

**US Army Corps of Engineers
Walla Walla District**

**FINAL DRAFT
THE LOWER SNAKE RIVER
SPORT FISHERY USE AND VALUE
STUDY**

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EXECUTIVE EXECUTIVE SUMMARY

Ground and aerial surveys of sport fishing were conducted during 1997-1998 on the Snake River from Ice Harbor Dam near Pasco, WA upstream to the Oregon-Washington border as part of the Lower Snake River Feasibility Study. Surveys estimated angling effort and catch, angler attributes, and the economic attributes and current value of the sport fishery on impounded and unimpounded portions of the Snake River. The data gathered were used to predict the amount and value of sport fishing expected to occur if the impounded river section were returned to riverine condition. Specifically, the intent was to (a) characterize the existing reservoir recreational fishery; (b) determine the monetary value for the reservoir fishery; (c) characterize the existing steelhead sport fishery in the unimpounded Snake River; and (d) using the unimpounded reach as a surrogate, predict angler use and monetary value of the sport fishery if the natural river drawdown alternative were selected for the lower Snake River.

Reservoir Sport Fishing

A total of 111,461 angling trips produced an estimated 489,215 hours of angling effort on the four lower Snake River reservoirs from April to November, 1997. Lower Granite Reservoir received the highest fishing effort, followed by Ice Harbor, Lower Monumental, and Little Goose reservoirs. Little Goose Reservoir received the highest use of all reservoirs in spring and summer, whereas Lower Granite Reservoir was the most heavily used in fall.

Reservoir anglers caught 140,358 fish and harvested 59% (83,066) of those caught. Catch and harvest were highest in July and lowest in October and November. The most fish were caught in Lower Granite Reservoir, but the highest harvest was from Ice Harbor Reservoir. Three resident fishes (crappie, smallmouth bass, and channel catfish) dominated the reservoir sport catch. Other important fishes included yellow perch, sunfish, and northern pikeminnow. Stocked rainbow trout caught in off-channel mitigation ponds were important in the spring. Anglers caught more than 13,000 steelhead in the reservoirs during August through November, mostly by boat anglers in Lower Granite Reservoir. Total catch and harvest rates (all fishes) were highest in Little Goose Reservoir (0.442 and 0.278 fish per hour), and among reservoirs were highest in either May or June and lowest in either October or November. Steelhead catch and harvest rates were 0.046 fish per hour or less.

The seasonal preferences of reservoir anglers were striking. Anglers sought stocked trout and resident fishes in spring and most of the summer. However, when steelhead season opened on September 1, virtually all effort in the reservoirs became focused on steelhead. Reservoir anglers originated primarily from the population centers nearest each end of the reservoir system (Triton and Lewiston/Clarkston). However, a substantial portion of angling at Little Goose Reservoir was by campers from the Spokane vicinity. Overall, reservoir angling attracted anglers from 22 states and Canada, although most were from nearby areas.

The data suggest continued, sustained growth in effort for the reservoir steelhead fishery, and a geographical difference in the amount of effort targeting resident fishes such as smallmouth bass and channel catfish. Channel catfish was the most targeted resident species, principally by anglers in the three lowermost reservoirs. Smallmouth bass were targeted by the highest

proportion of anglers in Little Goose and Lower Granite reservoirs. These data showing spatial differences in resident fish catch are corroborated by recent distribution and abundance surveys conducted throughout the lower Snake River reservoirs that showed smallmouth bass most abundant in Lower Granite Reservoir and channel catfish most abundant in the three downstream reservoirs.

Reservoir Sportfishing Demand

Two economic surveys were administered by mailed questionnaires to anglers fishing during 1997 on lower Snake River reservoirs for the purposes of measuring 1) willingness-to-pay (demand) for recreational fishing trips, and 2) expenditures by anglers. The sportfishing demand survey resulted in 537 usable responses, and the expenditure survey yielded 411 usable responses, each representing a 59% return rate.

The primary objective of the demand analysis was to estimate willingness-to-pay (WTP) per trip for sportfishing at the reservoirs. Consumer surplus (WTP that exceeds production costs) was estimated at \$29.23 per person per trip. The average number of fishing trips taken per year to the reservoirs was about 20, resulting in an average WTP of \$592 per year. The total annual WTP by anglers was estimated at \$1,956,560 after adjustment for non-response. Purchase data from the expenditure survey were used in impact studies reported in the Recreation Analysis of the Economics Appendix.

Unimpounded River Sportfishing

A survey of sport fishing in the 48-km (30-mile) unimpounded reach of the Snake River upstream of Asotin, Washington was initiated in September 1997 and continued through March 1998. Similar aerial and ground survey methods were used as for the reservoir sport fishing survey.

A total of 16,120 angler trips produced an estimated 88,940 hours of effort. Monthly effort steadily increased from September, peaked during November, and declined substantially after December. Most use (83.5%) was by boat anglers.

Anglers caught an estimated 20,592 fish and kept 58.4% (12,026) of those. Fish catches were highest in November and lowest in March. Boat anglers caught and harvested about nine times the number of fish as shore anglers. Steelhead comprised 68.5% of the total catch and 74.3% of the harvest. Other fishes sought in the unimpounded reach included smallmouth bass, northern pikeminnow, and white sturgeon, particularly in September and March when steelhead were not the principal target. Much of the angling for northern pikeminnow was in response to bounties paid by the Sport Reward Program funded by Bonneville Power Administration.

The overall catch and harvest rates for those anglers specifically seeking steelhead were 0.153 and 0.093 fish per hour. The highest catch rates were in October and November. Guided boat anglers experienced catch and harvest rates up to three times those of unguided boat anglers. About 26% of all boat anglers used guides.

Overall, the largest group of anglers (39%) fishing in the unimpounded reach were local (Lewiston, Clarkston, Asotin). However, during the peak of steelhead fishing in October and November, anglers from northern regional areas such as Spokane and Coeur d'Alene, as well as anglers from the Seattle-Tacoma area, were the most numerous (45%). Anglers from Montana and California predominated among those from nearly 20 other states.

The steelhead sport fishery in the unimpounded Snake River has continued to grow since initial effort estimates were made in the mid-1980s. However, the data suggest that fishery growth may have leveled off, as the area seems to be saturated with anglers and is unlikely to be able to support more steelhead angling.

Based on the assumptions that current fishery use in the unimpounded reach may have reached saturation, and that steelhead run sizes will remain similarly sized, the estimated potential sport fishery for steelhead in the lower Snake River if the dams were breached may approach 407,600 hours of effort. The estimated monetary worth of steelhead angling on the restored reach would be \$1.87 million dollars. Angling use will initially be depressed due to unstable banks, turbid flows, restricted access, and unfamiliarity of anglers with new fishing conditions. After conditions stabilize, however, a greater diversity of steelhead angling opportunities will develop that will appeal to a more diverse angling population than currently visits the reservoirs.

Unimpounded Snake River Sportfishing Demand

Sport anglers on the unimpounded Snake River above Lewiston, Idaho were surveyed during September 1997 through March 1998 to measure the willingness-to-pay (WTP, or demand) for fishing trips. The demand survey resulted in 247 usable responses (response rate of 72%).

The primary objective of the demand analysis was to estimate willingness-to-pay per trip for fishing on the unimpounded Snake River. Consumer surplus (the amount WTP exceeds production costs) was estimated at \$35.71 per person per travel cost trip. The average number of trips made per person from home to the unimpounded Snake River was about 12, thus the average WTP per angler per year was \$442. The total annual WTP for all anglers is estimated at \$408,408 when corrected for non-response.

PREFACE

Four largely stand-alone reports comprise The Lower Snake River Fishery Use and Value Study (UVS). The entire work product herein is part of the Lower Snake River Feasibility Study (LSRFS), which is a comprehensive effort designed to evaluate various alternatives to improve juvenile salmonid survival in lower Snake River reservoirs. The underlying assumption in the UVS is that the sport fishery will be grossly affected only if the natural river drawdown alternative is implemented. Selection of any other alternative will have no impact on the reservoir sport fishery. This preface explains the organization of the reports within the structure of the UVS.

Each report shares similar organization. Each contains introductory material, and a full description of methods and results. The results are interpreted and compared to other similar studies or historical information, where available.

The UVS was conducted in two phases. The Phase I report of the UVS is an evaluation of current sport fishing conditions in lower Snake River reservoirs, and consists of two parts. First, Part 1 of Phase I describes sport fishing effort and characteristics. Part 2 of Phase I follows and provides an economic assessment of the reservoir sport fisheries. The Phase II report describes sport fishing conditions in an unimpounded reach of the Snake River, and uses these data to estimate potential use and monetary worth of sport fishing in the lower Snake River if the dams were breached and the river returned to pre-impoundment, riverine condition. Part 1 of Phase II is an evaluation of current sport fishing conditions on a 30-mile unimpounded river section immediately upstream of the reservoirs, and also provides estimates of expected use and value of the sport fishery in the lower Snake River, if the dams were breached. Lastly, Part 2 of Phase II provides an economic assessment of the sport fishery in the unimpounded reach upstream of the reservoirs, and provides the data necessary to support the estimates of potential sport fishery worth discussed in Part 1. Concise summaries of each study phase follow the respective pair of reports.

Additional reports that investigate current and future recreation activities, including sport fishing, on the lower Snake River are part of the LSRFS. Similar or related methods were used to evaluate the broader spectrum of recreation other than fishing. These additional recreation reports are also available from the Corps of Engineers, Walla Walla District. However, the information reported herein represents a "stand alone" study that was underway prior to initiation of these other recreation investigations.

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