery Bulletin, U.S. 87:509-513, 1989) where otoliths are ground and prepped for digitizing on a computerized scanner. Peaks mapped between individual rings are analyzed for differences in size and frequency. Ages are back calculated from incremental growth analysis and compared to estimated ages using know spawning dates.

Estimated Duration of Project: Three years (no sample collection necessary the first year)

Estimated Cost per Year: $ 60,000 during the first year; $120,000 for years two and three.

Other Comments: This project falls within the category of management of human use since the information derived will be used directly in the stock assessment and management of the resource (Restoration Option No. 2. Intensify Management of Fish and Shellfish). This project also falls within the confines of Restoration Option No. 31 in terms of the development of a comprehensive monitoring program. Data collection and analysis could be coordinated with the collection of other larval fish and shellfish, and macroplankton.

Name, Address, Telephone:

Evelyn Biggs, Herring Research Biologist, Alaska Department of Fish and Game
Division of Commercial Fisheries, Box 669, Cordova, AK 99574-0669. (907)424-3213.

ID # 9206152 97-05

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category Monitoring

Restoration - ~~Monitoring~~

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

_____

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-05

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29747

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Intertidal/Shallow Subtidal Crustacean (Decapod) Composition

Justification: (Link to Injured Resource or Service)

Crustaceans are a major prey species for most fishes, at some life stage of the fish. Further, decapods specifically provide food for not only various fishes but also birds (harlequin ducks, common murres) and mammals (sea otters, river otters). This study will provide information on the shallow subtidal/intertidal species composition of decapods within different areas in Prince William Sound, and provide this useful information to other studies, whose subject may be affected by decapod species availability.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The goal of this study will be to find decapod species composition within specific areas (specified by substrate and oiling characteristics) of Prince William Sound and to document any changes in composition over time. Using this information in cooperation with other studies, specific species of importance may be identified. By managing human usage and, if deemed necessary, transplanting from other areas these species, recovery of both the decapod species and predator species may be expedited. The study sites would be determined by research done by previous NRDA studies, to make efficient use of existing information. The surveys would be run with various meshed pots, scuba and possibly (on sandy bottoms) trawls. The data collected would be, the number of different species, number of each species and weight per species. Statistical analysis would be run on this data to test differences between areas in species composition, specifically dominant species proportions. Cooperation with other studies would be imperative.

Estimated Duration of Project: Four years

Estimated Cost per Year: $275,000

Other Comments:
This study will be designed to coordinate with other investigators to synthesize an ecosystem picture and an ecosystem recovery. Further, this study ties into Option 31, "Develop Comprehensive Monitoring Program", in the Restoration Framework.

Name, Address, Telephone:
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ADF&G, Commercial Fisheries
333 Raspberry Rd
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ID # 920615297 - 47

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Duplicate

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- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - ~~enhancement~~ management action

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

⊗ N Passed initial screening criteria

type F1S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-47

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Intertidal/Shallow Subtidal Crustacean (Decapod) Composition

Justification: (Link to Injured Resource or Service)

Crustaceans are a major prey species for most fishes, at some life stage of the fish. Further, decapods specifically provide food for not only various fishes but also birds (harlequin ducks, common murres) and mammals (sea otters, river otters). This study will provide information on the shallow subtidal/intertidal species composition of decapods within different areas in Prince William Sound, and provide this useful information to other studies, whose subject may be affected by decapod species availability.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The goal of this study will be to find decapod species composition within specific areas (specified by substrate and oiling characteristics) of Prince William Sound and to document any changes in composition over time. Using this information in cooperation with other studies, specific species of importance may be identified. By managing human usage and, if deemed necessary, transplanting from other areas these species, recovery of both the decapod species and predator species may be expedited. The study sites would be determined by research done by previous NRDA studies, to make efficient use of existing information. The surveys would be run with various meshed pots, scuba and possibly (on sandy bottoms) trawls. The data collected would be, the number of different species, number of each species and weight per species. Statistical analysis would be run on this data to test differences between areas in species composition, specifically dominant species proportions. Cooperation with other studies would be imperative.

Estimated Duration of Project:

The project is not expected to last more than four years

Estimated Cost per Year:

$250,000

Other Comments:
This study will be designed to coordinate with other investigators to synthesize an ecosystem picture and an ecosystem recovery.

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Exxon Valdez Oil Spill Restoration Team
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Anchorage, AK 99501

Document ID Number 92061022 3

- ☐ A-92 WPWG
- ☑ B-93 WPWG
- ☐ C-RFNG
- ☐ D-PAG
- ☐ E-MISC.

ID # 920610223

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Monitoring

✓ Lead Agency

ADF+G

_____ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

type FIS

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

92061023

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29746

Document ID Number
920615297
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RFWG
☐ D-PAG
☐ E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Juvenile Spot Shrimp Habitat

Justification: (Link to Injured Resource or Service)

This study will provide information to better manage the recovery of the spot shrimp population and provide useful information for other studies (for example rockfish, which prey upon spot shrimp) within Prince William Sound.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The principal goal of this study will be to ascertain relative abundance of juvenile spot shrimp within specific areas of Prince William Sound and to document changes in these abundances over time. By identifying the relative abundance in different areas, inference may be possible to relative abundance of adult spot shrimp stocks and other oil affected species (such as rockfish). The types of inference would be: correlation between juvenile concentration and adult concentration; stock fluctuations (both spot shrimp and other benthic species); relative importance of juvenile spot shrimp as a prey species; juvenile spot shrimp mortality rate; and relative proportion of juvenile spot shrimp when compared to other crustaceans. The study would focus on areas near adult spot shrimp sample sites, as performed in previous years. Collection of crustaceans, specifically spot shrimp, will be performed by small meshed pots. All species caught in the pots would be sorted, counted and weighed. Further measurement records for spot shrimp would be length and gross health observations. The data would be used to run statistical analysis for the above inferences. Lastly, coordinate with other studies on benthic organisms would be pursued extensively.

Estimated Duration of Project: Three years

Estimated Cost per Year: $110,000

Other Comments:

This study will be designed to coordinate with other investigators to synthesize an ecosystem picture. This study project is tied to Option 3 of the Restoration Framework category Management of Human Uses entitled, "Increase Management for Fish and Shellfish that Previously Did Not Require Intensive Management" and Option 31, "Develop Comprehensive Monitoring Program".

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ID # 920615297-46

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

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- / ID stamped/Input completed
- / Name
- / Affiliation
- / Costs

/ Category

Restoration - ~~enhancement~~ management actions

/ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

Ø N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-46

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Juvenile Spot Shrimp Habitat

Justification: (Link to Injured Resource or Service)

This study will provide information to better manage the recovery of the spot shrimp population and provide useful information for other studies (for example rockfish, which prey upon spot shrimp) within Prince William Sound.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The principal goal of this study will be to ascertain relative abundance of juvenile spot shrimp within specific areas of Prince William Sound and to document changes in these abundances over time. By identifying the relative abundance in different areas, inference may be possible to relative abundance of adult spot shrimp stocks and other oil affected species (such as rockfish). The types of inference would be: correlation between juvenile concentration and adult concentration; stock fluctuations (both spot shrimp and other benthic species); relative importance of juvenile spot shrimp as a prey species; juvenile spot shrimp mortality rate; and relative proportion of juvenile spot shrimp when compared to other crustaceans. The study would focus on areas near adult spot shrimp sample sites, as performed in previous years. Collection of crustaceans, specifically spot shrimp, will be performed by small meshed pots. All species caught in the pots would be sorted, counted and weighed. Further measurement records for spot shrimp would be length and gross health observations. The data would be used to run statistical analysis for the above inferences. Lastly, coordinate with other studies on benthic organisms would be pursued extensively.

Estimated Duration of Project:

The project is not expected to last more than three years

Estimated Cost per Year:

$100,000

Other Comments:

This study will be designed to coordinate with other investigators to synthesize an ecosystem picture.

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Exxon Valdez Oil Spill Restoration Team
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Document ID Number 92061022A

- ☐ A-92 WPMS
- ☐ B-93 WPMS
- ☐ C-RFWG
- ☐ D-PAG
- ☐ E-MISC.

ID # 920610224

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Monitoring

✓ Lead Agency

ADF+G

____ Cooperating Agency(ies)

Y N Passed initial screening criteria

Type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

____ Project Number - if assigned ____

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1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29744

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- [ ] A-92 WPWG
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- [ ] C-RPWG
- [ ] D-PAG
- [ ] E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Prince William Sound (PWS) Spot Shrimp Recovery Management Plan

Justification: (Link to Injured Resource or Service)

Spot shrimp have supported intensive commercial, sport and subsistence fisheries within Prince William Sound (PWS). The harvests from these fisheries confounded the ability of the NRDA project F/S # 15 to identify damages to spot shrimp. Depressed shrimp stocks were identified in EVOS-affected areas prior to the spill and further depression has caused the closing of the spot shrimp commercial fishery within PWS. Additionally, this species is prey for a variety of animals identified as damaged under NRDA (sea otters, harlequin ducks, rockfish and chum salmon). Given the condition of the spot shrimp stock in spill-affected areas and their effect on other species, a management plan is necessary to ensure the recovery of the stock.

Description of Project: (eg. goals, objectives, location, rationale, and technical approach)

Development of a managment plan for spot shrimp will require the establishment of new bases of information. The information to be collected would include genetic diversity, larval drift, juvenile habitat requirements, growth rate and fecundity. The adult life history information (growth rate and fecundity) was started during NRDA F/S #15, and the management plan would put this valuable information to use, however a more comprehensive study is needed. The management plan will be based upon the above life history parameters and employ various methods of analysis to incorporate them into a useable document. The management document will recognize the place spot shrimp have in the ecosystem and provide a framework for managing human use (other than complete closure) in PWS.

Estimated Duration of Project: Two years

Estimated Cost of Project: $ 715,000

Other Comments: This project is tied to Option 3 of the Restoration Framework category Management of Human Uses entitled, "Increase Management for Fish and Shellfish that Previously Did Not Require Intensive Management".

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ID # 920615297-44

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

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- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - ~~enhancement~~ management actions

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

Q N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29745

Document ID Number
920615297
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RFWG
☐ D-PAG
☐ E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Prince William Sound (PWS) ~~Spot Shrimp Survey~~

Justification: (Link to Injured Resource or Service)

Spot shrimp have supported intensive commercial, sport and subsistence fisheries. The harvests from these fisheries confounded the ability of the NRDA project F/S # 15 to identify damages to spot shrimp. Depressed shrimp stocks were identified in EVOS-affected areas prior to the spill. Additionally, this species is prey for a variety of animals identified as damaged under NRDA (sea otters, harlequin ducks, rockfish and chum salmon). Given the condition of the spot shrimp stock in spill-affected areas and their effect on other species, a survey is necessary to monitor the status of the stock.

Description of Project: (eg. goals, objectives, location, rationale, and technical approach)

A survey will be conducted to sample the adult spot shrimp population in PWS. This survey will provide information to support management of the human use of this species and by extension support other damaged species. An historic database already exists for sampling stations established under NRDA, additional stations will be added in oiled areas to provide a more complete analysis of this area. This approach will provide a broader information base for fishery management decisions. Stock parameters such as length frequency, sex, and fecundity as well as catch per unit of effort will be identified. Relative strength of recruitment between years and overall stock structure will allow a determination of the recovery process. There is virtually no understanding of larval drift, settlement characteristics, or juvenile habitat requirements of spot shrimp in PWS. However, this survey addresses life history stages on which a body of knowledge exists and which may further our knowledge on the earlier life stages.

Estimated Duration of Project: Four years

Estimated Cost of Project: $ 88,000

Other Comments: This project is tied to Option 3 of the Restoration Framework category Management of Human Uses entitled, "Increase Management for Fish and Shellfish that Previously Did Not Require Intensive Management" and to option 31, "Develop Comprehensive Monitoring Program" of the Restoration Framework category Other Options also pertains.

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ID # 920615297-45

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

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(Y) N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-45

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Workshop to Develop Protocols for Analysis and Assessment of Benthic Biological, Physical, and Hydrocarbon Data**

Justification: (Link to Injured Resource or Service) A series of confounding variables in data and other problems in various projects are making it difficult to interpret results and develop appropriate statistical procedures. Data from various disciplines must be considered jointly to understand where oil accumulated after the EVOS and to determine to what extent that oil affected benthic organisms. Some of the oil data presently available are not consistent with the known EVOS trajectory and the bays known to have been oiled. Nevertheless, data from several projects suggest the presence of Exxon Valdez oil from 40-100 m in bays considered to be, or observed to have been, oiled. For example, bile samples from benthic fishes within selected oiled bays within PWS suggest that fluorescent aromatic compounds occur in fishes at these sites. Ultraviolet fluorescence data for 1990 sediment samples reported by Dr. D. A. Wolfe (NOAA) semiquantitatively indicate the presence of oil at 40 and 100 m at sites sampled for benthos. Dr. Joan Braddock's data on hydrocarbon degrading bacteria generally showed presence of oil at most oiled sites sampled for deep benthos. Deep benthic macrofaunal data suggest oil effects at 40 and 100 m at sites sampled by Dr. Wolfe and some sites sampled by Dr. Braddock and the NOAA flatfish studies, but sediment data introduces confounding effects that must ultimately be separated from oil effects.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) The intent of this project is to convene a workshop to discuss and resolve the many problems that exist in interpretation of benthic data. Oil data must be discussed and its reliability assessed. In particular, the workshop should address statistical procedures that would enable investigators to effectively interpret their data. It will be especially important, relative to shallow and deep benthic projects, to develop statistical procedures that will separate sediment effects from oil effects on the benthic macrofauna. A minimum of three days should be allotted to the workshop and a working paper should emerge as the workshop output. The workshop should be lead by a proven, successful workshop leader.

Estimated Duration of Project: A minimum of three (3) working days

Estimated Cost per Year: Approximately $300,000 (This presupposes that all of the agency personnel in the above list and those with funded projects will support their salaries, per diem, and travel.)

Other Comments:

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(907) 474-7956

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 920615297 - 11

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Tech Support

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

type ST

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

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EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Natural Recovery Monitoring of Subtidal Eelgrass Communities in PWS**

Justification: (Link to Injured Resource or Service) Subtidal eelgrass beds contain numerous polychaete worms, small snails and clams, amphipods, copepods, isopods, sea urchins, and sea stars, many of which serve as food for coastal-feeding otters, birds, fishes, crabs and shrimps. Studies in PWS subtidal eelgrass sites in 1990 revealed that almost all components of this habitat were impacted by the Exxon Valdez oil spill (EVOS).

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) The overall objective is to monitor the natural recovery of the shallow (<20 m) subtidal eelgrass community in western PWS that was impacted by the EVOS. The specific objectives are to; 1) spatially compare richness, diversity, abundance, biomass and feeding strategies of dominant taxa between paired (oiled:control) sites; 2) temporally compare these population parameters with data collected in 1990 and 1991.

Since no baseline information was available for the shallow subtidal regions prior to the spill, it is essential to obtain long-term temporal data to determine the rate and extent of natural recovery to pre-spill conditions or to a stable community. Because of the inherent temporal variability most post-spill subtidal environmental studies elsewhere have been three to five years in duration. To date, we have only two years of data (1990 and 1991) for the eelgrass habitat. Therefore, it is essential to continue to monitor the recovery process for an additional two or three years.

Our approach for 1993 is to monitor the various successional stages of the eelgrass community toward stabilization by comparing components of oiled and unoiled sites. We will again sample many of the same sites that were sampled in 1990 and 1991. Surveys will be conducted at three of the same five pairs of oiled and control eelgrass sites that were sampled in 1991. Methods will be the same as was used in 1990 and 1991. Within this habitat we will determine abundance of eelgrass, infauna, amphipods, small epifauna attached to eelgrass, large epifauna (i.e. crabs and se stars), and juvenile Pacific cod.

Estimated Duration of Project: Two (2) or three (3) years

Estimated Cost per Year: $265,000

Other Comments: This will be a cooperative effort with Coastal Resources Associates.

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Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 920615297 -24

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

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- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

✓ N Passed initial screening criteria

_____

type ST

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29715

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

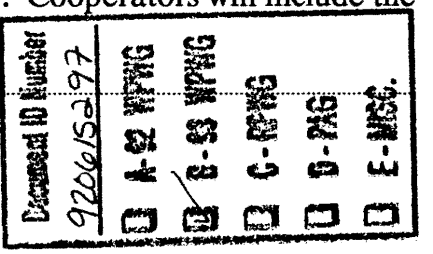
FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Monitoring Trends in Abundance of Harbor Seals in Prince William Sound, Alaska, 1993-1994.**

Justification: (Link to Injured Resource or Service) Following the Exxon Valdez Oil Spill (EVOS), counts of harbor seals (Phoca vitulina) at oiled trend count sites declined 35 percent compared to 13 percent at unoiled sites. Harbor seals encountered oil in the water and on haulouts. Some oiled seals developed potentially lethal lesions in the brain. Since 1990, the number of seals in the oiled area has increased at a substantially slower rate than in unoiled areas. Seventeen percent fewer seals were counted during pupping in 1991 than in 1989 and 1990. During tagging in mid-May 1992, very few harbor seals were seen hauled out anywhere in the central Sound. It is unknown whether these low numbers will be reflected in June pupping surveys.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) The goal of this study is to monitor the abundance of harbor seals in oiled and unoiled areas of PWS to determine whether numbers have stabilized or increased since their decline following the EVOS. Harbor seal abundance will be monitored by flying aerial surveys during pupping (early to mid-June) and molting (late August/early September). Pups will be counted separately in June. Each site will be surveyed multiple times to reduce the statistical variance of the counts. Several surveys also will be conducted of the Copper River Delta to increase our understanding of the relationship between seal counts in PWS and the Delta. Counts will be compared to data collected before, during, and after the EVOS to document whether and how rapidly recovery in the oiled area occurs.

The project will be coordinated and managed by ADF&G. Cooperators will include the University of Alaska Sea Grant Program.



Estimated Duration of Project: Two (2) years

Estimated Cost per Year: $39,000 per year

Other Comments: Harbor seals have experienced a significant decline since the early 1980s and were clearly impacted by the EVOS. They are hunted for food and skins by PWS residents, viewed by recreational users, and interact with commercial salmon fisheries in PWS and the Copper River Delta. A continued decline or the absence of data to indicate their recovery could result in a more restrictive legal classification that could interfere with commercial fishing activities in and adjacent to PWS.

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Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 920615297 - 15

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- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

_____

type MM

_____

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29713

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Synthesis of Information on Ecology and Injury to River Otters in Prince William Sound**

Justification: (Link to Injured Resource or Service) A large amount of data on biochemical and ecological injury to river otters in PWS has been gathered over the past four years. It is clear that there has been significant injury to PWS otters in the oiled areas. To determine appropriate restoration measures, it is necessary to integrate and synthesize all relevant information on the PWS otter habitat, on otters from PWS and elsewhere, and on biochemical effects of oil on mammals.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Objectives: Build a conceptual model of the river otter population in PWS, in both oiled and unoiled areas. Relevant factors might include basic ecology, food habits, blood chemistry, and genetics. A final report would detail the model and supporting information base.

Location: Workshop to be held in Anchorage in Spring 1993.

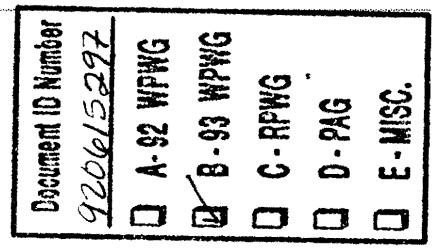
Technical Approach: A planning/scoping meeting would be held with the contractor to describe a basic model of the river otter population in PWS, including the factors related to the effects of oil on the otters and their environment. Based on the results of this meeting, the relevant issues and expertise would be identified. Expertise required could include biochemists, physiologists, parasitologists, otter ecologists, marine ecologists (invertebrate and fish), and a person skilled in building conceptual models (per the adaptive environmental assessment, AEA, process).

The model-building workshop lasting two or three days, would lead to a much better synthesis of all relevant information than exists at present. This synthesis will produce a clearer understanding of how EVOS and other factors may have affected the river otter population of PWS, whether there is continuing injury from EVOS and what additional restoration and/or monitoring activities should be undertaken.

Estimated Duration of Project: One (1) year

Estimated Cost per Year: $40,000

Other Comments:



Name, Address, Telephone

Mark A. Fraker
Alaska Dept of Fish and Game
333 Raspberry Road
Anchorage AK 99518
(907) 267-2136

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID #9206152 97 - 13

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

/ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

/ Category Management Actions

~~Damage Assessment~~ ~~Close out~~

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

Ø N Passed initial screening criteria

type TM

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-13

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29714

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: Habitat Use and Behavior of Harbor Seals in PWS

Justification: (Link to Injured Resource or Service) From 1988 to 1990, counts of harbor seals (Phoca vitulina) in PWS at oiled trend count sites declined 35 percent compared to 13 percent at unoiled sites. Since then, counts during the fall molt have increased at a substantially slower rate in oiled compared to unoiled sites. The number of seals counted during pupping was lower in 1991 than in 1989 or 1990. This, coupled with an unusually low number of seals seen hauled out during field work in May 1992, makes any statement of recovery suspect. It is particularly important that we understand what factors are limiting population recovery from the EVOS. We cannot assume, given the ongoing decline and the absence of recovery in oiled areas that the number of seals will return to pre-spill levels.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) The goal of this study is to characterize population mixing, movements between haulout sites, seasonal changes in haulout patterns, habitats used for feeding, and feeding behavior. Twelve satellite-linked time depth recorders (PTT's) will be attached to harbor seals to describe haulout behavior relative to season, time of day and tide; use of particular haulouts; and frequency of movement between PWS and adjacent waters such as the Copper River Delta. A 1991 pilot study demonstrated clearly that the project is feasible. Prey availability in feeding areas could be assessed through hydroacoustic studies and test-trawling if additional funds were made available.

This study will be used to identify areas of biological significance to harbor seals, interpret survey data, refine survey methods, and recommend actions necessary to safeguard seal habitat. This project will be coordinated and managed by ADF&G. Cooperators will include Texas A&M University, the University of Alaska Sea Grant Program, the National Marine Mammal Lab, and Cordova residents.

Estimated Duration of Project: Two (2) years

Estimated Cost per Year: $165,000 per year

Other Comments: Harbor seals have experienced a significant decline since the early 1980s and were clearly impacted by the EVOS. They are hunted for food and skins by PWS residents, viewed by recreational users, and interact with commercial salmon fisheries in PWS and the Copper River Delta. A continued decline or the absence of data to indicate their recovery could result in a more restrictive legal classification that could interfere with commercial fishing activities in and adjacent to PWS.

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ID # 920615297-14

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Damage Assessment

✓ Lead Agency

ADF&G

Cooperating Agency(ies)

NOAA

(Y) N Passed initial screening criteria

type MM

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

920615297-14

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29735

Document ID Number
92061529?
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RPWG
☐ D-PAG
☐ E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Genetic Stock Identification of Kenai River Sockeye for Protection in Mixed Harvest Areas

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Justification: (Link to Injured Resource or Service) Kenai R. sockeye salmon depressed due to EVOS

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The cohorts of sockeye salmon originating from the 1989 spawning in the Kenai River drainage are so depleted that a severe reduction or complete elimination of their harvest may be necessary starting in 1993 to insure even minimally adequate escapements. Genetic stock identification (GSI) techniques will be implemented to manage the harvest of these EVOS-damaged stocks in Cook Inlet mixed harvest areas. GSI has only recently been applied as an in-season management tool, and it has proven to be extremely effective for allocating and adjusting the harvest of stocks intercepted in stock mixtures such as those that occur in Cook Inlet. Starting in 1992, baseline genetic data will be collected from 28 subpopulations from the Kenai, Kasilof, and Susitna Rivers. Samples from the Cook Inlet commercial harvest will be annalyzed and reduced to stock components using these data and GSI techniques during the 1993 and 1994 seasons. Area managers will use this information to modify fishing areas and openings in order to facilitate harvest of the surplus Kasilof River and Susitna River stocks while protecting the EVOS-damaged Kenai River stocks.

Estimated Duration of Project: 3 years

Estimated Cost per Year: $410,000

Other Comments: Continuation of R59

Name, Address, Telephone:

James E. Seeb 267-2385
Genetics Program
Alaska Dept. Fish and Game 333
Raspberry Road, Anc., AK 99518

ID # 920615297-35

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - ~~Enhancement~~ management

Lead Agency

ADF&G

Cooperating Agency(ies)

⊘ N Passed initial screening criteria

Type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

920615297-35

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29732

Document ID Number
92061S297
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RPWG
☐ D-PAG
☐ E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:
F/S 27 (THIS IS NOT A RESTORATION PROJECT; THIS IS A CONTINUATION OF DAMAGE ASSESSMENT)

Sockeye Salmon Overescapement

Justification: Following the closure of commercial fisheries after the EXXON Valdez oil spill, excessive escapement of sockeye salmon into the Kenai and Kodiak systems may have overtaxed the lake rearing or spawning areas creating poor survival and possibly major declines in future sport, subsistence and commercial fisheries. Detailed justification is outlined on page 75 of the April 1992 Draft Work Plan. This is a continuation of existing projects.

Description of Project: Smolt enumeration and fry abundance on important sockeye salmon lakes on Kodiak Island and the Kenai Peninsula are continuing. These include systems that have had overescapement as well as those that have not. In addition, the limnology of the lakes is being studied to determine the relationship of food resources, nutrient status, and physical parameters to failing sockeye salmon production. Detailed methods and project description are contained in page 75 through 82 of the April 1992 Draft Work Plan.

Estimated Duration of Project: Through 1996, started in 1990

Estimated Cost per Year: Current costs are approximately $641K including administration. Future costs depend upon this years findings. No major increases are anticipated. Significant decreases are possible. See comment below.

Other Comments: A proposed expansion to further investigate cause of the Kenai sockeye salmon decline is proposed (47 K). This is primarily for obtaining sophisticated plankton counting equipment for determining vertical distribution of zooplankton throughout the season in selected major Kenai Peninsula glacial lakes that received excessive numbers of spawners or are acting as controls. An attached description of the problem is included.

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Mr. Ken Tarbox
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ALaska Dept. of Fish and Game
Soldotna, AK 99669
(907) 262-9368

ID # 920615297-32

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Damage Assessment - F/S 27

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ø N Passed initial screening criteria

_____

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

920615297-32

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL 29770

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: RED LAKE MITIGATION FOR RED SOCKEYE SALMON FISHERY

Justification: (Link to Injured Resource or Service)

Sockeye salmon system injured due to overescapement in 1989 due to Exxon Valdez oil spill. This project is directly related to results found in NRDA #27.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The sockeye salmon run at Red Lake appears to have been damaged by overescapement in 1989 as a result of the Exxon Valdez oil spill. Data gathered under NRDA #27 damage assessment, showed low levels (255,000) of migrant smolt and hydroacoustics biomass (100,000) at Red Lake. In order to counter and mitigate this loss, we propose to mitigate fishery displacement/loss by rearing underyearling sockeye salmon smolt to create a mitigation fishery of 125,000 sockeye salmon between 1994 and 1995.

There are currently 2,500,000 Afognak Lake sockeye salmon fry incubating in the Pillar Creek Hatchery which could be reared in brackish water net pens to 3 gram size smolt. The fish were originally intended to be stocked in barren lakes, but could be used for mitigation purposes. At a mean survival rate of 5%, we could expect a fishery of 125,000 sockeye salmon between 1994 and 1995. In 1993-1995, this program would be repeated with a 5,000,000 smolt each year.

Estimated Duration of Project: 1993-1996

Estimated Cost per Year: $143,000

Other Comments: 1994 to 1996: $143,000 per year

Name, Address, Telephone

Lorne White
AK Dept of Fish & Game
FRED Division
211 Mission Road
Kodiak AK 99615

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

920615729-02

920615279

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Document ID Number 920615279

☐ A-92 WPWG ☒ B-93 WPWG ☐ C-RFWG ☐ D-PAG ☐ E-MISC.

Title of Project:

RED LAKE MITIGATION FOR RED SALMON FISHERY

Justification: (Link to Injured Resource or Service)

Red salmon system injured do to overescapement in 1989 do to Exxon Valdez oil spill. This project is directly related to results found in NRDA #27.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The sockeye salmon run at Red Lake appears to have been damaged by overescapement in 1989 as a result of the Exxon Valdez oil spill. Data gathered under NRDA #27 damage assessment, showed low levels (255,000) of migrant smolt and hydroacoustics biomass (100,000) at Red Lake. In order to counter and mitigate this loss, we propose to mitigate fishery displacement/loss by rearing underyearling sockeye salmon smolt to create a mitigation fishery of 125,000 sockeye salmon between 1994 and 1995.

There are currently 2,500,000 Afognak Lake sockeye salmon fry incubating in the Pillar Creek Hatchery which could be reared in brackish water net pens to 3 gram size smolt. The fish were originally intended to be stocked in barren lakes, but could be used for mitigation purposes. At a mean survival rate of 5%, we could expect a fishery of 125,000 sockeye salmon between 1994 and 1995. In 1993 - 1995, this program would be repeated with a 5,000,000 smolt goal each year.

Estimated Duration of Project: 1993 - 1996

Estimated Cost per Year: $191,000 to $128,000

Other Comments: This proposal addresses Options 2,3, and 11 in the Exxon Valdez Oil Spill Restoration Framework, Volume I.

Name, Address, Telephone:

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EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL 29770

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: RED LAKE MITIGATION FOR RED SOCKEYE SALMON FISHERY

Justification: (Link to Injured Resource or Service)

Sockeye salmon system injured due to overescapement in 1989 due to Exxon Valdez oil spill. This project is directly related to results found in NRDA #27.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The sockeye salmon run at Red Lake appears to have been damaged by overescapement in 1989 as a result of the Exxon Valdez oil spill. Data gathered under NRDA #27 damage assessment, showed low levels (255,000) of migrant smolt and hydroacoustics biomass (100,000) at Red Lake. In order to counter and mitigate this loss, we propose to mitigate fishery displacement/loss by rearing underyearling sockeye salmon smolt to create a mitigation fishery of 125,000 sockeye salmon between 1994 and 1995.

There are currently 2,500,000 Afognak Lake sockeye salmon fry incubating in the Pillar Creek Hatchery which could be reared in brackish water net pens to 3 gram size smolt. The fish were originally intended to be stocked in barren lakes, but could be used for mitigation purposes. At a mean survival rate of 5%, we could expect a fishery of 125,000 sockeye salmon between 1994 and 1995. In 1993-1995, this program would be repeated with a 5,000,000 smolt each year.

Estimated Duration of Project: 1993-1996

Estimated Cost per Year: $143,000

Other Comments: 1994 to 1996: $143,000 per year

Name, Address, Telephone

Lorne White
AK Dept of Fish & Game
FRED Division
211 Mission Road
Kodiak AK 99615

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920615729-02

920615279

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Document ID Number 920615279

☐ A-92 WPWG ☒ B-93 WPWG ☐ C- RPWG ☐ D- PNG ☐ E- MISC.

Title of Project:

RED LAKE MITIGATION FOR RED SALMON FISHERY

Justification: (Link to Injured Resource or Service)

Red salmon system injured do to overescapement in 1989 do to Exxon Valdez oil spill. This project is directly related to results found in NRDA #27.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The sockeye salmon run at Red Lake appears to have been damaged by overescapement in 1989 as a result of the Exxon Valdez oil spill. Data gathered under NRDA #27 damage assessment, showed low levels (255,000) of migrant smolt and hydroacoustics biomass (100,000) at Red Lake. In order to counter and mitigate this loss, we propose to mitigate fishery displacement/loss by rearing underyearling sockeye salmon smolt to create a mitigation fishery of 125,000 sockeye salmon between 1994 and 1995.

There are currently 2,500,000 Afognak Lake sockeye salmon fry incubating in the Pillar Creek Hatchery which could be reared in brackish water net pens to 3 gram size smolt. The fish were originally intended to be stocked in barren lakes, but could be used for mitigation purposes. At a mean survival rate of 5%, we could expect a fishery of 125,000 sockeye salmon between 1994 and 1995. In 1993 - 1995, this program would be repeated with a 5,000,000 smolt goal each year.

Estimated Duration of Project: 1993 - 1996

Estimated Cost per Year: $191,000 to $128,000

Other Comments: This proposal addresses Options 2,3, and 11 in the Exxon Valdez Oil Spill Restoration Framework, Volume I.

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ID # 297 - 70

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category Restoration / Manipulation & Enhancement

✓ Lead Agency ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

297-70

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

See, in Comments pile, Support letter from Kodiak Island Borough.

#9206152?9

* Restoration Framework, 1992, pp 43-44.

24733

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Genetic Risk Assessment of Injured Salmonids

Justification: (Link to Injured Resource or Service)

Salmonids, including pink and chum salmon, Dolly Varden, and cutthroat trout, suffered both direct lethal and sublethal injuries as a result of the Exxon Valdez oil spill (EVOS). Pink salmon embryos and alevins suffered increased mortality, diminished growth, and a high incidence of somatic cellular and genetic abnormalities as a result of spawning ground contamination and rearing in oil areas. Dolly Varden and cutthroat trout also showed substantial increased mortality in the oil-affected areas. Additionally, cutthroat trout from oiled sites grew up to 68% slower than fish from control sites.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Reproductively isolated populations are by definition self-recruiting--the adults generally do not stray to repopulate depleted areas. Therefore, basing management decisions on known population and genetic structure is critical to facilitate successful restoration and to guide restoration management decisions including commercial harvest management and sportfish regulations. This project would provide the necessary information to define the genetic structure of pink and chum salmon, Dolly Varden, and cutthroat trout in the EVOS-affected area; identify those population segments which are most critical to the species; and to provide genetic risk assessment and monitoring of management and supplementation programs for each species.

Pink salmon sampling will be designed to include both early and late stocks and inter-tidal and upstream-spawning stocks. Chum salmon will be collected from the one hatchery broodstock and approximately ten wild stocks. Ten Dolly Varden populations and approximately five cutthroat populations will be sampled in a non-lethal manner. Genetic techniques will be utilized to survey both nuclear and mitochondrial markers.

Estimated Duration of Project: 4 years

Estimated Cost per Year: $ 408,000

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Lisa Seeb, Statewide Geneticist
Alaska Dept. of Fish and Game
333 Raspberry Road
Anchorage, AK 99518 267-2385

ID # 920615297-33

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Damage Assessment

✓ Lead Agency

~~DF~~ ADF&G

_____ Cooperating Agency(ies)

Ø N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-33

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29738

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Coded Wire Tagging of Wild Stock Pink Salmon For Stock Identification

Justification: Wild stock pink salmon production in Prince William Sound (PWS) has ranged from 10 to 15 million fish in recent years. Up to 75% of pink salmon spawning in PWS occurs in intertidal areas. Pink salmon populations in oiled streams have experienced higher egg mortalities, larval deformities, and lower juvenile growth rates than stocks from unoiled streams and hatcheries. There is also evidence that pink salmon from oiled streams sustained genetic damage which has resulted in persistent reduced egg survival following the spill. Commercial fisheries in PWS harvest salmon from damaged and healthy wilds stocks, and the numerically superior hatchery returns. Depleted and less productive oiled populations cannot sustain as high an exploitation rate in PWS commercial fisheries as unoiled wild and hatchery stocks; consequently, they require special protection from commercial fisheries if adequate numbers are to escape and spawn. Coded wire tags are a stock identification tool which will enable managers to identify stock specific temporal and spatial distributions in PWS, alter fisheries inseason, direct fishing efforts towards numerically superior hatchery stocks, away from damaged wild stocks, and monitor the recovery of damaged wild stocks.

Description of Project: Wild pink salmon fry from the intertidal and upstream portions of five oiled and five control streams will be enumerated. Portions of the upstream and intertidal sub-populations in each stream will be coded-wire tagged throughout the outmigration. Tag codes unique to each stream and sub-population will provide marked fish of known origin and exposure history. Tag recoveries from adults will be used to estimate hatchery and wild stock contributions to commercial catches by time and area. Catch contribution results coupled with wild stock escapement and hatchery stock brood data will be used to estimate total returns and survival rates for hatchery and wild stocks. Time and area hatchery and wild stock contribution information will be used to direct fishing fleet toward aggregations of hatchery fish and away from areas where damaged wild fish are present in significant numbers. Estimates of total return and survival for hatchery and wild stocks will enable managers to monitor wild stock specific recovery from oil damage and assess the effectiveness of revised management strategies. Intertidal fry weirs were pioneered in PWS (see NRDA F/S Study 3). Half length coded-wire tagging technology, recovery procedures in processing plants, tag retrieval procedures, tagging and recovery data archiving, and tag data analysis methods also have long histories of success.

Estimated Duration of Project: Damaged even and odd year pink salmon populations should be tagged and their returns monitored and managed independently until oiled effects have been shown to have diminished below levels apt to cause significant reductions in survival.

Estimated Cost of Project: $990,000 per year.

Other Comments: The estimated cost includes only the cost of enumerating and tagging wild fry. Recovery activities are funded in separate proposals.

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Alaska Department of Fish and Game
Box 880
Cordova, Alaska 99574
907-424-5900

ID # 920615297 - 38

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - ~~enhancement~~ management

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

(X) N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-38

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Horse Marine Creek Pink Salmon Restoration**

Justification: (Link to Injured Resource or Service) Alitak Bay, in close proximity to Olga Bay (outlet) was oiled in 1989 - Restoration Study 105 evaluated barrier falls and need for steep pass.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) Horse Marine Creek (257-402) is located in the southwest area of Kodiak Island and drains into Olga Bay. Although Olga Bay was not directly impacted by oil contamination, Alitak Bay was significantly oiled. Horse Marine will benefit areas that were directly affected on southern Kodiak Island. This system was evaluated through Restoration Study 105 to determine if a barrier falls could be bypassed to allow pink salmon access to a significant amount of spawning area above the falls.

This system will require 1-2 steep pass sections to bypass the 25' barrier falls. A thorough engineering survey will be conducted. Steep pass sections will be helicoptered to the site and a helicopter will be used to place steep pass sections in the creek after site preparation. Site preparation will consist of removing rock and debris. Fishpass sections will be anchored by cable and water will be diverted into steep pass by use of gabion and cement diversion walls. Fish passage will be evaluated by direct counts and stream surveys.

Estimated Duration of Project: Three (3) years

Estimated Cost per Year: $27,500

Other Comments: Horse Marine Creek restoration will also benefit sockeye and coho salmon.

Name, Address, Telephone
Steve Honnold
AK Dept of Fish & Game/ FRED Div
211 Mission Road
Kodiak AK 99615

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EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL 297 23

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Pink Creek Pink Salmon Restoration**

Justification: (Link to Injured Resource or Service) Pink Creek drains into Afognak Bay which was oiled in 1989 due to the Exxon Valdez oil spill. This system was evaluated through Restoration Project 105.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) Pink Creek (252-342) is located on Afognak Island and drains into Afognak Bay. Afognak Bay was directly impacted by oil in 1989. Restoration Study 105 surveyed this system in 1992 to determine fishpass feasibility. A falls blocks pink salmon from reaching a potential spawning area in this tributary to Afognak River. Survey results indicate that this barrier could be altered to allow pink salmon passage. Spawning area above the falls was determined to be of good to excellent quality and in sufficient quantity to support several thousand pink salmon.

This project would require steep pass sections resulting in approximately 15′ rise to bypass the falls. A channel also would be cut leading into the upstream end of the steep pass. Water diversion structures such as gabions reinforced with steel pipe and rebar, would divert water into the channel and steep pass. Cable would be anchored into the rock substrate to secure the steep pass. This project would be evaluated by stream surveys during the peak pink salmon spawning period.

Estimated Duration of Project: Two (2) years

Estimated Cost per Year: $11,000

Other Comments:

Reattach to 297-23

Name, Address, Telephone
Steve Honnold
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211 Mission Road
Kodiak AK 99615

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

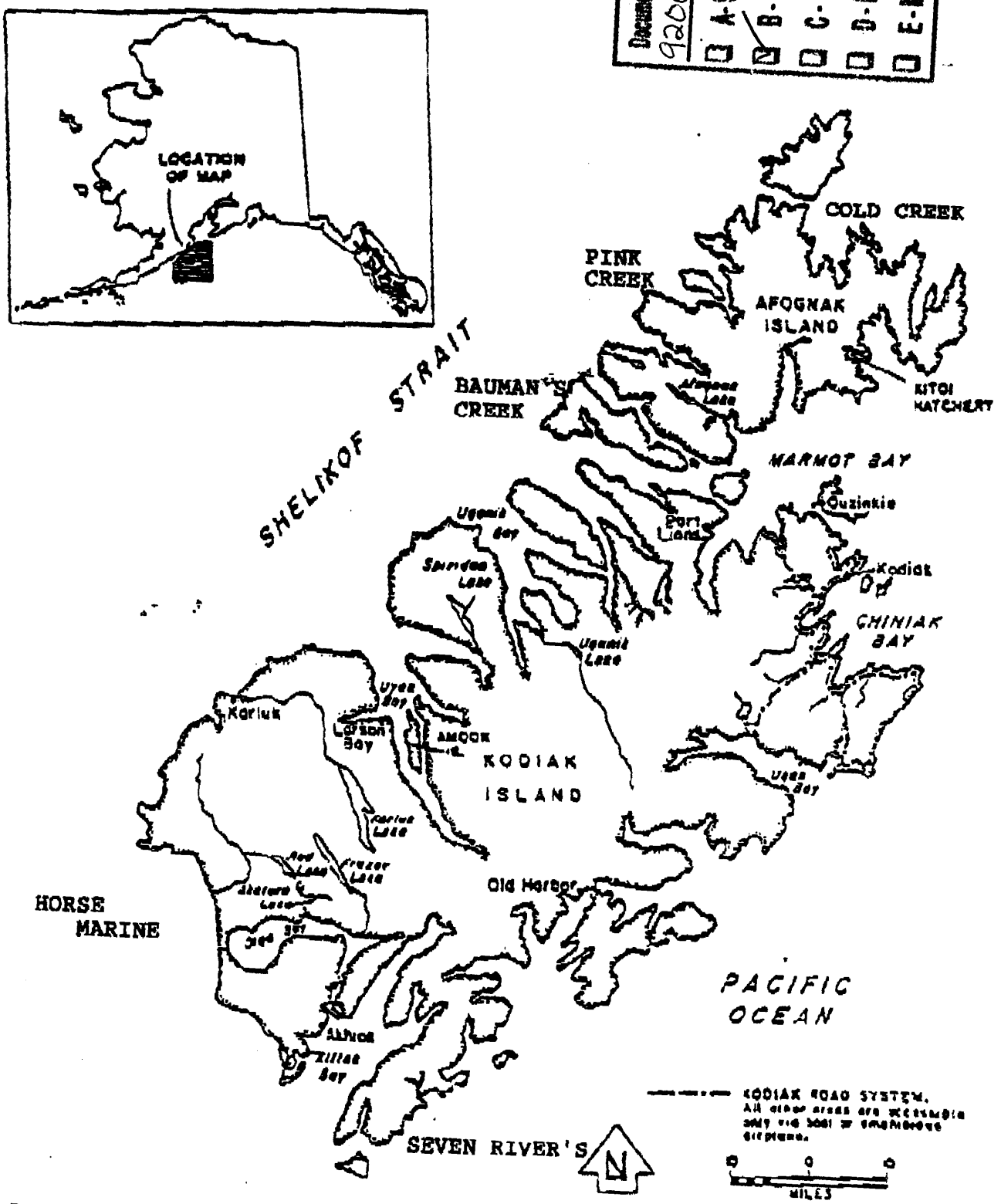

Figure 1. Area map of Kodiak and Afognak Islands

920615279 05

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Document ID Number 920615279

☐ A-92 WPWG ☑ B-93 WPWG ☐ C-RFWG ☐ D-PAG ☐ E-MISC.

Title of Project:

Horse Marine Creek Pink Salmon Restoration

Justification: (Link to Injured Resource or Service)

Alitak Bay, in close proximity to Olga Bay (outlet) was oiled in 1989 - Restoration Study 105 evaluated barrier falls and need for steep pass.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Horse Marine Creek (257-402) is located in the southwest area of Kodiak Island and drains into Olga Bay. Although Olga Bay was not directly impacted by oil contamination, Alitak Bay was significantly oiled. Horse Marine will benefit areas that were directly affected on southern Kodiak Island. This system was evaluated through Restoration Study 105 to determine if a barrier falls could be bypassed to allow pink salmon access to a significant amount of spawning area above the falls.

This system will require 1 - 2 steep pass sections to bypass the 25' barrier falls. A thorough engineering survey will be conducted. Steep pass sections will be helicoptered to the site, and a helicopter will be used to place steep pass sections in the creek after site preparation. Site preparation will consist of removing rock and debris. Fishpass sections will be anchored by cable and water will be diverted into steep pass by use of gabion and cement diversion walls. Fish passage will be evaluated by direct counts and stream surveys.

reattach to 297-21

Estimated Duration of Project: 3 yoars

Estimated Cost per Year: $25,000

Other Comments: Horse Marine Creek restoration will also benefit sockeye and coho salmon.

This proposal addresses Option 18 in the Exxon Valdez Oil Spill Restoration Framework, Volume I.

Name, Address, Telephone:

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Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 297-21

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration Manipulation & Enhancement

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

_____

Type F/S

_____

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

297-21

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

See support letter from Kodiak Borough "Comments" # 920615279

* Restoration Framework, 1992, pp 43-44.

29742

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Coded-wire Tag Recoveries from Commercial Catches in Prince William Sound Pink Salmon Fisheries (Restoration Study 60A)

Justification: Pink salmon populations in oiled streams in Prince William Sound (PWS) have experienced higher egg mortalities, larval deformities, and lower juvenile growth rates than stocks from unoiled streams and hatcheries. There are also observations which suggest that oiled pink salmon have sustained genetic damage which has resulted in reduced egg survival following the spill. Commercial fisheries in PWS harvest salmon from damaged and healthy wilds stocks, and the numerically superior hatchery returns. Depleted and less productive oiled populations cannot sustain as high an exploitation rate in PWS commercial fisheries as unoiled wild and hatchery stocks; consequently, they require special protection from commercial fisheries if adequate numbers are to escape and spawn. Coded wire tags are a stock identification tool which will enable managers to identify stock specific temporal and spatial distributions in PWS, alter fisheries inseason, direct fishing efforts towards numerically superior hatchery stocks, away from damaged wild stocks, and monitor the recovery of damaged wild stocks.

Description of Project: This project will recover coded-wire tags from salmon caught in the commercial salmon fisheries in Prince William Sound. Recoveries will be conducted at shore based processing plants. Tag extractions will be completed by the ADF&G tag laboratory in Juneau and data analyses will be completed by ADF&G staff in Cordova. Tag recovery data will be used to estimate hatchery and wild stock contributions to commercial catches by time and area. Catch contribution results coupled with wild stock escapement and hatchery stock brood data will be used to estimate total returns and survival rates for hatchery and wild stocks. Time and area hatchery and wild stock contribution information will be used to direct fishing fleet toward aggregations of hatchery fish and away from areas where damaged wild fish are present in significant numbers. Estimates of total return and survival for hatchery and wild stocks will enable managers to monitor wild stock specific recovery from oil damage and assess the effectiveness of revised management strategies. Coded-wire tagging technology, recovery procedures in processing plants, tag retrieval procedures, tagging and recovery data archiving, and tag data analysis methods have long histories of success. Coded-wire tagging of all hatchery salmon is already funded and conducted by aquaculture associations. A wild pink salmon fry tagging project would compliment this project and has been requested in a separate proposal.

Estimated Duration of Project: Both even and odd year pink salmon populations should be monitored until management strategies have been shown to be successful and oiled effects have been shown to have diminished below levels apt to cause significant reductions in survival.

Estimated Cost per Year: $855,000 per year

Other Comments: This is a currently funded restoration project (R60C)

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ID # 926015297-42

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration · enhancement management

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ⓨ N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-42

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
IDEAS FOR RESTORATION PROJECTS

29842

Title of Project:
Prince William Sound Salmon Stock Genetics
Justification:

Description of Project:
Goal: Develop baseline data on salmonid genetics which will be used by the US FS and other agencies interested in habitat improvement and preserving the genetic diversity in wild fish stocks in Prince William Sound

This project will build upon previous work by USFS, NMFS, ADFG. This included sampling for baseline data in 1991 by NMFS and ADFG and a USFS project to summarize all existing information in Prince William Sound and identifiy phenotypic characteristics of salmon which are indicative of gentypic variation which will be completed in 1992.

Objectives:
-develop sampling scheme based on geographic, temporal, phenotypic differences, oiled and non-oiled, hatchery and wild differences, type of spawning habitat (intertidal, lake, inlet stream).
-determine which stocks will need to be sampled over multiyears to obtain samples without endangering stocks
-sample for both immediate electorphoresis and eventual DNA samples; put a portion of sample in long term storage for use with techniques developed in the future
-after initial data collection, identify further needs and gene pools where more detailed sampling is needed
-sample coho and cut throat trout and dolly varden in order to identify what protocol to use for electorphoresis
-interact with scientists developing cut throat data bases in more southerly portions of the cut throat range.

Estimated Duration of Project:

Five years

Estimated Cost per Year:
$150,000

Other Comments:

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US Forest Service Glacier Ranger Station
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Girdwood, AK 99587
907-783-3242

ID # 920615298 - 42

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

✓ Category Monitoring

Lead Agency USFS

Cooperating Agency(ies) ADFG

(Y) N Passed initial screening criteria

type FIS

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

1993 PROJECT SCORING SHEET 920615298-92

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29736

Document ID Number
92061S297
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RPWG
☐ D-PAG
☐ E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Genetic Monitoring of Kodiak Island Sockeye Salmon

Justification: (Link to Injured Resource)

Curtailment of commercial fishing for sockeye salmon in the Kodiak Area during 1989 resulted in overly large spawning escapements. As a result a number of sockeye systems greatly exceeded optimal levels. This overescapement resulted in poor smolt production and will likely result in poor returns beginning in 1994. To improve the rate of recovery, restoration projects including fry planting are being planned for Kodiak Island sockeye populations.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Genetic assessment of the stock structure of sockeye salmon stocks inhabiting the EVOS-affected area has become of paramount importance in the face of stock-specific overescapements resulting from closures in 1989, decline of those same stocks, and the resulting modifications of human use. An understanding of the population genetic structure of Kodiak sockeye salmon is necessary to guide restoration and management decisions for damaged populations.

The objectives of this project are to use genetic stock identification to 1) monitor genetic impacts of proposed federal and state rehabilitation projects on sockeye salmon on Red Lake and 2) provide improved management capabilities for protection of EVOS-damaged Red Lake sockeye intercepted in stock mixtures in the Kodiak area. Sockeye salmon specimens will be collected from the major Kodiak Island spawning populations. Sampling will be designed to include both early and late stocks. Genetic data will be collected using protein and DNA techniques. The data can be used to modify fishing efforts to protect damaged stocks, to identify appropriate broodstocks, and to investigate the impacts of restoration and mitigation including levels of straying between wild and enhanced populations.

Estimated Duration of Project: 3 years

Estimated Cost per Year: $ 275,000

Other Comments: Damage to Kodiak sockeye salmon is documented in Study F/S 27 - Sockeye Salmon Overescapement; restoration projects are outlined in R113 - Red Lake Sockeye Salmon Restoration.

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ID # 920615297-36

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - ~~Enhancement~~ Monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

_____

Type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-36

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL 297 74

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: DEVELOPMENT OF OTOLITH MASS MARKING AS AN INSEASON STOCK SEPARATION TOOL TO REDUCE EXPLOITATION ON DAMAGED WILDSTOCK SALMON

Justification: Wild pink and chum salmon populations in Prince William Sound (PWS) were injured by the Exxon Valdez oil spill. Fishery managers must have inseason stock composition data to direct exploitation away from damaged wildstocks. This project will develop otolith mass marking as an inseason stock separation tool. Otolith marking is expected to reduce the cost of catch sampling and increase the precision of stock composition estimates, because every hatchery fish will be marked. Wildstock salmon are identified by default as unmarked fish. Because every hatchery fish is marked, otolith mass marking will also have important benefits for studies of hatchery-fish straying and wild-hatchery fish interactions during the early marine period.

Description of Project: This project will take otolith mass marking technology out of the laboratory and solve the problems necessary to apply the technique to protect damaged wildstock salmon. The project will focus on the following three objectives: (1) develop a banding code that can be applied and deciphered at a reasonable cost, (2) refine existing otolith mass processing techniques, and (3) develop a catch sampling program that will provide inseason stock composition data for fishery managers. In the first and second years of the project, embryos in two production hatcheries in PWS will be marked using an initial set of codes constructed to answer specific questions related to the speed and cost of otolith mass processing as well as the accuracy of mark identification in returning adults. In the third and fourth years, marked fish will return as adults and a catch sampling program will be conducted to estimate the variability of stock composition within and between fish tender boats and fish processors. Data obtained from the first generation will be used to refine techniques applied to the second generation. It is expected that the information obtained from the project will enable implementation of a full scale otolith mass marking program at the end of the four year period.

Estimated Duration of Project: 4 years

Estimated Cost per Year:

First Year	$ 152,000
Second Year	89,500
Third Year	198,000
Fourth Year	198,000

Other Comments: This concept proposal is being jointly submitted by the Alaska Department of Fish and Game, Prince William Sound Aquaculture Corporation, and the Valdez Fisheries Development Association, Inc.

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ID # 920615297-74

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration ~~enhancement~~ management actions

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ⓝ N Passed initial screening criteria

_____

type F/S

_____

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615291-74

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL 297 73

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: **SURVEY AND EVALUATION OF INSTREAM HABITAT AND STOCK RESTORATION TECHNIQUES FOR ANADROMOUS FISH (CONTINUATION OF RESTORATION PROJECT NO. 105)**

Justification: The Exxon Valdez oil spill severely damaged wild pink and chum salmon populations. Various amounts of oil were deposited in intertidal habitats in Prince William Sound (PWS) where up to 75% of the spawning occurs. Salmon eggs deposited in 1989 and all subsequent years have been contaminated and direct egg mortality has been documented. Recently detected genetic damages resulting from oil contamination in spawning beds may further reduce the productivity and fitness of wild salmon populations for many years to come. This project will identify the most appropriate techniques for restoring or replacing damaged spawning habitats and stocks of anadromous fish utilizing established enhancement methods.

Description of Project: This is an ongoing project conducted cooperatively by the Alaska Department of Fish and Game (ADF&G) and U.S. Forest Service (USFS). The USFS will provide expertise in habitat restoration in PWS, and the ADFG will focus on stock and habitat restoration in the EVOS impact area. The USFS will conduct hydrological surveys at sites in the National Forest, further evaluate fish pass sites identified in oil year 3, and determine appropriate restoration techniques for anadromous fish (salmon and trout) stocks and habitats in the most heavily oiled streams in PWS. The ADFG will estimate the area of salmon spawning habitat damaged by the EVOS in PWS, determine the most appropriate techniques for replacing this habitat within the EVOS impact area, and coordinate with the USFS on evaluation of fish stock restoration techniques. Appropriate restoration or enhancement techniques may include spawning channels and improvement of fish passage through fish ladders, or step-pool structures to overcome physical or hydrological barriers. These measures will provide oil-free spawning habitat to replace oil-impacted spawning areas. Additional wild salmon stock rehabilitation measures may include stream-side incubation boxes, remote egg-taking and incubation at existing hatcheries for fry stocking in oil-impacted streams.

Estimated Duration of Project: 3 years
Estimated Cost per Year: $416,000

Other Comments: This concept proposal is being submitted jointly by the U.S. Forest Service and the Alaska Department of Fish and Game.

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ID # 920615291 - 73

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration enhancement

✓ Lead Agency

ADF&G

✓ Cooperating Agency(ies)

USFS

O N Passed initial screening criteria

RS - 105

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

9206152 97 - 73

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

RS 105

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
FORMAT FOR IDEAS FOR RESTORATION PROJECTS

297 75

Document ID Number
92001529?
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RPWG
☐ D-PAG
☐ E-MISC.

Title of Project: **ESTABLISHING AN ECOLOGICAL BASIS FOR RESTORING AND ENHANCING THE MIXED-STOCK SALMON RESOURCES OF PRINCE WILLIAM SOUND: EARLY MARINE INFLUENCES**

Justification: Instream habitat improvement, hatchery rearing, and intensive management are recognized and accepted techniques for restoring and enhancing salmon resources. But, these conventional methods focus exclusively on freshwater and adult lifestages providing no insight into interactions resulting from manipulation of a major component of the marine ecosystem. The scientific literature supports the concept that marine ecosystems are regulated by changes in ocean climate that mediate interactions among juvenile fish and other animals in coastal habitats. Knowledge of these processes is essential to evaluate interactions between enhanced and wild salmon, predict restoration program effects on other ecosystem components, and determine the causes of salmon population changes documented by monitoring programs. Without this fundamental understanding, well meaning but poorly informed attempts to recover from environmental damage may inadvertently lead to far greater biological problems than they are intended to solve.

Description of Project: The goal of this project is to develop an understanding of the salmon ecosystem of PWS for use by restoration program managers. The requested funds will be used to enhance a modest ongoing program called Cooperative Fisheries and Oceanographic Studies (CFOS). The objectives of the project are (1) synthesis and integration of ocean temperature and zooplankton abundance data collected near five hatcheries, (2) description of growth responses of juvenile salmon to lower trophic level changes and subsequent effects on adult production, and (3) development of an understanding of ecosystem interactions that will lead to a predictive capability. Supplemental funding for CFOS will provide a means to continue ADF&G studies of early marine growth and survival, broaden University of Alaska studies of fry feeding dependencies and forage stocks, and allow local hatcheries to maintain substantial oceanographic and plankton watch programs. Work on bioenergetic and trophic models will be stepped up to provide the predictive capability needed by restoration program managers. In aggregate, these efforts will pioneer establishment of a sound ecological basis for restoring and enhancing the salmon resources of PWS.

Estimated Duration of Project: 5 years
Estimated Cost per Year: $385,000

Other Comments: This concept proposal is being jointly submitted by the Alaska Department of Fish and Game, Prince William Sound Aquaculture Corporation, Valdez Fisheries Development Association, Inc., and the University of Alaska Fairbanks.

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Mark Willette
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Cordova, Alaska 424-3214

ID # 920615297-75

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration enhancement

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ø N Passed initial screening criteria

_____

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297 -75

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29717

Document ID Number
92001529?
☐ A-92 WPWG
☒ B-93 WPWG
☐ C-RPWG
☐ D-PAG
☐ E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: Quality assurance for PWS coded-wire tagging and fish production records for improved management ability.

Justification: (Link to Injured Resource or Service)

Wild juvenile salmon populations were damaged by the EVOS. Management strategies have been intensified to avoid additional damage by overharvesting while attempting to focus more effort on the abundant hatchery produced stocks. This project is designed to support the extra needs for the required management intensity by providing the necessary quality assurance and improved precision for tagging and record keeping for the hatchery stocks.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Goal - To support and expand the means of recording data, maintaining data records and data reporting quality assurance to support and improve management precision.

Objectives - Develop, test and implement data recording system for fish production and coded-wire tagging projects.

Location - PWS fish production and tagging projects.

Rationale - Improved management strategies to prevent overharvest of damaged wild stocks require improved quality, and precision of record keeping for all projects that include fish marking, release and recapture.

Technical approval - A computer program will be developed to record, cross-reference and error-check production and release data and coded-wire tagging information to assure precise, high quality records for the fisheries managers to improve accuracy, precision and efficiency in the fishery to avoid over-harvest of wild stocks.

Estimated Duration of Project: FY93, 1994.

Estimated Cost per Year: $66,000.

Other Comments: Information from this project, when completed, will benefit other parts of the state and other agencies as well as greater efficiency will be realized among other projects.

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Anchorage AK 99518

ID # 920615297-17

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Management Action

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

Ø N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-17

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29771

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: FRY REARING TO IMPROVE SURVIVAL AND RESTORE WILD PINK AND CHUM SALMON STOCKS

Justification: The Exxon Valdez oil spill severely damaged wild pink and chum salmon stocks in Prince William Sound (PWS). Salmon eggs deposited in 1989 and all subsequent years have been contaminated and direct egg mortality has been documented. Higher incidence of somatic, cellular and genetic abnormalities were found among alevins and fry from oiled creeks. Genetic damages among salmon from oiled streams may have caused functional sterility increasing egg mortality in recent years. This project will offset the high mortalities documented in recent years.

Description of Project: This project will accelerate the recovery of damaged wildstock pink and chum salmon by increasing early marine survival and reducing commercial exploitation when adults return. The natural mortality of salmon fry is typically very high during the early marine period immediately after the fish enter saltwater. Ongoing studies in PWS indicate that fry-to-adult survival can be doubled if fry are reared in net pens and released during optimal growth conditions in the ocean. This project will apply this technology to restore damaged wildstock pink and chum salmon. Stray wildstock fish from enhanced stocks will help re-populate adjacent damaged stocks. Commercial exploitation of returning adults will be reduced by coded-wire tagging. Fry weirs will be installed at six of the largest oiled pink and chum salmon producing streams in PWS. Fry will be captured, held in netpens, and fed a commercial diet for several weeks. Fry will be released when growth conditions in the ocean are optimal for fry survival. A representative sample of fry will be coded-wire tagged at each site. Recoveries of coded-wire tagged adults in the commercial fishery will provide fishery managers with the information they need to direct exploitation away from damaged wildstock salmon.

Estimated Duration of Project: Until recovery of wildstocks
Estimated Cost per Year: $727,000

Other Comments: Studies conducted as part of the 'Instream Habitat and Stock Restoration' project (R105) have identified appropriate sites for fry rearing in PWS.

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ID # 92061529 7-271

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - enhancement

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ø N Passed initial screening criteria

_____

Type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29720

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Cold Creek Pink Salmon Restoration**

Justification: (Link to Injured Resource or Service) Ishut Bay, on Afognak, and Shuyak Island were directly impacted by oil in 1989, significant amounts of oil was again found in 1990. Restoration Study R105 identified Cold Creek as a potential site for fishway improvement work.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) Cold Creek (252-331) which is located on Afognak Island and drains into Kazakof Bay, was surveyed for fishpass feasibility in 1992 as identified in Restoration Study 105. This system has a steep gradient 200 yards from the estuary that impedes migration of pink salmon to spawning areas. Feasibility surveys indicate that this barrier can be altered in such a way to allow fish passage. Surveys also determined a significant amount of spawning area above the barrier is presently under-utilized.

This project would require placement of steep pass section to bypass the 15' barrier. A channel would also be cut leading into the upstream end of the steep pass. Water diversion structures such as gabions, reinforced with steel pipe and rebar, would divert water into the channel and steep pass. Cable would be anchored into the rock substrate to secure the steep pass. This project would be evaluated by stream surveys during the peak pink salmon spawning period.

Document ID Number 92061592 97

☐ A-92 WPWG ☑ B-93 WPWG ☐ C-RPWG ☐ D-PAG ☐ E-MISC.

Estimated Duration of Project: Two (2) years

Estimated Cost per Year: $16,500

Other Comments: This project would also allow increased barrier passage of coho salmon.

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Steve Honnold
AK Dept of Fish & Game/ FRED Div
211 Mission Road
Kodiak AK 99615

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

92061527 9 04

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Document ID Number 92061527

☐ A-92 WPWG ☒ B-93 WPWG ☐ C-RPWG ☐ D-PAG ☐ E-MISC.

Title of Project:
Cold Creek Pink Salmon Restoration

Justification: (Link to Injured Resource or Service) Ishut Bay, on Afognak, and Shuyak Island were directly impacted by oil in 1989, significant amounts of oil was again found in 1990.

Restoration Study 105 identified Cold Creek as a potential site for fishway improvement work.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Cold Creek (252-331), which is located on Afognak Island and drains into Kazakof Bay, was surveyed for fishpass feasibility in 1992 as identified in Restoration Study 105. This system has a steep gradient 200 yards from the estuary that impedes migration of pink salmon to spawning areas. Feasibility surveys indicate that this barriar can be altered in such a way to allow fish passage. Surveys also determined a significant amount of spawning area above the barrier is presently under utilized.

This project would require placement of steep pass section to bypass the 15' barrier. A channel would also be cut leading into the upstream end of the steep pass. Water diversion structures such as gabions, reinforced with steel pipe and rebar, would divert water into the channel and steep pass. Cable would be anchored into the rock substrate to secure the steep pass. This project would be evaluated by stream surveys during the peak pink salmon spawning period.

Estimated Duration of Project: 2 years

Estimated Cost per Year: 15,000

Other Comments: This project would also allow increased barrier passage of coho salmon.

This Proposal addresses Option 18 in the Exxon Valdez Oil Spill Restoration Framework, Volume I.

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Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 297-20

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category Restoration Manipulation & Enhancement

✓ Lead Agency ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

_____

Type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

297-20

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

See support letter Kodiak Island Borough in comments file # 920615279

* Restoration Framework, 1992, pp 43-44.

29737

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Pink Salmon Egg to Pre-emergent Fry Survival in Prince William Sound (Restoration Study 60C)

Justification: Salmon egg mortalities in Prince William Sound (PWS) were 70%, 65%, and 115% higher in oiled streams than in unoiled streams in 1989, 1990, and 1991. Differences between oiled and unoiled streams in 1989 and 1990 were confined to intertidal spawning areas and may be attributed to direct lethal effects of oil deposited in intertidal spawning areas. Large differences were observed across all tide zones in 1991. This may be the consequence of genetic damage to the germ cells of the adults which originated from the 1989 brood year when egg and larval exposures to intertidal oil were greatest. A consequence of this genetic damage may be persistent functional sterility and reduced returns per spawner for populations from oiled streams.

Description of Project: This project will monitor the natural recovery of wild salmon populations from damages to eggs and fry by comparing results of systematic fall egg and spring pre-emergent fry sampling between streams which were oiled and streams which were not. The 31 streams proposed for sampling are streams previously sampled in NRDA Fish/Shellfish #2 and Restoration Study #60C. The project will also use controlled laboratory experiments to determine if differences observed between oiled and unoiled streams in 1989, 1990, and 1991 are consistent with an oiling effect. Eggs from an unoiled hatchery stock of pink salmon will be incubated in simulated clean and oiled intertidal streambed environments. After control and oiled groups emerge as fry, each will be reared to sexual maturity and adults from each group will be spawned to form second generation control and oiled populations. Mortality differences between first generation control and oiled groups will be observed at critical developmental stages and compared to results observed in PWS streams in 1989, 1990. Differences in mortalities among second generation eggs will be observed through hatching and similarly compared to those observed in PWS in 1991.

Estimated Duration of Project: The field monitoring portion of this project should continue until populations stabilize and recover to pre-spill levels or until laboratory results discount an oil effect. The laboratory portion of the experiment will last four years.

Estimated Cost per Year:	Year 1	Year 2	Year 3	Year 4
	$385,000	$670,000	$494,000	$385,000

Other Comments: This is a currently funded project (Restoration Study 60C)

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ID # 920615297 - 37

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

Ø N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-37

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29739

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Inventory and Effects of Straying Hatchery Pink Salmon on Wild Pink Salmon Populations in Prince William Sound

Justification: Wild pink salmon stocks in oiled portion of Prince William Sound (PWS) have experienced higher egg mortalities, larval deformities, and lower juvenile growth rates than stocks from unoiled streams and hatcheries. There is also evidence that they may also have persistent genetic damage which has resulted in reduced egg survival in generations following the spill. Streams located on headlands in western Prince William Sound were most heavily impacted by oil and also lie along migratory corridors for fish destined to the large hatcheries in the western Sound. Results from NRDA F/S Study #3 tag recoveries indicate that wild salmon populations in these streams experience a high incidence of genetic interchange from the burgeoning hatchery populations which stray from migratory corridors into wild streams. Ample evidence in the literature suggests that hatchery fish are ill adapted to wild conditions and that genetic interchange between hatchery and wild stocks may lead to reduced fitness of wild stocks. The stocks that are most susceptible to straying are also those which were most vulnerable to oil damage. The combined effects of oil damage, genetic burden, and excessive harvest of wild fish in fisheries which target on more numerous hatchery returns in migratory corridors may result in an overall reduction in the genetic diversity and fitness of PWS salmon populations. Given the magnitude of straying discovered in the western areas of PWS in 1991, it is vital that wild stocks in all areas of Prince William Sound be examined for further evidence of straying.

Description of Project: This project will serve primarily to catalogue and inventory the location and degree of straying by hatchery stocks and help direct future restoration efforts. Our knowledge regarding the magnitude of straying by enhanced populations of pink salmon is presently limited to what was learned through the recovery of coded wire tagged fish from 45 streams surveyed daily in 1991. These streams represent a small percentage of the over 900 anadromous spawning streams used by wild stock pink salmon in Prince William Sound. The initial objective of this project will be to expand tag recovery efforts to include more streams in all regions of Prince William Sound. Tag recoveries will be accomplished through multiple ground surveys during periods of peak salmon returns. Salmon carcasses in escapements will be examined for the presence of a coded wire tag. Areas with a low incidence or no evidence of straying could be designated as genetic sanctuaries and future management efforts could be directed towards protecting these unimpacted stocks. Those oiled areas with documented high levels of straying could be monitored to examine the long term effects of straying and the resultant wild/hatchery salmon hybridization on the overall fitness of wild stock populations.

Estimated Duration of Project: Two years, in order to examine both odd and even year returns.

Estimated Cost of Project: $253,000 per year.

Other Comments: The issues surrounding enhanced and wild stock fisheries interactions, including the issue of straying by hatchery fish, has been identified by Alaska's Senate Special Committee on Domestic and International Commercial Fisheries as needing increased research efforts, thus allowing policy makers to make informed decisions and to consider the risks associated with those decisions. Success in this effort will be measured by the future protection of the genetic resources of affected stocks. Without understanding the full

magnitude of the straying phenomena, the evaluation of other restoration efforts aimed at restoring injured stocks of wild pink salmon will continue to be confounded by this issue.

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907-424-5900

ID # 920615297-39

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration ~~- Enhancement~~ management

✓ Lead Agency

ADF&G

✓ Cooperating Agency(ies)

USFS

(Y) N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297 - 39

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29740

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Pink Salmon Escapement Enumeration (Restoration Study 60B)

Justification: Wild stock pink salmon production in Prince William Sound has ranged from 10 to 15 million fish in recent years. Up to 75% of pink salmon spawning occurs in intertidal areas of streams with the proportion of intertidal spawning highest in streams flowing into the southwest portion of PWS, the area most heavily impacted by oil from the Exxon Valdez oil spill. Data from continuing pink salmon egg and pre-emergent fry projects have shown that spawning ground contamination by oil has resulted in increased mortality of eggs and higher incidence of somatic, cellular and genetic abnormalities in alevins and fry. Reduced survivals for pink salmon in oiled areas versus unoiled areas persists three years after the spill.

Description of Project: The most effective method of restoring injured wild pink salmon populations to their pre-spill condition will be the modification of human uses associated with the resource. The commercial harvest is the major factor controlling wild stock pink salmon spawning escapement and reproductive success. The ability to impose stock specific management on the commercial fishery and reduce exploitation on oil impacted wild stocks will be vital to their restoration. One of the most important pieces of information for stock specific fisheries management is a timely and accurate estimate of escapement. This project will provide fisheries managers with more accurate and more timely estimates of pink salmon escapements in oil impacted areas of Prince William Sound using aerial surveys for escapement estimation and weirs for total enumerations of escapement. Adult salmon will be enumerated through weirs at ten streams where, in addition, outmigrating fry enumeration and coded wire tagging are proposed. Field crews at each site will perform daily ground surveys of intertidal and upstream portions of the streams, enumerating live and dead pink salmon and recovering coded-wire tagged fish. Paired aerial and weir data will be used to calibrate aerial estimation procedures and estimate observer bias. Improved stock specific estimates of spawning escapements combined with commercial catch contribution data will allow fisheries managers to accurately assess the impacts of the commercial harvest and management strategies on impacted stocks.

Estimated Duration of Project: Both even and odd year pink salmon populations should be monitored until management strategies have been shown to be successful and oiled effects have been shown to have diminished below levels apt to cause significant reductions in survival.

Estimated Cost of Project: $705,000 per year.

Other Comments: This is a currently funded restoration project (R60B)

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ID # 920615297-40

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration Enhancement management

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ⓥ N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-40

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

RS 60B

* Restoration Framework, 1992, pp 43-44.

2974/

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Adult Tagging to Determine Stock Specific Distributions, Migratory Timing, and Rates of Movement for Pink Salmon in Prince William Sound Fisheries.

Justification: Pink salmon populations in oiled streams in Prince William Sound (PWS) have experienced higher egg mortalities, larval deformities, and lower juvenile growth rates than stocks from unoiled streams and hatcheries. There are also observations which suggest that oiled pink salmon have sustained genetic damage which has resulted in reduced egg survival following the spill. Commercial fisheries in PWS harvest salmon from damaged and healthy wild stocks and the numerically superior hatchery returns. Depleted and less productive oiled wild populations cannot sustain as high an exploitation rate as unoiled wild and hatchery stocks; consequently, they require special protection from commercial fisheries if adequate numbers are to escape and spawn. Oil spill funding and research programs will inevitably decline and it is important to design current research with long term less expensive management tools in mind. Run reconstruction is a computer modeling process which predicts stock specific time and area abundance in fishing district of PWS. Such a model can take advantage of data accumulated from some past and current salmon research projects and be used as a low cost future, albeit less precise, restoration tool. A model has been partially constructed for PWS but stock specific migratory timing and distributions for at least one even and one odd year return of pink salmon are needed to complete it.

Description of Project: This project will use adult tagging and recovery data to describe the migratory timing and routes of wild and hatchery stocks of pink salmon and fulfill the data needs for a complete run reconstruction model. Adult salmon will be tagged at weekly intervals in key entrances and along migratory corridors of PWS. Tags for each week and tagging location will be uniquely coded by color and number. Tags will be recovered throughout the season from all commercial catches, hatchery harvests, and at regular weekly intervals in approximately 150 spawning streams. Commercial catch recovery data by color and numeric code will be combined with tagging data to reconstruct the direction and rate of movement for individual migratory fish in fishing districts. Recovery data from escapements will be used to estimate the migratory speed of individual stocks through commercial fishing districts to their natal stream. Stock specific migratory timing, spatial distribution, and movement rates will be incorporated into a run reconstruction model.

Estimated Duration of Project: A minimum of two years to insure that timing and distribution of both even and odd year cycles of pink salmon are characterized.

Estimated Cost per Year:

Year 1	Year 2
$495,000	$450,000

Other Comments:

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ID # 920615297-41

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Enhancement management

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

Ø N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-41

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29706

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Replacement of Oiled Mussels with Commercially Produced Mussels

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Justification: (Link to Injured Resource or Service) Some mussel beds were not cleaned following the Exxon Valdez Oil Spill because the cleaning process killed mussels whereas oiling did not. It was thought that beds would naturally clean after exposure to waves and storms. Oil was trapped between he mussels and their substrate. it remained unweathered and birds and mammals which ate mussels would consume oil along the mussels. Reproductive failure of harlequin ducks may be related to oil exposure in this manner.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) Remove oiled mussels, clean substrate, replace with hemp strands of mussel spat or larger mussels if necessary. Mussels of the size sold for human consumption are sold for $1.70/lb. In extreme cases, this may be necessary; however, contracts can be given to current mussel aquaculturists to simply collect spat in the spring of 1993 by putting the appropriate numbers and lengths of spat collectors (hemp rope) in areas where mussel larvae are present. These ropes can then be anchored over the cleaned beds. The rope will biodegrade, but not before these mussels can attach other byssal threads to the natural substrate and become permanently anchored. Cost are dependent upon the needs identified by R102, the Oiled Mussel Bed project.

Estimated Duration of Project: 1-2 years

Estimated Cost per Year: $100, 000 to $500,000 dependent upon the magnitude of mussel bed replacement needs.

Other Comments:

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Jim Cochran, Mariculture Coordinator
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P.O. Box 25526
Juneau, AK 99802-5526
907-465-4160

ID # 920615297-06

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Enhancement

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ⓝ N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-06

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Restoration of Prince William Sound Rockfish and Lingcod Resources

Justification: (Link to Injured Resource or Service)

Rockfish and lingcod tend to be late-maturing (8-18 yrs), long-lived (50-100 years old), slow-growing, with strong homing tendencies, sporadic recruitment and high juvenile mortality. Consequently, rockfish and/or lingcod recover very slowly from any stock disturbances.

Rockfish were some of the first spill-related mortalities, evidenced by many dead specimens found floating on the water surface. Rockfish collected by NRDA Study F/S #17 indicate rockfish suffered lethal and sub-lethal hydrocarbon damage. Economic opportunities created by the EVOS combined with biological or economical declines in alternative fishery resources, increased fishing effort on rockfish and lingcod after the EVOS. Protection and rebuilding of rockfish and lingcod resources through management of human use require biological and stock information, of which little is available. Further, stock protection may also conflict with the fishing industry's efforts to increase the nearshore groundfish fisheries. A failure to identify and protect damaged rockfish and lingcod stocks could result in a closure of all groundfish fisheries with catches of the threatened species.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The data collected in this project will be used to create management strategies that allow a long-term, sustainable harvest of rockfish and lingcod while providing for the reproduction and growth of the stocks. Age composition data will be used to estimate growth and production rates from recruitment and mortality curves. Fishery data will be used to estimate gear- and area-specific harvest and discard rates. Stock composition data will be used to delineate areas of greater impact and assign priorities. Fishery- and area-specific strategies will be developed to insure that growth rates remain ahead of harvest rates for the many species and stocks involved. Such strategies include avoidance of spawning periods, bycatch reductions, trip limits, area-closures, etc. This project would collect species and age composition data from the directed and bycatch fisheries as well as genetic stock identification data. Samples will be collected from port and on-board sampling throughout the EVOS-impacted area, concentrating on Prince William Sound.

Estimated Duration of Project: 5 years

Estimated Cost per Year: $440,000

Other Comments:

This study will be designed to coordinate with other investigators to synthesize an ecosystem picture. This study project is tied to Option 3 of the Restoration Framework category Management of Human Uses entitled, "Increase Management for Fish and Shellfish that Previously Did Not Require Intensive Management" and Option 31, "Develop Comprehensive Monitoring Program".

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ADF&G, Commercial Fisheries
3298 Douglas Street
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907-235-8191

ID # 297-01

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category Management

~~Other~~ Science

✓ Lead Agency

ADF&G

✓ Cooperating Agency(ies)

NOAA

Y N Passed initial screening criteria

type F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

297-01

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

29712

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: Injury and Recovery of Deep Benthic Macrofaunal Communities

Justification: (Link to Injured Resource or Service) Assessment of benthic organisms used as food by bottom-feeding shrimps, crabs, and bottom fishes

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Objectives: To continue to document changes within the deep benthos subsequent to the EVOS by comparing changes in benthic animals related to sediment/oil content at sites occupied in Prince William Sound since at least 1989.

Location: The benthic sites sampled from 1989-1991 as one of the components of the oil assessment studies in PWS.

Rationale: A continued documentation of the health of benthic animals (many which serve as food for bottom predators) at oiled sites within the Sound.

Technical Approach: The project is a continuation of "Injury to Deep Benthic Communities" initiated in 1990, but will include at least one site sampled in 1989. The sampling plan will involve collection of five samples for biology and one sample for sediment/oil content at 40 and 100 m within approximately six oiled and six unoiled sites. A commonality of all sites will be the location adjacent to seagrass (Zostera) beds. Animals will be identified to family level or higher to facilitate the identification process (as successfully accomplished in other pollution-oriented benthic studies elsewhere). Various univariate measures (for example, diversity, evenness) will be applied to abundance data. Trophic types will be examined. Analysis of Variance (ANOVA) will test differences in abundance, biomass, and trophic type between dominant taxa at similar depths within unoiled and oiled sites for each year of study and for combined data collected on subsequent cruises. Taxon composition of all sites will be examined with multivariate techniques. The relationships between faunal composition, sediment parameters, and oil content in sediment at the stations will be examined by factor and discriminant analyses. A statistical assessment of relationships between fauna, sediment and oil composition at stations within oiled and unoiled sites will be accomplished.

Estimated Duration of Project: Three (3) years

Estimated Cost per Year: $275,000 (including 50 percent university overhead but not ship time).

Other Comments:

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Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 9206015297-12

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

~~DAMAGE ASSESSMENT~~ Monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

Ⓨ N Passed initial screening criteria

type ST

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

9206152 97-12

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.