

United States
Department of
Agriculture

Forest Service
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OR/
WA
ID
Bureau of
Land
Management

United States
Department of
Interior

File Code: 2670(FS)/6840(BLM)

Date: September 16, 1997

William Stelle Jr., Regional Director
National Marine Fisheries Service
7600 Sand Point Way NE
Bin C - 15700, Bldg 1
Seattle, WA 98115


Dear Mr. Stelle:

In accordance with Section 7(a)(2) of the Endangered Species Act, as amended, we are requesting initiation of consultation for the effects of the continued implementation of the Resource Management Plans (Bureau of Land Management-BLM) and reinitiation of consultation for the Land and Resource Management Plans (Forest Service-FS), as amended by PACFish, that may affect Snake River Basin (SRB) and Upper Columbia River (UCR) steelhead. Consultation is necessary because of the recent listings of SRB and UCR steelhead trout (see the enclosed biological assessment-BA).

The enclosed BA contains nine recommendations, which allow the biologists who prepared the BA to make a determination of may affect, not likely to adversely affect SRB and UCR steelhead trout with respect to the RMPs and LRMPs as amended by PACFish. By way of this letter we accept the nine recommendations and hereby direct the National Forests and the Bureau of Land Management Districts within the Snake River Basin and Upper Columbia River ESUs to have Level 1 Teams use the recommendations as part of the project decision process at a watershed and site-specific level. These recommendations will be implemented through Environmental Analyses (EAs), BAs, and consultation at the project level. Reasons for departure from these recommendations will be handled in a manner consistent with the Interagency Memorandum of Agreement for Streamlining Consultation. The determination that continued implementation of the LRMPs and RMPs as amended by PACFish is not likely to adversely affect is based on an understanding that PACFish is an interim strategy designed to maintain options for anadromous fish habitat while a long-term strategy is being developed. These recommendations are consistent with this purpose. Consultation on the more comprehensive long-term strategy will determine whether these recommendations need to be used. Therefore, this direction is issued from now until superseded by the Record(s) of Decision from the Columbia Basin Ecosystem Management Plan or other long-term direction that may be adopted.

The enclosed BA that addresses the effects of the LRMPs and RMPs on SRB and UCR steelhead does not address SRB chinook salmon or their critical habitat. However, the BA Team believes that the rationale for determining effects to the SRB and UCR steelhead hold for SRB chinook and critical habitat. In fact, the nine recommendations were developed for two purposes; 1) to provide adequate protection to SRB and UCR steelhead, and 2) to address new information and concerns regarding implementation of PACFish where SRB salmon occur that have come forward since the March 1, 1995 Biological Opinion. Documentation of this determination will be forthcoming from the BA Team.

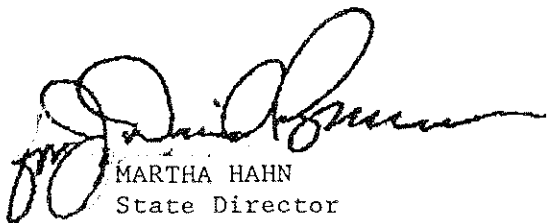
Based on the acceptance of the nine recommendations and the subsequent finding in the BA of may affect, not likely to adversely affect for SRB and UCR steelhead and the determination that the effects to SRB chinook salmon and their critical habitat would be the same, we request a letter of concurrence with these determinations that will conclude informal consultation.



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cc: All Forest Supervisors and District Managers in the Upper Columbia River Steelhead ESU and Snake River Basin Steelhead and Chinook Salmon ESUs.

Biological Assessment

Effects to Steelhead of Land and Resource Management Plans
and Selected Federal Actions
on National Forests and Bureau of Land Management Resource Areas
in the Upper Columbia River Basin and Snake River Basin
Evolutionarily Significant Units

September 12, 1997

by

David C. Burns, USDA-Forest Service

Jack E. Williams, Bureau of Land Management

Paul L. Boehne, USDA-Forest Service,

Steve Kozel, USDA-Forest Service,

with preliminary agreement by

Russell Strach, National Marine Fisheries Service

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Russell Strach, National Marine Fisheries Service

/s/ Russell M. Strach

EXECUTIVE SUMMARY

This Biological Assessment (BA) is for steelhead in the Snake River Basin Evolutionarily Significant Unit (ESU) and in the Upper Columbia River Basin ESU. This Biological Assessment addresses the effects to steelhead of (1) Land and Resource Management Plans (LRMPs) as amended or modified by PACFISH and, (2) 17 site specific Biological Opinions (SBOs) issued by National Marine Fisheries Service for salmon in the Snake River Basin.

The continued implementation of the LRMPs as amended or modified by PACFISH and those 17 SBOs listed in Table 2 may affect and are likely to adversely affect steelhead in the Snake River Basin ESU and Upper Columbia River Basin ESU. If, however, the recommendations described in this BA are implemented as part of the proposed action, the authors conclude that the continued implementation of the LRMPs as amended or modified by PACFISH and those 17 SBOs contained in Table 2 may effect but are not likely to adversely effect steelhead.

The recommendations are as follows:

- 1) Extend indefinitely provisions of the National Marine Fisheries Service's BO of March 1, 1995, and all subsequent related direction, to all LRMPs in both steelhead ESUs in order to reduce adverse effects not previously the subject of consultation on LRMPs until such time as new, long-term, programmatic direction is adopted for both salmon and steelhead;
- 2) Extend 17 SBO provisions on salmon to steelhead to assure that adverse effects are reduced or avoided;
- 3) Review actions conducted under LRMPs to assure that adverse effects are other wise reduced or avoided;
- 4) Provide additional mitigative measures in steelhead strongholds in the Snake River Basin ESU to reduce the potential of adverse combined effects;
- 5) Accelerate restoration of steelhead habitat in the Snake River Basin;
- 6) Review effects to steelhead from commercial permits and noncommercial recreational boating and floating as a federal action;
- 7) Strengthen monitoring and commitment, as needed, associated with PACFISH to insure the strategy is properly implemented;
- 8) Watersheds within the Upper Columbia River Basin ESU and the Snake River Basin ESU should be treated as key watersheds (as directed by PACFISH) and as designated critical habitat, and,
- 9) If adopted, these recommendations should be extended indefinitely, until such time as new, long-term, programmatic direction is adopted by the Forest Service and Bureau of Land Management for both salmon and steelhead.

1. Introduction

On August 18, 1997 the National Marine Fisheries Service published a final rule listing two Evolutionarily Significant Units (ESUs) of northwest steelhead, one as threatened and the other as endangered, under the Endangered Species Act (Federal Register: August 18, 1997 [Vol. 62, 43937]). The listing will become effective on October 17, 1997, which is 60 days after publication of the final rule. Here-in-after, all references to steelhead are for the listed species. The northwest area affected by the listing includes portions of Washington, Oregon, and Idaho. The listing requires the Forest Service and Bureau of Land Management to consult with the National Marine Fisheries Service on federal actions that may affect the species.

Land management actions administered by the Forest Service and Bureau of Land Management are carried out under several scales of planning and decision documents. Each National Forest is managed in accordance with a Forest Plan. Bureau of Land Management administers lands under either a Resource Management Plan or Management Framework Plan. All three planning documents are here-in-after called LRMPs (Land and Resource Management Plans). Depending on the geographic location of each National Forest, these LRMPs have been amended by the Northwest Forest Plan or the Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and California (PACFISH). For the Bureau of Land Management LRMPs, PACFISH is in conformance with existing plans and was implemented through instructional memoranda rather than formal plan amendments. Other amendments and modifications may apply to local plans, but those are not considered in detail in this Biological Assessment (BA). This BA is limited to the LRMPs as amended or modified by PACFISH and 17 site-specific Biological Opinions (SBOs) in two steelhead ESUs: the Upper Columbia River Basin ESU and the Snake River Basin ESU (Appendix A).

The Snake River Basin ESU includes the distribution of Snake River spring/summer and fall chinook salmon and Snake River sockeye salmon listed under the Endangered Species Act (Federal Register: May 22, 1992 [Vol. 57, 14653]). Here-in-after all references to chinook salmon and sockeye salmon are for the listed species. On March 1, 1995, the National Marine Fisheries Service issued a Biological Opinion (BO) on salmon titled, "Endangered Species Act Section 7 Biological Opinion on Land and Resource Management Plans for the Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests." This BO did not address those portions of lands administered by the Bitterroot, Clearwater, and northern portions of the Nez Perce National Forests because they were outside of the Snake River Basin ESU for salmon. These areas are within the Snake River Basin ESU for steelhead. Similarly, the Wenatchee and Okanogan National Forests were not considered in the BO because they were outside of the Snake River Basin ESU for salmon, but are within the Upper Columbia River Basin ESU for steelhead. Bureau of Land Management LRMPs have not previously been the subject of consultation. All of the above described Forest Service and Bureau of Land Management LRMPs are the subject of this BA.

In the March 1, 1995 BO on LRMPs as amended or modified by PACFISH, the National Marine Fisheries Service identified a set of goals, objectives, and guidelines that it would apply to watershed and site-specific consultations for salmon until LRMPs are amended to provide reasonable certainty that site specific actions will not result in jeopardy to salmon or adversely modify critical habitat. The Forest Service responded to these guidelines in a June 29, 1995 letter stating that these guidelines would not be used as required terms and conditions. On August 9, 1995, the National Marine

Fisheries Service, Fish and Wildlife Service, Forest Service and Bureau of Land Management signed a Memorandum of Agreement (MOA) which established a national, interagency process to streamline consultation. Regional agency administrators updated the agreement on February 26, 1997. These agreements provided direction that agencies would follow for LRMPs as amended or modified by PACFISH and the March 1, 1995 BO statements in exchange for expedited consultation time-frames. The agencies agreed that these documents provided substantial programmatic guidance that would facilitate consultation and meet the overall goal of arresting the degradation and beginning the restoration of salmon and steelhead habitat. PACFISH implementation was to "hold the line" until long term strategies could be developed to manage salmon and steelhead habitat in an ecologically sound framework. This BA partially addresses the biological efficacy of PACFISH implementation.

2. Definition of the Federal Actions

The purpose of this section is to describe the particular interim management direction and decisions that the Forest Service and Bureau of Land Management continue to implement through their LRMPs. The agencies also may consult on site specific federal actions conducted under the umbrella of the LRMPs that may affect listed species.

This BA considers the effects to steelhead in the Snake River Basin ESU and Upper Columbia River Basin ESU from 18 Forest Service and Bureau of Land Management LRMPs. The federal actions are fully described in the LRMPs and are only incorporated here by reference. Management direction for each unit was approved on the dates shown in Table 1.

Table 1. LRMP approval date for National Forests and Bureau of Land Management Resource Areas in the Upper Columbia River Basin and the Snake River Basin ESUs.

Forest Service Unit	Approval Date
Bitterroot National Forest	September 1987
Boise National Forest	April 1990
Challis National Forest	June 1987
Clearwater National Forest	September 1987
Naz Perce National Forest	October 1987
Okanogan National Forest	December 1989
Payette National Forest	May 1988
Salmon National Forest	January 1988
Sawtooth National Forest	September 1987
Umatilla National Forest	June 1990
Wallowa-Whitman National Forest	April 1990
Wenatchee National Forest	January 1990
Bureau of Land Management Unit	Approval Date
Baker Resource Area - Resource Management Plan	July 1989
Challis Resource Area - Ellis-Pahsimeroz Management Framework Plan - Challis Management Framework Plan	September 1982 July 1979
Cottonwood Resource Area - Chief Joseph Management Framework Plan	November 1981
Lemhi Resource Area - Lemhi Resource Management Plan	April 1987
Wenatchee Resource Area - Spokane District Resource Management Plan	August 1985

These LRMPs as amended or modified by PACFISH establish interim management direction in two areas. First, management direction establishes desired future conditions with goals, objectives, standards and guidelines. Standards and guidelines provide the side-boards for reaching goals and objectives, and are to be applied to site specific actions conducted under the LRMPs. Second, LRMPs project how many and where goods and services may be produced.

Each LRMP addresses a wide array of management direction. Included is direction for such things as fish habitat, water quality, road building, timber production, mineral management, fire management, livestock grazing, recreation management and others. Monitoring programs are established to determine whether LRMP direction is being met, and program budget requests are based on analysis of directed actions.

In addition, the National Marine Fisheries Service conducted formal consultation with the Forest Service on numerous site specific federal actions for salmon within the Snake River Basin ESU (Table 2). Resulting SBOs modified and/or were more specific than programmatic direction in the March 1, 1995 BO on LRMPs. The SBOs provide numerous requirements that overlay and supersede earlier direction. The Bureau of Land Management has not had any SBOs on listed salmon in the Snake River Basin ESU. All Bureau of Land Management actions have been subject to informal consultation through letters of concurrence.

Table 2. Biological Opinions Issued for all Listed Salmon within the Snake River Basin ESU.

Biological Opinion	Date	Forest	Status (1)	Reinitia- tion(2)
Bear Valley/Elk Creek/Horse Allotment	5/30/97	Boise	Modified	Yes
Bear Valley Basin Salvage Harvest	7/28/93	Boise	Ongoing	Yes
Annual Management Plans for Bear Valley and Elk Creek Cattle and Horse Allotments	6/1/93	Boise	Completed	No
Elk Creek Grazing Allotment	10/30/96	Boise	Ongoing	Yes
Annual Operating Plans for Sand Creek and Hanson Creek Cattle and Horse Allotments	10/5/93	Boise	Completed	Yes
Sand Creek Grazing Allotment	5/14/96	Boise	Ongoing	Yes
Main Salmon River Tributaries (Northest)	9/19/97	Nez Perce	Ongoing	Yes
Brush Mountain Timber Sale	5/28/97	Payette	Ongoing	Yes
Yantis Ditch Easement	5/21/96	Payette	Ongoing	Yes
Stibnite Mine, Inc. Road Use Permits, Mining	6/29/95	Payette	Ongoing	Yes
Reconstruct/Pave/Plow South Fork Salmon River Road	4/8/93	Payette	Ongoing	Yes
Payette National Forest Grazing Porgram	7/16/93	Payette	Completed	No
Implementation of Interim Strategies for Managing Anadromous Fish Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH)	1/23/95	Program- matic	Modified	No

Table 2. Biological Opinions issued for all listed salmon within the Snake River Basin ESU.-continued

Biological Opinion	Date	Forest	Status (1)	Reinitia- tion(2)
Land and Resource Management Plans for the Boise, Challis, Nez Perce, Payette Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests	3/1/95	Program- matic	Ongoing	Yes
Continued Implementation of Land and Resource Management Plans (PACFISH Extension)	3/18/97	Program- matic	Ongoing	Yes
Crazy Lumberjack Mine	Tent. 10/97	Salmon/ Challis	Ongoing	Yes
Grouse Creek Mine	8/25/97	Salmon/ Challis	Ongoing	Yes
Beartrack Mine Project	3/31/94	Salmon/ Challis	Ongoing	Yes
Operation of Thompsor Creek Mine	5/24/96	Salmon/ Challis	Ongoing	Yes
Commercial Floatboating on the Upper Salmon River	7/18/95	Sawtooth	Modified	Yes
Stanley Basin Cattle Allotment	5/6/94	Sawtooth	Ongoing	Yes
Tucannon River Subbasin	7/21/93	Umatilla	Ongoing	Yes
Starkey Cattle and Horse Allotment	7/18/95	Wallowa- Whitman	Ongoing	Yes
Sheep Creek, Banty, Tower, JC, Horn, Bugout, Prong, RD, and Johnson Salvage Timber Sales; Park HFR and Cantrell Timber Sales	6/9/93	Wallowa-	Ongoing	Yes

- 1 Status listed as completed, modified, or ongoing
- 2 Yes-needs reinitiation of consultation, No-project completed, reinitiation of consultation necessary.

In summary, this BA will address the effects on steelhead of interim programmatic direction found in LRMPs as amended or modified by PACFISH and site specific federal actions where SBOs supersede that direction. These effects will form the basis for initiating and reinitiating consultation on the LRMPs in the Upper Columbia River Basin ESU and the Snake River Basin ESU, as follows:

- 1) Initiate consultation on LRMPs as amended by PACFISH in both ESUs for the Bitterroot and Clearwater National Forests, the eastern portion of the Okanogan National Forest, the northern portion of the Nez Perce National Forest and the eastern portion of the Wenatchee National Forest;
- 2) Initiate consultation on LRMPs as modified by PACFISH in both ESUs for the Baker, Challis, Cottonwood, Lemhi, and Wenatchee Resource Areas of the Bureau of Land Management;
- 3) Reinitiate consultation on LRMPs amended by PACFISH in the Snake River Basin ESU for portions of the Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests; and,
- 4) Reinitiate consultation on steelhead in portions of the Snake River Basin ESU for 17 SBOs which have requirements that supersede consultation on the LRMPs as amended by PACFISH.

3. Environmental Baseline Conditions

Steelhead occur in the Upper Columbia River Basin ESU and the Snake River Basin ESU which are the subjects of this BA. Snake River steelhead have been listed as threatened and the Upper Columbia River steelhead have been listed as endangered by the National Marine Fisheries Service (Federal Register: August 18, 1997 [Vol. 62, 43937]).

These populations of steelhead overlap the distribution of Snake River spring/summer and fall chinook salmon and Snake River sockeye salmon listed under the Endangered Species Act (Federal Register: May 22, 1992 [Vol. 57, 14653]). Portions of the Snake River Basin, have been the subject of prior consultation on LRMPs (National Marine Fisheries Service's BO of March 1, 1995 for the Snake River Basin salmon). Differences and similarities in species distribution are described in this BA as well as differences and similarities in life histories.

Effects to steelhead have occurred or are occurring from salvage of timber under the provisions of the Rescissions Act timber rider (Section 2001 of Public Law 104-19) enacted in July 1995. Section 2001 of the Rescissions Act broadened the definition of salvage timber sales, temporarily suspended environmental laws and direction such as PACFISH, and expedited the amount of timber to be harvested under the salvage program. The President directed federal agencies, including the Forest Service and Bureau of Land Management, to implement a MOA designed to conduct the salvage sales in an environmentally sound manner. An interagency review of the salvage program, however, found substantial variation in compliance with the MOA (National Marine Fisheries Service et al. 1996). The Rescissions Act expired on December 31, 1996.

Within the Upper Columbia River Basin ESU and Snake River Basin ESU, the Bureau of Land Management reported 14 salvage timber sales on about 300 acres and the Forest Service reported 12 salvage timber sales on about 13,500 acres conducted under the Rescissions Act. Biological Assessments and other consultation records for some of these projects show risk of effects from altered sedimentation, altered risk of petroleum spills, and altered wood recruitment within Riparian Habitat Conservation Areas (RHCA's). These effects may result from harvest in RHCA's and LRMP modifications and/or amendments that delete risk aversion requirements. Examples of salvage timber sales with potential effects to steelhead include the Thunderboldt, Pony Creek, and Big Flat Creek sales, all of which occurred within the Snake River Basin ESU on the Boise and Payette National Forests.

The Forest Service manages about 40 percent of the Upper Columbia River Basin ESU and the Bureau of Land Management about 1 percent, while the Forest Service manages about 65 percent of the Snake River Basin ESU and Bureau of Land Management about 7 percent (Table 3). Areas not covered by prior consultation regarding

salmon include the Upper Columbia River Basin ESU and the portion of the Snake River Basin ESU within the Clearwater River Basin (United States Geologic Survey, hydrologic unit code numbers [HUC] 17060301 through 17060308).

Table 3. Acreage of ESUs by ownership and category of protection. Acreage is to the nearest 1000 acres from the Interior Columbia Basin Ecosystem Management Project database.

Unit	Evolutionarily Significant Units								
	Upper Columbia River Basin			Snake River Basin					
	Wenatchee River	Okanogan River	Methow River	Clearwater River	Salmon River	Tucannon River	Imnaha River	Grande Ronde R.	Asotin River
BLM	7,000	14,000	2,000	24,000	1,125,000	0	1,000	16,000	11,000
Forest Service	339,000	134,000	983,000	2,740,000	6,912,000	78,000	391,000	971,000	104,000
State and Private	876,000	891,000	182,000	1,479,000	920,000	859,000	157,000	1,032,000	337,000
Other Federal	128,000	0	2,000	1,000	0	0	0	0	0
Total Acres	1,370,000	1,039,000	1,169,000	4,244,000	8,957,000	937,000	549,000	2,019,000	452,000
Reserve Allocations	Wenatchee River	Okanogan River	Methow River	Clearwater River	Salmon River	Tucannon River	Imnaha River	Grande Ronde R.	Asotin River
Wilderness	73,000	0	317,000	1,283,000	2,420,000	14,000	60,000	177,000	0
Wild & Scenic River	5,000	0	0	85,000	234,000	0	25,000	24,000	1,000
National Recreation Areas	0	0	2	21,000	1,000	0	240,000	21,000	38,000
BLM areas of critical environmental concern	4,000	0	0	4,000	29,000	0	0	60,000	12,000
Consultation Status	Wenatchee River	Okanogan River	Methow River	Clearwater River	Salmon River	Tucannon River	Imnaha River	Grande Ronde R.	Asotin River
Chinook salmon consultation on LRMPs	0	0	0	0	6,912,000	78,000	391,000	971,000	104,000
Sockeye salmon consultation on LRMPs	0	0	0	0	1,000 *	0	0	0	0
No FS or BLM consultation on LRMPs	366,000	148,000	984,000	2,764,000	1,125,000	0	1,000	16,000	11,000

*- approximate acreage around Redfish Lake.

3a. Life History

Steelhead in the Columbia River are an anadromous form of redband trout (*Oncorhynchus mykiss*) (Behnke 1992). Part of their life history is spent in the ocean, and spawning occurs in freshwater streams. Steelhead in the Upper Columbia River and Snake River Basins are primarily summer-run fish which enter freshwater 9 or 10 months prior to spawning. They are described as either "A" or "B" run fish, depending upon when they pass over Bonneville Dam on the mainstem Columbia River.

Wild and naturally-reproducing stocks of steelhead have declined dramatically in the interior Columbia River Basin (Lee et al. 1997). Their decline is due to a variety of factors, but construction of dams along the Snake and Columbia Rivers is a primary cause (Meehan and Bjornn 1991). Loss and degradation of spawning and rearing habitats as well as the introduction of non-native fishes have also contributed to declines. Smolt-to-adult survival has declined from more than 4 percent in 1968 to approximately 1.5 percent during the early 1970s and to less than 1 percent in recent years (Raymond 1979, Lee et al. 1997, R. Thurow, personal communication). The current known distribution of steelhead in the interior Columbia River Basin includes approximately 41 percent of their

historical range and they are classified as "strong" within only 1.3 percent of the remaining range (Lee et al. 1997).

Steelhead spawn in the Upper Columbia River Basin ESU and Snake River Basin ESU from March to July, and may enter streams several months before spawning. Young steelhead have a variety of migration patterns that vary with local conditions; control mechanisms range from mostly genetic to mostly environmental (Behnke 1992). In some populations, fish may remain in natal streams before migrating to the ocean, but in others they may migrate upstream or downstream soon after emergence to enter other rearing areas. In some cases, perhaps depending upon water temperatures and subsequent growth rates, part may remain in freshwater for up to 7 years (Mullen et al. 1992).

In general, life history requirements for chinook salmon in the interior Columbia River Basin are similar to those for steelhead in the basin. Differences are described as follows. Steelhead exhibit spawning at different times of the year than the listed chinook and sockeye salmon. Steelhead typically spawn in the spring, while salmon spawn in the summer and fall. Such pronounced differences do not occur with other life history stages. Where differences occur they are primarily associated with micro-habitat selection in the same streams suitable for occupation by both species. As noted by Meehan and Bjornn (1991) juveniles of the different species migrate during overlapping time periods. Bjornn and Reiser (1991) also identified overlaps in habitat requirements of salmon with steelhead. For example, the temperature range for spawning and incubation of spring/summer chinook salmon is identified as 42 to 57 degrees Fahrenheit and that for steelhead is 39 to 49 degrees Fahrenheit. In a review of temperature requirements for steelhead, Barnhart (1991) noted that spawning occurs within a range of 39 to 55 degrees Fahrenheit with an optimal spawning temperature at 45 degrees Fahrenheit. In general, steelhead have a lower temperature requirement for spawning than do chinook salmon. Similarly, the amount of fine sediment that produces optimum spawning for these fish is about 20 percent fine sediment or less (<6.3 mm). The habitat objectives from PACFISH are compared to those from the March 1, 1995 BO on LRMPs and to steelhead literature (Table 4). This comparison shows that steelhead requirements overlap those of listed salmon for most life history stages.

Table 4. Comparison of riparian management objectives (RMOs) of PACFISH, the National Marine Fisheries Service Biological Opinion of March 1, 1995 on the LRMPs, and this Biological Assessment for steelhead based on review of literature cited in the text.

Habitat Feature	RMOs	Biological Opinion	Steelhead Assessment
Pool frequency	9 to 96 pools per mile based on stream width	9 to 96 pools per mile based on stream width (same as RMO)	9 to 96 pools per mile based on stream width (same as RMO)
Water temperature	No measurable increase in maximum temperature; <64F in migration and rearing areas & <60F in spawning areas	No measurable increase in maximum temperature; <64F in migration and rearing areas & <60F in spawning areas (same as RMO)	No measurable increase in maximum temperature; <64F in migration and rearing areas & <55F in spawning areas
Large woody debris	>20 pieces per mile that are >12 inches diameter and >35 feet long	>20 pieces per mile that are >12 inches diameter and >35 feet long (same as RMO)	>20 pieces per mile that are >12 inches diameter and >35 feet long (same as RMO)
Substrate	None recommended	<20% fine sediment in spawning areas	<20% fine sediment in spawning areas (same as BO)
Stream bank stability	>80%	>90%	>90% (same as BO)
Lower bank angle	>75% banks undercut	>75% banks undercut (same as RMO)	>75% banks undercut (same as RMO)
Width to depth ratio	<10	<10 by channel type	<10 by channel type (same as BO)

Habitat and population conditions for steelhead within the Upper Columbia River Basin ESU and the Snake River Basin ESU are documented in LRMP Environmental Impact Statements (EISs) and in the proposed rule for listing (Federal Register: August 9, 1996 [Vol. 61, 41541]). Populations are in long-term decline and habitat conditions are less than optimal for reproduction and rearing throughout the two subject ESUs.

3b. Steelhead Distribution

As noted previously, the distribution of steelhead within the Upper Columbia River Basin ESU and Snake River Basin ESU overlaps that of listed Snake River spring/summer and fall chinook salmon and Snake River sockeye salmon. Those areas unique to steelhead are the Clearwater River Basin in the Snake River Basin ESU, and the Upper Columbia River Basin ESU in its entirety.

Within these ESUs there are only three sub-basins which have demographics of wild steelhead that have not been affected by hatchery production (Idaho Department of Fish and Game 1996). These sub-basins are the Selway River (HUCs 17060301 and 17060302), a Clearwater River tributary; the South Fork Salmon River (HUC 17060208) and the Middle Fork Salmon River (HUC 17060205 and those portions with the Middle Fork watershed of 17060206), both tributaries to the Salmon River. These sub-basins are of a large enough size (about 750,000 acres or larger) to sustain genetically diverse sub-populations of wild steelhead. Thurow (1985, 1987) documented genetic divergence among sub-populations in various tributaries to the Middle Fork Salmon River and South Fork Salmon River. Lee et al. (1997) identified smaller watersheds with strongholds of steelhead that would form the nucleus of a more widespread distribution of steelhead with little or no influence of non-indigenous stocks. All strongholds appear to be within watersheds identified as high priority resulting from the National Marine Fisheries Service's BO of March 1, 1995.

This BA analyzes the effects to steelhead distribution based on the specific objectives for various watersheds found in LRMPs as amended or modified by PACFISH. Quigley et al. (1996) provided a recent assessment of the continued effects of LRMPs on ecosystems; but the information is provided only at the broad scale. Objectives in LRMPs vary from ecosystem restoration and maintenance in some larger rivers like Rapid River, a Little Salmon River tributary, and the South Fork Salmon River, to long-term tradeoffs of salmon and steelhead habitat for commodity production. Espinosa et al. (1997) documented that one LRMP did not protect salmon, and by inference steelhead; however, that LRMP was not amended by PACFISH for the period evaluated, nor was it a LRMP that placed priority of salmon and steelhead restoration above other discretionary actions.

Detailed consideration of steelhead distribution can be found in the National Environmental Policy Act (NEPA) documentation for PACFISH. Management requirements for the Upper Columbia River Basin ESU and the Snake River Basin ESU are found in LRMPs as amended or modified by PACFISH. Existing effects to steelhead are also found by inference in National Marine Fisheries Service's BO of March 1, 1995 on several LRMPs in the Snake River Basin because of some similarities in life history and distribution between salmon and steelhead. The March 1, 1995 BO and SBOs include consideration of the status of LRMP and project implementation. Details are incorporated by reference, but are not repeated here.

4. Effects of the Actions

The effects to steelhead of LRMP implementation are complex because they include overlapping geographic areas where previous consultation occurred on salmon. This BA evaluates whether the effects on steelhead are within the range of effects consulted on for salmon. This is further complicated by the fact that LRMP consultation for salmon has been superseded by 21 SBOs. This BA simultaneously evaluates this combination of effects. This BA also covers new geographic areas where no previous consultation has occurred. At the end of this section the effects will be summarized in relation to the federal actions.

LRMPs present a special case for consultation because many federal actions conducted under direction of the LRMPs must undergo further FLPMA (Federal Land Policy Management Act), NFMA (National Forest Management Act), NEPA and ESA review and approval before being implemented. Some types of actions do not undergo further review and approval. The latter include mine operating plans and hydro-power license applications upon which the Forest Service and Bureau of Land Management do not act, undeveloped and dispersed recreation activities, and other actions specifically exempted by law such as salvage timber sales in 1996. Because of the programmatic nature of the LRMPs, no interrelated or interdependent federal actions would have effects, except under the circumstances that a Federal Energy Regulatory Commission license or other federal permit was issued independent of Forest Service or Bureau of Land Management consultation. Therefore, the efficacy of implementation of programmatic direction needs to be evaluated to determine whether there might be adverse effects to steelhead from LRMP implementation and deviations from it as explained above. Further evaluation of these effects can be found in the National Marine Fisheries Service's BO of March 1, 1995 on LRMPs for salmon in the Snake River Basin ESU.

For this programmatic BA, it is assumed that similar patterns of effects exist for steelhead as were identified for salmon. For Snake River Basin salmon, the Forest Service and Bureau of Land Management prepared 57 watershed-scale BAs. These BAs addressed proposed and ongoing land management actions and characterized environmental baseline conditions. A comparable watershed-scale process has not been completed for steelhead.

To assist in the preparation of this BA, Forest Supervisors and Bureau of Land Management Area Managers in the two subject ESUs were questioned to determine the approximate nature of deviations from programmatic direction and the combined effects of those deviations with anticipated effects from previous consultation on salmon. All National Forests and all Bureau of Land Management Resource Areas responded. The types of effects for each action can be found in the consultation records for salmon in offices of the National Marine Fisheries Service in Boise, Idaho and Portland, Oregon.

The National Forests reported a total of 36 amendments, other than PACFISH, that may effect steelhead and individual Forests ranged from zero to 19 amendments. Effects of these amendments vary widely, but include alterations in RHCA's that do not conform to recommendations in PACFISH, causing increased risk of adverse effects to steelhead. Similarly, amendments provide for increased risk due to sedimentation and petroleum spills where LRMP direction prohibited those risks in certain sub-basins. Some of these amendments are for federal actions that are the subject of the SBOs listed in Table 2. The effects of the other amendments will be reviewed as ongoing federal actions. The Bureau of Land Management did not report any LRMP modifications, other than PACFISH, that may effect steelhead

Other effects to steelhead potentially occur because of hydro-power development, mining, and commercial and noncommercial recreational boating and floating. Effects include, but are not limited to, alteration of instream flows, sedimentation, pollution by toxic chemicals, and direct disturbance of steelhead. The Bureau of Land Management showed that they responded to all proposed mine development and hydro-power development, but had no administration of commercial and noncommercial recreational boating and floating to avoid take of spawning steelhead. The National Forests showed that they had responded to all proposed mine development, all but one hydro-power development, and had three units with administrative procedures in place that prevent take of spawning steelhead by commercial and noncommercial recreational boaters and floaters. Spawning steelhead are subject to the types of effects described in the consultation record on spawning salmon from human disturbance. In addition, David Burns, Russ Strach, and others who have studied spawning steelhead in the South Fork Salmon River observed that these fish are easily displaced or disturbed by people. Water conditions during spawning are not sufficient to prevent such disturbance. From this, it is concluded that there are effective administrative procedures which consider steelhead with the exception of commercial and noncommercial recreational boating and floating. The latter is not effectively administered with programmatic direction to avoid take of spawning steelhead.

Table 5. General Summary Of Findings For Nine Subjects After 1995 PACFISH Field Reviews On Selected National Forests And BLM Districts (PACFISH Review Team 1996).

(L=Low, M=Medium, H=High success, NA=Not assessed, ?=Unable to determine based on field observations and information provided.)

	Salmon/Challis s	Nez Perce		Clearwater		Ochoco/Prineville e	Umatilla/Baker r	Cottonwood	Los Padres	Bolse	Payette	Sawtooth
Date Reviewed	September 12-14 95	July 27-28 96	Oct 1-4 96	Sept 21-22 95	Oct 1-4 96	October 3-5	October 24-26	November 1-2	November 8-9	September 9-12 96	September 9-12 96	September 9-12 96
Subject	USFS / BLM	USFS		USFS		USFS / BLM	USFS / BLM	BLM	USFS	USFS	USFS	USFS
Line/Staff Understanding	M / H	M	M+	H	H	M / M	L / H	H	M	L / M	L / M	H
Commitment	M / H	M	M+	M	H	M / H	M / H	H	M	M	M	H
a. Screening b. Documentation	M / H L / L	H L	NA M	H M	NA M+	L / M L / L	M / M L / L	H M	M L	NA L / M	NA L / M	NA H
Mod. Projects W/Unacc. Risk	NA / H	L	NA	M	NA	L / M	M / M	H	?	NONE OBSERVED	NONE OBSERVED	NONE OBSERVED
Appl. of S&Gs	NA / NA	NA	NA	NA	NA	NA / NA	NA / NA	NA	NA			
Doc. Of Changes RMO/RHCA	L / L	L	M	L	M	L / H	L / L	L	M	L / M	L / M	H / M
Use of WA	L / L	L	L	L	L	H / L	L / L	L	H	L	L	L
Impl. Monitor Initiated	? / M	L	H	L	H	L / L	L / L	M	L	H	H	H

Many LRMPs, such as those of the Payette, Boise, and Wallowa-Whitman National Forests, effect steelhead habitat by providing restoration objectives and implementation schedules. If these schedules are not met, or objectives are not achieved then steelhead are affected. Implementation of restoration actions to steelhead habitat showed a high degree of variability among units. The Bureau of Land Management reported that 100 percent of the mileage of streams planned for restoration were on schedule. Similarly, National Forests in the Upper Columbia River Basin ESU reported that 100 percent of the restoration of steelhead habitat was on schedule. National Forests within the Snake River Basin ESU reported no planned restoration in most of the Clearwater watershed. In the remainder of the Snake River Basin ESU, National Forests reported that about 90 percent of planned steelhead habitat restoration has not been completed. These units reported insufficient funding or low priority as the reason for restoration shortfalls. From these reports it is concluded that units were having irretrievable loss of restored steelhead habitat in the Snake River Basin ESU. In other words, steelhead production has been lost from delays in implementation of restoration of steelhead habitat.

The PACFISH effort is an ecosystem-based approach for maintaining the health of watersheds containing habitat for anadromous fish, including steelhead, on Forest Service and Bureau of Land Management administered lands (Williams and Williams 1997). In February 1995, LRMPs of both agencies were amended or modified by PACFISH for an 18-month period pending development and implementation of long-term aquatic conservation strategies developed by both agencies in cooperation with other federal agencies through the Interior Columbia Basin Ecosystem Management Project. PACFISH was implemented to halt declines in anadromous fish habitat on federal lands and to maintain long-term management options prior to completion of geographically specific EISs as part of the Interior Columbia Basin Ecosystem Management Project. Delays in completion of the EISs have resulted in continued implementation of PACFISH beyond the envisioned 18-month period.

Implementation of PACFISH has been inconsistent. Forest Service and Bureau of Land Management scientists, with the assistance of staff from National Marine Fisheries Service and Fish and Wildlife Service, have monitored and reported on implementation of PACFISH during 1995 and 1996 (PACFISH Review Team 1996, 1997). In general, the reviews showed that Bureau of Land Management field offices exhibited a moderate to high understanding and commitment to implementation of PACFISH; whereas understanding, commitment and implementation among Forest Service offices were more mixed (Table 5). In particular, while the commitment of staff to PACFISH was rather high, documentation of implementation was consistently low for both agencies. Although some improvement was observed during 1996, problems of proper implementation persist. Implementation problems have resulted in adverse effects to steelhead and their habitat from increased solar radiation from timber harvest in RHCAs and reduced streambank stability and increased stream temperatures from grazing allotments (PACFISH Review Team 1997). Implementation and effectiveness monitoring, which was not initially considered to be a critical component of PACFISH because of the limited 18-month implementation period, have become more important as the EISs have been delayed and the duration of PACFISH extended. Similarly, watershed analysis was not broadly encouraged during the initial 18-month period although it was a primary component in the development of PACFISH (Williams and Williams 1997). Based on deviations and uncertainty in the implementation of PACFISH, as well as the extended duration for which PACFISH now applies, the authors conclude that there have been effects to steelhead that were not planned during programmatic consultation. As such, the commitment to proper implementation of PACFISH, with appropriate watershed analysis and monitoring, must be strengthened.

The SBOs on other federal actions (Table 2) form the basis for a somewhat complex set of management direction and resulting effects for portions of the Snake River Basin ESU. The SBOs and their supporting record define effects and measures to reduce or avoid those effects to salmon and their designated critical habitat. It has been previously noted that these effects are within areas where programmatic consultation has occurred and that they define effects to the same life history stages of steelhead as for salmon. The difference in the timing of spawning for salmon and steelhead does not result in any unanticipated effects because irrigation season is primarily after steelhead spawning season, and no in-stream activities were planned in known steelhead spawning areas for these site specific federal actions. Therefore, it is concluded that the same measures would reduce or avoid adverse effects to steelhead. The effects to steelhead are reduced or avoided due to the combination of programmatic and site specific requirements in these instances. In a review of SBOs by the authors of this BA it was concluded that

if BOs were to be written for steelhead based on existing scientific information, that they would apply equally to steelhead as they do to salmon.

In addition, it is noted that 9 of 21 salmon SBOs are within the Middle Fork Salmon River, South Fork Salmon River, and Selway River sub-basins, areas which are found to be unique strongholds of wild steelhead (Lee et al. 1997). Also occurring within these sub-basins were: (1) one hydro-power project implemented within steelhead habitat without Forest Service requirements to protect steelhead; (2) three salvage timber sales of several thousand acres that may effect salmon and steelhead; (3) lack of completion of about 80 percent of the restoration planned for steelhead habitat; and, (4) no effective administration of commercial and noncommercial recreational boating and floating to avoid take of spawning steelhead. Effects of combined actions include, but are not limited to, altered sedimentation, altered exposure of steelhead to toxic chemicals, altered wood recruitment within RHCAs, altered instream flows, direct disturbance of spawning steelhead, and lack of implementation of restoration of steelhead habitat.

These effects were identified to be exceptions to programmatic direction in LRMPs as amended or modified by PACFISH. Implementation of the interim programmatic direction of PACFISH, and subsequent conservation of anadromous fish habitat have been hampered by the following: (1) inconsistent application of PACFISH within certain Forest Service units; (2) lack of adequate funding to implement planned steelhead habitat restoration activities, especially within sub-basins of the South and Middle Forks of the Salmon River, and (3) Rescission Act salvage timber sales. Although these problems exist within both the Upper Columbia River Basin and the Snake River Basin ESUs, their impacts have been most pronounced in the Snake River Basin ESU, which harbors the majority of remaining strongholds for steelhead in the Columbia River drainage (Lee et al. 1997). Thus it is concluded that existing implementation of the interim programmatic direction of PACFISH has not adequately prevented increasing risks to steelhead, particularly within the Middle Fork Salmon River, South Fork Salmon River, and Selway River sub-basins.

In summary:

- 1) Implementation of the LRMPs as amended by PACFISH, for the Bitterroot, Clearwater, and Okanogan National Forests and the northern portion of the Nez Perce National Forest and the eastern portion of the Wenatchee National Forest, result in effects to steelhead from inconsistent implementation of PACFISH, Forest Plan amendments that may effect steelhead, commercial and noncommercial recreational boating and floating, combined effects to steelhead strongholds, and those effects described in the National Marine Fisheries Service's BO of March 1, 1995 for salmon before application of their recommendations;
- 2) Implementation of LRMPs as modified by PACFISH for the Baker, Challis, Cottonwood, Lemhi, and Wenatchee Resource Areas of the Bureau of Land Management, result in effects to steelhead from inconsistent implementation of PACFISH, commercial and noncommercial recreational boating and floating, combined effects to steelhead strongholds and those effects described in the National Marine Fisheries Service's BO of March 1, 1995 for salmon before application of their recommendations;
- 3) Implementation of the LRMPs as amended by PACFISH for the Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests, result in effects to steelhead from inconsistent implementation of PACFISH, lack of restoration of steelhead habitat, Forest Plan amendments that may effect steelhead, commercial and noncommercial recreational boating and floating, site specific federal actions under SBOs and combined effects to steelhead strongholds, and those effects described in the National Marine Fisheries Service's BO of March 1, 1995 for salmon; and,
- 4) Implementation of site specific federal actions in portions of the Snake River Basin under 17 SBOs result in similar effects to steelhead as those described for salmon except when combined as above in steelhead strongholds.

4a. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State and 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 BA, the action encompasses those portions of 17 administrative units within the subject ESUs.

Quigley et al. (1996) identified that large portions of the Columbia River Basin are state and private land. Various effects to steelhead can be inferred from agricultural development, dam and road construction, urbanization and other activities on state and private lands. Although not quantitative, the effects are inferred to be greater than those on federal lands because most remaining steelhead habitat of high and moderate quality is found within lands administered by the Forest Service and Bureau of Land Management.

The Upper Columbia River Basin ESU and Snake River Basin ESU have similar patterns of development (Table 3) to the larger Columbia River Basin. However, because of the amount of federal ownership within these two ESUs, they contain a higher percentage of high to moderate quality steelhead habitat than the Columbia River Basin as a whole. This places added emphasis on the importance of protecting steelhead on lands administered by the Forest Service and Bureau of Land Management in these two ESUs (Lee et al. 1997).

The combination of high proportions of federal ownership, and the assumed greater protection of high to moderate quality steelhead habitat, and the assumed lower proportions of high risk activities on non-federal ownership in the two subjects ESUs results in a determination of low adverse cumulative effects to steelhead.

5. Recommendations

The recommendations are broken out into nine areas due to the complexity of effects. They are as follows:

- 1) Extend indefinitely the National Marine Fisheries Service's BO of March 1, 1995 and all subsequent related direction, to all LRMPs in both steelhead ESUs in order to reduce adverse effects not previously the subject of consultation on LRMPs until such time as new, long-term programmatic direction is adopted for both salmon and steelhead;
- 2) Extend 17 SBO provisions on salmon to steelhead to assure that adverse effects are reduced or avoided;
- 3) Review actions conducted under LRMPs to assure that adverse effects are otherwise reduced or avoided;
- 4) Provide additional mitigative measures in steelhead strongholds in the Snake River Basin ESU to reduce the potential of adverse combined effects;
- 5) Accelerate restoration of steelhead habitat in the Snake River Basin ESU;
- 6) Review commercial permits and noncommercial recreational boating and floating as a federal action;
- 7) Strengthen monitoring and commitment, as needed, associated with PACFISH to insure the strategy is properly implemented;
- 8) Watersheds within the Upper Columbia River Basin ESU and Snake River Basin ESU should be treated as key watersheds (as directed by PACFISH) and as designated critical habitat; and,
- 9) If adopted, these recommendations should be extended indefinitely, until such time as new, long-term, programmatic direction is adopted by the Forest Service and Bureau of Land Management for both salmon and steelhead.

These recommendations are not exclusive of one another because of the overlaps defined in the summary of effects. Recommendations are intended to be additive for each of the four applicable federal actions. Recommendations are intended to be implemented in combination to reduce and avoid adverse effects to steelhead. The effects avoided are those summarized beginning at page 10. Detailed descriptions of each of these nine recommendations are listed below.

- 1) The measures identified in the National Marine Fisheries Service's BO of March 1, 1995, and all subsequent related direction, on LRMPs in the Snake River Basin ESU, should be extended to all LRMPs in those portions of the Upper Columbia River Basin ESU and Snake River Basin ESU upon which LRMP consultation was not initiated for salmon. This includes, but is not limited to, designation of high priority watersheds and consultation on all ongoing federal actions that may affect steelhead. The Clearwater and Nez Perce National Forests and the Cottonwood Resource Area have already begun to characterize and prioritize watersheds. Portions of PACFISH and the consultation record on LRMPs for salmon designed to reduce or avoid adverse effects should be extended to watersheds containing steelhead throughout both subject ESUs. It is recommended that the National Marine Fisheries Service's BO of March 1, 1995, and all subsequent related direction, be extended indefinitely for all LRMPs in both ESUs, until such time as new, long-term, programmatic direction is adopted for both salmon and steelhead.
- 2) Within the area of the Snake River Basin ESU where consultation has been concluded on LRMPs and site specific federal actions, it is recommended that 17 SBOs for salmon immediately be extended to steelhead. That would assure that those actions where formal consultation has been concluded (Table 2) would have sufficient requirements to reduce or avoid adverse effects to steelhead and salmon and their critical habitat, and prevent the actions from being suspended pending completion of consultation.
- 3) Throughout the Upper Columbia River Basin ESU and the Snake River Basin ESU, all other ongoing Forest Service and Bureau of Land Management actions that may affect steelhead should be assessed via the Level I streamlining teams using the National Marine Fisheries Service checklist and matrix of pathways (National Marine Fisheries Service 1996). That process should be amended to review federal actions for take of steelhead. Prior to the review, the checklist and matrix of pathways should be modified as needed by a team from the National Marine Fisheries Service, Forest Service and Bureau of Land Management for habitat features and recommended values that are appropriate for the Snake River Basin ESU and the Upper Columbia River Basin ESU. The revised checklist and matrix of pathways for ongoing federal actions in both ESUs should be completed approximately 60 days after the BO is issued pursuant to this BA by the National Marine Fisheries Service. Those actions that pass the review shall proceed as proposed; others shall be modified as appropriate.

For the Snake River Basin ESU, already the subject of consultation for salmon, brief BAs should be tiered to those already prepared for various watersheds and they should contain the review of federal actions for effects to steelhead except for those identified in SBOs. For the Upper Columbia River Basin ESU, not the subject of consultation on salmon, BAs should be prepared following the agreed upon format for salmon, and they should contain reviews for all ongoing federal actions that may affect steelhead; the latter BAs should be completed for the watersheds as shown in Table 6.

Table 6. BAs to be completed for ongoing projects for steelhead consultation.

ESU	Watershed	Lead Unit
Upper Columbia River Basin	Wenatchee	Wenatchee National Forest
	Okanogan	Okanogan National Forest
	All remaining portions	Wenatchee National Forest

It is further recommended that federal actions that are conducted under the 36 amendments to LRMPs (page 11), in addition to PACFISH, be identified clearly and that consultation be appropriate to the effects

on steelhead of the amendment. Resulting BAs should be entered into consultation with the National Marine Fisheries Service at the earliest possible date following listing.

- 4) Special management considerations not previously warranted for salmon are needed for the Selway River, Middle Fork Salmon River and South Fork Salmon River sub-basins. This is because a genetically and ecologically unique sub-population of steelhead has been identified in these three sub-basins combined with a relatively high density of site specific federal actions which are exceptions to programmatic LRMPs as well as a lack of implementing planned restoration actions. LRMPs contain some special management requirements that should be made more uniform. Specialized management requirements have been previously related to designation of large areas to remain roadless and specialized protection for fish. In addition to previously cited information, the consultation records for federal actions for salmon in the Snake River Basin ESU have been utilized to develop the mitigative measures listed below. Those consultation records utilized include emergency consultations on flood and fire effects, recreation effects, timber sale effects, allotment management plan effects and others found in consultation records in the offices of the National Marine Fisheries Service in Boise, Idaho, and Portland, Oregon.

It is acknowledged that there are limitations to the best available science and that these limitations play an important role in actual effects to steelhead from management actions. Mitigative measures are intended to provide risk avoidance until such time as better scientific information is available.

Federal actions in the Selway River, Middle Fork Salmon River, and the South Fork Salmon River sub-basins in their entirety should be subject to the following mitigative measures and are applicable to the jurisdictions of the Forest Service and Bureau of Land Management.

Roads

Develop a schedule and prioritize to close, obliterate and revegetate, or resurface as many existing roads as possible. Existing roads in RHCAs should receive high priority for treatment. If resurfaced, cover the existing native surface open roads with aggregate or pavement to control erosion and sedimentation; stabilize cut and fill slopes.

Build new roads only to replace existing roads in RHCAs, or directly repair human-caused damage to steelhead habitat in streams.

Do not widen roads by increasing cut and fill slope areas in order to accommodate more traffic and/or larger vehicles than can presently use the road.

Do not open closed and revegetated roads for management purposes unless necessary to repair human-caused damage to steelhead habitat.

Riparian Habitat Conservation Areas

In order to define landslide prone areas, utilize methods described by Prellwitz (1994) and Hall et al. (1994), or use at least an equivalent peer reviewed methodology with at least a 90% probability of identifying landslide prone slopes.

Fire Management

Emphasize containment and confinement rather than control strategies to manage wildfire.

Use tractors only in the immediate vicinity of private property or to protect life, as in the construction of safety zones.

Maximize the use of planned ignitions and natural prescribed fire to meet vegetation management objectives.

Only use water sources where screening of fish from water intake is provided or no salmon or steelhead are present.

Timber Management

Only use timber harvest methods (such as, helicopters, horses, etc.) that result in low levels of ground disturbance or that avoid adverse effects to steelhead.

Use only existing open roads, without construction of new landings.

Do not harvest in RHCAs.

Grazing Management

Manage for natural bank stability of streams using best available data.

Locate holding facilities for domestic livestock outside of RHCAs.

Recreation Management

Allow motorized use only on open roads and trails designed for such purposes.

Where steelhead spawning has been documented and where disturbance of spawning fish is likely to occur, close streams or affected reaches to commercial and noncommercial recreational boating and floating in any craft from April to June of each year.

- 5) It is important that steelhead habitat restoration be accelerated in the Snake River Basin ESU. It is recommended that the Forest Service and Bureau of Land Management work cooperatively with the National Marine Fisheries Service, the state agencies and the Tribes to develop priorities and adequately fund restoration.
- 6) Review effects to steelhead from commercial permits and noncommercial recreational boating and floating for adverse effects to steelhead spawning. Where adverse impacts are reducing steelhead productivity, commercial permits and noncommercial recreational boating and floating should be modified to reduce or eliminate the adverse effects. Review all recreational facilities as ongoing federal actions.
- 7) Strengthen monitoring and commitment, as needed, associated with PACFISH to insure the strategy is properly implemented. To date the implementation has been inconsistent. Strengthened implementation should include increased emphasis on watershed analysis and the development of a schedule for each unit to complete such analyses in a timely manner.
- 8) Watersheds within the Upper Columbia River Basin ESU and the Snake River Basin ESU should be treated as key watersheds (as directed by PACFISH) and as designated critical habitat.
- 9) If adopted, these recommendations should be extended indefinitely, until such time as new, long-term, programmatic direction is adopted by the Forest Service and Bureau of Land Management for both salmon and steelhead.

6. Determination

The continued implementation of the LRMPs as amended or modified by PACFISH and those 17 SBOs listed in Table 2 may affect and are likely to adversely affect steelhead in the Snake River Basin ESU and Upper Columbia River Basin ESU. If, however, the recommendations are implemented as part of the proposed action, the authors conclude that the continued implementation of the LRMPs as amended or modified by PACFISH and those 17 SBOs contained in Table 2, may effect but are not likely to adversely effect steelhead

The reasons for this determination are that:

- 1) The effects to most life history stages of steelhead are similar to salmon for which consultation has previously been concluded with BOs;
- 2) Sub-basins with unique sub-populations of wild steelhead in the Selway River, Middle Fork Salmon River, and South Fork Salmon River need additional protection from combined adverse effects;
- 3) Ongoing actions need to be reviewed for unanticipated effects to steelhead either from actions within LRMP direction or deviating from it;
- 4) Ongoing actions covered by the previous 17 SBOs (Table 2) are implemented with measures to reduce and/or avoid adverse effects to steelhead;
- 5) Provisions of the National Marine Fisheries Service's BO of March 1, 1995 and all subsequent related directions, in the Snake River Basin on salmon are applicable to portions of the Snake River Basin ESU and need to be extended to the entire ESU and to the Upper Columbia River Basin ESU; and,
- 6) Habitat for steelhead needs to be treated as if it were a key watershed and designated critical habitat.

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