



# Oregon

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January 15, 2008

Ms. Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426

**Via Electronic Filing**



Subject: Applegate Dam Project, FERC 11910-002-Response to FERC's request for additional information during the 10(j) meeting November 5, 2007

Dear Secretary Bose:

The Oregon Department of Fish and Wildlife (ODFW), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Oregon Department of Water Resources (OWRD), and Symbiotics participated in a section 10(j) inconsistency meeting via teleconference with the Federal Energy Regulatory Commission (FERC or Commission) on November 5, 2007. ODFW submitted a response to FERC's Section 10(j) Preliminary Determination of Inconsistency Letter, June 20, 2007 in which we requested a meeting to address ODFW's remaining issues in a letter dated August 17, 2007.

As a result of this meeting ODFW was asked to submit additional information by Mr. Tim Looney of FERC which would aid in resolving outstanding issues associated with the Applegate Dam Environmental Assessment. One of the key topics of discussion at the meeting, and of critical importance to the fish agencies, the applicant, and the Commission, is ODFW's plan to initiate the reintroduction of anadromous salmonids above Applegate Dam. ODFW is formally submitting its reintroduction proposal (Attachment 1) in to the licensing record as requested by FERC staff at the meeting.

Thank you for the opportunity to provide this information, ODFW looks forward to working with FERC, Symbiotics, and other participants to resolve all remaining issues with the Environmental Assessment for this Project.

Sincerely,

David A. Harris  
Southwest Hydropower Coordinator

C: Service List (FERC 11910)  
Applegate HART

# **Migratory Fish Reintroduction At Applegate Dam**



**January 2008**

**Oregon Department of Fish and Wildlife  
Southwest Region  
Rogue Watershed District**

## **Introduction**

Recent studies completed as part of the application process for hydropower development at Applegate Dam have clearly delineated the opportunity for restoration of production and connectivity for native migratory fishes in the upper Applegate watershed. The Oregon Department of Fish and Wildlife (“ODFW” or “Department”) plans to initiate steps to reintroduce native migratory fishes above Applegate Dam beginning in 2008. Formal reintroduction planning will be included in the appropriate conservation plan/recovery plan for each species, and will involve coordination with the Corps of Engineers as the owner of the dam.

This document presents initial plans for management direction of anadromous and other migratory fishes in the area, and contains the proposed sequence and methodology for reintroduction. The anadromous fish species being considered for reintroduction above the dam in order of preference include winter steelhead (*Onchorynchus mykiss*) and coho salmon (*O. kisutch*). Winter steelhead are the logical choice for initial efforts at reintroduction because they were the most abundant anadromous fish before the dam was constructed, and substantial habitat remains in tributaries above the dam and reservoir. Coho were known at a minimum to use habitat that is now within the inundation zone, and habitat suitable for coho exists above the dam and reservoir. Coho salmon are listed as “threatened” under the federal Endangered Species Act.

Other native migratory fish species will be considered for reintroduction. Summer steelhead are present in the Applegate below the dam and were known to spawn above the dam site. Pacific lamprey (*Lampetra tridentata*) were known to migrate past the dam site as well. Spring and fall chinook likely reached the upper Applegate at times, but not in significant numbers or on a regular basis and are not being considered for reintroduction at this time. Searun cutthroat trout (*O. clarki clarki*) are thought by ODFW to be found primarily in the lower Rogue and Illinois rivers and not the Applegate, although opinions vary. Restoration of passage for cutthroat trout is an objective, but would likely benefit a fluvial population. Passage could also be considered for Klamath smallscale suckers, a native migratory fish species.

## **Background**

The Applegate project was authorized by the Flood Control Act of 1962 and constructed by the US Army Corps of Engineers (ACOE). Construction of the dam and appurtenances was completed by the fall of 1980. A 1961 report by the U.S. Fish and Wildlife Service estimated about 10,000 steelhead, 5,000 coho salmon, and 15,000 fall Chinook salmon used the Applegate River for spawning (ACOE, 1961). A spawning population of about 2,000 steelhead was estimated to use the mainstem Applegate and tributaries upstream from the dam site, while about 500 coho were estimated to spawn in the reservoir site.

Unique to the Rogue, a primary authorized use of Rogue project dams including Applegate is fishery enhancement, mostly through the dedicated use of reservoir storage for flow enhancement and a multi-port reservoir outlet for temperature control. Later, two low-head

diversion dams downstream of Applegate Dam were modified to facilitate passage of adult anadromous fishes.

Fish passage was originally to be provided at Applegate Dam. Hatchery production was designed to mitigate for the loss of 1,150 winter steelhead and 500 coho within the inundation zone. Only later did the natural resource agencies agree to reconsider the authorized requirement for fish passage facilities at Applegate and mitigate all fish with hatchery production. The ACOE constructed an adult fish collection facility at the base of the dam for winter steelhead. Broodstock are transported from the collection facility to Cole Rivers Hatchery. The smolt release is then trucked back to the Applegate River just below the collection facility.

ODFW has continued to recognize the production potential of the habitat above Applegate Dam. Hatchery winter steelhead adults excess to broodstock needs were released above the dam almost annually between 1980 and 2005 to provide a sport fishery on the adults, with numbers ranging between 270 and 1,620. Any subsequent contribution to the trout fishery above the dam or steelhead production below the dam has been considered an additional benefit. No evaluation of subsequent production has been attempted to date.

ODFW has compiled a table of estimates of habitat and anadromous fish production above Applegate Dam (Table A). The most recent estimates are found in the Anadromous Fish Reintroduction and Passage Feasibility Study completed by Symbiotics (2006). The study reported the following: 40-80 stream miles in the upper Applegate River Basin possess

good winter and summer rearing habitat; a “target goal” for reintroduction of 1,500-2,000 adult steelhead would be realistic; and 172 coho adults would be needed to fully seed the habitat available for this species (Symbiotics, 2006). More importantly, surveys conducted by the USDA-Forest Service and Symbiotics have indicated that the existing habitat in tributaries above Applegate Reservoir is high quality habitat.

Following a review of the available data, ODFW estimates that: a minimum of 35 miles of habitat remain for anadromous fish production above the dam and reservoir; a likely minimum goal for steelhead production is 850 adults in the remaining habitat; a likely minimum goal for coho production is 172 adults in the remaining habitat.

## **Policies for Reintroduction**

The Native Fish Conservation Policy (NFCP--OAR 635-007-0504 and OAR 635-007-0505) provides overarching goals to the Department with respect to ensuring the conservation and recovery of native fish in Oregon. The policy identifies conservation of native fish in areas they are indigenous as the Department's principle obligation for fish management. The Applegate River upstream of Applegate Dam traditionally provided habitat for several native migratory fish species, as listed above.

The policy has three areas of emphasis. First is to avoid serious depletion of native fish. Second is to actively restore and maintain native fish at population levels that provide ecological and societal benefits, and third is to ensure opportunities for fisheries and other societal resource uses are not unnecessarily constrained when consistent with native fish

conservation. Objectives for reintroduction at Applegate include: expanding the current range of steelhead and coho salmon in the sub-basin; gaining additional and sustainable natural production of steelhead and coho salmon; increasing recreational opportunity and providing fisheries consistent with native fish conservation; restoring a keystone component of the upper river ecology, with some marine nutrient benefit; and potentially contributing to the potential de-listing of Southern Oregon Northern California coho.

### **Near-Term (2008): Winter Steelhead**

Initial steps toward reintroduction will follow some of the concepts identified in reintroduction planning at the Pelton Round Butte Hydroelectric Project, and will concentrate on managing disease risk to upstream fish populations until a sustainable steelhead population is established. The preferred strategy at this time is to reintroduce winter steelhead by moving juveniles and/or gametes into upstream areas until monitoring and evaluation confirms that a sustainable population can be developed under existing conditions. At first, only winter steelhead adults known to have originated upstream of Applegate Dam will be considered for passage above the dam. All Applegate origin winter steelhead adults may be considered acceptable for passage upstream of Applegate Dam if it has been determined that the population is able to sustain itself, or that disease risk is minimal.

ODFW plans to release groups of hatchery winter steelhead juveniles above Applegate Dam. The juveniles will be progeny produced during current hatchery production practices with Applegate stock winter steelhead. The primary action will be a paired release of

differentially marked winter steelhead smolts above and below the dam (20,000 smolts above, 20,000 smolts below with an alternate ventral fin clip). The collection of returning fish to determine comparative survival rates will occur in two stages: the fish will be collected during their half-pounder run at the Huntley Park seining project on the lower Rogue River; and the fish will be collected upon return to the collection facility at Applegate Dam.

Hatchery gradeout winter steelhead juveniles and fry will be also released above the dam as allowed by the ability to differentially mark these releases. The release site will vary between the reservoir or tributary streams depending on the life stage involved.

**The proposed timeline for the release in 2008 will be:**

1. Marked winter steelhead smolts (20,000 AdLV) will be released in various locations above the dam in late April.
2. Marked winter steelhead smolts (20,000 AdRV) will be released directly below the dam near the inlet of the collection facility in late April.
3. Returning marked half pounders will be captured and identified during seining efforts at Huntley Park on the lower Rogue River (RM 8). Marked LV or RV steelhead will be enumerated and released on site (July-October 2008 or 2009).



4. Returning marked adults will be captured and identified at the collection facility during broodstock collection at the Applegate Dam facility. Marked LV or RV steelhead will be enumerated and collected for broodstock (February through June, 2009-2011).

5. Planning will continue for releases in years beyond 2008 to facilitate evaluation of winter steelhead reintroduction.

6. The information will be presented in a project report after completion of the study.

### **Mid-Term: (2010) Coho Salmon**

Recovery planning for the Oregon portion of the SONC coho ESU is expected to begin in 2008. It is likely that some direction regarding reintroduction will come out of the recovery planning process. During hatchery production planning for the 2008/2009 brood year, ODFW will work with the National Marine Fisheries Service (NMFS) and ACOE to gain approval for a test release of Rogue stock hatchery coho at Applegate. The earliest smolt release would likely be in 2010.

The proposal would mimic the 2008 paired release of differentially marked winter steelhead smolts. The juveniles will be progeny produced during current hatchery production practices with Rogue stock coho salmon from Cole Rivers Hatchery. The primary action will be a paired release of differentially marked coho salmon smolts above and below the dam (20,000 smolts above, 20,000 smolts below with an alternate ventral fin clip).

The returning fish would be collected at the collection facility at Applegate Dam to determine comparative survival rates. The Rogue stock fish could easily be removed from the subbasin at this time. The effort would require a significant operational change, however. The collection facility is currently only operated during the winter steelhead collection period (February-June), and not when coho adults peak in the Applegate. Approval and funding to operate the trap additional months would be needed.

### **Long-Term: Cutthroat Trout**

With confirmation that sustainable populations are being maintained above the reservoir, cutthroat trout will be considered for transfer above the dam. Adult cutthroat captured at the trapping facility could be collected and hauled above the reservoir. The collection period would overlap that of coho and steelhead (November through June).

### **Long-Term: Pacific Lamprey**

With confirmation that sustainable populations can be maintained above the reservoir, Pacific lamprey could be considered for reintroduction. Adult lamprey captured at the trapping facility could be collected and hauled above the reservoir. The collection period would at least partially overlap that of coho and steelhead (November through June).

### **Long-Term: Klamath smallscale sucker**

With confirmation that sustainable populations can be maintained above the reservoir, Klamath smallscale sucker could be considered for reintroduction. Adult suckers captured at the trapping facility could be collected and hauled above the reservoir. Based on data

from Elk Creek Dam, the collection period would at least partially overlap that of coho and steelhead (November through June).

### **Additional comments:**

Captures of reservoir origin spring chinook juveniles (stocked in the reservoir for the fishery) during downstream migrant trapping conducted by Symbiotics showed that there was only a 3% immediate mortality resulting from passage through Applegate Dam under current conditions (delayed mortality unknown). At four to eight inches in length, these fish should be considered the surrogate for downstream anadromous juvenile passage identified in the study. This fact, combined with the amount of high quality habitat remaining above the dam, suggests that there is a high likelihood for successful reintroduction.

Uncertainties regarding reintroduction continue to exist, however. The ability to survive a downstream migration through the reservoir may be affected by predation. Key species that may prey on smolts include largemouth bass, smallmouth bass, and black crappie. Also, the ability to navigate through the reservoir and find outlet ports in the reservoir tower may vary by species.

Restoration of anadromous fish migration can be expected to provide numerous ecological benefits. But there is some risk to resident fish populations from competition and disease.

Resident trout upstream of Applegate Dam have been isolated from the remainder of the subbasin for over 20 years. These fish may not have been subjected to newly introduced or more virulent pathogens found downstream. Of primary concern is Infectious Hematopoietic Necrosis Virus, found in naturally produced salmon and steelhead downstream of the dam. The virus found naturally in the lower river is currently a different strain than the virus found in California, but similar strain has been detected in the past.

Secondary barriers (natural falls) are present, especially in California portions of the upper watershed. Resident trout above these barriers would not be affected in any way by reintroduction efforts.

Pursuant to Oregon Revised Statute 509.585, the owner/operator of a facility is responsible for providing upstream and downstream passage facilities at an artificial obstruction when certain trigger activities are initiated. ODFW will coordinate efforts and responsibilities with the ACOE and the federal fish agencies. Reintroduction of native migratory fishes will require detailed fish passage procedures and evaluations to ensure adequate efficiencies and survival rates are achieved to meet population goals.

This reintroduction plan represents the initial phase in guiding ODFW's efforts at Applegate Dam. The Department anticipates that this plan will be revised and amended as information on the success of these efforts becomes available. As revisions and amendments to the reintroduction plan are incorporated it will include identification of specific criteria for desired status for the population, tasks of monitoring and evaluation,

and identification of criteria that indicate significant deterioration in status that will trigger plan modification. Tracking and reporting results will be an important component of the reintroduction activities.

## **Literature Cited**

ACOE. 1961. Rogue River Basin: water resources development. Department of Army, Portland District Corps of Engineers, Portland, Oregon. Volumes 1 and 2.

Symbiotics. 2006. Anadromous Fish Reintroduction and Passage Feasibility Study. April 2006. Symbiotics, Logan, Utah.

USDA-Forest Service. 2007. Justification/Rationale in support of final FPA 4(e) terms and conditions and 10(a) recommendations. Pacific Northwest Region USDA Forest Service. Portland, Oregon.

Table A. Compilation of estimates of habitat and anadromous fish production from the watershed above Applegate Dam.

Stream	USFWS Surveys and 1961 report	ODFW planning forms and misc.	USFS habitat surveys 1969-80 a	USFS documents 1990s-2000s	USFS letter to FERC 2003	Symbiotics reintroduction report
Carberry	Reservoir would destroy habitat in lower reach	6.3 miles; 500 steelhead	6.8 miles; No barriers	6.3 miles; 5 mile remaining		
Brush		3 miles; 175 steelhead  Summer steelhead present				
Cougar		0.5 miles; 30 steelhead	Road culvert a barrier(?)  Steelhead spawn in lower 0.5 miles	Now enters reservoir, not Carberry, at normal July water levels		
Steves b Fork		1 mile; 45 steelhead	12' dam rm 1.0; Steelhead spawn below dam	No barriers up to rm 10.9  Gradient 5% or less		
Sturgis b Fork		0.3 miles 25 steelhead  5-6 miles of good steelhead habitat above	15-18' dam a barrier between rm 0.25-0.5; steelhead spawn below dam  Barrier falls	Old log dam washed out in 1997 flood  At NSO 196—Sturgis Fork ditch/dam diverts 80% of		

		Sturgis Fork dam  5' dam present at approx rm 4.5; diversion to Thompson Cr	at 2.5, 4.5, 5.5, 6.75, 7.0, 7.75, 8.0	flow to Thompson Creek (between rm 2.2-4.5)  8.7 miles surveyed; gradient 5% or less		
Squaw	Reservoir would destroy habitat in lower reach	5 miles 500 steelhead  Summer steelhead present	Some 5 foot falls may block fish at some flows;  6 miles of habitat  Lamprey spawn in lower ¼ mile  4 foot dam rm 2.75-3.0 found 1980	Anadromous use to Squaw lakes—4 miles remaining		
Elliott		NA; California	No barriers on mainstem  Dutch Creek-2 barrier falls ½ mile above mouth	Historically anadromous used 12.3 of Elliott and 1.8 of Dutch		
Cook and Green		NA; California	Steelhead spawn in lower one mile	Steelhead use		
Applegate c	Reservoir would destroy 5 miles of habitat	NA; California	15 foot falls a barrier at Whiskey Creek; Butte Fork enters above this point	Chinook, coho and steelhead up to falls at Whiskey Creek		
Middle Fork c		NA; California	20 foot barrier falls at rm 1; 6 foot barrier falls at rm 1.75.	Steelhead use;		

			Another barrier falls at rm 2.25 Numerous other barrier falls			
Butte Fork		NA; California	5 foot barrier falls at rm 0.5; numerous other barrier falls	Steelhead use		
Total	Miles: NA  2,000 steelhead above damsite; Reservoir 1150: Above 850  500 coho in reservoir area	Miles: 16.1 in Oregon  1275 steelhead in Oregon tribs	Miles: 30.6	Miles: 42.7 minimum	Miles: 60 Approx	Miles: 40 spawning and winter rearing (80 summer)  1,500-2,000 steelhead  172 coho

a. Barrier evaluation varied between reports. The 1969 report listed very few impassible barriers compared to the 1980 report.

b. Diversion dams that were barriers to fish migration on lower Sturgis and Steves Forks washed out during the 1997 flood (Susan Maiyo, USFS, personal communication). In 2007, ODFW assisted a landowner working with the Oregon Water Resources Department (OWRD) on a point of diversion transfer from Sturgis and Steves Forks to the confluence at Carberry Creek. The transfer was approved. Future diversions are to include fish passage and screens.

c. OWRD and USFS use different names for the river just above Applegate Reservoir.

- According to the Oregon Water Resources Dept: (Rogue Drainage Basin Map, 1980), Applegate Dam is located at roughly rm 46. The inundation zone extends to the California border at roughly rm 51. The mainstem Applegate continues for several miles into California, to the confluence of the Middle and Butte forks at roughly rm 54.5.
- USFS reports refer to the Middle Fork Applegate River entering the inundation zone and meeting Elliot Creek at the border.
- This document lists the Applegate extending roughly 3.5 above the reservoir to the confluence of Butte Fork and the Middle Fork. River mile references for the Middle Fork have been adjusted accordingly.

d. Actual miles remaining between reservoir and barriers is not clear.

e. May be high; based on USFS survey and report of moderate gradient and no barriers.

f. May be low; assumes the dam for the diversion to Thompson Creek is a barrier.



Notes:

1. A table of fish use in the Applegate Ranger District (probably dating to the 1970's) lists the following miles of steelhead distribution. As stated above, the USFS and OWRD use different names for the river just above the reservoir. The 3.4 miles listed for the Middle Fork correlates to the distance between the California border/upper reservoir and the barrier falls near Whiskey Creek, which is considered the Applegate River by OWRD.

Squaw	6.4
Carberry	7.0
Cougar	0.1
Brush	3.0
Sturgis Fork	0.6
Steves Fork	1.2
Elliott Creek	8.0
Middle Fork	3.4
Cook and Green	1.0
Butte Fork Applegate	0.0

2. A 2003 USFS letter to FERC lists approximately 60 miles of anadromous habitat above the dam.

3. French Gulch Creek: a cascading falls in the first 50 yards is considered a barrier to fish migration (USFS habitat surveys 1969-1980). This barrier may now be flooded by the inundation zone.

4. Whiskey Creek: possible natural barrier within the first ½ mile (USFS habitat surveys 1969-1980). Listed as used by steelhead in the Middle Fork Watershed Analysis (USFS, 1998)

5. According to the Squaw, Elliott, Lake Watershed Analysis (USFS, 1995) excessive amounts of copper, zinc and iron, along with very high specific conductivity, are present in three miles of Joe Creek (Elliott Creek) below the inflow of Blue Ledge Mine. Fish and other aquatic organisms have been extirpated from this section of the stream. No impacts on Elliott Creek are mentioned, but this could be a problem.

6. Irrigation diversions are present above the damsite, and have not been monitored by ODFW for many years (Brad Fuss, personal communication. Some may no longer be in use following reservoir construction.

Cougar Creek: 1) Watkins: S10T41SR4W, 14"x 30" screen size. Just below first bridge over Carberry Creek.

\* suspect this diversion fed fields now submerged under the Reservoir\*

Carberry Creek: 1) Finley: S2T41SR4W, 30"x 82" screen size.

\* records indicate this diversion and ditch was flooded over by the Reservoir\*

Sturgis Creek: 1) Dawson: No record of exact location. 18"x 58" screen size.

Steve Creek: 1) Dawson: No Record of exact location. 14"x 59" screen size.