COLLAWASH RIVER FALLS FISH PASSAGE PROJECT

1992 ANNUAL REPORT

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Prepared for

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ABSTRACT

The Forest Service conducted physical habitat and biological monitoring of the project area in 1992. The physical habitat monitoring included determining if the Forest Service needed to do additional channel work and also documenting how the channel changed at various flow events. There appeared to be little change in conditions at the site from 1991 to 1992. In the spring of 1992, summer steelhead were seen upstream of the falls area and one spring chinook salmon was observed in the first pool below the initial cascade. These results imply that the reduction in the number of cascades facilitates fish access through the area. The Forest Service plans to continue monitoring channel changes through time and also plans to continue to do biological monitoring of the upstream areas. Physical habitat monitoring will be conducted to determine if channel maintenance work is necessary to ensure that fish passage remains at the levels approximating conditions seen in 1991 and 1992.

TABLE OF CONTENTS PAGE

INTRODUCTION

At River Mile (RM) 7.4, a series of cascades and falls provided a complete to partial barrier to anadromous fish passage. The project area is about 260 feet long with a total drop of about 36 feet from the upper falls to the lower falls. The upper falls was about 3-4 feet high and the lower falls was about 12 feet high. The combination of continuous vertical jumps and the lack of deep holding water made fish access difficult, if not impossible. Adequacy of passage depends on the flow during migration.

The falls restricted access to approximately 10 miles of good quality spawning and rearing habitat for spring chinook salmon, coho salmon[1], and winter and summer steelhead. The native late-run coho salmon and native winter steelhead have declined from historic levels. These two stocks are now considered at a moderate risk of extinction (Nehlsen, et al. 1991). Thus, this project could benefit these two stocks by increasing access to the high quality habitat upstream of the falls area. Fishery biologists estimate that approximately 10,000-12,000 square yards of high quality spawning gravels occur upstream from the project area. Native cutthroat and rainbow trout populations are present above the falls. Summer steelhead have been observed to pass the falls at an estimated 10-20% success rate.

The falls are located in a deeply incised gorge. Access and working conditions at the site are difficult. Work in 1974 on the falls was terminated due to safety concerns over stability and condition of the steep headwall adjacent to the project area. The project feasibility report of January 1986 by Ott Water Engineering identified four passage alternatives that could safely be implemented to meet the project objective of improving fish passage.

The Collawash Falls Project Environmental Assessment (EA) which displayed the range of alternatives was developed by the Forest Service and formally signed in May of 1986. The selected alternative (No. II) was pool excavation. Other alternatives considered included placement of gabion weirs, placement of a vertical slotted fishway, and blasting of the falls. Only the vertical slotted fishway alternative offered comparable long-term success, but estimated costs for it were three times as high.

Management emphasis in the Collawash River drainage is to increase wild runs of anadromous fish. The current goal is to provide returning adult fish year-round access past the migration barrier to the extensive upstream spawning and rearing habitat. Native run winter steelhead trout, hatchery origin summer

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[1]There are two races of coho salmon that use the Collawash River. These include the early-run race that is derived from hatchery stock and the late-run race that is endemic to the Collawash River drainage. The late-run stock has declined from historic levels and was considered for listing under the Endangered Species Act (55 Federal Register 37342).

steelhead trout, and coho and chinook salmon are the primary benefitting and target species.

The Collawash Falls Fish Passage Project began in August of 1987, and resulted in completion of Phase I of the project. Phase I provided for excavating a 95-foot-long, 8-foot-deep, and 10-foot-wide trench. A core team of Forest Service personnel, led by fish passage specialists from R-10, Alaska, excavated the trench in the bedrock bench on the left bank of the river. Phase II proposed to install a headwall flow control structure and 6 weirs in the trench.

Implementation of Phase II of the project was put on hold in July of 1988, when 50 yards of rock from the adjacent headwall sloughed into the trench. During September and October of 1988 the larger rocks were reduced in size by blasting. High river flows in November flushed the rock from the trench. Forest Service personnel reevaluated the focus of Phase II of the project because of the dynamic nature of the area.

In 1989, Forest Service biologists and engineers decided to implement a non-structural alternative. Implementing the non-structural alternative does not affect completion of the pool and weir passage structure begun in 1987. The non-structural alternative allows the Forest Service to monitor how effective reducing large boulders is at improving fish passage. The pool and weir structure would be completed at a future date if the monitoring results show that it is still necessary.

In October 1989, Forest Service crews blasted 124 boulders greater than 2 feet in diameter and totalling about 350 cubic yards. The blasting effort required drilling about 635 feet of holes and using 100 pounds of dynamite.

In October 1990, Forest Service crews blasted an additional 95 rocks, including blasting a notch in the large bedrock at the downstream end of the project area. This blasting effort required drilling about 507 feet of holes. In 1991, the Forest Service monitored fish passage through the falls area. Summer steelhead and spring chinook salmon were observed upstream of the falls.

Work scheduled for 1992 included: (1) monitoring the configuration of the cascades to determine if additional blasting was necessary; (2) conducting any additional needed blasting; and (3) monitoring numbers of adult and juvenile anadromous fish upstream of the project area.

DESCRIPTION OF THE PROJECT AREA

The Collawash River is the largest tributary of the upper Clackamas River, with a mainstem length of 11.6 miles and a basin area of 150 square miles. The stream provides one-third of the low flow volume of the Clackamas River. The entire Collawash River drainage is on National Forest System lands. About 35% of the watershed is in fully protected status as wilderness. Much of the watershed is classified as Special Emphasis Watershed under the Mt. Hood National Forest Land Management Plan. Special Emphasis Watersheds are watersheds where there is an unusually high combination of riparian resource values and high inherent sensitivity to disturbance. Approximately 20% more is under protected riparian area status or is unsuitable for timber harvest.

Overall fish habitat is rated good to excellent, with good holding and rearing habitat present throughout the system.

METHODS AND MATERIALS

As discussed in the introduction, the 1989 and 1990 efforts concentrated on reducing the number of large boulders that impede fish passage. The 1992 work focused on monitoring the changes to the falls area from 1991 and seeing if adult fish still passed through the area.

Physical Habitat Monitoring

The Forest Service conducted site visits to the project area in June and July 1992. These site visits allowed the observers to see how the channel changed following the years high flow events.

Biological Monitoring

Biological monitoring consisted of walking upstream of the falls area and looking for adult fish holding in pools.

RESULTS AND DISCUSSION

Physical Habitat

As discussed in last years annual report, there were only two areas that could affect fish passage. The upstream and downstream falls are now about 3 feet high and there appeared to be good holding pools below each falls.

The channel configuration achieved by the fall of 1991 remained in 1992. As in 1991, only two falls remained in the project area. These occurred at the upstream and downstream boundaries of the project area. Having only two difficult areas for fish to pass allows them to rest below each falls, thus conserving their energy.

Biological Monitoring

The biological monitoring of the project area supports the results of the physical changes. Eight adult summer steelhead were seen in the river upstream from the project area. One adult spring chinook salmon was holding in the pool immediately below the downstream falls. We were not able to confirm whether or not this fish passed through the area. It appeared that fish passage approximated conditions in 1991 when both adult and juvenile spring chinook salmon were observed upstream of the falls area. These results imply that fish access through the area remained the same as in 1991, which was an improvement over pre-project conditions.

SUMMARY AND CONCLUSIONS

The project area configuration has changed significantly from the configuration prior to initiating blasting of the mainstem rocks in 1989. Presently, the

project area contains a more gradual gradient, with fewer and less difficult falls for fish to pass. Therefore, one can conclude that fish passage has been greatly improved over conditions prior to 1989.

Due to drought conditions, there were no flow events large enough to change the channel conditions from 1991 to 1992. Thus, the Forest Service biologists observed little change in conditions from 1991 to 1992.

There remains only 2 small falls in the project area; this is a considerable reduction in the number of difficult passage areas prior to 1989. The biological monitoring results in 1991 and 1992 show that summer steelhead and spring chinook salmon pass through the area. Because the swimming and jumping ability of native winter steelhead exceeds that of spring chinook salmon, we can assume that this species also is able to negotiate the falls. However, no native winter steelhead were seen above the falls. This could be due to a number of factors. The principal factor is that visibility in April and May when this species is present, is hampered by higher flows and more white water. One can conclude that the work conducted in 1989 and 1990 significantly improved the passage conditions through the falls area based on the physical and biological monitoring.

REFERENCES

Nehlsen, W., J.E. Williams, and J.A. Lichatowich. 1991. Pacific salmon at the crossroads: stocks at risk from California, Oregon, Idaho, and Washington. Fisheries: 16: 4-21.