NATIONAL MARINE FISHERIES SERVICE
Alaska Region Operations Office &
Alaska Fisheries Science Center

ALASKA REPORT

June 1991 No. 6

NEW REGIONAL OPERATIONS OFFICE DIRECTOR ANNOUNCED. On June 21, 1991, NMFS Alaska Region Director, Steve Pennoyer, announced that Don Collinsworth, a familiar face in Alaska fisheries issues, was selected as the new Regional Operations Office Director to replace Jim Brooks who retired several weeks ago. Mr. Collinsworth brings nearly twenty years of natural resource research, management and administrative experience to the job. He has spent most of his career working on Alaskan resource management issues and has served the past several years as the Commissioner of Alaska Department of Fish & Game. (Steve Pennoyer, NMFS Alaska Region Office 907-586-7221)

VOLUNTEER FISHING VESSEL NEEDED TO TEST EQUIPMENT. NMFS plans to test the use of two Total Catch Weight instruments aboard a fishing vessel this summer and is seeking one vessel to volunteer for participation in the test.

Both instruments will be provided for the test at no cost to the vessel. Installation will be supervised by the manufacturer, who will also provide operating instructions.

One of the instruments is an Inline Conveyor Scale which weighs the amount of fish passing over a point on the conveyor line. This instrument is easily retrofitted to an existing belt and is maintenance free. The scale would be installed at a point where unsorted catch moves on a conveyer belt.

The second instrument, a Remote Bin Volume Sensor, obtains accurate volume determinations without the operator having to actually see inside the bin. The instrument uses ultrasonic sound to measure the level of fish in a holding tank or bin and then calculates the volume of fish. A density factor is applied to the volume to determine the total weight in the bin.

The vessel selected must have an NMFS certified observer aboard to monitor the test for at least one month.

It is preferable that the vessel also take part in the observer sampling methods test. This test involves a team of two observers (provided at no cost by NMFS) sampling the same hauls, each using a different sampling method. Flatfish and rockfish vessels are especially needed for the months of July and August. (Dave Cormany, NMFS, Alaska Regional Office 907-586-7228)

INTERNATIONAL RESEARCH PROGRAM ON POLLOCK. NMFS Alaska Fisheries Science Center, Resource Assessment and Conservation (RACE) Division, along with NOAA's Pacific Marine Environmental Laboratory is participating in the Fishery/Oceanography Coordinated Investigation (FOCI) of Bering Sea pollock. Study results are expected to assist with establishing population relationships and also to determine the role of the oceanic environment in controlling pollock distribution, migrations, and survival.

Since 1988, RACE has conducted or cooperated in seven pollock surveys in the Aleutian Basin to collect biological samples and to measure distribution and abundance of that species. (Tom Dark, NMFS Alaska Fisheries Science Center, Seattle 206-526-4103)

RIPARIAN MANAGEMENT STANDARDS SOUGHT FOR TONGASS NATIONAL FOREST. The Tongass Timber Reform Act requires the Secretary of Agriculture, in consultation with the State of Alaska, NMFS, and affected private land owners to prepare and transmit to Congress a study containing recommendations on the need, if any, to standardize riparian management practices for Federal, State, and private lands within the Tongass National Forest. American North was selected as consultant to prepare the study and will open an office in Juneau to handle this contract. (Tamra Faris, NMFS Protected Resources Management Division 907-586-7645)

JAPAN-SOVIET 1991 SALMON CATCH QUOTA REDUCED. The Japan-Soviet Joint Fishery Committee recently agreed to reduce the 1991 quota for catches of salmon by Japanese fishing vessels outside the Soviet Union's 200-nautical mile fishing limits by 2,000 tons (t) from last year, to 9,000 t. The two countries also agreed on an 8,000-t quota within the Soviet Union fishing limits. The quota for 1990 was 6,000 t. (Yutaka Yoshioka, Japan International Agricultural Council, Tokyo, Japan. (03)3262-50486 phone or (03) 3262-8096 FAX)

PRIBILOF ISLANDS NORTHERN FUR SEALS SUBSISTENCE HARVEST. On May 29, 1991, a public hearing was held in Anchorage to take comments on the proposed subsistence harvest quota for northern fur seals in the Pribilof Islands. The proposed lower end of the quota range has been set at the average number of seals harvested over the last five years for each of the two inhabited islands. (NMFS Protected Resources Management Division 907-586-7235)

DONUT HOLE CONSERVATION & MANAGEMENT. Scientists generally agree that central Bering Sea stock of pollock spawn principally within U.S. waters and are otherwise dependent upon U.S. and, to a lesser degree, Soviet waters during a signi-

(The NMFS Alaska Report is an administrative report, issued by the NMFS Alaska Region for the information of people interested in fisheries of the North Pacific Ocean and the Bering Sea and Aleutian Islands. If you would like more information on any of the items, please contact the person listed at the end of each news item or contact the newsletter editor, Patsy A. Bearden (907) 586-7228).

ficant portion of its life-span. Pollock are vulnerable to fisheries in the international waters of the Central Bering Sea, the "donut hole," when an unknown portion of the stock migrates into that area. The donut hole, situated beyond the U.S. and Soviet 200-mile zones, is being fished by over 170 factory trawlers from Japan, Korea, China, Poland, the USSR, and the USA.

Discussions were held in February by NOAA/NMFS, Office of International Affairs, Foreign Fisheries Analysis Branch, and delegations from The People's Republic of China, Japan, the Republic of Korea, the Republic of Poland, and the Union of Soviet Socialist Republics concerning the conservation and management of fishery resources in international waters of the donut hole area.

Held at the Department of State, Washington, D.C., it was the first diplomatic discussion on the issue involving all concerned countries. (William Aron, NMFS Alaska Fisheries Science Center, Seattle 206-526-4000)

ECONOMIC GUIDE TO ALLOCATION BETWEEN COMMERCIAL AND RECREATIONAL FISHERIES. A new NOAA report entitled, "An Economics Guide to Allocation of Fish Stocks between Commercial and Recreational Fisheries," is available from NOAA. Written by NMFS economist, Steven F. Edwards, the report offers a guide to economic value determination and to appropriate ways to characterize, estimate, and compare value between commercial and recreational fisheries. (Steven F. Edwards, NMFS 508-548-5123).

NORTH PACIFIC HIGH SEAS DRIFTNET FISHERIES. Representatives of the American Institute in Taiwan (AIT) and the Coordination Council for North American Affairs (CCNAA) met with NMFS in Hawaii in March, to review Taiwan's 1990 driftnet scientific monitoring and enforcement programs and to conclude arrangements for the continuation and improvement of these programs in 1991. At the conclusion of the meeting, AIT and CCNAA representatives initialled the ad referendum agreement on North Pacific driftnet fisheries. The agreement will remain in effect through June 30, 1992, at which time moratoria on large-scale pelagic driftnet fishing are anticipated pursuant to United Nations General Assembly Resolution 44/225. Similar agreements have been concluded with the Governments of Japan and Korea. (Dean Swanson, NMFS, Office of International Affairs 301-427-2276 or Jim Coe, NMFS AFSC 206-526-4009)

MORTALITY OF ADULT SALMON PRESPAWNERS. The Alaska Working Group on Cooperative Forestry-Fisheries Research has received the final draft on the cause of adult salmon prespawner mortality in southeast Alaska. Future research depends upon funding commitments from Federal agencies, although the logging industry may proceed with an independent study. (Protected Resources Management at 907-586-7235)

FEEDING MARINE MAMMALS IN THE WILD. NMFS issued a final rule effective April 19, 1991, that amends the definition of "take" under the Marine Mammal Protection Act to include feeding marine mammals in the wild. As a result, feeding dolphins, porpoise, whales, seals and sea lions in the wild will be prohibited unless the feeding is incidental to another activity such as the routine discard of fish bycatch or discharges from processing plants or vessels. (Gloria Thompson NOAA/NMFS 301-727-2333)

Oil Spill Public Information Center NEWS

VOL.1, NO.10 JUNE 14, 1991

OUTBACK CONTACTS OSPIC

Word has spread as far as Australia concerning one of OSPIC's most requested documents, the NOAA report on treatment of beaches following EVOS. A request was received this week, via kangaroo pouch, for a copy of the report, which was promptly sent by air.

RESEARCHERS FROM AFAR

Most people come to Alaska to view wildlife and glaciers, but OSPIC has been host to visitors from Florida, Washington D.C., New York, Washington, and Pennsylvania who came to Anchorage specifically to use the library's resources and reference assistance. Those persons publishing their work will be sending OSPIC copies for its collection.

Recent visitors signing the guest register have come from as far as Algiers, Algeria, and as close as Portage, Alaska.

SHOW ME THE WAY

New signs, compliments of the Alaska Library Network, have been placed in OSPIC windows. The signs, indicating that the library is a contributing member of the network, have encouraged additional visitors.

HARD ROCK LIBRARY

Oiled rocks from the beaches of Prince William Sound were donated to OSPIC by L.J. Evans, Public Information Officer for the Alaska Department of Environmental Conservation.

Sealed bottles, labeled with the beach location, are available for view and will be placed in the exhibit area. These samples were collected from beaches surveyed in the most recent Shoreline Cleanup Assessment Study.

FOREST SERVICE TOURS

Seasonal Forest Service workers toured OSPIC recently. Volunteers from the Chugach National Forest spent several hours in the library in preparation for the summer season.

BUSH LIBRARIANS USE OSPIC

The librarian from Akiachak, 20 miles up the Kuskokwim River from Bethel, Alaska, contacted OSPIC regarding use of videos for classroom instruction.

OSPIC staff will make arrangements to loan materials to this small bush community of Upik Eskimos.

The State of Alaska film library may be closed due to budgetary restraints and OSPIC anticipates increased use of its video collection as a result of this action.

500th VISITOR

OSPIC's 500th visitor walked through the doors on June 12th. It was none other than Byron Morris from the National Marine Fisheries Service at Auke Bay.

Byron made a brief visit to OSPIC while in Anchorage for Management Team meetings.

OSPIC ADDITIVES

A unique contribution to the OSPIC video collection is coverage of the March 13th press conference held at the Department of Justice announcing the EVOS settlement.

The Attorney General, the Governor of Alaska, and representatives of the Trustee agencies give their views concerning the settlement agreement and follow with a brief question and answer period.

THE YEAR IN REVIEW

On Site/Off Site Reference Requests 5/20-6/14	165
On Site/ Off Site Reference Requests to Date	434
Titles Received 5/20-6/14	64
Total Titles	1588
Pleadings This Week	94
Pleadings to Date	1187
News Clippings to Date	30,000
Documents Sent 5/20-6/14	207
Documents Sent to Date	891

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Oil Spill Public Information Center
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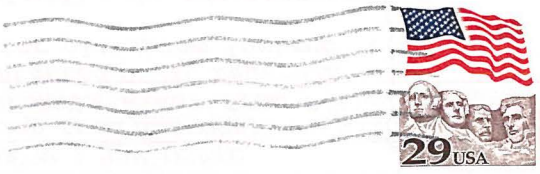


OIL SPILL RESTORATION AND PLANNING
ATTN S MACMULLIN
437 E STREET
ANCHORAGE AK 99501

Natural
Resources
Council
of America

August 19, 1991

Mr. Hans O. Jahns
Scientific Coordinator
NRDA and Litigation Support
Exxon Company, U.S.A.
P.O. Box 2180
Houston, TX 77252-2180

Dear Hans:

I want to take this opportunity to express my deepest appreciation to you and the entire Exxon contingent - Otto Harrison, Al Maki and Pat Hughes - for the thoroughness, thoughtfulness, care and patience you all took in organizing the tour of Prince William Sound. (I know I should write each of them personal letters, however, yours was the only business card I managed to secure. Therefore, I hope you will share this letter with the others.)

I suspect that each of you were assigned to one particular visitor. If that be the case, and you were assigned to me, I must assume that you drew the short stick. It is my nature to be skeptical, if not downright cynical, and that makes me a very tough customer who is not easily persuaded. However, I would also characterize myself as reasonable, practical, realistic and honest, the latter sometimes brutally so, as you once quite accurately observed. I do hope I left you with the impression that I am as critical, realistic and honest about the environmental community of which I consider myself a part as I am about our collective responsibility to take the steps necessary to conserve and protect the natural resource base.

As I indicated during our debriefing session, I approached the Prince William Sound tour with a considerable measure of skepticism and suspicion, in addition to an admitted prejudice that Exxon simply could not have done enough. Slowly, I began to grasp the magnitude of the task you undertook and the massiveness of the operation.

At the risk of being perceived as exhibiting the "Jane Fonda in Hanoi" syndrome, I must confess that I was genuinely surprised and impressed by everything I observed. As the tour progressed, I mentioned that I began feeling somewhat petty in turning over rocks and digging deep into the substrata in a desperate effort to find some residual oil. I really wanted to find some. Ironically, it was you, Hans, who found the oiled rocks that I brought back as souvenirs! Reluctantly, but honestly, I was forced to conclude that there simply was nothing there. And I think I saw enough to convince me that this was a fair representation of oiled beaches; it was not my impression that anything was being hidden. Virtually all of the visible evidence of the spill has been removed from the beaches we visited - with the exception, of course, of those deliberately left as study sites. I have seen more oil on the recreational beaches of the Atlantic Coast than I saw on any beach in Prince William Sound.

In addition, I was also encouraged by the evidence of the biological communities coming back on many of the beaches. Because I am not a scientist by profession, it was extremely useful for me to intereact with marine biologists on the tour and I certainly benefited by gauging their observations. Although I regret we were unable to visit a beach that had not been oiled in order to use it as a reference point as a "normal" beach, I believe I saw and heard enough to convince me that through the manual removal of the heaviest oil, the high-pressure washings bioremediation, and relocation of the storm berms, you provided the necessary assistance for natural systems to recover.

As I mentioned during our debriefing session, given the enormity of the undertaking, Exxon should be proud of the results of the clean-up and restoration efforts in the Sound. And you should be recognized for the commitment you made. It was money well spent and it was an effort worth making.

I must wonder about the potential difference in Exxon's perceived "attitude" of having to spend $2.2 billion to clean up the spill if Prince William Sound were inhabited by humans instead of simply by wildlife. I suspect the public hew and cry would have been louder and Exxon's whining would have been substantially muted. I make this observation as an aside to demonstrate the powerful influence of what I would characterize as a pervasive anthropocentric view of the world.

In my subsequent travel in Alaska, I talked to quite a few people - some tourists, some residents. After establishing my professional environmental credentials (so as not to appear to be an emissary of Exxon), I told them what I observed in Prince William Sound. I must admit that I was somewhat shocked by the reactions and the consistency with which they were repeated.

Although people generally appeared to be somewhat relieved and consoled by the "good news" about the condition of the Sound, by far the most common response was: "So what if Exxon spent $2 billion cleaning up the spill. It was Exxon's fault; Exxon should have spent even more." The bottom line is that the public really doesn't care how much it cost; the public EXPECTED Exxon to spend whatever it took. I thought I was tough! These people were unforgiving and immovable. One person from Springfield, Missouri offered this expression: "It just better never happen again..." This phenomenon led me to conclude that Exxon must take special care not to evince any residual resentment for having been forced to spend money on the clean-up. You would be well-advised to simply, "Get over it, already." Learn from mistakes; apply lessons learned in the future.

Having said the foregoing, I must admit my own concern about the paucity of wildlife in Prince William Sound. Although I have never visited there before, I know it is an area that once was reported to be teaming with wildlife. I also know you went to great lengths to try to find some wildlife for me, exploring every nook and cranny, every cove and lagoon. An abundance of gulls, several kittiwakes, a pair of bald eagles, a small pod of whales, three sea lions - does not a thriving wildlife population make. No one can deny that salmon are abundant in the Sound, although there are several biological explanations for this phenomenon. To offer an aside, my local veterinarian embarked on a two week excursion in Alaska earlier this month. He has a good friend who is a veterinarian for Alaska's Department of Fish & Game. We compared notes upon my return and he reinforced my observations about wildlife in the Sound.

I am equally concerned about a question that is repeatedly asked of me and I cannot answer: "Where did all the oil go?" Some of it was recovered on the surface with the help of booms, some of it washed up on the beaches, some evaporated, some dissipated; but I just don't buy the explanation that IT ALL DISSIPATED. Granted, I am not a chemist, but the explanation simply is not logical. I can accept the fact that oil loses toxicity over time, but I just do not believe that the oil eventually sinks and completely dissipates. There is a common belief - and one which I share - that the bottom of Prince William Sound must look like an asphalt parking lot. If that were the case, expecting a resilience of wildlife anytime soon would be sheer folly because the bottom of the food chain has been effectively paved over.

As I mentioned at our debriefing, I suspect that the double backdrop of the Exxon Valdez litigation and the question of opening the Arctic National Wildlife Refuge make it unrealistic for you to expect the environmental community to help you "get the good word out" about the restoration of Prince William Sound. There is a great deal of suspicion surrounding the scientific data and research being gathered but suppressed in conjunction with the litigation. And, as I pointed out, we may just have to accept the fact that we must agree to disagree about the drilling of the Refuge. Rarely have I seen an issue unite the national environmental/ conservation community as the Arctic has done. Until these situations are resolved, it is difficult for me to foresee a "thaw" in relations. (Notice that I did not use the word "normalization," because, quite honestly, I view the "normal" relationship between oil companies and environmental groups as necessarily adversarial.)

In conclusion, I am grateful for the opportunity to observe first hand the results of the restoration efforts on the beaches of Prince William Sound. It is obvious that the work you conducted over two summer seasons has certainly paid off. I was particularly impressed by the bioremediation process and its tremendously beneficial effects. It is unfortunate that many of those who witnessed the immediate devasting effect of the spill have not had the opportunity to return after the second season of cleaning to see the difference.

Finally, on a personal note, I was quite affected by your sharing with me, Hans, the fact that you are a card-carrying member of the Sierra Club. As I confided to you, knowing that you will treat this information with the utmost discretion given my sensitive position, I still carry an Exxon credit card and I do buy your gas.

With warm regards,

Andrea J. Yank
Executive Director

OHIO COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT

THE OHIO STATE UNIVERSITY
1735 NEIL AVENUE
COLUMBUS, OHIO 43210

COPY

FISH: Rm 85
614/292-8961
FTS 943-7395

WILDLIFE: Rm 93
614/292-6112
FTS 943-7418

September 3, 1991

Mr. Stanley E. Senner
Oil Spill Restoration Planning Office
437 "E" Street Suite 301
Anchorage, AK 99501

Dear Stan,

Enclosed you will find information on surfbird occurrence on Green Island. I have also prepared some brief annotations on species that differed from the Isleib and Kessel accounts. Also enclosed you will find an announcement regarding the color-banded oystercatchers.

On another note -- in the meeting we had a few weeks ago, a document that provided guidelines for restoration projects was mentioned. The Oil Spill Office of Fish and Wildlife didn't have a copy and Paul Gertler suggested I contact you about a copy. I would greatly appreciate this document for preparing the oystercatcher report. Please forward it to me at the Unit address above.

I will most likely be in Anchorage in mid-October. Thanks for your support.

Sincerely,

Brad

Cooperating Agencies
U.S. Fish and Wildlife Service
Ohio Division of Wildlife
The Ohio State University
Wildlife Management Institute

Notable Bird Records from Prince William Sound -1991
Brad Andres, USFWS, 30 May - 14 August

Greater Yellowlegs - Breeding individuals found on Green, Montague, Knight and Ingot islands. More widespread in the Sound than indicated.

Wandering Tattler - Single adult with downy young in intertidal of Bay of Isles, 30 July.

Whimbrel - Non breeders in flocks from 2 to 8 regular (recorded every week) throughout summer on gravel shorelines of Knight, Green, Montague.

Black Turnstone - Common in the Port Chalmers area of Montague Island in flocks <125 from 7 July to 9 August. Smaller numbers of individuals at other scattered sites.

Surfbird - Highest concentration on the southern part of Green Island on 7 July. Smaller numbers (<50) were present on Green/Montague until 9 August.

Semipalmated Sandpiper - Small numbers (<10) occasionally encountered on Green/Montague from 7 July to 9 August.

Least Sandpiper - Regularly encountered on Knight, Green, Montague from 30 June on. Flocks numbered 5-200. Largest groups occurred on Montague. The most common Calidris I observed.

Rock Sandpiper - Small numbers (<20) present on Green/Montague 7 July - 9 August.

Common Snipe - One bird heard winnowing in Port Chalmers, Montague Island on 19 June.

Parasitic Jaeger - Two pairs found nesting at 1000' on Ingot island. 1 pair fledged a single young.

Glaucous-winged Gull - 1 pair found nesting a 1000' on Ingot Island.

Long-tailed Jaeger - Several birds seen between Perry and Eleanor on 31 May.

Sabine's Gull - 1 bird seen on the south end of Perry on 2 June.

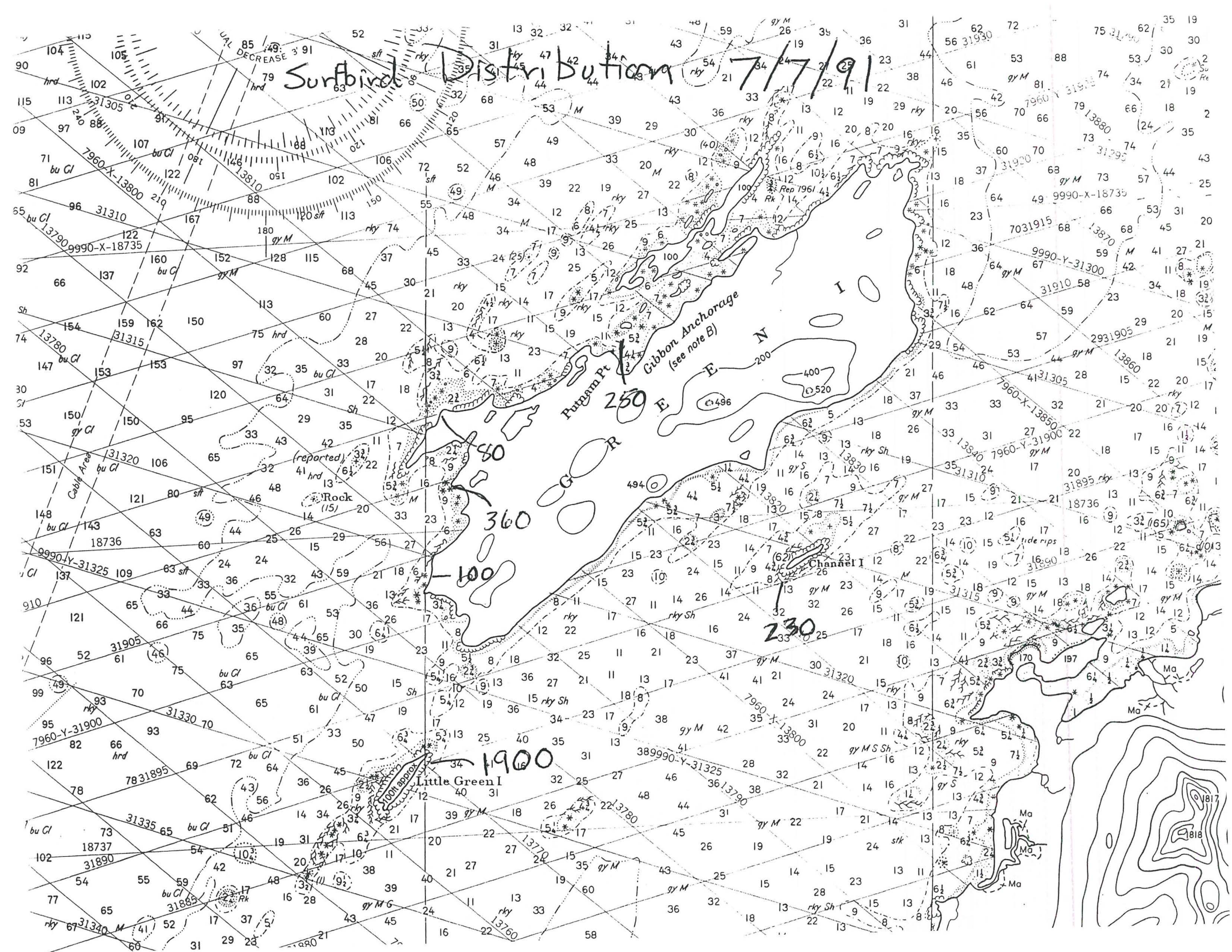
Caspian Tern - Single individual heard and seen flying over Lower Herring Bay, Knight Island on 25 June.

Shorebirds on Green/Montague Islands

Species	7/7	7/21	7/29
Black-bellied Plover			1
Greater Yellowlegs	21		
Lesser Yellowlegs	10		
Wandering Tattler			3
Ruddy Turnstone			1
Black Turnstone	280	180	150
Surfbird	2920	190	70
Semipalmated Sandpiper	8		
Western Sandpiper	62	5	10
Least Sandpiper	240	60	40
Rock Sandpiper	10	5	8
Dowitcher sp.	15		7

Other species observed on Green/Montague:

Semipalmated Plover
Solitary Sandpiper
Spotted Sandpiper
Whimbrel
Red-necked Phalarope


Surfbird Distribution 7/7/91
GREEN I
Putnam Pt
Gibbon Anchorage
(see note B)
250
80
360
100
Channel I
230
Little Green I
100 ft approx
1900
Rock
(15)
(reported)
Cable Area
tide rips
Rep 1961
ANNUAL DECREASE 3' 91
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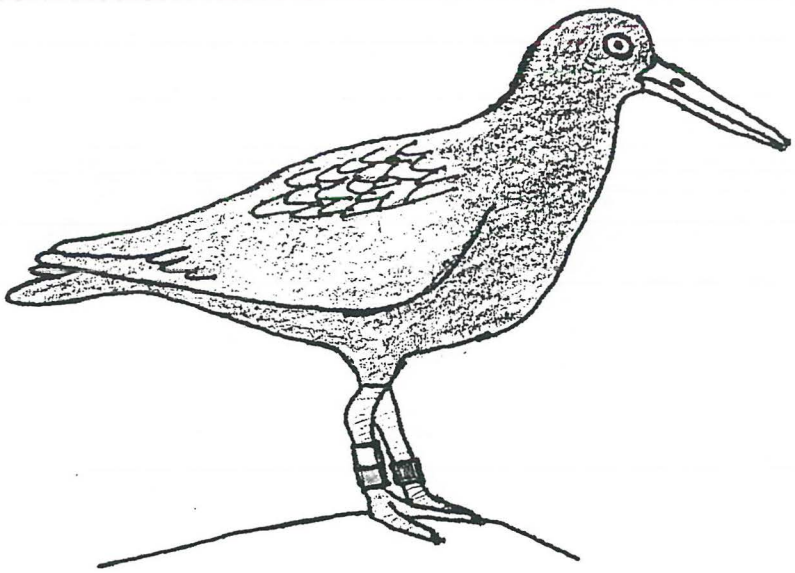
7960-X-13800
9990-Y-31325
7960-Y-31900

ASSISTANCE REQUESTED



COLOR-BANDED BLACK OYSTERCATCHERS

During the summer of 1991, black oystercatchers hatched in Prince William Sound, Alaska were banded with U.S. Fish and Wildlife bands and unique color-bands. If you see one of these birds, please record the following information: date, location, band combination (e.g. left = silver, right = pink over light blue). Band combinations should be reported by starting with the color band nearest the body (pink in the example). The following colors were used: pink, black, white, yellow, dark blue, light blue, dark green, silver (USFWS).

Please inform: Brad Andres, Ohio Cooperative Fish and Wildlife Research Unit, 1735 Neil Avenue, Columbus, OH 43210

Thank you for the assistance.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF ADMINISTRATION/OSIAR

WALTER J. HICKEL, GOVERNOR

333 RASPBERRY ROAD
ANCHORAGE, ALASKA 99518-1599
PHONE: (907) 344-0541

FAX NO: 522-3148

RAPIFAX TRANSMITTAL FORM

TO: Stan Senner
OSIAR/RPWG

DATE: 9/20/91

No. Pages: 4
(including this page)

FROM: Joe Sullivan
OSIAR Div. Anchorage

MESSAGE: Proposals 245 (cutthroat) and 246 (Dolly Varden) follow.

WHAT WILL HAPPEN IF NOTHING IS DONE? The regulation in effect designates the described area during the described time period as a fly-fishing-only area. The proposed regulation was in effect prior to the 1989 season. Lack of enforcement which has resulted in fish being snagged, the use of lures, and the use of fly's with hook size in excess of that allowed for a fishery designated as a fly-fishing-only area warrants closure of this recreational fishery.

WHO IS LIKELY TO BENEFIT? Unknown.

WHO IS LIKELY TO SUFFER? Unknown.

OTHER SOLUTIONS CONSIDERED? None.

PROPOSED BY: Copper River/P.W.S. Advisory Committee (SC-90-F-16)

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PROPOSAL 244 - 5 AAC 55.020. BAG LIMITS, POSSESSION LIMITS, AND SIZE LIMITS. This action will allow sport fishing for salmon, other than king salmon, in Solomon Gulch Creek downstream of Valdez Fisheries Development Association weir.

(a) Except as provided and (d) of this section, bag limits, possession limits, and size limits are as follows:

(d) In Solomon Creek Gulch downstream of the Valdez Fisheries Development Association weir, the bag limit is 6 salmon per day, other than king salmon, with no more than 12 in possession.

WHAT WILL HAPPEN IF NOTHING IS DONE? Fish that will be available to harvest in this system will have escaped the commercial and sport fishery, and will be surplus to those required for natural spawning, egg take requirements, and cost recovery. Valdez Fisheries Development Association has the authority to close this stream to sport fishing through enforcement of trespass laws as they own the land on each side of the stream and upstream of the weir.

WHO IS LIKELY TO BENEFIT? Recreational anglers that participate in Valdez Arm fisheries that are road accessible.

WHO IS LIKELY TO SUFFER? Unknown.

OTHER SOLUTIONS CONSIDERED: Establishment of a personnel use fishery.

PROPOSED BY: Alaska Department of Fish and Game

****

PROPOSAL 245 - 5 AAC 55.020. BAG LIMITS, POSSESSION LIMITS, AND SIZE LIMITS. This action would reduce daily bag and possession limit for cutthroat trout in Prince William Sound as follows:

(a) Except as provided and (c) of this section, bag limits, possession limits, and size limits are as follows:

	Bag Limit	Possession Limit	Size Limit
Cutthroat Trout	2	2	None

(c) In all lakes accessed from or freshwater drainages crossed by the Cordova road system including streams crossed by the Copper River Highway, and Clear Creek (mile 42), the bag and possession limit for cutthroat trout is five with no more than one over 10 inches in length.

PROBLEM: Prince William Sound is the most northern and western area of distribution for cutthroat trout. The recreational harvest has increased in some areas of Prince William Sound creating conservation problems for anadromous cutthroat trout populations. A bag and possession limit of two fish is adequate to provide recreational fishing opportunity to anglers while maintaining healthy cutthroat trout populations. Copper River Delta resident cutthroat trout populations appear to be stable. In order to allow a more liberal bag and possession limit for resident cutthroat trout, while offering protection to anadromous cutthroat trout, it is appropriate to establish a bag and possession limit of five of which not more than one may be greater than 10 inches in length along the Cordova road system.

WHAT WILL HAPPEN IF NOTHING IS DONE? The cutthroat trout bag and possession limit will remain at 5 daily and 10 in possession which will allow for increased probability of over harvest of anadromous cutthroat trout.

WHO IS LIKELY TO BENEFIT? All users of the cutthroat trout resource.

WHO IS LIKELY TO SUFFER? Those anglers that prefer to retain more than the proposed cutthroat trout daily bag and possession limit.

OTHER SOLUTIONS CONSIDERED: A daily bag and possession limit for cutthroat trout of two for all areas of Prince William Sound. This option was rejected because it would unnecessarily restrict the opportunity to harvest 5 fish per day from the healthy populations of resident cutthroat trout along the Cordova road system.

PROPOSED BY: Alaska Department of Fish and Game

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PROPOSAL 246 - 5 AAC 55.020. BAG LIMITS, POSSESSION LIMITS, AND SIZE LIMITS. This action would reduce the daily bag and possession limit for Arctic Char/Dolly Varden in Prince William Sound as follows:

(a)

	Bag Limit	Possession Limit	Size Limit
Arctic Char/ Dolly Varden	10	10	None

PROBLEM: The current bag and possession limit for Dolly Varden in Prince William Sound is well in excess of any other area within the state. The proposed bag and possession limit would be in conformation with those established for Upper Copper Upper Susitna, Yakutat, Kodiak and the Bristol Bay Areas. A bag and possession limit of ten fish is adequate to provide recreational fishing opportunity to anglers while maintaining healthy Dolly Varden populations.

WHAT WILL HAPPEN IF NOTHING IS DONE? Dolly Varden populations in Prince William Sound would have a higher probability of being over harvested.

WHO IS LIKELY TO BENEFIT? All users of the Dolly Varden resource.

WHO IS LIKELY TO SUFFER? Those anglers that prefer to retain over ten Dolly Varden daily.

OTHER SOLUTIONS CONSIDERED: None.

PROPOSED BY: Alaska Department of Fish and Game

****

PROPOSAL 247 - 5 AAC 55.020. BAG LIMITS, POSSESSION LIMITS, AND SIZE LIMITS. This action would reduce daily bag and possession limit for Arctic grayling in Prince William Sound as follows:

(a)

	Bag Limit	Possession Limit	Size Limit
Arctic grayling	10	10	None

PROBLEM: The current bag and possession limit for Arctic grayling in Prince William Sound is in excess of any other area within the state. The proposed bag and possession limit would be in conformation with adjacent area lakes. Arctic grayling in Prince William Sound are stocked into lakes and ponds adjacent to the Copper River Highway. A reduced bag and possession limit will distribute the grayling available for harvest to a greater number of sport anglers.

WHAT WILL HAPPEN IF NOTHING IS DONE? The bag and possession limit for Arctic grayling in Prince William Sound will remain out of conformation with other areas of the state.

WHO IS LIKELY TO BENEFIT? All users of the Arctic grayling resource.

WHO IS LIKELY TO SUFFER? Those anglers that prefer to retain or possess over ten Arctic grayling daily.

OTHER SOLUTIONS CONSIDERED: None.

OIL SPILL RESTORATION PLANNING OFFICE

437 E Street, Suite 301 Anchorage, Alaska 99501
(907) 271-2461 FAX: (907) 271-2467

Privileged & Confidential**Attorney Work Product

MEMORANDUM 20 SEPTEMBER 1991

TO: Management Team

FR: Stan SES Senner (ADF&G) and Ken RMR Rice (USFS)

RE: Restoration Science Needs and Preparation of Proposals for 1992

On 12-13 June the Restoration Planning Work Group (RPWG) met with key restoration peer reviewers to discuss science information needs to help guide development of restoration study proposals for the 1992 field season. I have enclosed a product from that meeting and ask that you share it with your damage assessment/restoration PIs and program managers. This material is sensitive and should not be distributed more widely than necessary.

With respect to the schedule for reports and proposals, restoration planning has been merged with the overall NRDA report and review process. For PIs currently conducting restoration science studies, reports and recommendations for future studies are due for review by the Management Team/RPWG by Wednesday, 27 November. Within your agency, you may require an earlier deadline, and RPWG would like to have advance drafts, if possible, by Wednesday, 20 November. The reports due in November should be as comprehensive as possible in terms of integrating results from more than one field season (where applicable). Format should be as requested for the damage assessment.

Regarding any proposals for what would be new restoration studies in 1992, RPWG should have preliminary proposals no later than Wednesday, 13 November. A suggested format is enclosed. We do not know how much money will be available for field studies in 1992, but it may be less than was available in 1991. We cannot possibly fund studies for all the needs described in the enclosed summary, but the themes and specific needs described here should give a strong sense of what RPWG and the restoration peer

reviewers believe is important. Please convey to your PIs that any proposal must be linked clearly to an EVOS-injury and a restoration endpoint (including monitoring).

Please call us if you have questions (Stan, 271-2461; Ken, 278-8012).

enclosures: information needs summary
format for new proposals

cc: Legal Team
RPWG

Science Information Needs and Priorities
Restoration Planning Project
(Oil Year 4)

On 12-13 June 1991 the Restoration Planning Work Group met with several NRDA/restoration peer reviewers and other guests to review science information needs and priorities for 1992 (Oil Year 4). The following themes, questions, and topics were identified at that meeting as areas possibly deserving further study in order to assess potential restoration options. There are probably other areas that should be explored, but the following reflect our current understanding of injuries and restoration options. General themes are presented first, followed by species- or resource-specific needs. The items under each heading are not presented in any order of priority, nor is the sequence of species/resources.

general needs

- Improve understanding of the long-range underlying mechanisms causing injury or limiting populations; such information is necessary to support effective restoration actions. Where population declines or reproductive failures preceded EVOS, we need to better understand root causes, if relevant to identification and evaluation of restoration options.

- Extend focus of studies beyond Prince William Sound and throughout affected area. Where appropriate, need to assess restoration/equivalent resource opportunities beyond EVOS area.

- Shift emphasis to broader ecological rather than species-specific approaches. This may require additional ecological expertise, particularly for studies involving habitat issues. A habitat/ecologically-oriented synthesis meeting might be appropriate.

- Analyze further the linkages between predators and prey abundance, availability, and quality, including for intertidal/subtidal prey and forage fish.

- Monitor ecosystem recovery, since the extent and persistence of damages will determine the level of restoration necessary. Certain species, such as the harlequin duck, pigeon guillemot, and black oystercatcher, may be good indicators of ecosystem recovery.

- Synthesize the effects of environmental disturbances (e.g., logging) on EVOS-injured species (e.g., harlequin, sea otter).

- Monitor the fate (quantity, chemical status, persistence) of weathering oil, including in mussel beds.

harbor seal

- Determine habitat requirements and year-round range of PWS seals (current restoration study).

- Determine basic food habits; study juvenile survival in relation to prey selection and availability.

- Study age structure of population to determine which segment of the population is experiencing problems and why.

- Study habitat and forage fish issues in ecological context.

- Review prior data on harvest of fish in relation to seal population decline (report from Fairbanks meeting in spring 1991 will help).

sea otter

- Integrate damages over time as well as geographically (current damage assessment study).

- Extend survey work beyond PWS; need to know trends and demography outside of PWS.

- Determine causes of continuing EVOS-related decline: what life stages are problem? (current damage assessment); what are physiological mechanisms?

killer whale

- Develop satellite tagging methodology so that year-round distribution and habitat use can be addressed (current restoration study).

- Monitor population status through surveys (current damage assessment study).

harlequin duck

- Determine foraging habitat of incubating and brood-rearing females.

- Determine nest site preferences and characteristics of nesting habitat (current study). In general, critical components of habitats used by harlequins are not understood.

- Compare prey and other characteristics associated with successful streams in eastern PWS with "similar" streams having no reproduction in western PWS.

- Extend results of damage assessment/restoration studies beyond PWS to Gulf of Alaska: conduct surveys to establish areas of use; survey numbers of harlequins using oiled vs. non-oiled streams on Kodiak; and compare known nesting streams outside of PWS to the profile of nest streams from eastern PWS.

- Review issue of sport and subsistence harvests (already addressed by ADF&G).

- Determine whether harlequins will use artificial nest sites.

black oystercatcher

- Study reproductive success in cleaned versus non-cleaned and oiled versus non-oiled sites (current restoration study).

pigeon guillemot

- Determine if predation is a limiting factor.

- Explore use of predator-proof artificial nest structures to enhance productivity.

- Study prey (forage fish) selection in relation to productivity at easily-accessible nest sites.

marbled murrelet

- Review existing data bases (OCSEAP, Maritime NWR) on distribution during breeding season prior to undertaking additional field surveys outside of PWS.

- Survey Afognak Island and other locations to determine presence/absence of murrelets during breeding season (focus on heads of bays adjacent to big timber).

- Include areas with rocky habitats along with timbered habitats in nesting habitat studies (current restoration study-?).

common murre

- Monitor small colonies to determine whether they are abandoned or whether they are inhabited by nonreproducing adults (current damage assessment study?).

- Test feasibility of tape recordings, decoys, etc. to facilitate synchrony.

- Explore the feasibility of transferring birds to unproductive or abandoned sites.

- Identify post-breeding concentrations of chicks with accompanying males and winter concentrations: do regional populations mix in winter? do young birds ultimately return to their natal colonies?

- Identify opportunities for acquiring areas which benefit public access and education purposes (e.g., Gull Island).

bald eagle

- Determine extent of injury beyond PWS (current damage assessment study).

- Identify winter roost sites.

- Develop a population model and understanding of age-specific survival rates and productivity (current damage assessment study).

- Determine winter food habits for adults and subadults.

- Monitor contamination by residual petroleum hydrocarbons; can be important indicator species.

coastal habitat

- Link predators to abundance, availability, and quality (e.g., contamination) of intertidal prey.

- Assess the quantity, chemical status, and persistence of oil underlying mussel beds.

- Test techniques for removing oil from under mussel beds, other than removal of beds themselves.

- Monitor contamination over time; clams are indicators of continued contamination of intertidal/subtidal ecosystem. "Growth" in bivalves may be a helpful monitoring tool.

- Explore feasibility of using rafts in deeper water to enhance clam population (to stay away from oiled shores).

Dolly Varden/cutthroat trout

- Determine whether dollys and cutthroats in individual streams are from common population or whether each stream represents a genetically distinct stock.

- Explore whether cutthroats have any unique adaptations or genetic attributes, since they are at the margin of their range.

- Identify non-oiled streams with cutthroats and dollys, both for genetic reasons and recreation, both in and outside of PWS, and including southeast Alaska.

pink salmon

- Determine baseline genetic makeup (population attributes) on cross section of both wild and hatchery stocks.

- Establish whether pinks in individual streams are genetically distinct.

- Determine whether PWS intertidally-spawning salmon are genetically distinct.

- Model run reconstruction to determine whether there has been a decrease in returns of wild stocks (current damage assessment study).

- Gather more information on adult residence time; are there physiological changes as fish enter PWS that would enable determination of adult residence time?

- Identify stream/stock specific enhancement measures.

Pacific herring

- Study basic population biology; information is lacking on such things as stock status (degree of separation).

- Establish feasibility and benefits of supplementing spawning substrates.

subsistence/recreation

- summarize existing information on injuries to subsistence services (current damage assessment study).

- summarize existing information on injuries recreational services to determine need for restoration actions.

- explore what information is available on recreational impacts from federal and state economic studies (to the extent this is appropriate and permissible).

[SES:infomtg.syn:09/20/91]

Format for New Proposals
Restoration Science Studies
1992 Field Season

(length of proposal: 2-3 pages)

A. Name of the Study

B. Injured Species to be Addressed

C. Principal Investigator and Lead Agency

D. Project objectives

E. Project methods, including technical feasibility of the study

F. Duration of the project (number of seasons needed to fulfill project objectives)

G. Estimated Cost (per year, if more than one year)

H. Restoration activity or endpoint to be addressed

I. Relationship to science information needs identified by RPWG

J. Importance of initiating project in 1992

K. Link to other NRDA damage assessment or restoration studies

OIL SPILL RESTORATION PLANNING OFFICE

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Attorney-Client Communication

DRAFT MEMORANDUM 24 OCTOBER 1991

TO: Dianne M. Lyles (DNR) and Tom Jennings (USFWS)
Technical Services Study Number 3

FR: Ken Rice (USFS) and Stan Senner (ADF&G) for SES
Restoration Planning Work Group

RE: Requests for Mapping Information

The Restoration Planning Work Group (RPWG) has several needs for information concerning data sets or products from Tech. Serv. No. 3. The following requests are made to assist RPWG in restoration planning in the balance of Oil Year 3 and in a post-settlement program.

Data Catalog

In order to understand what data are available to Tech. Serv. No. 3, we request a current data catalog listing available EVOS and public domain data sets. This information will assist us in identifying our future data needs. For each data set, we need to know the following:

- data layer type
- digital format
- editing phase (if applicable)
- coverage area
- scale
- litigation sensitive vs. public domain

Data Sets

The RPWG needs to be able to view and work with various data sets for planning purposes, and has the capacity to do so on a real-time basis. This capability is especially helpful when there is need to display and have access to mapped data during the course of a meeting. Recognizing that Tech. Serv. No. 3 has the

responsibility to produce finished mapping products, we request the following data sets for the EVOS-affected area (as much of it as is available):

- shorelines by shoreline type with ESI data, e.g., headland, rocky shore, etc.
- land status
- land ownership
- special area designation, e.g., parks, refuges, forests (state/federal)
- anadromous streams
- vegetation
- shoreline oiling from ADEC's Fall 1989 beach survey
- habitat data

Please provide the data sets in the following format:

- Arc-Info coverages written to 1/4" 150 mb tape cartridges in the Unix "tar" format
- township/range/section grid, tic's, and survey monumentation in digital format at this time
- the largest scale available
- the sets listed in the 11/15/90 NRDA update or the ADNR blue book (PFD No. 87-12) are acceptable

These data will be used only by RPWG members and staff within the security of the 4th Floor of the Simpson Building, which is operated by CACI on contract to the Department of Justice. All requirements regarding the confidentiality of data sets will be honored, as is routinely the case for all NRDA damage assessment and restoration information.

<u>Kodiak-Alaska Peninsula Map</u>

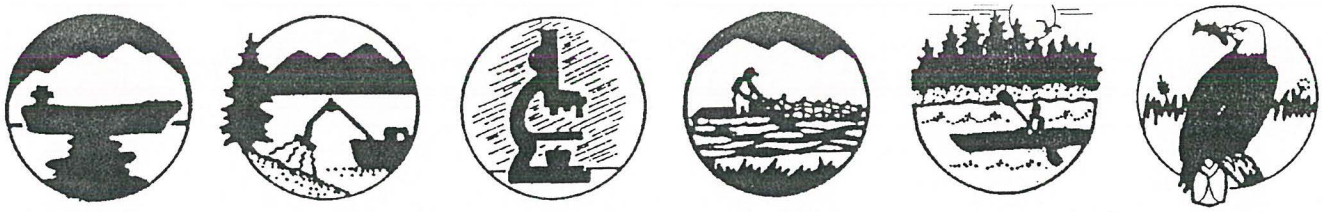
Previously, the DNR group of Tech. Serv. No. 3 had provided RPWG and the Alaska Department of Fish and Game two maps displaying land status and forest cover in Prince William Sound and the Kenai Peninsula. We are interested in having the additional map or maps needed to complete coverage of the entire EVOS area, including the Kodiak area and south shore of the Alaska Peninsula to the southern end of Aniakchak National Monument and Reserve.

Before making a formal request of ADNR and USFWS for the subject mapping information, we would like to determine the following: Do you have the information needed to complete this additional map or maps, and how long would it take to obtain this product? If you do not have the necessary information, can it, in fact, be gathered? What is the estimated cost of producing this product? Could this request be covered by the current Tech. Ser. No. 3 budget, or would additional funds need to be appropriated?

As we anticipate that both of you will have questions and that there will be a need for discussion, we will plan to call you in the next few days to arrange a meeting or conference call. There

is much work yet to be done to develop a meaningful restoration plan, and we look forward to working with the staff of Tech. Services No. 3 to develop the required background information and mapping products. Thank you.

cc: RPWG
Mark Fraker, ADF&G
Paul Gertler, USFWS
Alex Swiderski, ADOL
David Street, USDOJ
Dave Gibbons, USFS



OIL SPILL RESTORATION PLANNING OFFICE

MEMORANDUM

TO: MANAGEMENT TEAM

FR: Ken Rice

RE: NRDA Project Recommendation Form

Enclosed is a disk of the NRDA project Recommendation Form modified by CACI staff as per discussions at the 10/31 Management Team meeting. This version has been changed so that data may be entered into the blocks and the blocks will automatically expand as more data is entered. Because of this function, a block continued onto a second page will not have the title appear at the top of the second page. A page heading will automatically appear on and second or subsequent pages.

Other changes include modifying the form to reflect that this is oil year 4 and adding a comment block on the projects relevance to restoration.

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH AND GAME

To: Restoration Subgroup **Date:** 13 December 1991

File No:

Telephone No: 907-278-8012

From: Stan Senner Stan
Restoration Program Mgr.

Subject: Request for GIS Data Sets

Unfortunately, I was not able to be at the meeting on 10 December to discuss RPWG's needs for mapping products and data sets. I gather that there were comments made by Dianne Lyles to the effect that the reason we had not heard back from her in regard to our request for data sets was that RPWG (specifically me) had not responded to her telephone calls. For the record, I have compiled from my notes a chronology regarding the RPWG request and my subsequent interaction with Dianne:

(1) Memorandum sent from RPWG (Senner/Rice) to Lyles on 10/24 requesting:
- -preparation of a data catalog
- -providing certain data sets to RPWG
- -preliminary request about preparation of Kodiak-AK Pen. land status/forest cover maps

(2) No response from Lyles by telephone or in writing through 11/13.

(3) On 11/13, Senner received fax from Lyles re submission of a Tech. Serv. 3 restoration proposal. Lyles' memo did not address the RPWG request of 10/24.

(4) Senner attempted to call Lyles on 11/14 in response to her fax of 11/13.

(5) On 11/15, Senner and Lyles connected by telephone and discussed her fax of 11/13. Senner also initiated a discussion of the RPWG request of 10/24 and asked for her reaction to the request. We discussed need for Lyles to meet with RPWG soon, but, primarily due to Lyles' travel schedule, we had to schedule a tentative meeting date of 12/16.

(6) Subsequent discussions within RPWG suggested that we could not wait until 12/16 to address the RPWG request for data sets.

(7) On 11/22, Senner called Lyles and left a message for Lyles and/or Rich McMahon requesting that the meeting tentatively scheduled for 12/16 be advanced to 12/10 at 1530 h.

(8) During the week of 11/25 (I don't have specific date), McMahon returned my call of 11/22. We discussed the date change and, after McMahon consulted with Lyles, we agreed to meet on 12/10. Lyles agreed to this meeting only on the condition that Chief Scientist Bob Spies was present and that restoration needs more broad than the RPWG request for data sets were discussed.

(9) No further interaction until 3 December, at which time McMahon started sitting in on the NRDA review meetings at CACI.

cc: Dave Gibbons
RPWG & OSIAR files

OIL SPILL RESTORATION PLANNING OFFICE
645 "G" Street, Anchorage, Alaska 99501
Phone: (907) 278-8012 FAX: (907) 276-7178

MEMORANDUM 19 DECEMBER 1991

TO: George Peterson and Lewis Queirolo

FR: Stan Senner

RE: Review of ADF&G Economics Proposals

Early in November you were kind enough to participate in an economics workshop with members of the Restoration Planning Work Group. At that time, we briefly discussed three proposals from the Alaska Department of Fish and Game in regard to economics and restoration of fisheries resources harmed by the Exxon Valdez oil spill. Of the three proposals, I got the strong sense that there was little interest in pursuing the "regional impact assessment" proposed by Scott Goldsmith, Institute for Social and Economic Research. On the other hand, there was more positive interest in the "recreational fishing economic impacts" proposal by Mike Mills and the "cost-benefit analysis of salmon restoration projects" by Jeff Hartman.

There have been a number of developments recently in terms of implementation of the settlement agreement, and we still are unsure of what kinds of studies, including economic analyses, will be appropriate in 1992. To cover our bases, we should obtain a technical review of the ADF&G two proposals and request your assistance.

We would very much appreciate your close reading of the two proposals and would welcome your comments on their technical merit. Are the methods sound? Can the project objectives be achieved and will the projects benefit restoration planning? Do the budgets appear in line with the work to be performed?

Are you able to help us with this request? Please let me know if you cannot. We are not, by the way, looking for an exhaustive review. If you can give the two proposals one good reading and provide short written comments, that should suffice. Feel free to call the principal investigators directly if you have questions about their proposed methods.

enclosures (2)
cc: RPWG

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Alaska Fisheries Science Center
Resource Ecology and Fisheries
Management Division
BIN C15700; Building 4
7600 Sand Point Way NE
Seattle, WA 98115

January 9, 1992

MEMORANDUM FOR: OSRPO - Stan Senner

FROM: F/AKC2 - Lewis E. Queirolo
Alaska Regional Economist

SUBJECT: Requested Review of ADF&G Economics Proposals

I have completed the review you requested of the two Restoration studies, dealing with fisheries. I have provided you with "marked-up" copies of the proposals with my substantive comments noted in the margins.

In addition, I will summarize here my observations regarding your specific questions.

"Are the methods sound?" I believe that both proposals reflect careful thought and preparation. Methodologically, both seem feasible. The Mills' proposal, of course, is based in large part upon existing work, much of it regarded as "state-of-the-art". I am not enthusiastic about their use of I-O impact analysis in connection with the net benefit assessment, but as I note in my conclusion, they suggest that it will be (appropriately) supplemental to the Net Benefit Analysis.

The Hartman proposal's methodology is less familiar to me. However, the information presented suggests it to be theoretically consistent with the stated objectives. I have not had time to study the accompanying articles, but the fundamental approach seems sound, and should difficulties arise, the authors have identified a less ambitious alternative.

"Can the project objectives be achieved and will the projects benefit restoration planning?" I believe the answer to these questions is a qualified 'yes'. Because of the historical work done by Mills and associates, there is little doubt but that they will be successful in completing their proposed analysis.

Likewise, the model and software proposed for development by Hartman, et al., is achievable. As you will note on the "mark-up", I have several questions about each project with respect to its direct application to the restoration plan. In the case of the Hartman proposal, the key question concerns "assured, independent access" to the necessary primary data sets (see margin comments). Hartman raises the question by citing the need

for substantial and varied use of primary data held to be "confidential" by Alaska State Law. He notes that the Commercial Fisheries Entry Commission will necessarily be consulted about data acquisition, as will ADF&G.

With respect to Mills' proposal, my only serious reservation about applicability has to do with the species involved, i.e., Dollys and cutthroat. These concerns may be unfounded and a result of my own lack of familiarity with the complete restoration research agenda. But, as I note in the margins, recreational values predicated upon sport fishing for these two species will be of little use in assessing rec. fishing values for coho, chinook, sockeye,...,halibut, etc. In the area of interest, it would seem likely that any/or all of the above species would support larger and more economically important sport fisheries than the two species which are the subject of the proposed study.

"Do the budgets appear in line with the work to be performed?" In the case of the Hartman proposal, I believe the answer is clearly 'yes'. I believe that the Mills' budget is similarly appropriate, although the way it is presented is not particularly revealing to me (probably my problem).

In a general vein, however, I raise one question. Because, as both proposals point out, each resulting model currently has (or upon completion will have) numerous direct applications to the existing "programmatic" responsibilities of, among others, ADF&G; and both modeling efforts are either extensions of previously funded or previously considered research efforts, is it appropriate for the Restoration Planning Office to pick-up the lion's share of the proposed research costs? As one operating on the outside, I cannot venture an informed opinion, but it seems like a reasonable question.

In combination with my written comments and conclusion statement appended to the respective proposals, I hope my review will be of assistance to the Restoration Planning working group. If I can be of further assistance, please call upon me.

MEMORANDUM

STATE OF ALASKA
Department of Fish and Game

TO: Jerome Montague
Director
Oil Spill Impact Assessment
and Restoration Division
Juneau

DATE: September 23, 1991

FILE NO:

THRU:

TELEPHONE NO: 465-4160

SUBJECT: Restoration Economic Study#1

FROM: Jeff Hartman
Economist
Division of FRED
Department of Fish and Game

Thank you for the opportunity to submit a detailed work plan for Economic Study #1 (ES #1). This plan was requested by Peg Kehrer in her memo of July 25, 1991. The name of ES #1 is Cost-Benefit Analysis of Salmon Restoration Projects.

In this study plan, Dr. Berman, Dr. Boyce, and I have addressed additional coordinating issues between other ADF&G divisions. We have also adjusted the cost of the study to reflect Mike Dean's suggestion that the full cost of the project should be reflected in the budget. I had previously intended to donate my time at no cost to OSIAR. I am including one month of salary, and travel funds for one project coordinating trip, for Boyce and Berman in this proposal, as well as some funding for data manipulation for the Division of Commercial Fisheries.

Stan Senner raised some very good questions about how ES #1 would measure "the economic impacts of modifying our management practices and harvest levels to protect wild stocks in oiled streams." Also: "How might such actions as time and area closures to protect wild stocks affect the hatchery based-fishery? Do either of the salmon projects as proposed address this question."

The answer to these questions are: yes... the work outlined in ES #1 is the only way that Dr. Boyce, Berman, and I know of to empirically estimate the relationship between the costs and benefits[1] of area

---

[1] *Stan used the term "economic impacts" in his question. I think that he is referring to benefits and costs that as they are defined in welfare economics. The term "impacts" in economics generally refers to employment and income data produced by economic impact models, such as an input-output model.*

time openings and closings in the salmon fishery. In fact, historical area/time openings and closings for salmon (available by district in area management reports) are key pieces of data in ES #1. The cost model is structured to explain how altered openings and closings would change short run fishing patterns and in turn, how the costs of the fishing fleet would increase or decrease, in the short run and long run. Additionally, the demand model would be used to compute the change in revenue to the fishing fleet of reduced catches from the hatchery stock and possibly future increased catches from the wild stocks. Of course the biologists would have to provide information on population feedbacks from the short run reduction in exploitation of wild stocks, long run changes in population size of wild stocks, change in the harvests of enhanced stocks, and changes in the cost of evaluation, management and monitoring.

Boyce, Berman and I would be happy to provide a detailed discussion of how the modeling and simulations would allow for this restoration option to be evaluated. A discussion in a meeting setting with the three principal investigators of ES #1, and staff from OSIAR and RPWG would be the most efficient way to present a primer on how this modeling would be applied to restoration policy questions. I would also be happy to attend a meeting with you, Mike and Stan to explain how this study would work and discuss how economics can be integrated with the restoration studies to evaluate costs in relation to the benefits.

Stan has also indicated that the RPWG has other economic needs and listed that some of those needs included "nuts and bolts things like costs estimation, not sophisticated models." I would like to point out, however, that the sport fish economic modeling project proposed will be using the discrete choice models from the South Central study, which is one of the most sophisticated non-market models that exists in resource economics today. A CRAY super-computer was required to calibrate the models. I think that the sportfish project should be carried out, and would produce some useful analysis that would be as helpful to fishery managers as ES #1. My point is that sophisticated models are sometimes required to make precise and reliable economic projections that can withstand scrutiny.

As you can see from the attachments, (appendix 1 and 2) that detail the equations and methods for this ES #1, John Boyce, Matt Berman and I have already invested a great deal of effort in satisfying the information requests for this proposed study. The coordination of the project and finalizing the RSA's will require a face to face meeting with Boyce, Berman, Schelle (of CFEC) and me in Juneau. Some, travel funding assistance with this step would be helpful. Approximately $ 1,400.00 should be sufficient for the first meeting which I would like to schedule within a week.

Matt Berman pointed out to me that the Reimbursable Services Agreement is the legally binding document that is conventionally used for ISER and UAF studies on economics. It would be better for the University, if The Detailed Work Plan was an attachment to an RSA, which would eventually be signed by the Chancellor of each campus.

I believe that ES #1 will assist in evaluating costs and benefits of immediate salmon restoration studies and implementation projects identified in the second Federal Register notice. This study will also assist in identifying costs and benefits of salmon restoration that the RPWG may wish to carry out in the future. Finally, ES #1 will provide valuable insights on commercial fishing costs that the Alaska State Board of Fish, and the State Legislature would find useful in unraveling the current crisis that salmon fisheries are in now. Finally, ES #1 does not duplicate or overlap with any economic studies

related to the AG offices Litigation on the EVOS.

If you have comments or questions please contact me.

cc:
Jeff Koenings
Robert Burkett
Johnny Holland

TITLE: Cost-Benefit Analysis of Salmon Restoration Projects.

Project I.D. Number:
Name of Project Leader(s):

Matt Berman P.h. D., John Boyce P.h. D., Jeff Hartman

Lead Agencies:

Alaska Department of Fish and Game, F.R.E.D. Division
University of Alaska, Fairbanks, School of Management
University of Alaska, Institute of Social and Economic Research, Anchorage

Cooperating Agencies:

Alaska Department of Fish and Game, Division of Comm. Fish.
Commercial fishery Entry Commission

Cost of Proposal (for Each agency):

Alaska Department of Fish and Game: $10,650 (project management, data preparation, RSA development, and study product review).

University of Alaska, Fairbanks: $20,000 (model development, testing, simulations, reporting)

University of Alaska, ISER: $20,000 (model development, testing, simulations, reporting)

Commercial Fishery Entry Commission $3,000 (acquisition of fish ticket file data and reports)

University of Alaska, Fairbanks and/or ISER, $15,000 (combining of demand and cost model into computer software, simulation of 15 or more restoration cases, reporting of results in formal report).

Total $68,650

Dates of Project Implementation:
To begin on October 1, 1991 and to be completed on June 30, 1992.

Location of Project Implementation:
Analysis will be carried out at Anchorage, Fairbanks, and Juneau AK.

Signature of Financial officer(s):
To be completed in RSA process.

Note: The legally binding document with UAF and UAA will be a Reimbursable Services Agreement.

II. INTRODUCTION

The purpose of Economic Study #1 (ES #1) Cost-Benefit Analysis of Salmon Restoration Projects. is to assist in the restoration of the economic benefits provided by the salmon resources affected in the EVOS, and to increase the value of those resources to the fishing industry and to society of the investments in restoration. More specifically, ES #1 is designed to evaluate "the relationship of the expected costs of the proposed actions to the expected benefits" of salmon restoration, in a manner that is consistent with the guidelines of welfare economics and economic criteria in NRDA.

The primary product of the study would be development of computer software in SAS, and the simulation of net benefits for specific salmon restoration projects identified by the Restoration Planning Work Group (RPWG). The software, and all associated reports and data would, be the property of OSIAR. Simulation results displaying the benefits and costs of specific restoration projects would be made by June 30, 1991. The data manipulation, econometric modeling, software development, model simulations, and report writing would occur through a cooperative effort between the University of Alaska, Anchorage, and the University of Alaska, Fairbanks, the Alaska Department of Fish and Game, and the Commercial Fishery Entry Commission.

Obviously, the timing has changed. Will this have any effect on, (1) the cost of the study, (2) availability of resources & personnel,

III. DESCRIPTION OF PROJECT

Evidence of injury and damage to salmon has been revealed through the NRDA (damage assessment) studies under the Clean Water Act. While the most telling evidence is for pink salmon and chum salmon in Prince William Sound, other studies are expected to reveal population level damages for other species in regions where hydrocarbons have been observed, or where fisheries were subject to emergency closure as a result of the spill. Fishery managers and restoration planners are proposing several studies and implementation projects for the restoration of commercial salmon fisheries as identified in the Federal Register Notice #2.

These restoration projects include:

Restoration Implementation Study #3 Salmonid Stocks and Habitat Restoration (Principal Investigator, Mark Willette), Restoration Study #4 Protection of Strategic Fish and Wildlife Habitats and Recreation Sites (with respect to the impacts on the value of the commercial salmon fishery), #8 Coded-Wire Tagging of Pink Salmon, Restoration Study #9 Prince William Sound Pink Salmon Escapement Enumeration.

In the absence of #1 will the usefulness of #3, #4, #8 #9 diminish?

Restoration economics study #1 is designed to provide software for estimation of net benefits specifically of Implementation Study #3 and #4, and probably Restoration Studies #8 and #9.

This study is also designed to estimate the benefits and costs of other restoration actions that may be proposed in the future, including but not restricted to, changes in area/time openings and closings of some fisheries, adjustments gear restraints, investments in coded wire tagging, scale pattern analysis, enforcement, escapement monitoring, or any other management investment that can be related to an increment in short run or long run abundance in salmon fishing districts. Additionally, ES #1 would allow for the estimation of commercial fishing benefits and costs of protecting selected critical salmon

It would appear that this proposed research will produce outputs with important applications well beyond the "Restoration" project. If successful, it could represent an important management/analytic resource. As such, could (should) the cost of the project be distributed across the population of users?

habitat through changes in land status or land acquisition, rehabilitating affected salmon stocks through application of intensive or extensive wild stock rehabiltiation techniques, or relying on natural recovery.

The **objective** of this study will be to develop all necessary economic software for a cost-benefit analysis of Restoration studies that alter (1) abundance of salmon in districts, by species and time, (2) changes in area/time openings and closings, and (3) some types of gear restraints, and fleet rationalization. ES #1 will also be designed to carry out an immediate evaluation of Implementation Restoration study 3. The analysis in ES #1 will include the formulation and testing of a model that will project short run and long run fishing costs, development of software from reduced form equations to use in CBA simulations of restoration project outcomes, and combining of the cost functions with other existing salmon demand models to estimate the Net Benefits of a sample of selected restoration projects for the purpose of estimating the Net Present Value of the alternatives.

Numbers 1 & 2 are not unique to "Restoration" projects. 3 may not even be associated

Classical cost-benefit analysis (CBA) will be applied to evaluate the net economic benefits and tradeoffs between these proposed restoration activities. Estimates of the net economic benefits (as measured by the producer surplus) for proposed salmon restoration will depend on how the changes in salmon stock size, management actions and market prices will affect fishing behavior and marginal costs of producers and government.

This cost/benefit analysis ~~for~~ will consist of five components: (1) Restoration project production function and production assumptions (provided by biologists) (2) population-growth model for the restoration of the wild stock that is linked to fishing exploitation (provided by biologists), (3) a demand model, (4) a fishing-cost model, and (5) a software package that combines components 2 and 3 in a CBA system that is capable of estimating the net present value of various projects. A key component of this study is the development of a model for determining the marginal costs of catching the restored salmon population. Fishing costs are the largest single social cost in most of the world's regulated fisheries. Long run fishing costs in Alaska's salmon fishery probably dwarf the social costs of managing fisheries, yet fishing costs are the least understood component of producer costs affecting the value of Alaska's salmon fisheries.

To conduct a cost-benefit analysis, fishing costs must be determined in the short run and the long run. In the short run, a restoration action may encourage salmon fishermen to direct more fishing effort (a function of gear, boat size, horse power, crew size, etc.) into a specific statistical area and away from another statistical area (or alternative fishing opportunity). With the existing restraints on salmon fishing in place, these short-run increases in marginal costs may be smaller than potential short-run rents from the project. In the long run, fishermen can be expected to increase fishing effort even if new vessels are not allowed to enter the fishery. Currently, economists can only provide informed guesses of the magnitude of short run and long run fishing costs in Alaska's salmon fishery. These issues can only be emperically answered by examining the vessel-level data that are contained in fish ticket and license operators' files.

* Because permits limit entry by area and gear these costs may (probably would) be larger than potential realized benefits in the short-run.

Methods:

-Restoration Production Assumptions and population level effects.

Dr. Mark Willette will project the operating and construction costs of candidate restoration alternatives identified in Restoration Implementation study project #3. He will also develop projections of the change in the catch by district and month between the starting year of the alternative and for 30 years into the future. The projections for each candidate restoration alternative will be forwarded to James Brady of the Division of Commercial Fisheries, who will compute any increases or decreases in the costs of managing fisheries that might result from the project. In the absence of a formal management cost estimate from the Division of Commercial Fisheries, it will be assumed that the average costs of management in a region will be equal to the marginal cost for this enhancement project[2].

Other restoration studies, or projects will need to generate similar projections of catch and public costs to evaluate the associated social costs and benefits.

-Demand Model for Salmon Fisheries

The demand model created by Dr. John Boyce, called: A Comparison of Demand Models for Alaska Salmon will be used for projecting prices and price responsiveness for all projects. An unrelated economic study currently funded by the Alaska State Legislature may provide an improved set of demand models to use for Alaska salmon. The University contractors will agree upon a set of the best demand models that are available at the time to apply to each fishing region and species.

-Cost Model for Salmon Fisheries

Economic theory suggests that fishermen's behavior will be driven by their desire to earn economic profits. This means that fishermen will participate in fisheries that they perceive as being the best alternative available to them. The cost to them of remaining in that fishery will depend upon what it costs them to fish, relative to their earnings in that fishery, and what they are giving up by not fishing in some other area. These costs can be inferred from entry/exit decisions (such as switching from one fishery to another). Fishing entry/exit decisions, and thus fishing costs will also be affected by the abundance of fish in a fishery. A restoration project may alter these decisions and costs, and in turn, the fishing costs of restoration projects can be explained through entry\exit behavior. Finally, a profitability model of various fisheries can be combined with a fishing cost model derived from entry\exit information to determine the net benefits of restoration activities. A more detailed description of the equations for both approaches are attached in Appendix 1 and 2.

As the researchers know, entry and exit are artificially constrained in Alaska's salmon fisheries. This will make the analysis somewhat more complex than the paragraphs above imply. Care must be exercised when interpreting "mobility" as an indication of economic profit maximizing behavior, particularly in the short-run.

[2] *Average management costs are the mean annual ADF&G regional management budget for salmon divided by the mean annual lbs. of salmon harvested in the region.*

-Data available for fishing cost model:

The purpose of this cost modeling component is to calculate the marginal cost of fishing, using inferential techniques from data in the Commercial Fishery Entry Commission fish ticket files and vessel license operators' files. Fish ticket files provide harvest information by statistical area and species for each operator. The license file reveals how many fisheries the operator participates in and includes detailed information of vessel characteristics. It may be necessary to access data from several fisheries in order to develop a structural model form that predicts fishing behavior. These data bases are confidential and modeling exercises, as well as published simulations, must be designed around these constraints. Because of Alaska's confident iality constraints, will the Restoration Team ultimately acquire "ownership" of a useful model in the absence of Alaska State data bases? Is the model of any practical use w/o assured access to the primary data? Is such access assured: If not, perhaps as an element of the restoration strategy funding decision, formal assured access might be sought.

-Fishing Cost Model form and testing:

Two methods have been used to estimate the critical values of expected revenues necessary for fishermen to remain in the fishery or to enter a fishery. The first of these was used by Boyce (1990). It involves constructing the theoretical supply curves for the industry and using the equilibrium conditions that the number of fishermen that enter an area or switch into an area will be such that no single fisherman can profit by changing the decision, given the way in which the rest of the fishermen have acted. This method aggregates across fishermen and deals with the problem of heterogeneous fishermen only looking at the shape of the supply curve. The main advantage of this method is that it allows for a simple formulation of the expectations of revenues held by fishermen. The expected revenues are postulated to be a function of the number of fishermen and the size of the biomass. A different equation is specified for the biomass where it grows as the run of salmon reaches its peak and then declines afterwards. Thus, escapement data is also necessary for this analysis.

The second method utilizes specific data from each vessel and estimates the probability that a discrete action will occur (stay in the fishery, exit the fishery, or switch to an alternative location) based on what is known about the fisherman's opportunity set. This technique, which is borrowed from the recreational demand literature, has the advantage of not hiding any information in the aggregation process. That is, variations in fishermen based on historical patterns, capital characteristics, and the available set of permits can be used to estimate the actions of the individual fishermen. The disadvantages are that this method requires analyzing much larger data sets and that it also requires that the cost functions then be constructed by aggregating based on the probabilities of each decision by each agent.

The determination of which method to use is a decision that has to be made by the researchers after a preliminary analysis of the data is constructed.

This project will have 9 major steps:

1. Identifying relevant fisheries based on the regions and districts of probable restoration projects.
2. Obtaining the relevant fish ticket and vessel license file data from CFEC
3. Summarizing portions of the fish ticket file and license/vessel file in the form of reports that are usable and consistent with confidentiality regulations;
4. Merging the vessel and fish ticket files.

5.Formulation of the structural model and testing;
6.Development of software from reduced form equations to use in CBA simulations of restoration project outcomes;
7. Combining software of demand model and cost models in SAS so that NPV of projects can be projected.
8. Application of CBA using the demand models and cost models to estimate the Net Benefits of a sample of selected restoration projects, for the purpose of estimating the Net Present Value of the alternatives.
9. Documentation of models in a report, and instructions for using software.

IV. SCHEDULES AND PLANNING

As soon as funding is made available, John Boyce, Matt Berman, Jeff Hartman, and Kurt Schelle will meet in Juneau to determine our combined data needs and what CFEC's role will be. This schedule would have to be altered if additional review steps were imposed.

Major activities and target dates (assuming the project begins in October 15, 1991, would be:

1. Scoping meeting to coordinate CFEC data collection and manipulation: Sept 27.
2. RSA Written, reviewed and signed by both University Campuses: October 15, 1991.
3. Obtain data from fish ticket and vessel license files and match by SSN: Nov 15.
4. Compile data on seasoning openings and area closures: November 30.
5. Form specific data sets for estimation: December 31.
6. Estimate cost function with various approaches as described: April 30.
7. Select the cost model methods that work best for a given fishery, and appropriate demand model from available studies: May 15th.
8. Mark Willette to provide projections of project costs from data gathered on Implementation Restoration Study #3: May 1, 1991.
9. Mark Willette to provide projections of additional management costs that would result from the proposed projects, after review by Division of Commercial Fisheries, May 15, 1991.
10. Combine model software on salmon Demand (Boyce 1990) or (next best substitute) with cost. model, in SAS simulation framework capable of estimating a NPV for relevant time horizon: May 30th.
11. Run simulations on candidate restoration projects. June 15th.
12. Write report (one section from John Boyce, one section from Matt Berman, and one from Jeff Hartman: June 30.

V. NEPA/PERMIT STATUS

Not Applicable

VI. BUDGET

Alaska Department of Fish and Game: $10,650 (project management, data preparation, RSA development, contract development, and study product review).

Includes $6,250 for one month salary for Economist II FRED Division, $3,000 for 3 weeks AP I, C (programmer) in the Division of Commercial Fisheries, $1,400 for 1 project coordination meeting with Boyce and Berman.

University of Alaska, Fairbanks: $20,000 (model development, testing, simulations, reporting)

University of Alaska, ISER: $20,000 (model development, testing, simulations, reporting)

Commercial Fishery Entry Commission $3,000 (acquisition of fish ticket file data and reports)

University of Alaska, Fairbanks and FRED Division and/or ISER and FRED Division, $15,000 (combining of demand and cost model into computer software, simulation of up to 15 restoration cases, reporting of results in formal report).

Includes $5,000 for creating simulation software by University of Alaska Fairbanks, or University of Anchorage, ISER through RSA. Also up to $10,000 for immediate simulation of up to 15 projects (assumed to be approximately $650 each) and reporting results of simulations in a report. Number of simulations and the simulation costs may be less than this, depending on how many need to be completed in FY 92.

Total $68,650

VII. MONITORING PROGRAM

Not Applicable

VIII. PERSONNEL QUALIFICATIONS

13 pages of detailed resumes are available for:

Matthew D. Berman
Associate Professor of Economics, Institute of Social and Economic Research
School of Business and Public Affairs
University of Alaska Anchorage
3211 Providence Drive
Anchorage Alaska 99508

John R. Boyce
Associate Professor of Economics, Department of Economics
School of Management
University of Alaska
Fairbanks, Alaska 997750-1070

Jeff Hartman
Economist

Alaska Department of Fish and Game
F.R.E.D. Division
P.O. Box 3-2000
Juneau, AK 99824

Conclusions: The proposed study appears to be well conceived, and its objectives attainable. It also appears to have varied potential applications, many of which could make a real contribution to Alaska salmon resource management. The potential usefulness in terms of the Restoration project seems equally obvious, particularly to the extent that the series of specific restoration projects cited in the proposals text are undertaken.

My only serious reservation with the proposal (and this should not be regarded as an insurmountable problem) is associated with the resultant models usefulness, absent ready access to Alaska's primary data. I realize that the State is a co-trustee, however, my experience during the Damage Assessment phase suggests state-federal cooperation and data sharing is not assured. Furthermore, to avoid any doubts about the objectivity of subsequent analyses which utilize the model and software, all trustees both state and federal should be guaranteed independent access and use of the model, and by extension, the data necessary to employ them.

I would give this proposal a firm endorsement, with the one or two caveates noted.

MEMORANDUM **STATE OF ALASKA**

TO: Peg Kehrer
Graduate Intern
OSIAR Division

DATE: October 22, 1991

FILE NO: VI.500.075.100

TELEPHONE NO: 267-2369

THRU:

SUBJECT: Economic Study Work Plan

FROM: Mike Mills, Chief
Research and Technical Services
Division of Sport Fish
Department of Fish and Game

Enclosed is a revised detailed work plan for the fiscal year 92 portion of the *Recreational Fishing Economic Impacts and Benefits* study. It is the first phase of what must be a multi-year project since the principal restoration science project it will value, Study 7, *Restoration of Dolly Varden and Cutthroat Trout Populations in Prince William Sound*, is a multi-year project from which management strategies will develop in later years.

The enclosed work plan schedule is optimistic. Delays caused by the economic study proposal review procedures may jeopardize completion during fiscal year 92 of all aspects of the *Recreational Fishing Economic Impacts and Benefits* study. It may prove necessary to encumber funds for use in fiscal year 93 to complete model refinement and baseline estimation.

Enclosures

Issues to review with the proposals authors:

① What do we know about the "pre-spill" baseline size of the cutthroat and Dolly populations in the region? -- perhaps as measured by CPUE in recreation fisheries. Can these data support the modeling analysis? If no what alternative is available?

② What do we know (quantitatively) about "post-spill" populations?

③ How, and over what time interval, will these resources be restored ... and ~~over~~ to what "level" of the baseline population?

RECREATIONAL FISHING ECONOMIC IMPACTS AND BENEFITS

ID Number:

Project Leader: Mike Mills

Lead Agency: Alaska Department of Fish and Game, Division of Sport Fish

Proposal Cost: $81,200

Project Dates: 15 November 1991 through 30 June 1992

Location: Anchorage, Alaska

application?

Was this I-O limited to Dolly & cutthroat fishing or did it extend to the 5 salmon species, halibut, rockfish, etc.? If the latter, is it amenable to the narrower

Can we reasonably assume that the "recreational experience," i.e. WTP for Dolly & cutthroat fishing is, in any way, indicative of the value of other sport fishing, e.g. salmon (species), halibut...?

INTRODUCTION

During fiscal year 1992, the Alaska Department of Fish and Game, Division of Sport Fish, Research and Technical Services, will conduct a study to develop computer models from existing software for use in estimating the economic impacts and benefits of restoration projects affecting recreational fishing in the area impacted by the Exxon Valdez oil spill. this project is relatively narrow.

PROJECT DESCRIPTION

The information derived from this study would be used to estimate the economic impacts and benefits associated with restoration projects affecting sport fishing, in particular, study 7, *Restoration of Dolly Varden and Cutthroat Trout Populations in Prince William Sound*[1]. In this first phase of a multi-year study, economic impact and benefit models will be developed, data collected, and baseline information produced. In future years, as management strategies are implemented to promote fishing opportunities for Dolly Varden and cutthroat trout at non-oiled sites in Prince William Sound, the models will be used to estimate the employment impacts in oil spill affected areas of Alaska, the distribution of revenues between geographic areas, and net benefits to anglers.

two very different and independent assessments!

Existing software would be modified and updated. The Southcentral Alaska sport fishing economic study[2] developed a series of separate programs, models, and spreadsheets to estimate impacts and benefits of sport fishing. Input-output methodology was used to estimate total economic impacts associated with Southcentral Alaska sport fishing in terms of sales, employment, and income. The demand for sport fishing by Alaska residents was analyzed using a nested generalized logit model. Hanemann[3] shows how estimates of net willingness to pay (the dollar amount over and above actual expenditures) for sport fishing opportunities can be derived from fitted logit models. Nonresident angler demand for Southcentral Alaska sport fishing opportunities was modeled using the travel cost method and a contingent valuation survey. The Southeast Alaska sport fishing economic study[4] carried model development a step further by producing an integrated modeling system to simultaneously measure impacts and benefits.

Using the Southcentral components supplemented by available data and new data from a small mail survey concentrated on the oil spill impact area missed in the previous Southcentral survey, a system similar to the Southeast system will be developed for the oil spill impact area and will be used to analyze sport fishing restoration projects.

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[1]Study 7 will identify non-oiled streams with Dolly Varden and cutthroat trout and estimate stock sizes. This information will enable fisheries managers to redirect sport fishing effort to non-oiled streams, thereby enabling fish stocks in oiled streams to recover.

[2]Jones and Stokes Associates, Inc. 1987. Southcentral Alaska Sport Fishing Economic Study. Sacramento, CA. Prepared for the Alaska Department of Fish and Game, Sport Fish Division, Anchorage, AK.

[3]Hanemann, W.M. 1985. Applied welfare analysis with discrete choice models. Working Paper. University of California, Department of Agricultural and Resource Economics, Berkeley, CA,

[4]Jones and Stokes Associates, Inc. In prep. Southeast Alaska Sport Fishing Economic Study. Sacramento, CA. Prepared for the Alaska Department of Fish and Game, Anchorage, AK.

The sampling frame for the mail survey will be the respondents to the division's annual sport fish harvest survey who indicate that they sport fished in the oil spill impact area. The economic mail survey will concentrate on respondents who live in the oil spill impact area communities of Prince William Sound and Kodiak Island, but will also contact anglers who reside in other locations. The survey data will reveal individual angler choices concerning use of specific fisheries. By observing such choices, it should be possible to use estimated demand equations in conjunction with theoretical models to generate baseline willingness to pay measures. As fisheries management strategies are implemented in the future that affect the oil spill impact area, angler choices can be observed, and net benefits and impacts can be estimated.

The project will be based in Anchorage. The need for technical assistance with model development and survey design will be met through contractual agreement(s). Survey typesetting, graphic art work, and printing will also be contracted. Implementation of the survey, programming, and data processing will be performed by the lead agency personnel.

SCHEDULE AND PLANNING

Assuming a project implementation date of November 15, 1991, model development and baseline estimates will be completed during fiscal year 92.

This project will use new and historic data collected by the division's annual sport harvest survey. Data collection for the 1991 sport fishing season will occur during the October 1991 through March 1992 period.

A supplemental survey will concentrate on anglers who reside in the spill impact area. A small sample of respondents to the annual sport fish harvest survey will be contacted to gather information needed to run the computer models. Survey design and printing will be completed by December 1991. Data collection will be completed by March 1992. Data will be entered, edited, and synthesized by April 1992.

A contract will be established for development of the modeling system from existing components by February 1992. Computer model development will be completed by May 1992. Model refinement and estimation of baseline impacts and benefits should be completed by June 1992.

Project Schedule

Complete supplemental survey design and printing: December 1991

Establish modeling system contract: February 1992

Complete supplemental survey data collection: March 1992
Complete supplemental survey data synthesis: April 1992

Complete modeling system development: May 1992
Complete baseline estimation: June 1992

Project personnel

Mike Mills, Chief of Research and Technical Services. Responsible for project management, contract administration, and reporting.

Allen Howe, Fishery Biologist. Responsible for coordination of survey design, typesetting, graphic art work, and implementation.

Wolfgang Kurtz, Analyst Programmer. Responsible for development of software to enter, edit, and process survey data.

Katheryn Kush, Data Processing Clerk. Responsible for survey receipt and data entry.

Alaska Specialized Education and Training Services (ASETS). Responsible for survey instrument typesetting, printing, and mailing.

Contractor (to be determined). Responsible for model development and survey instrument design.

Conclusions: I am familiar with the work that Mike Mills has done in the past with these same colleagues. It is recognized as being among the best research efforts in the subject area. While I am not enthusiastic about the use of Input-Output models, I realize they may produce information which local governments may find "helpful." Furthermore, the I-O aspect is, according to the proposal, correctly supplemental to the "net benefit" aspect of the study. I am not close enough to the projects' development to know the reasons for focusing on cutthroats & Dollys. It seems to me that the recreational fisheries for coho, chinook, sockeye (perhaps even pinks & chums), and halibut, would represent much more important -- valuable -- service flows. Will the value information obtained from this study be used to extrapolate to species and fisheries beyond cuts & Dollys? I would be concerned if the answer is "yes." While the proposal is relatively "brief", it builds upon research which I know to be highly regarded within the economics profession. I have confidence this project will be equally well done. This does raise a question about the appropriateness of the Restoration Project assuming the cost. I only raise the question!

FY 92 BUDGET REQUEST

Project: Recreational Fishing Economic Impacts and Benefits	Project Leader: Mike Mills
Project No.:	Location: Anchorage Phone: 267-2369

LINE ITEM	AMOUNT 7/1/91-2/28/92	3/1/92-6/30/92	7/1/91-6/30/92
71000	15.4	22.7	38.1
72000	0.0	0.0	0.0
73000	27.1	16.0	43.1
74000	0.0	0.0	0.0
75000	0.0	0.0	0.0
TOTAL	42.5	38.7	81.2

COMMENTS:

The above breakdown assumes a project implementation date of November 15, 1991.

FY 92 BUDGET REQUEST

71000 PERSONAL SERVICES						
PCN/NP/NEW	RANGE/STEP	CLASSIFICATION	NO. MONTHS	LOCATION	INCUMBENT	SUPERVISOR
4052	22K	Fisheries Scientist	1.0	Anchorage	Mills	Netsch
4119	18F	Fishery Biologist	1.0	Anchorage	Howe	Mills
4267	17A	Analyst Programmer	5.0	Anchorage	Kurtz	Fidler
4268	9B	Data Processing Clerk	1.0	Anchorage	Kush	Fidler

72000 TRAVEL	AMOUNT
	0.0

73000 CONTRACTUAL	DESCRIPTION	AMOUNT
PROFESSIONAL SERVICES	ECONOMIC MODEL DEVELOPMENT AND TESTING	30.0
PROFESSIONAL SERVICES	SURVEY INSTRUMENT DESIGN	5.0
NONPROFESSIONAL SERVCS.	SURVEY TYPESETTING, LAYOUT	2.6
NONPROFESSIONAL SERVCS.	SURVEY PRINTING AND MAILING PREPARATION	1.5
POSTAGE	SURVEY MAILING AND RETURN POSTAGE	4.0

74000 SUPPLIES	DESCRIPTION	AMOUNT
		0.0

75000 EQUIPMENT	DESCRIPTION	AMOUNT
		0.0

FY 92 BUDGET REQUEST

71000 PERSONAL SERVICES --- FOR 7/1/91-2/28/92

PCN/NP/NEW	RANGE/STEP	CLASSIFICATION	NO. MONTHS	LOCATION	INCUMBENT	SUPERVISOR
4052	22K	Fisheries Scientist	0.5	Anchorage	Mills	Netsch
4119	18F	Fishery Biologist	0.5	Anchorage	Howe	Mills
4267	17A	Analyst Programmer	2.0	Anchorage	Kurtz	Fidler
4268	9B	Data Processing Clerk	0.0	Anchorage	Kush	Fidler

PERSONNEL QUALIFICATIONS

Project Leader

Mike Mills is Chief of Research and Technical Services for the Sport Fish Division of the Alaska Department of Fish and Game. He has been employed by the department since 1974. He holds a B.A. from the University of Colorado and a M.S. from the University of Washington. He directed the first studies on economics of sport fishing in Alaska; has consulted on, designed, and analyzed data from economic studies; has made presentations on economics to economists and natural resource professionals, the legislature, and the public; has served on economics committees; and was involved in planning of economic damage assessment studies for the Exxon Valdez oil spill.

Other Project Personnel

Allen Howe, Fishery Biologist III, Alaska Department of Fish and Game, Sport Fish Division, Research and Technical Services.

Wolfgang Kurtz, Analyst Programmer III, Alaska Department of Fish and Game, Sport Fish Division, Research and Technical Services.

Katheryn Kush, Data Processing Clerk II, Alaska Department of Fish and Game, Sport Fish Division, Research and Technical Services.

OOS
Memorandum

January 8, 1992

To: Stan Senner

From: Carol Gorbics

Subject: Draft Working List of Restoration Approaches

As you requested, "restoration approaches" are provided for pigeon guillemots, black oystercatchers and bald eagles.

pigeon guillemots

minimize human disturbance

protect/acquire marine and coastal habitats (colony nesting areas)

conduct research on population status/limiting factors (e.g. colony locations and size, reproductive success in oiled areas, threats to nesting habitat, mitigate predation pressure, prey availability)

eliminate sources of contaminated habitat and prey

monitor recovery, including results of restoration actions

black oystercatchers

minimize human disturbance (including bioremediation effects)

protect/acquire marine and coastal habitats (breeding, nesting and rearing areas)

conduct research on population status/limiting factors (e.g. life history requirements, contamination of prey, reproductive success in oiled areas, threats to habitat, sources of disturbance)

eliminate sources of contaminated prey

monitor recovery, including results of restoration actions

bald eagles

minimize disturbance

protect nesting areas

conduct research on population status/limiting factors (e.g. productivity surveys, population surveys, continued hydrocarbon contamination of eggs)

monitor recovery, including results of restoration actions

cc Rabinowitch