United States Department of the Interior

FISH AND WILDLIFE SERVICE
911 NE. 11th Avenue
Portland, Oregon 97232-4181

IN REPLY REFER TO:

JUN 27 1994

Jack Ward Thomas, Chief
U.S.D.A. Forest Service
Washington, D.C. 20240

Dear Mr. Thomas:

The U.S. Fish and Wildlife Service (Service) has reviewed the biological evaluation (BE) attached to your April 1, 1994, letter in which you requested that we provide our biological opinion on the implementation of Interim Standards and Guidelines for Managing Anadromous Fish-producing Areas in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH). The Service concurs with the Environmental Assessment (EA) for the Implementation of Interim Strategies, which concludes that the preferred alternative (number 4), if selected, would have a neutral or beneficial effect on listed and proposed species. Our recommendation is that there is no need to enter into formal consultation with the Service at this time. The Service does, however, feel that there will be a need to consult both informally and formally in the future as the Forest Service and the Bureau of Land Management (BLM) continue to work over the next 18 months on geographically specific environmental impact statements for PACFISH implementation. The Service anticipates providing section 7 consultations that will address planning at scales larger than individual projects. Efforts will be made to consult on the largest area practicable to eliminate unnecessary delays in management planning. There is also a continuing need to do section 7 consultation for individual ongoing and proposed activities for both of your agencies in the coming months and years as you perform watershed analyses. Any projects that require additional consultation pursuant to 50 CFR Sec. 402.13 of our interagency regulations governing section 7 of the Endangered Species Act should be addressed separately.

The Service provides the following comments for your consideration as you prepare to implement the interim PACFISH standards and guidelines:

1. Bull trout (*Salvelinus confluentus*), a petitioned species, has received considerable attention from our respective agencies in the last 18 months. The Service determined that the listing of the bull trout was warranted, but precluded by other pending proposals of higher priority, for the population segments residing in the coterminous United States. The Service determined that listing the bull trout was not warranted in Canada and Alaska. This finding was made on June 6, 1994, and announced in the Federal Register on June 10, 1994 (59 FR 30254). In addition, the Service has worked closely with the States of Idaho and Montana, Regions 1 and 4 of the Forest Service and the Idaho BLM to draft bull trout conservation agreements that will conserve and protect this species. It was our understanding that National Environmental Policy Act (NEPA) compliance for bull trout conservation would be linked to PACFISH. There is no evidence of this in either the EA or the

BE. The Service, therefore, recommends that bull trout and their habitat be included with anadromous fish in the present habitat management effort, as well as any NEPA document that you develop for public disclosure. Key watersheds have been identified, and a conservation strategy that could serve as a model or template for lands that encompass the remainder of the bull trout's range has been developed for the State of Idaho.

2. Alternative 4 (preferred) of the EA states that the interim standards and guidelines will apply to all proposed and some of the ongoing activities on lands managed by your agencies. To us, this means that a group of management activities, potentially large in size and impacts, will be exempt from the interim standards and guidelines. The EA should explain what the analysis criteria will be for determining "acceptable" and "unacceptable" risk to fish, wildlife and plant species of interest.

3. A monitoring plan, developed in cooperation with the Service, National Marine Fisheries Service, and other interested parties, should be made part of the interim strategy. This is especially important for activities that proceed in key watersheds prior to watershed analysis. The results would be useful immediately for proposed activities and future watershed analysis efforts.

Thank you for the opportunity to provide these comments. If you have questions or need clarification on our position regarding your request for formal consultation, please contact Vicki M. Finn of my staff at 503-231-6241.

Sincerely,

MARVIN L. PLENERT

Regional Director

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1335 East-West Highway
Silver Spring, MD 20910
THE DIRECTOR

JAN 23 1995

Mr. Jack Ward Thomas, Chief
U.S. Department of Agriculture
Forest Service
Washington, D.C. 20090

Dear Mr. Thomas:

Enclosed is the biological opinion prepared by the National Marine Fisheries Service (NMFS) under section 7 of the Endangered Species Act on Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH).

As stated in the biological opinion, NMFS has determined that the proposed action is not likely to jeopardize the continued existence of endangered Snake River salmon species or result in the destruction or adverse modification of their designated critical habitat. In part, these conclusions were based on NMFS's expectation that the interim PACFISH guidance would be in place for a period not to exceed 18 months and that ongoing consultation on U.S. Forest Service Land and Resource Management Plans will be completed in a timely manner. Should this timeframe be exceeded, you should reinitiate consultation.

The Forest Service, Bureau of Land Management, and NMFS have worked together closely for more than 8 months at the staff level to make the interim PACFISH guidance clearer, more consistent, and to improve protective measures for listed salmon. Successful implementation of the PACFISH strategy will depend on continued close coordination between our respective agencies through the PACFISH Implementation Team, during consultations on Forest Service Land and Resource Management Plans, and during project-specific consultations. In particular, I call your attention to the conservation recommendations contained in this biological opinion and urge you to implement these recommendations to the maximum extent practicable.

Sincerely,

Rolland A. Schmitten

Enclosure

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1335 East-West Highway
Silver Spring, MD 20910
THE DIRECTOR

JAN 23 1995

Mr. Mike Dombeck, Acting Director
U.S. Department of the Interior
Bureau of Land Management
Washington, D.C. 20240

Dear Mr. Dombeck:

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Sincerely,

Rolland A. Schmitten

Enclosure

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

Endangered Species Act -
Section 7 Consultation

BIOLOGICAL OPINION

Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH)

Agency: U.S. Department of Agriculture, Forest Service and
U.S. Department of Interior, Bureau of Land Management

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: 1/23/95

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I. BACKGROUND

On April 1, 1994, the USDA Forest Service (FS) and USDI Bureau of Land Management (BLM) requested the initiation of formal Endangered Species Act (ESA) section 7 consultation with the National Marine Fisheries Service (NMFS) on the "Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California" (commonly referred to as the interim PACFISH strategy, or, in this document, as PACFISH). Included with the request for consultation was a March 18, 1994 biological assessment (BA) and environmental assessment (EA) on the PACFISH strategy. The BA concluded that implementation of PACFISH "may affect" listed species and designated critical habitat, but did not include a determination as to whether or the proposed action was "likely to adversely affect" or "not likely to adversely affect" listed species and designated critical habitat. NMFS staff met with the staff of the FS and BLM (action agencies) on May 3, 1994 to discuss the PACFISH March 18, 1994 EA and Endangered Species Act (ESA) section 7 consultation. NMFS staff also met with the action agencies on July 12, July 20, August 16, and October 13, 1994 to discuss the PACFISH section 7 consultation.

As a result of both public comment through the NEPA process and as a result of ESA section 7 consultation, the action agencies made several clarifications and minor changes to their original proposed action as expressed in alternative 4 of the March 18, 1994 PACFISH EA. These included clarifications on implementation of the interim direction, the interim locations of key watersheds, and clarifications and changes to the proposed standards and guidelines. This biological opinion (Opinion) analyzes the original proposed action, with the clarifications and changes described in an October 11, 1994 letter from Gray F. Reynolds, FS, and Al Wright, BLM, to Rollie Schmitten, NMFS. Unless stated otherwise, the source of all information in this Opinion is the March 18, 1994 PACFISH EA, its attached BA, and the October 11, 1994 letter.

The objective of this Opinion is to determine whether the interim PACFISH strategy is likely to jeopardize the continued existence of Snake River (SR) sockeye salmon (*Oncorhynchus nerka*), SR spring/summer chinook salmon (*O. tshawytscha*), or SR fall chinook salmon (*O. tshawytscha*), or result in the destruction or adverse modification of their designated critical habitat.

II. PROPOSED ACTION

The proposed action for consultation includes goals, identification of key watersheds, riparian habitat conservation areas (RHCAs), riparian management objectives (RMOs), standards and guidelines (S&Gs), and procedures that would apply to

project-level actions in the action area. PACFISH itself does not propose any ground-disturbing actions, but sets in place certain riparian management goals and management direction with the intent of arresting the degradation and beginning the restoration of riparian and stream habitats. Although PACFISH sets in place common goals, objectives, and standards and guidelines that may facilitate project- or watershed-level consultations, its implementation following conclusion of consultation does not eliminate the requirement to consult at other levels, such as on site-specific actions.

PACFISH would provide interim guidance for each of the affected national forests and BLM districts while long-term management approaches are evaluated via geographically specific environmental analyses. The Environmental Impact Statements (EIS) for Oregon, Washington and Idaho will be developed based on scientific and technical information produced by the Interior Columbia Basin Ecosystem Management Project. The action agencies initiated the Oregon/Washington EIS in fall 1993, and published notices of intent in fall 1994 to prepare an EIS for Idaho and to complete an environmental analysis for California. See 59 FR 4880 (February 1, 1994) and 59 FR 63071 (December 7, 1994). The action agencies expect all three environmental analyses to have decisions within 18 months of PACFISH implementation. Therefore, NMFS expects that PACFISH would not apply more 18 months beyond the effective date in the decision notice.

The FS and BLM would apply PACFISH by means of different administrative procedures. For the BLM, if provisions of the proposed interim direction are not in conformance with existing LUPs (e.g. S&Gs and procedures) the LUPs would have to be amended prior to implementation of the proposed interim direction. For the FS, the proposed interim direction provided by PACFISH would amend LRMPs for each of the affected national forests to include new goals, riparian management objectives, S&Gs and monitoring requirements.

For the PACFISH consultation, the FS and BLM requested consultation on alternative 4 of the March 18, 1994 EA (the preferred alternative). Under alternative 4, the interim management direction would be applied to all proposed land management actions and to those ongoing land management actions that "pose unacceptable risk to habitat condition or at-risk anadromous fish." During consultation, the action agencies defined "unacceptable risk"[1] and developed a draft set of

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[1]NMFS understands that "unacceptable risk" will be defined in the revised EA as "A level of risk from an ongoing activity or group of ongoing activities that is determined through NEPA analysis or the preparation of biological assessments/evaluations, or their subsequent review, to be likely to adversely affect listed anadromous fish or their designated critical habitat, or likely to adversely impact the viability of non-listed anadromous fish." (Glossary

guidelines for determining whether ongoing actions pose an unacceptable risk (October 18, 1994 fax transmittal of September 2, 1994 draft from Harv Forsgren, FS to Jeff Lockwood, NMFS). A PACFISH Field Implementation Team, which will include a NMFS representative (October 13, 1994 meeting) will issue final definitions and guidelines for determining unacceptable risk and would address consistency of application of PACFISH S&Gs. It is expected that this Team will reach these decisions consistent with this opinion.

The Components of PACFISH

The interim PACFISH strategy is comprised of the following components: riparian goals, interim riparian management objectives (RMOs), riparian habitat conservation areas (RHCAs), standards and guidelines (S&Gs), key watersheds, watershed analysis, and watershed restoration.

Goals - The goals of PACFISH (March 18, 1994 EA p. C-4) are to "maintain or restore" characteristics of healthy, functioning watersheds, riparian areas, and fish habitat, and include elements such as water quality; stream channel integrity, channel processes and sediment regime; instream flows; water table elevations; diversity and productivity of riparian vegetation; riparian vegetation functions such as large woody debris recruitment, thermal regulation, and bank stability; and riparian and stream habitats necessary to foster the genetically-unique fish stocks that have evolved within the geographic region.

Riparian Management Objectives - The interim RMOs provide a set of targets for land managers in planning land-disturbing activities. The action agencies averaged existing stream survey data on stream characteristics for unmanaged watersheds across the entire area covered by PACFISH (including areas outside of the SR Basin) to set interim RMOs for pool frequency, temperature, large woody debris, bank stability, lower bank angle, and width/depth ratio (Harv Forsgren, FS, pers. comm. with Jeffrey Lockwood, NMFS, October 28, 1994). Watershed analysis "generally" would be required to adjust the RMOs (November 10, 1994 letter from Gray Reynolds, Forest Service, and Tom Walker, BLM to Rollie Schmitten, NMFS). However, the RMOs also "may be modified in the absence of Watershed Analysis where watershed or stream reach specific data support the change" in consultation with NMFS (November 10, 1994 letter from Gray Reynolds, Forest Service, and Tom Walker, BLM to Rollie Schmitten, NMFS).

Each of the interim RMOs must be met or exceeded before habitat would be considered "good" for anadromous fish. Based on the

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transmitted from Gordon Haugen, USFS to Jeffrey Lockwood, NMFS, October 20, 1994) Also see definitions in Appendix A.

March 18, 1994 EA, meetings with the action agencies, and the proposed definition for "attain RMO" (August 30, 1994 fax from Harv Forsgren, FS to Jeffrey Lockwood, NMFS; see Appendix A), NMFS understands the RMOs to be minimum targets for land managers. Thus areas where "good" habitat is surpassed would not be subjected to incremental degradation down to the level of "good". However, according to the March 18, 1994 EA, if the interim RMO for the only key element (pool frequency) is met or exceeded, some latitude would exist for meeting the other, supporting RMOs. No time frame for attaining the RMOs was described in the March 18, 1994 EA, nor was there any indication of the kinds, quality or duration of data needed to demonstrate that an RMO has been attained. However, clarifications to the proposed interim direction provide consistent language specifying that actions (with some exceptions; see discussion of standards and guidelines below) not retard or prevent attainment of the RMOs, thus setting an expectation of habitat improvement at natural rates or faster. During consultation, the action agencies agreed to change the water temperature RMO to be more protective of listed and non-listed anadromous fish (October 11, 1994 letter; see Appendix A of this Opinion).

Riparian Habitat Conservation Areas - Interim RHCAs would be delineated in every anadromous fish-bearing watershed on lands administered by the FS and BLM within the geographic range of the proposed interim direction. Interim RHCAs are areas where the PACFISH management direction automatically applies for proposed projects and those ongoing projects that pose an unacceptable risk; however, they do not exclude some ongoing or proposed management activities (livestock grazing, mining, watershed restoration, and fisheries enhancement). New road and landing construction (March 18, 1994 EA), new recreation facilities (October 11, 1994 letter), and timber salvage (October 13, 1994) are prohibited in RHCAs until after watershed analysis (see definition and discussion below). Standard widths defining interim RHCAs are listed in Appendix A of this Opinion.

The interim RHCAs for intermittent streams in PACFISH alternative 4 are reduced by one-half in non-key watersheds, relative to key watersheds. Also, the RHCAs for PACFISH alternative 4 stop at the edge of the 100-year floodplain (regardless of width) for non-forested rangeland ecosystems.

RHCAs "generally" would not be adjusted without watershed analysis; however, the RHCAs "may be modified in the absence of watershed analysis where stream reach or site specific data support the change", in consultation with NMFS (November 10, 1994 letter from Gray Reynolds, Forest Service, and Tom Walker, BLM to Rollie Schmitten, NMFS).

Key Watersheds - According to the March 18, 1994 EA, the following criteria would be used to designate key watersheds

following the implementation of PACFISH: (1) watersheds with stocks listed pursuant to the ESA or stocks identified as "at risk" by Nehlson et al. (1991); or, (2) watersheds that contain "excellent habitat" for mixed salmonid assemblages; or, (3) degraded watersheds with a high restoration potential. During consultation, the action agencies informed NMFS that all watersheds with designated critical habitat for SR salmon would be identified as key watersheds during the interim PACFISH period (July 20, 1994 meeting and October 11, 1994 letter). Final key watersheds would be designated in the EISs for ecosystem management in eastern Oregon/Washington and Idaho.

During consultation, the action agencies indicated that for actions in watersheds that do not contain designated critical habitat, but that serve as potential sources of high quality water to designated critical habitat (i.e. the Clearwater River Basin excluding the North Fork Clearwater River above Dworshak Dam), BAs submitted after the date that PACFISH is implemented shall provide available data and analysis needed to describe potential downstream effects on water quality (e.g. temperature, sediment load, and contaminants), and peak flow timing and volume within designated critical habitat (July 20, 1994 meeting). However, with respect to the Clearwater basin, NMFS does not anticipate receiving many additional project-specific BAs for proposed actions nor any project-specific BAs for ongoing actions during the period PACFISH is in effect, because BAs prepared in 1992 by the Clearwater National Forest concluded that all ongoing management actions, with the exception of wildfire suppression, in the Lolo Creek, Middle Fork Clearwater River, and Lochsa River watersheds had "no effect" on listed SR salmon.

Watershed Analysis - Watershed analysis is described in the March 8, 1994 EA as "a systematic procedure for determining how a watershed functions in relation to its physical and biological components. This is accomplished through consideration of history, processes, landform, and condition." Watershed analysis as it is being developed pursuant to the FSEIS/Record of Decision on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl emphasizes the importance of determining watershed status, resilience and capabilities, examining fish ecological relationships, and identifying watershed restoration and monitoring objectives, strategies, and priorities prior to planning actions in the watershed (Interagency Watershed Analysis Coordination Team 1994).

During consultation with NMFS, the action agencies indicated that watershed analysis procedures for the SR Basin would not be completely developed and tested during the period PACFISH is in effect (July 12, 1994 meeting). A limited number of watersheds (four to five) would be subject to prototype or pilot analyses during PACFISH (July 12 meeting and October 11, 1994 letter).

Watershed Restoration - Under Alternative 4, the action agencies assume that no additional funds will be available for watershed restoration during the interim period, but that existing funds will be re-targeted, "as necessary", to establish a watershed restoration program. Priority for restoration would be given to key watersheds. No further information was provided concerning the scope or timing of watershed restoration, although the March 18, 1994 EA ties restoration to priorities and strategies identified by watershed analysis.

Standards and Guidelines - The S&Gs address management of timber, roads, grazing, minerals, fire/fuels management, lands, riparian areas, watershed and habitat restoration, and fisheries and wildlife restoration. The S&Gs would apply only to RHCAs (see clarifications below).

The PACFISH S&Gs proposed in the March 18, 1994 EA would allow activities to proceed under a variety of scenarios: if there are no "impacts" or "adverse effects" that are "inconsistent with attainment of RMOs" (e.g. TM-1a, GM-1, LH-2, LH-3); "only when RMOs are not adversely affected" (e.g. TM-1b); or "in a manner that 'assures' (TM-1c) or is 'consistent with' attainment of the RMOs" (FW-2).

Clarifications to the S&Gs include the following: (1) applying consistent requirements that actions must not retard or prevent attainment of the RMOs (for certain existing facilities, the standard would be limited to not preventing attainment of the RMOs); (2) applying the S&Gs not only to the RHCAs, but to actions outside the RHCAs that could degrade (see list of definitions in Appendix B) the RHCAs (this decision would be made during the planning of individual actions); and (3) adding an emphasis on avoiding adverse effects to listed anadromous salmonid fishes and designated critical habitat.

The action agencies have added S&Gs that: (1) prohibit sidecasting of road material on road segments within or abutting RHCAs in watersheds containing designated critical habitat; (2) prohibit storage of fuel and other toxicants in RHCAs; (3) prohibit refueling within RHCAs; and (4) direct land managers not to use mitigation or planned restoration as a substitute for preventing habitat degradation (October 11, 1994 letter). During the October 13, 1994 meeting, the action agencies agreed to delay salvage and fuelwood cutting in RHCAs until after watershed analysis. However, RHCAs could be adjusted based on either watershed analysis or site-specific analysis (November 10, 1994 letter from Gray Reynolds, FS and Tom Walker, BLM to Rollie Schmitten, NMFS; see discussion under Riparian Habitat Conservation Areas, above).

IV. LISTED SPECIES AND CRITICAL HABITAT

There are three species under the jurisdiction of NMFS listed as endangered under the ESA that occur within Federal lands and may be affected by the proposed action as described in the draft EA: SR sockeye salmon (listed on November 20, 1991, 57 FR 58619); SR fall chinook salmon, and SR spring/summer chinook salmon. SR fall chinook salmon and SR spring/summer chinook salmon were listed as threatened on April 22, 1992 (57 FR 14653) and reclassified as endangered on August 18, 1994 (59 FR 42529). Endangered Sacramento River winter run chinook salmon (*O. tshawytscha*) do not occur on Federal lands addressed by the March 18, 1994 EA, but could be affected by FS or BLM land management actions in watersheds with tributaries to the Sacramento River. However, NMFS does not expect PACFISH to adversely affect Sacramento River winter run chinook salmon.

Critical habitat was designated for SR sockeye salmon, SR spring/summer chinook salmon, and SR fall chinook salmon on December 28, 1993 (58 FR 68543), effective on January 27, 1994. The designation of critical habitat provides notice to Federal agencies and the public that these areas and features are essential to the conservation of listed SR salmon.

Essential SR salmon habitat consists of four components: (1) Spawning and juvenile rearing areas, (2) juvenile migration corridors, (3) areas for growth and development to adulthood, and (4) adult migration corridors. Components 1, 2, and 4 are present within the range of PACFISH.

Essential features of the spawning and juvenile rearing areas for SR sockeye salmon include adequate: (1) Spawning gravel, (2) water quality, (3) water quantity, (4) water temperature, (5) food, (6) riparian vegetation, and (7) access.

Essential features of the spawning and juvenile rearing areas for SR spring/summer chinook salmon and SR fall chinook salmon include adequate: (1) Spawning gravel, (2) water quality, (3) water quantity, (4) water temperature, (5) cover/shelter, (6) food, (7) riparian vegetation, and (8) space.

Essential features of the juvenile migration corridors for SR sockeye salmon, SR spring/summer chinook salmon, and SR fall chinook salmon include adequate: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food, (8) riparian vegetation, (9) space, and (10) safe passage conditions.

Essential features of the Columbia River adult migration corridor for SR sockeye salmon, SR spring/summer chinook salmon, and SR fall chinook salmon include adequate: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water

velocity, (6) cover/shelter, (7) riparian vegetation, (8) space, and (9) safe passage conditions.

V. BIOLOGICAL INFORMATION

A. Snake River Sockeye Salmon

SR sockeye salmon adults enter the Columbia River primarily during June and July. Arrival at Redfish Lake, which now supports the only remaining run of SR sockeye salmon, peaks in August and spawning occurs primarily in October (Bjornn et al. 1968). Eggs hatch in the spring between 80 and 140 days after spawning. Fry remain in the gravel for three to five weeks, emerge in April through May and move immediately into the lake, where juveniles feed on plankton for one to three years before they migrate to the ocean (Bell 1986). Migrants leave Redfish Lake from late April through May (Bjornn et al. 1968), and smolts migrate almost 900 miles to the Pacific Ocean. For detailed information on the SR sockeye salmon, see Waples et al. (1991a) and 56 FR 58619 (November 20, 1991).

Downstream passage at Lower Granite Dam (the first dam on the SR downstream from the Salmon River) occurs from late April to July, with peak passage from May to late June (Fish Passage Center 1992). Once in the ocean, the smolts remain inshore or within the Columbia River influence during the early summer months. Later, they migrate through the northeast Pacific Ocean (Hart 1973; Hart and Dell 1986). SR sockeye salmon usually spend 2 to 3 years in the Pacific Ocean and return in their fourth or fifth year of life.

Historically, the largest numbers of SR sockeye salmon returned to headwaters of the Payette River, where 75,000 were taken one year by a single fishing operation in Big Payette Lake (Bevan et al. 1994). During the early 1880s, returns of SR sockeye salmon to the headwaters of the Grande Ronde River in Oregon (Wallowa Lake) were estimated between 24,000 and 30,000 minimum (Cramer 1990, cited in Bevan et al. 1994). During the 1950s and 1960s, adult returns to Redfish Lake numbered more than 4,000 fish (Bevan et al. 1994).

SR sockeye salmon escapement to the SR has declined dramatically in recent years. Counts made at Lower Granite Dam since 1975 have ranged from 531 in 1976 to zero in 1990. In 1988, IDFG conducted spawning ground surveys that identified four adults and two redds (gravel nests in which the eggs are deposited). In 1989, one adult reached Redfish Lake and one redd and a second potential redd were identified. No redds or adults were identified in 1990. In 1991, three males and one female returned to Redfish Lake. One male SR sockeye salmon returned to Redfish

Lake in 1992. Six male and two female SR sockeye salmon returned to Redfish Lake in 1993.

Since 1991, adults returning to Redfish Lake have been collected for the captive broodstock program. Therefore, only progeny of residual sockeye salmon (which NMFS has determined to be listed SR sockeye salmon; March 19, 1993, letter from N. Foster {NMFS} to constituents) are expected to migrate from Redfish Lake in 1994. Between 119 and 2550 juvenile SR sockeye salmon may be tagged with passive integrated transponders (PIT-tags) by the Idaho Department of Fish and Game and released into the SR system in 1994 (NMFS 1994a).

As of October 9, 1994, one adult sockeye salmon had returned to Redfish Lake in 1994. The Columbia River Technical Staffs (1993) predicted a return of three fish to the Columbia River mouth during 1994 based on the 1989-1993 average proportion of sockeye salmon counted at Ice Harbor and Priest Rapids dams. Dygert (1993) also estimated a return of three with an expected range from one to five SR sockeye salmon based on smolt counts and subsequent escapement to Redfish Lake. Numbers of returning adults in 1997 and beyond may be higher as a result of captive rearing program releases planned for 1995 and 1996.

B. Snake River Spring/Summer Chinook Salmon

1. Life History Summary

The present range of naturally-spawned-origin SR spring/summer chinook salmon is primarily limited to the Salmon, Grand Ronde, Imnaha, and Tucannon subbasins. Most SR spring/summer chinook salmon enter individual subbasins from May through September. Juvenile SR spring/summer chinook salmon emerge from spawning gravels from February through June (Perry and Bjornn 1991). Typically, after rearing in their nursery streams for about 1 year, smolts begin migrating seaward in April through May (Bugert et al. 1990; Cannamela 1992). After reaching the mouth of the Columbia River, spring/summer chinook salmon probably inhabit nearshore areas before beginning their northeast Pacific Ocean migration, which lasts 2 to 3 years. For detailed information on the life history and stock status of SR spring/summer chinook salmon, see Matthews and Waples (1991), NMFS (1991a), and 56 FR 29542 (June 27, 1991).

2. Population Status and Trends

The estimated number of wild adult SR spring/summer chinook salmon returning to spawn was estimated by Bevan et al. (1994) as more 1.5 million fish annually. By the 1950's the population had declined to an estimated 125,000 adults. Escapement estimates indicate that the population continued to decline through the 1970's. Redd count data also show that the population continued

to decline through about 1980. The estimated annual number of wild adult SR spring/summer chinook salmon returning over Lower Granite Dam (escapement) averaged 9,674 fish from 1980 through 1990, with a low count of 3,343 fish in 1980 and a high count of 21,870 fish in 1988 (Matthews and Waples 1991). Estimated escapement of wild adult SR spring/summer chinook salmon in 1991 and 1992 was 5,520 and 9,344 fish, respectively (1994-1998 biological assessment for the Federal Columbia River Power System (FCRPS). In 1993, escapement of wild adult spring/summer chinook salmon was estimated at 7,803 fish (ESA section 10 permit application, Army Corps of Engineers, Juvenile Fish Transportation Program, November 15, 1993, revised December 7, 1993). Returns of spring/summer chinook salmon were at an all-time record low in 1994. Only 3,915 adults were counted at Lower Granite Dam; this is about 15% of the recent ten year average (Fish Passage Center 1994).

In small populations, random processes can lead to two major types of risk: demographic and genetic. Demographic risk is the risk of extinction due to environmental fluctuations, random events affecting individuals in the population, and possible reductions in reproduction or survival at low population sizes. Genetic risk is the risk of loss of genetic variability and/or population fitness through inbreeding and genetic drift. Both types of risk increase rapidly as population size decreases.

Severe, short-term genetic problems from inbreeding are unlikely unless population size remains very low for a number of years. However, the erosion of genetic variability due to low population size is cumulative, so long-term effects on the population (even if it subsequently recovers numerically) are also a concern.

The SR spring/summer chinook salmon evolutionarily significant unit consists of more than 30 local spawning populations spread over large geographic areas (Lichatowich et al. 1993). Therefore, the total number of fish returning to local spawning populations would be much less than the total run size. Based on recent trends in redd counts in major tributaries of the Snake River, many local populations could be at critically low levels, with subpopulations in the Grande Ronde River, Middle Fork Salmon River, and Upper Salmon River basins at particularly high risk. Both demographic and genetic risks would be of concern for subpopulations, and in some cases, habitat might be so sparsely populated that adults would not find mates.

C. Snake River Fall Chinook Salmon

1. Life History Summary

Adult SR fall chinook salmon enter the Columbia River in July and migrate into the SR from August through October. Natural spawning for SR fall chinook salmon is primarily limited to the

SR below Hells Canyon Dam, and the lower reaches of the Clearwater, Grand Ronde, Imnaha, Salmon, and Tucannon rivers. Fall chinook salmon generally spawn from October through November, and fry emerge from March through April. Downstream migration generally begins within several weeks of emergence (Becker 1970; Allen and Meekin 1973) with juveniles rearing in backwaters and shallow water areas through mid-summer prior to smolting and migration. The fish will spend 1 to 4 years in the Pacific Ocean before beginning their spawning migration. For detailed information on the life history and stock status of SR fall chinook salmon, see Waples et al. (1991b), NMFS (1991b) and 56 FR 29542 (June 27, 1991).

2. Population Status and Trends

Reliable historic estimates of abundance are unavailable for SR fall chinook salmon (Bevan et al. 1994). Estimated returns of SR fall chinook salmon declined from 72,000 annually between 1938 and 1949, to 29,000 from 1950 through 1959 (Bjornn and Horner 1980, cited in Bevan et al. 1994). Estimated returns of naturally-spawned adult SR fall chinook salmon fell to a low of 78 fish in 1990, but since have increased to 318 in 1991, 533 in 1992 (WDF 1993), and 742 in 1993 (WDF 1994).

Based on the preseason forecast, the expected 1994 escapement of naturally-spawned SR fall chinook salmon to the Columbia River is 803 fish (NMFS and USFWS 1994). Accounting for estimated inter-dam adult fall chinook losses of 56%, and a preliminary estimated post-season harvest rate of 15% on Snake River fall chinook salmon, a preliminary estimate of 1994 escapement of naturally-spawned SR fall chinook salmon to Lower Granite Dam is 300 fish (Peter Dygert, NMFS, pers. comm. with Jeffrey Lockwood, NMFS, November 2, 1994).

Although risks associated with small population sizes are also a general concern for SR fall chinook salmon, currently there is no evidence of multiple subpopulations of naturally-spawning SR fall chinook salmon. The anticipated short-term reduction in escapement during the next few years would not raise major genetic concerns of inbreeding, but certainly would raise demographic concerns. Genetic and demographic risks increase dramatically with increasing number of consecutive years of depressed populations.

D. Environmental Baseline

NMFS defines the action area for this consultation as the mainstem SR Basin (below Hells Canyon Dam), and the Salmon, Grande Ronde, Tucannon, Imnaha and Clearwater (excluding the North Fork Clearwater River above Dworshak Dam) River subbasins. In large part, the sharp decline of salmon production in the action area has resulted from a variety of activities that have

degraded habitat and increased egg to smolt mortality, including hydropower development, water withdrawals, unscreened water diversions, road construction, timber harvest, livestock grazing, mining, and outdoor recreation. In general, land management actions that disturb ground and remove vegetation have: (1) reduced connectivity (i.e. the flows of energy, organisms and materials) between streams, riparian areas, floodplains, and uplands; (2) drastically increased watershed sediment yields, leading to pool filling and elimination of spawning and rearing habitat; (3) reduced or eliminated recruitment of large woody debris that traps sediment, stabilizes stream banks, and helps form pools; (4) reduced or eliminated the vegetative canopy that minimizes temperature fluctuations; (5) caused streams to become straighter, wider, and shallower, and in the worst case incised, with concomitant reduction in spawning and rearing habitat and increased thermal fluctuations; (6) altered peak flow volume and timing, leading to channel changes and probably altered fish migration timing; and (7) altered water tables and base flows, resulting in riparian wetland and stream dewatering (Eastside Forests Scientific Society Panel 1993; FEMAT 1993; McIntosh et al. 1994; Wissmar et al. 1994).

As stated on page 3 of the March 18, 1994 EA, "major portions of the lands administered by the FS and BLM have poor habitat conditions for anadromous fish, characterized by: 30-70 percent fewer large, deep pools; excessive fine sediments in spawning gravels; and greater disturbances of riparian vegetation than is acceptable." For example, streams in the Upper Grande Ronde River subbasin have been heavily impacted by livestock grazing, road construction, timber harvest, mining, and stream channelization on private and Federal lands (McIntosh et al. 1994). Ten streams resurveyed in the Grande Ronde River Basin showed declines in the frequency of large pools by 20 - 90% over the period 1941 - 1990, with a total decline of 66% (McIntosh et al. 1994). Dominant substrate particle size generally decreased in the basin over the same period of time. Large woody debris was scarce in recent surveys of managed watersheds of the basin. Peak flows in the Upper Grande Ronde River shifted over the period to as much as 30 days earlier in the spring. Similar kinds of habitat damage are widely distributed throughout managed watersheds in the Columbia River Basin studied by McIntosh et al. (1994).

The environmental baseline on lands managed by the action agencies in watersheds that may affect listed SR salmon is degraded in most areas, and in further decline in many of those areas (Eastside Forests Scientific Society Panel 1993; March 18, 1994 PACFISH EA; McIntosh et al. 1994; Wissmar et al. 1994). Maintaining or worsening existing conditions would contribute to the continuing decline and possible extinction of the listed species. The historic and existing management regimes on FS and BLM lands have allowed this habitat degradation to occur because

they have not adequately provided for the needs of salmon and their habitats during the planning and execution of land management actions and during land allocation planning. Principal among the ways in which the historic and existing land management regimes have contributed to the decline of salmon habitat are: (1) historic overemphasis on production of non-fishery commodities at the expense of riparian and fish habitat; (2) failure to take a biologically conservative or risk-averse approach to planning land management actions when inadequate information exists about the relationships between land management actions, fish habitat, and fish production; (3) failure to incorporate known scientific information into the planning of actions; (4) planning actions on a site-specific basis, rather than based on watershed and river basin conditions and capabilities; and (5) reduction in the number, size and distribution of remaining high-quality habitat areas (such as roadless and lightly developed areas) that could serve as refugia for salmon subpopulations and sources of genetic material for eventual recolonization of unoccupied habitat.

VI. EFFECTS OF THE PROPOSED ACTION

This biological opinion provides two levels of analysis relating to the effects of PACFISH to listed species and their designated critical habitat. The first level discusses the specific effects of implementation of PACFISH independent of existing management direction. This requires an analysis of the components of PACFISH, such as the S&Gs, RMOs, etc., and how they may be applied.

However, to fully address the effects of PACFISH, NMFS must consider the broader relationship to existing land management actions and direction, including those projects that could be proposed and carried out consistent with existing management direction (LRMPs and LUPs, for example). Therefore, the second level involves consideration of effects of project-level land management actions carried out under existing management direction that may affect listed species but are not necessarily expressly addressed by PACFISH. Even though NMFS will evaluate these effects at the programmatic level in the consultation on the LRMPs and in the development of and consultation on the geographically-specific EISs, and through project-level consultations it considers these effects in this opinion in order to properly assess the relative effects of implementing PACFISH to the current condition of critical habitat.

A. Effects to Listed Species and Designated Critical Habitat

1. Determining Effects of Proposed Actions

The framework for evaluating actions affecting listed SR Salmon during section 7 consultations is provided by section 7(a)(2) of the ESA and the NMFS/Fish and Wildlife Service joint consultation regulations (50 CFR Part 402). For each listed species, NMFS uses the best scientific and technical data available to evaluate the current status of the species and its designated critical habitat, as well as the effects of the proposed action (as defined in 50 CFR §402.02), which would be added, with any cumulative effects, to the existing environmental baseline. On the basis of this evaluation, NMFS determines whether the proposed actions, taken together with cumulative effects, are likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of the species' designated critical habitat.

NMFS is currently re-examining its approach for determining the particular requirements for each species' continued existence to address concerns raised in the recent court decision in the case of Idaho Department of Fish and Game v. NMFS, Civil No. 92-973-MA (D.C.Or., decided March 28, 1994). While this re-examination is underway, NMFS takes a conservative approach in reaching its ESA determinations and places particular emphasis upon the current risk of extinction faced by each species, and the likelihood of survival and recovery for each species. An objective of increasing the likelihood of both survival and recovery for each species, in this and all ESA consultations, will ensure that the effects of proposed actions will not likely jeopardize their continued existence.

To evaluate the likely effects of a proposed action on designated critical habitat, NMFS examines the effects of a proposed action on the components of designated critical habitat (described in section IV) and determines whether those effects reduce the value of any essential feature of a habitat component. NMFS then considers the significance of a reduction in the habitat's value in relation to the species current status, risk of extinction, and the likelihood of both survival and recovery.

The "effects of the action," as defined at 50 C.F.R. 402.02, consist of:

> the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline. . . . Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur. Interrelated actions are those

that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.

50 C.F.R. 402.02.

2. Specific effects of PACFISH

Successful restoration of watersheds and concomitant improvements in fish habitat depend on a thorough understanding of watershed conditions, processes and capabilities, and of linkages between land management actions and effects to fish habitat (Forest Ecosystem Management Team {FEMAT} 1993). Procedures for addressing these issues over time are being developed by the Interagency Watershed Analysis Coordination Team, the Interior Columbia Basin Ecosystem Management Project, and research efforts by various Federal, state, tribal and academic entities. Even if begun today, the most significant benefits of watershed restoration likely would not be realized except over a scale of decades to centuries. In consideration of these limitations, NMFS focused its analysis on PACFISH as a short-term strategy for preventing further degradation of RHCAs and initiating habitat recovery, rather than on the necessary additional components of a comprehensive, long-term approach to fish habitat that is being addressed in the actions described above.

PACFISH is a commendable effort by the action agencies to develop an interim approach to addressing concerns for degraded salmon habitat that exist on USFS and BLM lands. By improving protective measures for riparian and aquatic habitats, PACFISH should help reduce adverse effects to listed species and designated critical habitat from future land management actions in many instances, relative to what might have occurred by following the existing guidance in LRMPs and LUPs. PACFISH also provides an consistent starting point from which to analyze effects of actions at the project level.

The final determinant of PACFISH's effectiveness will be how it is interpreted in project-specific implementation. Where PACFISH provides specific direction, it is likely to be applied consistently in project-specific implementation. However, in some respects, interim PACFISH guidance leaves room for discretion in the interpretation and the possibility that it may not be applied consistently across watershed and administrative boundaries. Decisions resulting from implementing PACFISH will also be subject to ESA consultation through project-level consultations. These decisions include: (1) the application of standards and guidelines across watersheds and administrative boundaries; (2) determinations as to whether particular actions assist, retard, or prevent the attainment of RMOs, or adversely

affect listed species or designated critical habitat; (3) the quality and consistency of the scientific information used to modify RMOs and RHCAs; and (4) the adequacy of monitoring to verify that protective measures were implemented as planned and that the measures were effective in protecting salmon and their habitat from adverse effects. These added levels of consultation should help that ensure that the likelihood of adverse effects resulting from PACFISH interim direction is relatively small. NMFS participation on the PACFISH Implementation Team should also reduce the likelihood of adverse effects resulting from inconsistent implementation.

a. Riparian Management Objectives

The RMOs provide a consistent set of target conditions for riparian areas and fish habitat. In most managed watersheds, current habitat conditions are degraded relative to unmanaged watersheds (McIntosh et al. 1994), and likely do not meet the RMOs. Thus the PACFISH RMOs should have a positive effect to listed species and their designated critical habitat relative to what may occur in the absence of PACFISH direction, since land managers will have to proceed cautiously in order to protect habitat and allow natural restoration to begin.

NMFS believes that the RMOs generally are an acceptable set of variables to describe salmon habitat, with some caveats: 1) The ability of the one key and five supporting features to serve as adequate surrogates for all other stream and riparian habitat factors that can affect the growth, survival, and reproductive success of salmon needs to be validated; 2) some of the RMOs (such as large woody debris and bank stability) are set at levels that are surpassed by some Snake River watersheds, or that could be surpassed following watershed restoration. As above, the specific needs to minimize these problems are discussed in the following section regarding project-level consultation.

The March 18, 1994 EA did not clearly instruct land managers to prevent habitat degradation in areas that currently surpass the minimum requirements of the broad regional criteria set by the RMOs. The final PACFISH guidance will include a definition of "attain RMOs" (July 12, 1994 meeting and August 30, 1994 fax from Harv Forsgren, FS to Jeff Lockwood, NMFS) that includes an element of maintaining conditions that are better than the RMOs, and specifies that "actions that would degrade the RMOs are inconsistent with the concept of attaining RMOs." This should reduce the potential for damage to the riparian features from land management decisions, relative to the guidance described in the March 18, 1994 PACFISH EA, although the guidance is somewhat indirect as a result of being part of the definitions. NMFS also will address this problem where it occurs in watershed consultations.

b. Riparian Habitat Conservation Areas (RHCAs)

The proposed RHCAs (described in Appendix A) provide a consistent starting point for addressing riparian and aquatic habitat concerns. For the most part, the RHCAs are similar to or larger than the areas commonly subject to special management consideration as riparian areas in many of the biological assessments previously submitted to NMFS for consultation in the SR Basin. However, this has not been consistent across administrative boundaries or action categories. For example, some national forests have used riparian buffers similar to the RHCAs for timber sales, but have not specified how riparian areas subject to different livestock management are defined, or have used definitions that are either more or less restrictive than PACFISH. By improving consistency, the proposed RHCAs should help reduce adverse effects to listed species from future activities in many instances, relative to what might have occurred under the existing guidance in the LRMPs and LUPs. Although designation of RHCAs in and of itself will not restore habitat that already is degraded, the designation will foster the beginning of natural habitat restoration.

c. Key Watersheds

NMFS agrees with the action agencies' decision to include watersheds containing Snake River salmon critical habitat as key watersheds. However, The action agencies' decision to include only watersheds with designated critical habitat in the initial identification of key watersheds may have implications for SR fall chinook salmon in the lower mainstem Clearwater River. This decision increases the risk of water quality degradation and sedimentation due to reduced protection for intermittent streams, relative to key watersheds. NMFS also recognizes that this decision could affect other species currently undergoing status review for listing, such as steelhead, although this concern is beyond the scope of this Opinion (for more information, see NMFS [1994c]). NMFS' representation on the Interior Columbia Basin Ecosystem Management Project should help ensure NMFS' participation in the final designation of key watersheds for the SR Basin (July 20, 1994 meeting).

d. Watershed Restoration

NMFS does not expect PACFISH to significantly alter the amount or kinds of watershed restoration actions carried out during the interim period it is in effect. Thus PACFISH alone will not enable the action agencies to achieve part of their stated purpose (begin the restoration of anadromous fish habitat) and to improve the already-deteriorated environmental baseline for SR spring/summer chinook salmon and SR fall chinook salmon. However, watershed restoration may be more effective and cost-efficient following watershed analysis (FEMAT 1993). Also,

designation of RHCAs will allow natural restoration to begin in areas where further damage from mining or grazing is prevented. Due to the lack of significant watershed restoration during the interim period from PACFISH, and because of the degraded condition of critical habitat in many areas, it is especially important that PACFISH prevent further adverse effects to listed species and designated critical habitat.

e. Standards and Guidelines (S&Gs)

The S&Gs described generally in the October 11, 1994 letter and specifically in an August 30, 1994 fax from Harv Forsgren, FS to Jeffrey Lockwood, NMFS specify consistently (with the exception of proposed mining activity) that actions that would retard or prevent attainment of the RMOs, or that adversely affect listed species or their designated critical habitat, should be modified or eliminated[2]. However, most of the RMOs (with the exception of water temperature, lower bank angle, and streambank stability) are features that change only gradually. Reliance on these objectives means that some short-term adverse effects to SR spring/summer and SR fall chinook salmon, and their designated critical habitat from land management actions may be overlooked.

3. Implications for project-level consultations

While all project-level actions that may affect listed species are subject to consultation, it is relevant to discuss the implementation of PACFISH in relation to project-level consultations. In particular, NMFS is concerned about: (1) the consistency of the application of its standards and guidelines across watersheds and administrative boundaries by the action agencies; (2) the consistency of determinations as to whether particular actions assist, retard, or prevent the attainment of RMOs, or adversely affect listed species or designated critical habitat; (3) the quality and consistency of the scientific information used to modify RMOs and RHCAs; and (4) the adequacy of monitoring to verify that protective measures were implemented as planned and that the measures were effective in protecting salmon and their habitat from adverse effects.

For example, in current ongoing site-specific and watershed consultations, there are some classes of ongoing actions that the FS and BLM may not be treating consistently for effects determinations at the project-specific level. This can lead to inconsistent application of protection measures for listed salmon and designated critical habitat. For example, under existing

[2]The standards and guidelines would apply to proposed actions and the ongoing actions determined to pose an "unacceptable risk" of adverse effects to listed species or designated critical habitat.

guidance on effects determinations, road maintenance may be considered "no effect" by one forest manager but "may affect" by another, even under similar conditions with similar risks to listed species.

The screening process for "unacceptable risk" ongoing actions developed by the action agencies and NMFS during this consultation should identify most of the ongoing actions that are likely to adversely affect listed SR salmon or their designated critical habitat, provided that the screens are consistently applied in a biologically risk-averse manner. Some adverse effects from ongoing actions may not be prevented by PACFISH during the lag time between PACFISH implementation and completion of the screens. This is a relatively minor concern if the screens can be completed during the winter when relatively few actions are active.

a. Riparian Management Objectives

As stated, the RMOs provide a consistent set of target conditions for riparian areas and fish habitat. However, there are a number of problems remaining with the RMO approach: (a) PACFISH does not provide a decision framework for determining whether or not potentially harmful land use actions will assist, retard or prevent attainment of the RMOs; (b) PACFISH does not provide a timeframe for attainment of the RMOS; (c) PACFISH does not address the amount, quality, or timeframe of data necessary to determine whether RMOs are being met prior to management actions being taken that could alter the key or supporting features; (d) validation monitoring is needed to support the setting of the] RMOs at the given levels and the ability of the one key and five supporting features to serve as adequate surrogates for other stream and riparian habitat elements; (e) PACFISH does not clearly instruct managers to prevent degradation of areas that currently surpass the RMOs; (f) PACFISH allows RMOs to be adjusted based on site-specific analysis; and (g) PACFISH does not provide guidance for areas where existing data indicates that watershed or stream reach habitat capabilities surpass the RMOs. These problems are further discussed below:

1) **No decision framework** - PACFISH allows potentially harmful actions such as livestock grazing or prescribed burning to proceed in RHCAs if land managers determine they will not retard or prevent attainment of the RMOs, or adversely affect listed species. However, PACFISH does not provide a decision framework for determining whether or not these potentially harmful land use actions will assist, retard or prevent attainment of the RMOs. For example, the S&Gs for mining do not explicitly prohibit mining actions that would retard or prevent RMOs or adversely affect listed species. Depending on existing habitat conditions, the location of salmon habitat, the nature, magnitude and duration of the action, and other factors, such

actions may adversely affect listed species and their designated critical habitat by increasing sediment loads and raising water temperatures (grazing, prescribed burning and mining) or contaminating streams with acid drainage and heavy metals (mining) or excessive nutrients (grazing). While NMFS believes that such a decision framework needs to be developed in order to standardize the action agencies' approach to mining activities and thereby minimize adverse effects to listed species and their designated critical habitat at the earliest opportunity, adverse effects of many actions can be addressed to a large extent during consultation at other levels, albeit with less efficiency, less expediency and perhaps less uniformity. NMFS's participation on the PACFISH Implementation Team should also reduce the potential for adverse effects from inconsistent implementation.

2) **No timeframe for attainment of the RMOS** - Although PACFISH is expected to be in effect for 18 months, PACFISH does not include specific timeframes for attainment of the RMOs. NMFS assumes that the requirement developed during consultation that actions not retard attainment of the RMOs is equivalent to a requirement that actions should not impede natural habitat recovery rates, nor should they reduce the quality of the key or supporting features.

3) **Data requirements not described for determining whether RMOs are met** - PACFISH does not address the amount, quality, or timeframe of data necessary to determine whether RMOs are being met prior to management actions being taken that could alter the key or supporting features. However, this complex problem is being addressed through the ongoing consultations on LRMPs and through consultations at other levels. Any of the adverse effects described under VI.D. below could result from actions that are allowed to proceed where inadequate data exists to demonstrate that RMOs have been attained or whether attainment of RMOs are being retarded. However, NMFS expects to address these adverse effects during both LRMP and watershed consultations.

4) **Suitability of RMOs** - Fine substrate sediment in spawning and rearing areas is a habitat feature not included in the RMOs that can significantly affect salmon survival and recovery. Although pool frequency (included as an RMO) is sensitive to sediment loads, its response time likely is too slow to be of much value in identifying actions, conditions and processes that are responsible for elevating sediment delivery to levels that could adversely affect listed species and designated critical habitat. NMFS and the FS are addressing the evaluation and monitoring of fine sediment in the ongoing consultations on the LRMPs.

5) **No direct guidance to prevent degradation of areas that currently surpass the RMOs** - The March 18, 1994 EA did not clearly instruct land managers to prevent habitat degradation in

areas that currently surpass the minimum requirements of the broad regional criteria set by the RMOs. The final PACFISH guidance will include a definition of "attain RMOs" (July 12, 1994 meeting and August 30, 1994 fax from Harv Forsgren, FS to Jeff Lockwood, NMFS) that includes an element of maintaining conditions that are better than the RMOs, and specifies that "actions that would degrade the RMOs are inconsistent with the concept of attaining RMOs." This should reduce the potential for damage to the riparian features from land management decisions, relative to the guidance described in the March 18, 1994 PACFISH EA, although the guidance is somewhat indirect as a result of being part of the definitions. NMFS also will address this problem where it occurs in watershed consultations.

6) PACFISH allows RMOs to be adjusted based on site-specific analysis - Without watershed analysis, adjustment of RMOs could fail to prevent adverse effects to designated critical habitat, thereby reducing the ability of the habitat to support listed salmon. NMFS believes that RMOs should not be adjusted to be less protective until after watershed analysis, but should be adjusted in a more protective direction, where data suggests this course of action, on an interim basis until watershed analysis is complete. Although these effects normally would be addressed when the action agencies and NMFS consult on proposed RMO modifications during watershed consultations, such consultations do not take advantage of economies of scale that could otherwise be achieved through this consultation.

7) No clear guidance for areas where existing data (prior to watershed analysis) indicates that watershed or stream reach habitat capabilities surpass the RMOs - PACFISH would not prohibit management practices that maintain conditions that meet or surpass the RMOs, but are below watershed or reach capability, possibly placing a cap on egg to smolt survival prior to watershed analysis. Due to its interim nature and the lack of a significant restoration component, PACFISH will not be able to overcome this problem in many areas where habitat is degraded, regardless of whether decisions are made in a biologically conservative manner. However, NMFS will be able to specify habitat objectives during watershed consultations which should reduce the potential for adverse effects.

b. Riparian Habitat Conservation Areas

The proposed RHCAs may not be adequate to fully protect fish habitats in all cases. The proposed RHCAs stop at the edge of the 100-year floodplain (regardless of width) in non-forested rangeland ecosystems. This may not provide adequate protection from land management actions for SR spring/summer chinook salmon in streams with narrow floodplains. The proposed RHCA for fish-bearing and permanently flowing non fish-bearing streams may not adequately protect meandering, low-gradient, permanently

flowing streams with floodplains wider than 600 feet and so may be subject to further restrictions when brought to ESA section 7 consultation at the project level. This would include some areas of high historic productivity for SR spring/summer chinook salmon, such as Bear Valley in Idaho. PACFISH would not necessarily prevent potentially harmful activities such as road construction or mining at the edge of the floodplain, if forest managers decide the proposed action will not degrade the RHCA. Depending on whether or not these decisions are made in a biologically conservative manner, such actions could result in increased sedimentation or other impacts to the floodplain, and hence the stream during floods or when the stream changes its course within the floodplain. PACFISH would only apply to actions outside of RHCAs if forest managers decide that those actions pose an unacceptable risk (for ongoing actions) or if they decide those actions would degrade the RHCAs. Thus PACFISH does not consistently control adverse effects from actions outside of RHCAs, since it defers such decisions to local land managers without providing a clear decision framework. However, NMFS and the action agencies will address the full range of potential actions outside of RHCAs in consultations on the LRMPs, and in project-specific consultations.

The RHCAs would be subject to modification following watershed analysis or site-specific analysis. The action agencies have not described the goals and procedures for site-specific analysis under PACFISH, other than a statement in the November 10, 1994 letter that "RHCAs may be modified in the absence of watershed analysis where stream reach or site specific data support the change". NMFS is concerned that site-specific analyses, by definition, would not include watershed-scale factors that should help shape the RHCAs. Also, without scientifically valid guidance on procedures, the analyses used to adjust RHCAs likely will vary in uniformity and quality. This would result in uneven protection for listed species and designated critical habitat, and increase the risk of adverse effects to listed species from sedimentation (SR spring/summer chinook salmon and SR fall chinook salmon), temperature increases (all three listed species of SR salmon), and reduced recruitment potential for large woody debris (SR spring/summer chinook salmon and SR fall chinook salmon). NMFS will further address these possible adverse effects in watershed and ongoing LRMP consultations, which should reduce the likelihood of adverse effects.

The RHCAs are generally larger than traditional riparian buffer areas used by the action agencies, and should offer adequate protection from land management actions in most cases (FEMAT 1993). However, until watershed analysis using the interagency manual (Watershed Analysis Coordination Team, 1994) is completed, their effectiveness in protecting fish habitat is somewhat uncertain in the circumstances described above, because of the importance of site-specific factors such as slope, soil types,

vegetative cover, and hillslope stability (Belt et al. 1992; FEMAT 1993) that would be examined in watershed analysis.

c. Standards and Guidelines

Following are comments on specific S&Gs. The concerns addressed here will be addressed at project- and watershed-level consultations. The following abbreviations apply: TM, timber management; MM, minerals management; and FM, fire/fuels management.

MM-1. This guideline addresses mine reclamation requirements "for impacts that cannot be avoided" in RHCAs, but does not clearly instruct managers to avoid impacts from mining. In effect, it may be interpreted to allow future mining activity in RHCAs so long as reclamation bonds and plans are prepared.

MM-1, MM-2, MM-3. No guidance is provided on how forest managers should decide whether "impacts (from mineral operations)... cannot be avoided" (MM-1), "no alternative to siting facilities in RHCAs exists" (MM-2) and "no alternative to locating mine waste... facilities in RHCAs exists". This may allow some mines with harmful effects to proceed through to watershed consultation, making those consultations more complex.

TM-1a. Under the proposed guidance, salvage logging and fuelwood cutting is permitted in RHCAs after watershed analysis if it will not retard or prevent attainment of RMOs (October 11, 1994 letter and October 13, 1994 meeting). These actions could allow some incremental risk of altered water temperatures, reduced inputs of large woody debris, and increased sedimentation to the designated critical habitat of SR spring/summer chinook salmon (Chamberlin et al. 1991). This is true mainly where watershed conditions or capabilities are demonstrated by watershed analysis to surpass the RMOs. However, this problem could be minimized by adjusting the RMOs to reflect the results of the watershed analysis using the interagency manual (Watershed Analysis Coordination Team, 1994). The adjustment of RHCAs following site-specific analysis without watershed analysis (as described in the November 10, 1994 letter) may result in similar adverse effects as described above.

Roads Management: Under the March 18, 1994 EA and the October 11, 1994 letter, PACFISH only would apply to ongoing road management activities if they posed an "unacceptable risk". NMFS believes that, because of the difficulty of sorting out the accumulated effects of individual roads on watersheds, roads in watersheds that may affect listed salmon should be consistently managed to avoid adverse effects from sedimentation, fish passage problems, and altered hydrologic response, and to attain or surpass the RMOs. The PACFISH S&Gs for roads management are a reasonable approach to this problem and should be implemented in

all "may affect" watersheds (i.e. roads management should not be put through the screens for "unacceptable risk."

Guideline RF-3b was changed during consultation from a directive to meet RMOs by "closing and stabilizing, or obliterating and stabilizing roads not needed for future management activities" to "prioritizing closing and stabilizing, or obliterating and stabilizing roads not needed for future management activities." Although the intent of the action agencies to prioritize these actions is apparent, the guideline should be changed to reemphasize the need to carry out these actions, not merely prioritize them.

B. Relationship to existing management direction

In its analysis and conclusion, NMFS considered several factors regarding the relationship of PACFISH to the overall Federal land-use planning process:

(1) The land-use planning processes of FS and BLM involve a variety of tiered, interrelated actions, beginning with broad administrative requirements at the national level and ending with approval of individual actions at the project-specific level. Under the ESA and its implementing regulations, and existing agency policies, agencies should avoid or mitigate adverse effects to listed species and their designated critical habitat at their earliest opportunity. In this regard, NMFS believes that section 7 consultations may be both required and appropriate at several levels this planning process, where such planning actions identify elements (e.g., standards and guidelines, management objectives and goals, land use allocations, etc., as well as actual ground-disturbing actions) that may affect listed species or designated critical habitat. Consultation on PACFISH is one of several consultations on the various components of land-use planning either completed or underway; these consultations include those for Rangeland Reform 94, individual LRMPs, and project-specific actions.

In particular, the analysis and conclusion in this biological opinion is based on the assumption that consultation on the LRMPs for the Sawtooth National Recreation Area, and the Boise, Salmon, Payette, Challis, Nez Perce, Umatilla and Wallowa Whitman National Forests shall be completed by March 1, 1995.

(2) NMFS similarly recognizes the temporal relationship of PACFISH with other aspects of the land-use planning process. As stated above, NMFS has analyzed the effects of PACFISH with the understanding that PACFISH will be in effect for 18 months. That PACFISH addresses only a portion of all land-use planning activities that adversely affect listed species is compensated by the interim nature of PACFISH, and the fact that the action agencies shall consult on other components of land-use planning

subsequently. Consequently, the analysis and conclusion in this biological opinion is based on the assumption that consultation on the EISs for ecosystem management in eastern Oregon, Washington and Idaho shall be completed no later than publication of the Record of Decision for those EISs 18 months from the date that PACFISH is implemented.

(3) Upon implementation of PACFISH, but prior to completion of the ongoing consultations on LRMPs, NMFS further believes that application of section 7(d) of the ESA to site-specific actions [through the consultation on the LRMPs] will reduce the potential for adverse effects to listed species and their designated critical habitat.

PACFISH is not intended to address every action or class of actions adversely affecting listed salmon that may be carried out in accordance with existing LRMPs or LUPs. However, the difference between those potentially harmful actions that PACFISH effectively addresses and those that it leaves in place or does not address are a reasonable effect to analyze under the regulatory definition of "effects of the action". The conclusions made by NMFS on the questions of whether implementation of PACFISH is likely to jeopardize the continued existence of the listed salmon or adversely modify their designated critical habitat are based on the significance of these adverse effects and the likelihood that they will be addressed by alternative approaches and mechanisms beyond the scope of PACFISH. The FS initiated ESA section 7 consultation with NMFS on the LRMPs for the Umatilla and Wallowa-Whitman National Forests on August 3, 1994, and initiated consultation on the LRMPs for the Sawtooth National Recreation Area and the Boise, Payette, Salmon, Challis, and Nez Perce National Forests in Idaho on September 12, 1994. NMFS is addressing the issues described below in more detail during the consultations on the LRMPs and will address these issues further in the geographically specific EISs.

By making protective measures for riparian and aquatic habitats more conservative and consistent, the proposed RMOs, RHCAs and S&Gs should help prevent adverse effects to listed species from future project-specific activities in many instances, relative to what might have occurred consistent with the existing guidance in LRMPs and LUPs.

However, there are potential effects to listed species and critical habitat that may only be addressed at the broad scale of PACFISH because they may not be adequately addressed in project-specific consultations. Currently, section 7 consultations for land management actions are being carried out by watershed, subwatershed or individual project. The combined effects of Federal actions on salmon subpopulations that may be distributed across more than one watershed may not be adequately

considered by consultations at these scales (particularly at the project scale). For example, potential broad-scale adverse effects include the effects of road construction and timber harvest in roadless areas and other areas of remaining high-quality habitat on the availability and quality of habitat refugia for remaining subpopulations of listed salmon. The adequacy of remaining refugia cannot be determined by examining one action or even one watershed at a time. The importance of such refugia and combined impacts of projects upon refugia across several watersheds can only be assessed by broad-scale strategies such as PACFISH and the upcoming EISs for ecosystem management.

Because the existing decision framework may not be adequate to fully determine how proposed actions will affect attainment of the RMOs, listed species, and designated critical habitat, and because of other reasons described below, some actions that would adversely affect listed salmon, or their designated critical habitat may be not be prevented by PACFISH at earlier planning stages. Such actions may include: road construction and maintenance (Reid and Dunne 1984; Furniss et al. 1991); logging and yarding (Bisson et al. 1987; Carlson et al. 1990; Chamberlain et al. 1991; Hicks et al. 1991a) following site-specific adjustment of RHCAs without watershed analysis; livestock grazing (Clary and Webster 1989; Platts 1991; Burton et al. 1993), and mining (Nelson et al. 1991). These activities may alter stream temperatures, raise fine sediment loads, and reduce channel complexity. Such adverse effects likely will be minimized or eliminated where the action agencies complete both watershed analysis and project-specific analysis prior to adjusting RHCAs. These project-level decisions will be preceded by NEPA and ESA review.

1. Riparian Management Objectives

As stated previously, RMOs provide a consistent set of target conditions for riparian areas and fish habitat and should have a positive effect to listed species and their designated critical habitat over what is currently occurring, since land managers will have to proceed cautiously in order to protect habitat and allow natural restoration to begin. However, because the environmental baseline consists of widespread poor habitat conditions on USFS- and BLM-administered lands and because PACFISH does not provide specific direction to achieve RMOs, and because of the time necessary to recover habitat, NMFS believes that poor habitat conditions will persist on BLM and USFS lands, even with the implementation of the PACFISH direction.

The PACFISH water temperature RMOs, as amended by the October 11, 1994 letter (see Appendix B), are adequate to support salmon spawning, where RMOs are attained. However, the RMOs leave little room for unforeseen events or conditions that could raise water temperatures. The amended temperature RMO of 64 F in

rearing and migratory habitat is set at a level where sublethal stress to rearing juvenile SR spring/summer chinook salmon and migrating adult SR spring/summer chinook salmon and SR sockeye salmon is possible (Armour 1991). However, in many, if not most, watersheds containing designated critical habitat, water temperatures currently exceed the RMOs. This is particularly true in mainstem rivers that constitute migratory habitat for all three listed species. Because the RMOs for temperature do not accommodate any temperature increases from FS or BLM land management actions in watersheds with designated critical habitat, the RMOs should guide land managers to avoid further reductions in stream shade and channel widening. Also, the general S&G requirement that most kinds of actions not retard attainment of the RMOs should help restore the conditions and processes needed begin the reduction of water temperatures where they are too warm. NMFS will further address actions that affect stream temperatures in watershed and ongoing LRMP consultations.

2. Riparian Habitat Conservation Areas (RHCAs)

Although the proposed RHCAs provide a consistent starting point for Federal land managers, and are, in most cases, more protective of aquatic habitat than found in existing management direction, the proposed RHCAs may still not be adequate to fully protect fish habitats in all cases. For example, the proposed RHCA for fish-bearing and permanently flowing non fish-bearing streams may not adequately protect meandering, low-gradient, permanently flowing streams with floodplains wider than 600 feet. This would include some areas of high historic productivity for SR spring/summer chinook salmon, such as Bear Valley in Idaho. PACFISH would not necessarily prevent potentially harmful activities such as road construction or mining at the edge of the floodplain, if forest managers decide the proposed action will not degrade the RHCA. Depending on whether or not these decisions are made in a biologically conservative manner, such actions could result in increased sedimentation or other impacts to the floodplain, and hence the stream during floods or when the stream changes its course within the floodplain. PACFISH would only apply to actions outside of RHCAs if forest managers decide that those actions pose an unacceptable risk (for ongoing actions) or if they decide those actions would degrade the RHCAs. Thus PACFISH does not consistently control adverse effects from actions outside of RHCAs, since it defers such decisions to local land managers without providing a clear decision framework. However, NMFS and the action agencies will address the full range of potential actions outside of RHCAs in consultations on the LRMPs, and in project-specific consultations. NMFS participation on the PACFISH Implementation Team should also reduce the likelihood of adverse effects.

The proposed RHCAs stop at the edge of the 100-year floodplain (regardless of width) in non-forested rangeland ecosystems. This

may not provide adequate protection from land management actions for SR spring/summer chinook salmon in streams with narrow floodplains. However, NMFS can address this problem in watershed or site-specific consultations, where these conditions occur.

Ground disturbance within or outside of RHCAs (caused by timber yarding, mining, livestock grazing, or recreation activities) could increase surface erosion and raise watershed fine sediment yields. RHCAs would, in most situations, buffer streams from sediment carried in unchannelized flows, but may not effectively protect streams from sediment produced in upslope areas that is carried in channelized flows such as through culverts (Belt et al. 1992). Laboratory and field studies summarized by Chapman and McLeod (1987) and Hicks et al. (1991a) demonstrated that for a variety of salmonids, including chinook salmon, increasing proportions of fine sediment (variously defined as particles that would pass sieve openings from 0.83 mm to 9.5 mm in size) reduced fish survival from egg to emergence of fry, and caused earlier emergence of surviving fry. Smaller fry could be expected to suffer higher mortality rates.

The proposed RHCAs are reduced in size by half in non-key watersheds, relative to key watersheds (see Appendix A). The action agencies have not presented an analysis of potential downstream effects of reduced protection for intermittent streams in the Clearwater River Basin that are outside of designated critical habitat. Because of the reduced RHCA size in non-key watersheds, management activities along intermittent streams in the Clearwater River Basin could result in stream temperature changes (Beschta et al. 1987, Chamberlin et al. 1991) reduced recruitment of large woody debris that helps moderate sediment transport (Bisson et al. 1987), increased sediment generation (Chamberlin et al. 1991), and reduced sediment filtration (Belt et al. 1992, FEMAT 1993). Depending on the extent of the impacts described above, this could result in water temperature alterations or sediment depositions in the designated critical habitat of SR fall chinook salmon in the mainstem Clearwater River. Higher stream temperatures in the Clearwater River could alter the timing of adult and juvenile SR fall chinook salmon migrations to less than optimum (Fall Chinook Meeting, Dworshak National Fish Hatchery, January 14, 1994). Water temperatures reduced below natural in the Clearwater River during winter are of particular concern for fall chinook salmon due to the possibility of delayed fry emergence (Arnsberg et. al 1992). This problem is due in part to water management at Dworshak Dam past and in part to forest management practices in the Clearwater National Forest that removed riparian vegetation.

Because of the great distances involved between designated critical habitat and the affected streams, NMFS is uncertain whether measurable downstream effects will occur from reduced intermittent stream protection. However, there likely is some

incremental risk to listed SR fall chinook salmon from potential project level actions by the action agencies consistent with the interrelated LRMPs and LUPs. These project level actions will be subject to ESA consultation as well as NEPA compliance. NMFS and the action agencies will further address the suitability of limiting key watersheds to those watersheds with designated critical habitat in ongoing consultations on LRMPs (October 13, 1994 meeting). Also, NMFS will address this issue in its recovery plan for SR salmon. However, NMFS cannot address this during watershed consultations since, with the exceptions described under Section II's Key Watersheds discussion above, the action agencies are not consulting with NMFS on actions taken in the Clearwater River.

3. Key Watersheds

A broad-scale effect of PACFISH concerns the extent and timing of watershed analysis, which is an essential prerequisite for identifying the combined effects of the range of actions affecting the ecosystem as a whole. FEMAT (1993), the FSEIS/Record of Decision on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (U.S. Department of Agriculture and U.S. Department of the Interior 1994), and the interagency Watershed Analysis Coordination Team (1994) described watershed analysis as a set of procedures that would examine watershed status, resilience and capabilities as a basis for planning land management actions, monitoring and restoration. Although the PACFISH S&Gs do represent a significant improvement over existing planning practices, PACFISH would not require decisions about individual projects to be based on a comprehensive understanding of watersheds (with the exception of road and landing construction, new recreation facilities, and timber salvage in RHCAs), and therefore may not prevent adverse effects (as described in the sections on RMOs and S&Gs) to listed salmon arising from site-specific actions authorized consistent with the LRMPs/LUPs. The action agencies do not expect watershed analysis procedures for use in the range of PACFISH to be fully developed and field-tested during the period the interim PACFISH strategy is in effect. NMFS and the action agencies will further address the relationship between watershed analysis and proposed actions in current consultations on LRMPs and through the geographically-specific EISs.

4. Standards and Guidelines (S&Gs)

Fire/fuels Management: These guidelines are a reasonable starting point for wildfire suppression activities. However, the guidelines would allow prescribed burning and "fuels management" to occur within or outside RHCAs if land managers predict that they will not prevent attainment of the RMOS. Because of inherent risks of excessive vegetation removal, sedimentation,

and escaped fires, it may be prudent to limit these actions within RHCAs to situations where they are needed to attain RMOS, and then only after watershed analysis.

5. Roadless Areas

Road construction has been a primary cause of salmonid habitat decline (Eastside Forests Scientific Society Panel 1993, FEMAT 1993, The Wilderness Society 1993, Everett et al. 1994, Wissmar et al. 1994). FEMAT (1993) summarized Furniss et al. (1991) as follows:

> Roads may have unavoidable effects on streams, no matter how well they are located, designed or maintained... Roads modify natural hillslope drainage networks and accelerate erosion processes. These changes can alter physical processes in streams, leading to changes in streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition, and stability of slopes adjacent to streams. These changes can have significant biological consequences that affect virtually all components of stream ecosystems.

Roadless areas contain much of the remaining high-quality habitat for anadromous fish. They can be considered havens for weak stocks and may facilitate the future recolonization of restored habitats (FEMAT 1993, Eastside Forests Scientific Society Panel 1993). Consideration of land allocations, including roadless areas, was a crucial factor in estimating salmonid population viability under different alternatives in the final supplemental EIS for managing Federal lands in the range of the northern spotted owl.

PACFISH would not directly prohibit construction of new roads, or require a reduction in total road mileage in key watersheds in inventoried roadless areas not proposed for wilderness designation in LRMPs. However, considerable (albeit temporary) protection for these areas will be afforded by the requirement to complete watershed analysis prior to constructing roads in RHCAs. Current FS practice includes the requirement of an EIS prior to entry into roadless areas. This should preclude construction of valley bottom or mid-slope roads until watershed analysis procedures are developed, tested, and finalized, since stream (and therefore RHCA) crossings generally would be required.

A strategy for identifying and protecting remaining areas of high quality salmon habitat at the landscape scale is crucial to the survival and recovery of listed salmon (Eastside Forests Scientific Society Panel 1993, FEMAT 1993, Frissell et al. 1993, The Wilderness Society 1993). However, the analysis of habitat refugia is beyond the scope of PACFISH, and the length of time it would require would foreclose the opportunity to issue the

interim PACFISH guidance. NMFS expects that the action agencies, in cooperation with NMFS, will identify potential refugia in the Eastside Ecosystem Management Assessment and Upper Columbia River Basin Assessment. NMFS will focus this consultation on the proposed scope of PACFISH as an interim riparian management strategy in place until these more comprehensive analyses can be completed. NMFS and the action agencies also will address potential refugia in ongoing consultations on the LRMPs.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the action area includes all USFS and BLM lands in all watersheds that contain designated critical habitat for listed SR salmon, or that do not contain designated critical habitat but in which land management actions are subject to section 7 consultation for "may affect" actions (this has at times included portions of the Clearwater River basin excluding the North Fork Clearwater River above Dworshak Dam.

In the SR Basin, non-Federal lands have been subjected to as great or greater degradation of fish habitat than Federal lands. Although no information on non-Federal lands was provided in the PACFISH BA, it is apparent that most of the remaining high-quality fish habitat is on Federal lands since non-Federal lands generally are less remote, more accessible, and subject to a somewhat larger array of impacts than Federal lands. However, a substantial portion of historic salmon spawning and rearing habitat does occur on non-Federal lands. Many of these areas have been degraded by the effects of agriculture, water withdrawals and diversions, urbanization, riparian road building, logging, and livestock grazing (Bevan et al. 1994, Wissmar et al. 1994). This has resulted in loss of riparian vegetation, increased water temperature, increased nutrient loading, loss of pools, and increased fine sediment (for an example of stream conditions on non-Federal land see the discussion of the Tucannon River in USDA 1982a and Theurer et al. 1985). These impacts have substantially reduced survival for SR spring/summer chinook salmon in many watersheds, and for SR fall chinook salmon in some river reaches.

To some extent, the protective measures included in PACFISH may reduce the availability of Federal timber, rangeland, mineral and recreational resources to local user groups. The draft EA predicted cancellation of some timber sales within the Clearwater and Nez Perce National Forests and in the BLM Coeur d'Alene District due to restrictions in PACFISH. The draft EA also predicted a reduction in livestock grazing in RHCAs of affected areas. Depending on other economic factors that are

impossible to predict within the scope of this Opinion, these restrictions could lead to increased resource use on non-Federal lands with accompanying damage to riparian and fishery habitats. However, there is inadequate information to determine whether these changes to non-Federal actions are reasonably certain to occur.

VII. CONCLUSION

In general, PACFISH represents an improvement over existing planning direction. The implementation of PACFISH should avoid and reduce degradation of designated critical habitat, and prevent increases in habitat-related salmon mortality, from most classes of ongoing and future land management actions, relative to what would have occurred under the LRMPs and LUPs without PACFISH. PACFISH is likely to be most effective in ameliorating problems from timber harvest, road construction, and road maintenance; however, its effectiveness in controlling ongoing and future habitat degradation from livestock grazing and mining is less certain. Possible adverse effects from these actions are subject to the restrictions of ESA section 7(d) due to the initiation of consultation on LRMPs, and individual projects through watershed BAs, and will be addressed by NMFS in subsequent biological opinions.

NMFS has determined that, based on the available information, the interim PACFISH guidance is not likely to jeopardize the continued existence of SR sockeye salmon, SR spring/summer chinook salmon, or SR fall chinook salmon, or result in the destruction or adverse modification of critical habitat.

Implementation of PACFISH could foster the beginning of natural habitat restoration in some areas of designated critical habitat. However, since PACFISH will be in place for a relatively short time, and does not contain an active watershed restoration component, it is unlikely that its implementation will significantly reduce mortality of listed salmon caused by existing degradation of the environmental baseline. Possible cumulative effects occurring in the action area from implementation of PACFISH are difficult to predict but are not likely to be significant.

Under the ESA and its implementing regulations, and existing agency policies, agencies must avoid or minimize incidental take at their earliest opportunity. Therefore programmatic measures that will reduce the potential for taking are an appropriate result of a consultation on a programmatic action. Consultations and further measures to avoid or minimize incidental take may still be necessary at the LRMP and project/permit levels, where more comprehensive and quantitative information about proposed actions and likely effects on listed salmon and designated critical habitat will be available.

VIII. REINITIATION OF CONSULTATION

Consultation must be reinitiated if: (1) new information reveals effects of the action that may affect listed species in a way not previously considered; the action, as described in the March 18, 1994 EA and amended by the October 11, 1994 letter, (2) PACFISH is modified in a way that causes an effect on listed species or their designated critical habitat that was not previously considered; or, (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

Because the proposed PACFISH direction does not provide specific guidance for monitoring the overall effectiveness of PACFISH implementation, the conservation recommendations provided in this opinion outline elements that are strongly suggested to be included in such a monitoring plan. Results of this monitoring may reveal new information that may trigger reinitiation of consultation.

NMFS would consider the extension of PACFISH beyond 18 months after its implementation be a modification of the proposed action that would require reinitiation of consultation. Consultation shall be reinitiated in the event that consultation on the geographically-specific EISs in eastern Oregon, Washington and Idaho is not completed by 18 months from the effective date of the record of decision for PACFISH.

NMFS' conclusion on PACFISH is based in part on the assumption that some of the adverse effects from interrelated actions not prohibited by PACFISH will be addressed in consultations on the LRMPs for the Sawtooth National Recreation Area and the Boise, Salmon, Payette, Challis, Nez Perce, Umatilla, and Wallowa-Whitman National Forests. Although NMFS expects consultation to be completed on these LRMPs by February 1, 1995, consultation on PACFISH shall be reinitiated in the event that consultation on the EISs for these LRMPs is not concluded and a biological opinion issued for these LRMPs by March 1, 1995.

IX. CONSERVATION RECOMMENDATIONS

Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of designated critical habitat, to develop additional information, or to assist the Federal agencies in complying with their obligations under section 7(a)(1) of the ESA. NMFS believes the following conservation recommendations are consistent with these obligations, and therefore should be implemented by the FS and BLM.

For clarity, NMFS has organized conservation recommendations into categories of actions that NMFS believes will assist the USFS and

BLM in minimizing their impacts to listed salmon and designated critical habitat at the earliest opportunity. These are organized into categories of (1) suggested clarifications to PACFISH interim direction to provide further consistency and clearer protection for listed salmon; (2) recommended elements for monitoring the effectiveness of PACFISH; (3) expectations of data requirements NMFS will need for section 7 consultations at the project- or watershed level for actions conducted under PACFISH interim direction; (4) recommended elements for the geographically-specific EISs.

A. Clarifications to PACFISH interim direction to provide further consistency and protection for listed salmon

1. The FS and BLM, in coordination with the Interior Columbia Basin Ecosystem Management Project (ICBEMP), should provide to NMFS following the issuance of this biological opinion the following information to facilitate project-level consultations that will be occurring during the period PACFISH is in place. The USFS and BLM should use this information in evaluating potential impacts of road construction during consultations on ongoing or proposed actions that include any road construction in roadless areas:

a. a map of roadless areas to include inventoried and non-inventoried roadless areas in the Snake River Basin;
b. descriptions of the roadless areas including names, locations, sizes and general geomorphological characteristics;
c. a description of any planned road construction in these areas during the period PACFISH will be in effect;
d. additional road construction likely to be proposed during the period PACFISH will be in effect; and
e. an analysis of the impacts of the proposed road system on designated critical habitat.

2. RMOs

a. To provide the maximum benefit for listed salmon, NMFS strongly recommends that where existing data or watershed analysis indicate that watershed or stream reach habitat capabilities surpass the RMOs, the RMOs should be adjusted on a reach or watershed basis to reflect the naturally attainable levels for the key and supporting features for that reach or watershed. However, RMOs should not be adjusted to reflect less optimum habitat conditions than the interim RMOs unless supported by the results of watershed analysis and permitted by section 7 consultation for the subject watershed.

b. Proposed or ongoing actions in watersheds containing designated critical habitat or in the Clearwater River Basin (excluding the North Fork Clearwater River above Dworshak Dam)

that are likely to degrade habitat conditions in designated critical habitat that currently meet or surpass the minimum criteria set by the interim RMOs should be modified or eliminated. Exceptions to this condition may be made as a result of section 7 consultation with NMFS.

3. RHCAs

a. All stream reaches presently or historically accessible to listed Snake River salmon (except reaches above impassable natural falls, and Dworshak and Hells Canyon Dams) in designated critical habitat should be included in the proposed RHCA for Category 1 - Fish-bearing streams.

b. Actions or groups of actions outside of RHCAs but that may affect RHCAs, due to their proximity to the RHCAs or other factors (such as areas where the 100-year floodplain is 300 feet wide or greater {600 feet including both sides of the stream channel}, or non-forested rangeland ecosystems with floodplains less than 100 feet wide) should be specifically addressed by the FS and BLM in their biological assessments on specific actions or groups of actions submitted for section 7 consultation.

c. The interim RHCAs for non-forested rangeland ecosystems should include the 100-year floodplain and adjacent riparian areas.

d. Interim PACFISH RHCA widths should not be made smaller unless appropriate data is provided that meets requirements, which will be mutually agreed to by NMFS and action agency biologists, or unless supported by the results of watershed analysis and permitted by section 7 consultation for the subject watershed.

e. The FS and BLM should use procedures equivalent to the Federal Wetlands Manual (U.S. Army Corps of Engineers et al. 1987) to identify riparian areas within RHCAs. The FS and BLM should provide NMFS with these procedures for review.

f. The FS and BLM should apply PACFISH RHCAs for key watersheds in the Clearwater River Basin (excluding the North Fork Clearwater River above Dworshak Dam) in those watersheds where land management actions may affect water quality in designated critical habitat.

4. Key Watersheds

a. During the period PACFISH interim guidance is in place, and until final key watersheds are designated in the Record of Decision based on the EISs for ecosystem management, the FS and BLM should treat as interim key watersheds those watersheds that

contain salmonids proposed for listing or proposed critical habitat.

b. The FS and BLM should coordinate with NMFS, through NMFS' representatives to the ICBEMP, on proposed and final designation of key watersheds for the Snake River Basin.

c. If any anadromous salmonid species (occurring within the geographic range of PACFISH direction) is proposed for listing under the ESA during the period that PACFISH direction is in place, the FS and BLM should, in coordination with NMFS, analyze and report to NMFS on the need to designate additional key watersheds.

5. Watershed Analysis

a. NMFS recommends that watershed analysis be designed and carried out to meet the goals described on p. C-18 to C-19 of the March 18, 1994 PACFISH EA, in accordance with the following steps and timeframes:

(1) The FS and BLM should provide to NMFS as soon as possible, a list and description of watershed analyses currently underway in the Snake River Basin, and should provide NMFS with copies of documentation for the resulting analyses when completed.

(2) The FS and BLM should coordinate with NMFS, through NMFS' representatives to the Interagency Watershed Analysis Coordination Team and the ICBEMP, regarding priorities and initial procedures for prototype watershed analyses, means of peer review and other evaluation of results, and revision of procedures.

(3) Upon the revision of watershed analysis procedures used in the prototype watershed analyses described in 3(a)(2) above, watershed analysis should be carried out in key watersheds prior to planning and implementing new land management actions that could cause an irreversible or irretrievable commitment of resources that would foreclose the action agencies' ability to formulate alternatives, in the geographically-specific EISs, to avoid jeopardy to listed species or adverse modification of designated critical habitat. New actions are defined as those for which biological assessments have not been submitted to NMFS for section 7 consultations as of the date revision of watershed analysis procedures is completed.

b) For new mineral exploration and extraction actions authorized or permitted by the FS or BLM that may adversely affect listed salmon, the agencies should complete watershed analysis prior to

authorizing or permitting those actions in RHCAs of watersheds with designated critical habitat.

c) The FS and BLM should evaluate means and possible benefits of withdrawal of RHCAs for new mineral entry in areas where watershed analysis indicates mining would degrade designated critical habitat or adversely affect listed salmon to the extent allowed under applicable law.

d) The FS and BLM should begin using, to the extent practicable, the watershed analysis procedures developed by the Interagency Watershed Analysis Coordination Team as soon as they are amended and released (expected in July 1995), for planning actions that are likely to adversely affect listed salmon or designated critical habitat.

e) Where possible, the FS and BLM should complete watershed analysis prior to planning and carrying out prescribed burning and fuels management actions inside RHCAs.

6. Watershed Restoration

The FS and BLM should begin identifying areas that are in need of watershed restoration immediately upon implementation of PACFISH, and should begin planning for and carrying out watershed restoration in those areas as soon as possible. Priorities should be based on existing and potential risks and effects to listed salmon and their critical habitat, as well as the likely effectiveness of the restoration effort.

7. Standards and Guidelines

a. The FS and BLM should attempt, to the extent practicable, to complete Road Management Plans and Transportation Management Plans within the period of PACFISH implementation.

b. The following guidance should be added to the beginning of guideline MM-1: "Avoid adverse effects to listed species and designated critical habitat from mineral operations."

c. The FS and BLM should provide guidance to land managers on how to decide in a consistent and biologically risk-aversive manner whether "no alternative to siting facilities in RHCAs exists" (MM-2) and "no alternative to locating mine waste... in RHCAs exists" (MM-3). This guidance shall be submitted to NMFS for review within 3 months of the implementation of PACFISH.

d. Guideline RF-3b should be amended to read as follows: "closing and stabilizing, or obliterating and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to listed anadromous fish and their designated critical habitat, and the ecological value of the riparian resources affected."

B. Recommended elements for monitoring the effectiveness of PACFISH

1. The FS and BLM, in cooperation with NMFS, should develop a quality control team to oversee the application of the "unacceptable risk" screens for ongoing actions. This team would address the consistency of scientific and technical information used to make determinations using the screens, and should develop inter-regional review methodologies.

2. Monitoring the implementation of PACFISH interim direction is critical to documenting the progress towards achieving the stated goals of PACFISH. The results of such monitoring are needed to assist in identifying the long-term needs of the species. The FS and BLM should prepare and submit a joint report to NMFS within one year of PACFISH implementation:

a. A section describing progress on the identification and designation of key watersheds.

b. A section describing progress on the implementation of prototype watershed analyses, including a description of analysis status, a summary of peer review comments (with complete copies of peer review comments attached as an appendix), an evaluation of results for any completed analyses, and a description of planned revision of procedures.

c. A section describing results of stream inventory and monitoring efforts, and relating those results to status of attainment of riparian management objectives and protection of listed salmon, by watershed.

d. A section describing progress on the identification of riparian management objectives that are specific to watersheds or ecoregions, by National Forest and BLM District.

e. A summary of land management actions (e.g. timber harvest by acres, changes in equivalent clearcut acreage, road miles constructed, reconstructed, and obliterated, recreation developments, mining activity, grazing activity, and watershed restoration) begun, carried out, or completed that are in, or modify, RHCAs, or that affect attainment of RMOs, by watershed. This section should include an analysis of whether the actions were implemented in accordance with the PACFISH interim guidance.

f. A section describing the effectiveness of the PACFISH interim guidance in avoiding adverse effects to listed species and designated critical habitat, by watershed.

3. The FS and BLM should, in coordination with the ICBEMP, plan and initiate validation monitoring to examine the assumptions used in designing the PACFISH RHCAs, RMOs and S&Gs as protective measures for listed anadromous salmonid fishes and their designated critical habitat. The FS and BLM should report to NMFS on progress in developing validation monitoring plans within one year of PACFISH implementation.

C. Recommendations to simplify project- or watershed-level consultations (see also recommendations on monitoring)

1. The FS and BLM should jointly (preferably) or singly develop a comprehensive strategy that addresses fire suppression and fuels management for all watersheds that contain designated critical habitat for Snake River salmon and for watersheds that may affect water quality in designated critical habitat (i.e. the

Clearwater River Basin excluding the North Fork Clearwater River above Dworshak Dam). In order to facilitate consultation and to reduce the need for emergency consultations during fire season, the FS and BLM should attempt to complete the fire management BA prior to the anticipated start of the 1995 fire season in the Snake River Basin.

2. Biological assessments submitted by the FS or BLM to NMFS after the date that PACFISH is implemented for actions in the Clearwater River Basin (excluding the North Fork Clearwater River above Dworshak Dam) should provide the available data and analysis needed to describe potential downstream effects on water quality (e:g. temperature, sediment load, and contaminants), and peak flow timing and volume within designated critical habitat.

X. Incidental Take Statement

Section 9 of the ESA prohibits any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of endangered species without a specific permit or exemption. Generally, when a proposed Federal action is found to be consistent with Section 7(a)(2) of the ESA (i.e., the action is found not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat) and that action may incidentally take individuals of listed species, NMFS will issue an incidental take statement that (1) specifies the impact of any incidental taking of endangered or threatened species; (2) specifies the reasonable and prudent measures that are necessary to minimize impacts; and (3) sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures. Any incidental taking that is in compliance with the terms and conditions of the incidental take statement are exempt from the taking prohibition pursuant to section 7(o) of the ESA.

In the case of PACFISH, NMFS is not specifying any incidental take level. NMFS will be better able to identify the amount or extent of incidental taking and more comprehensively identify those reasonable and prudent measures necessary to monitor and reduce take in future biological opinions. Therefore no incidental take statement is provided, and no take is authorized incidental to USFS or BLM activities under PACFISH.

XI. REFERENCES

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XII. Appendix A

INTERIM RIPARIAN MANAGEMENT OBJECTIVES AND RIPARIAN HABITAT CONSERVATION AREAS

FINAL PROPOSAL IDENTIFIED BY USFS AND BLM DURING SECTION 7 CONSULTATION ON INTERIM PACFISH DIRECTION

INTERIM RIPARIAN MANAGEMENT OBJECTIVES

Interim Objectives	Habitat Feature
Pool Frequency (all systems)	Varies by channel width, see below:
wetted width in feet:	10 20 25 50 75 100 125 150 200
number pools per mile:	96 56 47 26 23 18 14 12 9
Water Temperature	No measurable increase in maximum water temperature.* Maximum water temperatures below 64 F within migration and rearing habitats, and below 60 F within spawning habitats.
Large Woody Debris (forested systems)	Coastal California, Oregon, and Washington. >80 pieces per mile; >24 inch diameter; >50 foot length. East of Cascade Crest in Oregon, Washington, Idaho. >20 pieces per mile; >12 inch diameter; >35 foot length.
Bank Stability (non-forested systems)	>80 percent stable.
Lower Bank Angle (non-forested systems)	>75 percent of banks with >90 degree angle (i.e. undercut).
Width/Depth Ratio (all systems)	<10, mean wetted width divided by mean depth

*7-day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7-day period.

RIPARIAN HABITAT CONSERVATION AREAS (RHCAs)

The interim RHCA widths would apply until (1) Watershed Analysis is completed, (2) a site-specific analysis is conducted and described and the rationale for modification of interim RHCA boundaries is presented, or (3) the termination of the interim direction.

STANDARD WIDTHS DEFINING INTERIM RHCAs

Four categories of stream or water body, and the standard widths for each are:

Category 1 - Fish-bearing streams: Interim RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), whichever is greatest.

Category 2 - Permanently flowing non-fish-bearing streams: Interim RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year flood plain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.

Category 3 - Ponds, lakes, reservoirs, and wetlands greater than 1 acre: Interim RHCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest.

Category 4 - Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas: This category includes features with high variability in size and site-specific characteristics. At a minimum the interim RHCAs must include:

a. the extent of landslides and landslide-prone areas,

b. the intermittent stream channel and the area to the top of the inner gorge,

c. the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation, and

d. for Key Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest;

e. for watersheds not identified as Key Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest.

In non-forested rangeland ecosystems, the interim RHCA width for permanently flowing streams in category 1 and 2 is the extent of the 100 year flood plain.

XIII. Appendix B.

FINAL DEFINITIONS PROPOSED BY USFS AND BLM DURING SECTION 7 CONSULTATION ON INTERIM PACFISH DIRECTION

Adverse Effects: Adverse effects include short or long-term, direct or indirect management-related, impacts of an individual or cumulative nature, such as mortality, reduced growth or other adverse physiological changes, harassment of fish, physical disturbance of redds, reduced reproductive success, delayed or premature migration, or other adverse behavioral changes to listed anadromous salmonids at any life stage. Adverse effects to designated critical habitat include effects to any of the essential features of critical habitat (e.g., as described at 58 FR 68543) that would diminish the value of the habitat for the survival and recovery of listed anadromous salmonids.

Adverse Impacts: As used to define unacceptable risk, the term refers to management-related, short or long-term, direct or indirect impacts of an individual or cumulative nature that jeopardize the viability of, or which may cause a non-listed anadromous salmonid population to become threatened or endangered.

Attain RMOs: Meet riparian management objectives for the given attributes. For habitats below the objective level, recovery will be initiated during the period the interim strategy is in place. For habitats at or better than the objective level, maintain at least the current condition. Actions that "degrade" habitat conditions (as defined elsewhere) would be considered inconsistent with the concept of attaining RMOs.

Avoid to the Greatest Extent Practicable/Possible: Apply pre-protect planning, best available technology, management practices, and scientific knowledge to eliminate known management induced i-pacts and minimize the risk of potential impacts.

Best Conventional: Most effective existing techniques, methods and/or management practices.

Degrade: Measurably change an RMO feature in a way that:

-- further reduces habitat quality, where existing conditions meet or are worse than the objective values.

-- reduces habitat quality, where existing conditions are better than the objective values.

Designated Critical Habitat: Those habitats designated by the National Marine Fisheries Service or US Fish and Wildlife Service, under provisions of the Endangered Species Act, that

include (1) the specific areas within the geographical area occupied by a Federally listed species on which are found physical or biological features essential to the conservation of the species, and that may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a listed species, upon determination by the Secretary of Commerce or Interior that such areas are essential for the conservation of the species.

Fish-bearing Streams: Stream segments that support fish during all or a portion of a typical year.

High-water Quality: Water with the physical, biological and chemical attributes necessary to meet the life-history requirements and provide for the naturally-attainable productivity of anadromous salmonids.

Minimize: Apply pre-protect planning, best available technology, management practices, and scientific knowledge to reduce the magnitude, extent and/or duration of impacts.

Non-Forested Rangelands: Land on which the native vegetation is predominately grasses, grass-like plants, forbs, or shrubs. In determining what minimum interim RHCA boundary widths apply, there may be instances where the widths for non-forested rangelands apply to one side of a stream and the widths for forested lands apply to the other side of the stream (based on the vegetative cover of adjacent uplands).

Ongoing Actions: Those actions that have been implemented, or have contracts awarded, or permits issued and (within the range of listed anadromous salmonids) for which BA's have been prepared and submitted for consultation, prior to signature of the decision notice for the proposed action (PACFISH Interim Direction).

Permanently Flowing, Non-Fish-bearing Streams: Stream segments that contain running water throughout a typical year, but do not support fish during any portion of a typical year.

Prevent Attainment of RMOs: Preclude attainment of habitat conditions that meet RMOs. Permanent or long-term modification of the physical/biological processes or conditions that determine the RMO features would be considered to prevent attainment of RMOs.

Proposed or New Actions: Those actions that have not been implemented, or for which contracts have not been awarded, or for which permits have not been issued, or (within the range of listed anadromous salmonids) continuing actions for which BA's have not been prepared and submitted for consultation, prior to

signature of the decision notice for the proposed action (PACFISH Interim Direction).

Retard Attainment of RMOs: Measurably slow recovery of any identified RMO feature (e.g., pool frequency, water temperature, etc.) that is worse than the objective level. Measurable degradation of the physical/biological process or conditions that determine RMO features would be considered to retard attainment of RMOs.

Short-Term Habitat Impacts: Impacts of a short duration - generally days or weeks - that would not retard or prevent attainment of RMOs.

Unacceptable Risk: A level of risk from an ongoing activity or group of ongoing activities that is determined through NEPA analysis, and/or through the preparation or subsequent review of biological assessments/evaluations to be:

-- "likely to adversely affect" listed anadromous salmonids or their designated critical habitat or

-- "likely to adversely impact" the viability of non-listed anadromous salmonids.