

LSRCP Steelhead Hatchery Mitigation Program
Clearwater River, Idaho
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This report describes the steelhead hatchery mitigation program in the Clearwater, Idaho that is part of the Lower Snake River Compensation Program (LSRCP). Information includes: a description of Idaho Department of Fish and Game (IDFG) management objectives, description and status of natural populations, background and history of the hatchery program, description of how successful the hatchery program has been in achieving objectives, and a description of the current and future management focus. While not part of this program review, the hatchery steelhead mitigation program for the Dworshak hydroelectric dam funded by the US Army Corps of Engineers (USACOE) is introduced to provide context and scope for the entire steelhead hatchery mitigation effort within the Clearwater River drainage.

Management Objectives and Framework for the Clearwater River

The Clearwater River is a tributary of the Snake River encompassing approximately 9,600 square miles. Major tributaries of the Clearwater River include the Selway, Lochsa, North Fork Clearwater, South Fork Clearwater, Middle Fork Clearwater, and Potlatch rivers (Figure 1). The Clearwater River and its tributaries once supported robust wild populations of steelhead. In 1997, the Snake River steelhead DPS was listed as threatened under the ESA.

The Idaho Department of Fish and Game (IDFG) statewide management objectives include restoring and maintaining natural populations of steelhead in the Clearwater drainage. Objectives for the hatchery steelhead program are to meet the LSRCP adult mitigation objectives, to restore and maintain recreational and tribal steelhead fisheries, and to minimize impacts of the hatchery program on natural populations. The primary objective of the steelhead hatchery program is to meet harvest mitigation objectives. As such, the hatchery program is managed as a segregated program intended to maximize smolt to adult survival rates while at the same time minimize interaction with natural populations.

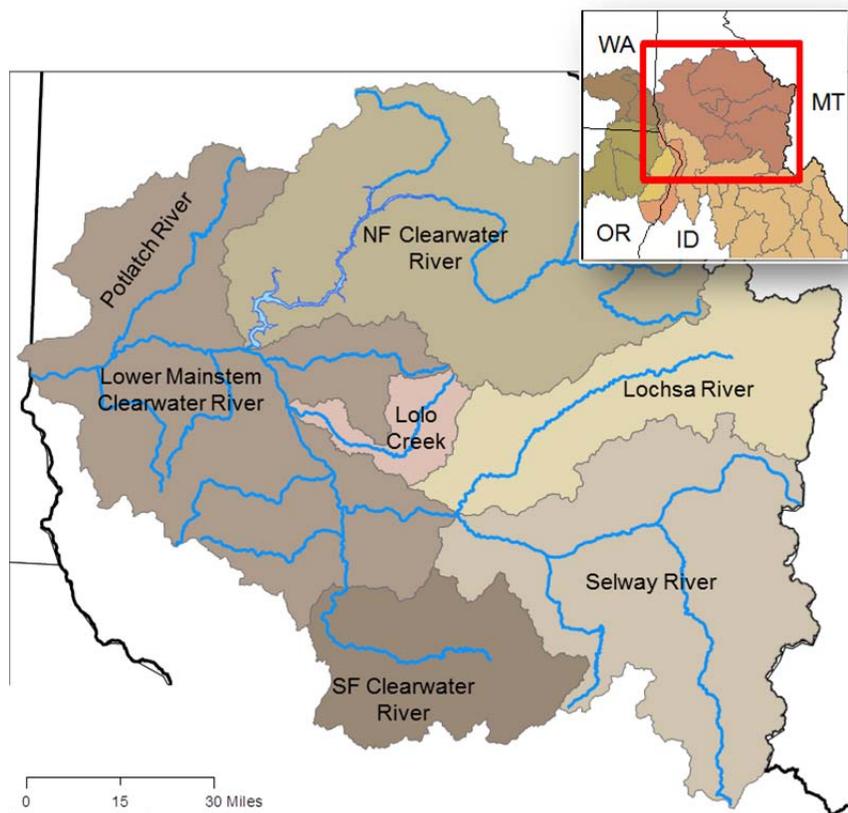


Figure 1. Map of the Clearwater River steelhead Major Population Group (MPG) and six independent populations and major tributaries.

The IDFG management framework for steelhead includes confining the release of hatchery production to areas likely to have the least impact on natural populations. Within the Clearwater River sub-basin, hatchery releases of summer steelhead that are part of the LSRCF mitigation program are confined to the South Fork Clearwater River (Figure 2).

Harpster Dam was constructed on the South Fork Clearwater River (SFCR) in 1910, approximately 20 miles upstream of the mouth, and had significant impacts to wild steelhead during the years it was operated. Between 1910 and 1935, no fish passage facilities existed at the dam and all upstream passage of wild steelhead was blocked. In 1935, fish passage facilities were constructed at the dam and operated until 1949 when high water damaged the passage facilities rendering them unusable. Between 1949 and 1963, all upstream migration of adult steelhead was once again blocked. The dam was finally removed in 1963. Efforts to reestablish wild steelhead in the SFCR began in 1961 as part of the Columbia River Fisheries Development Program. As part of this effort, wild adult steelhead collected at the Lewiston Dam, on the Clearwater River, were transported upstream of Harpster Dam and released for natural spawning. Additionally, beginning in 1962, eyed eggs from wild adults collected at Lewiston

Dam were placed into hatching channels annually in tributaries of the SFCR upstream from the dam. In 1969, the egg source for steelhead mitigation in the SFCR changed to the North Fork Clearwater River at Dworshak National Fish Hatchery (DNFH).

The focus of the LSRCF hatchery mitigation in the Clearwater River has remained in the SFCR. Annually, 843,000 steelhead smolts reared at Clearwater Fish Hatchery (CFH) that are part of the LSRCF steelhead mitigation program are released in the SF Clearwater River (Figure 2)

There are no hatchery steelhead smolt releases in the Middle Fork Clearwater River upstream of Clear Creek, or in the Selway or Lochsa rivers. Dworshak dam, constructed in the late 1960s and early 1970s near the mouth of the North Fork Clearwater River completely blocked steelhead access to the North Fork Clearwater River. Mitigation efforts to compensate of the loss of wild steelhead into the North Fork Clearwater River included the construction of Dworshak National Fish Hatchery in 1969 funded by the USACOE. This mitigation program includes 2.1M yearling smolt releases. The majority of the smolts for the DNFH mitigation are released onsite at DNFH (1.2M) and in the SFCR (600,000) with the remaining smolts released in Lolo Creek and in Clear Creek (Figure 2).

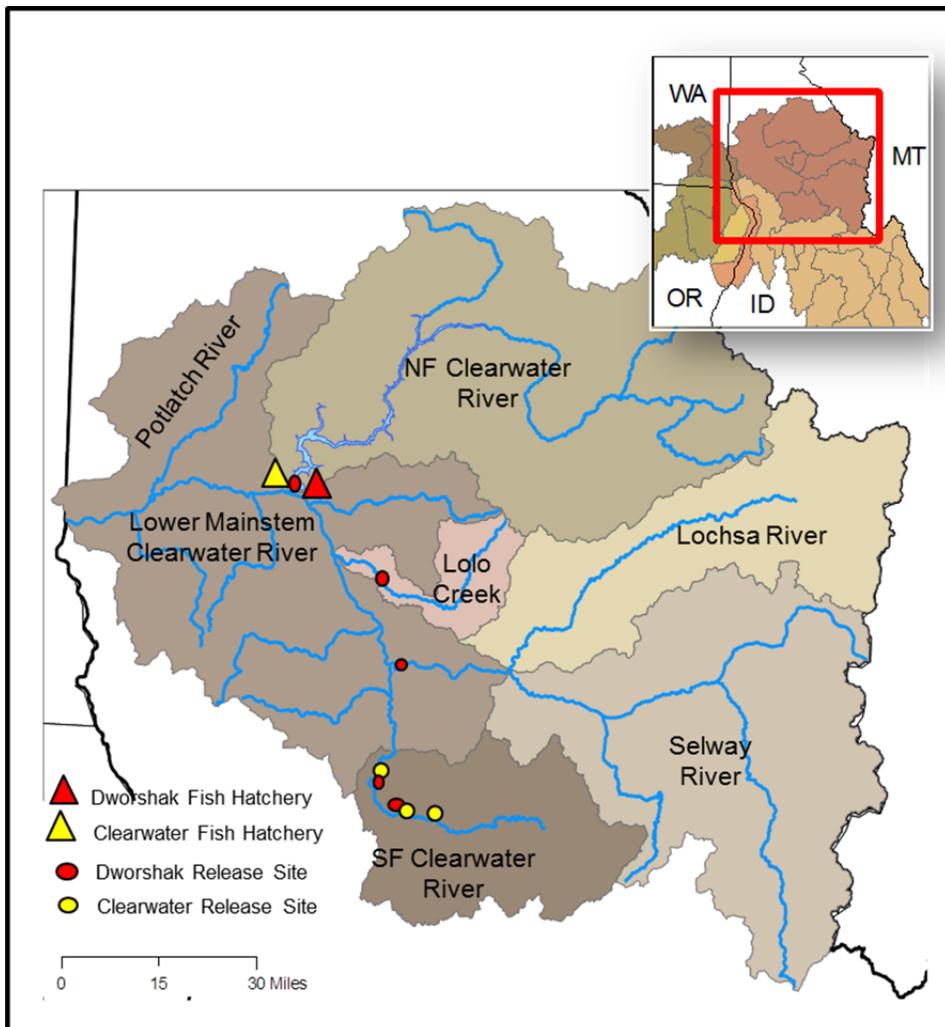


Figure 2. Release Sites for hatchery steelhead reared at Clearwater and Dworshak fish hatcheries.

Status of Natural Populations

Steelhead in the Clearwater River Major Population Group (MPG) have been classified into six demographically independent populations including five extant populations on one population where all historic habitat is blocked by the Dworshak Dam (Figure 1) (ICTRT 2003). Currently, all five extant populations of steelhead in the Clearwater MPG fail to meet the established viability criteria. All populations are currently classified at moderate to high risk for abundance and productivity measures. All five extant populations are rated at low to moderate risk for spatial structure and diversity measures. While population specific abundance and productivity data are currently lacking, managers are focusing effort to estimate these parameters through the use of genetic analysis and PIT tagging technologies.

Mitigation Goals and Hatchery Program Background

The LSRCP steelhead hatchery mitigation program was established to provide in-kind and in-place mitigation for lost harvest opportunity resulting from the construction and operation of the four lower Snake River hydroelectric dams. Total mitigation expected for the LSRCP is 165,300 adults to be produced annually. This is based on an assumed 2:1 ratio of catch (downstream of project area; Lower Granite Dam) to escapement (upstream of the project area) (Corps of Engineers, 1975). During the program development, it was anticipated that the majority of the harvest mitigation benefits would be distributed downstream of the project area. However, less than expected returns of hatchery fish produced within the program and the depressed status of natural-origin fish influenced Columbia River fisheries management programs. The anticipated 2:1 distribution of harvest benefits downstream: upstream of Lower Granite Dam has not been realized. Regardless of the actual distribution of harvest benefits, it was anticipated that the Clearwater River steelhead hatchery program would contribute 42,000 (25.4% of total) adults annually towards the total LSRCP mitigation goal (Table 1). To achieve the adult goals, smolt to adult survival rates (SARs) were modeled and used to size the hatchery facilities.

For the LSRCP hatchery program operated within the Clearwater River drainage, the Clearwater Fish Hatchery (CFH) is the primary hatchery facility. All broodstock for the CFH program have historically been collected at Dworshak National Fish Hatchery (DNFH). However, efforts have been initiated to develop a locally adapted broodstock in the SFCR and move away from use of adults returning to DNFH. This effort is discussed in more detail later in this report.

Smolt to adult survival rates (SARs) used to size the CFH program specified the need for a release of approximately 1.75M million smolts to produce 42,000 adults annually. Currently, 843,000 yearling smolts are released in the SFCR representing about one half of the original production target. Limited water availability at CFH and the desire of managers to increase the size of the Chinook salmon program at CFH are the primary reasons for the reduced steelhead production. Despite the current limitations for rearing capacity at CFH, managers do have expectations to increase steelhead production up to the original smolt production target of 1.75M.

Table 1. Mitigation goals and smolt releases for the LSRCP hatchery steelhead program in the Clearwater River, ID.

Clearwater Fish Hatchery	
Adult Goal- Project Area	14,000
Adult Goal- Downstream of Project Area	28,000
Total Adult Mitigation Goal	42,000
Smolt Release Target	1,750,000
Actual Smolts Released	843,000
DNFH smolts Released in Clearwater R	2,100,000
Total Steelhead Smolts Released in the Clearwater River	2,943,000

While not part of this hatchery review, another hatchery mitigation program is also operated within the Clearwater River at DNFH and is funded by the US Army Corps of Engineers (USACOE). This program is operated to mitigate for the loss of anadromous steelhead resulting from the construction and operation of the Dworshak hydroelectric dam on the North Fork Clearwater River. In addition to the 843,000 smolts released as part of the LSRCP program, 2.1M smolts from the Dworshak Dam mitigation are also released within the Clearwater River basin for a total of 2.943M smolts (Table 1).

Hatchery Steelhead Broodstock History in the Clearwater River

Hatchery steelhead broodstocks currently used in the Clearwater River at CFH and DNFH were founded with wild North Fork Clearwater River steelhead captured at DNFH. Throughout the duration of hatchery mitigation within the Clearwater River basin, no out-of-basin steelhead have been released in the Clearwater River. North Fork Clearwater steelhead are classified as B-run steelhead and return predominantly as 2-ocean adults.

As previously mentioned, all of the 843,000 smolts released in the SFCR as part of the LSRCP steelhead program have been sourced from adults trapped at DNFH (North Fork Clearwater R). Managers have recently initiated efforts to develop a locally adapted broodstock in the SFCR. While currently lacking adequate facilities to trap returning adult steelhead in the SFCR, IDFG has been collecting broodstock in the SFCR through the use of angling techniques since 2010. All broodstock collected in the SFCR are transferred to DNFH for spawning and the resultant eggs are transferred to CFH for final rearing. Plans are currently underway to develop and construct trapping facilities on a tributary of the SFCR to perpetuate and expand the SFCR localized broodstock.

Description of the Hatchery Steelhead Program in the Clearwater River

Clearwater Fish Hatchery (CFH) was constructed in 1991 and is the last of the LSRCP hatcheries to be constructed. CFH includes a satellite facility in the upper Lochsa River, and two satellite facilities in tributaries of the SFCR (Red River and Crooked River). The Satellite facility on the upper Lochsa is only utilized for the spring Chinook salmon program. Historically the Red River and Crooked River sites have been used as release sites for the steelhead mitigation program in the SFCR. However, the lack of adults returning to these locations has forced managers to rely on broodstock collected at DNFH to perpetuate the CFH program. It appears that under certain flow conditions, a velocity barrier exists in the mainstem SFCR that impacts upstream passage of adult steelhead. As part of the plan to develop a locally adapted broodstock in the SFCR, managers are moving forward with a plan to develop adult trapping and juvenile acclimation facilities in a tributary of the SFCR downstream of the migration barrier.

The LSRCP hatchery steelhead program within the Clearwater River basin is composed of 843,000 yearling smolts released in the SFCR (Table 2). Of the 843,000 smolts released for this program, 510,000 are adipose clipped and the remaining 333,000 smolts are released with their adipose fin intact. All releases for this program are consistent with the 2008-2017 US v. OR Management Agreement.

In addition to smolts released as part of the LSRCP program, 2.1M million yearling smolts are released from DNFH as part of the hatchery mitigation for Dworshak Dam funded by the USACOE. These two programs contribute to a total release of 2.943M hatchery steelhead smolts in the Clearwater River basin (Table 2, Figure 2).

Table 2. Hatchery steelhead smolt releases in the Clearwater River that are part of the LSRCP and USACOE hatchery mitigation programs.

Clearwater River Hatchery Program Component	LSRCP Hatchery Steelhead Smolt Releases	USACOE Hatchery Steelhead Smolt Releases	Total Release
South Fork Clearwater R. and Tributaries	843,000	540,000	1,383,000
North Fork Clearwater R.		1,200,000	1,200,000
Lolo Creek		60,000	60,000
Clear Creek		300,000	300,000
Total Release	843,000	2,100,000	2,943,000

Hatchery Production and Survival

The following section describes the production and survival metrics associated with the hatchery program and compares the observed performance with the anticipated program mitigation benefits. Information includes in-hatchery and post release survival and contribution to fisheries for the LSRCP steelhead mitigation program in the Clearwater River.

With few exceptions, egg to release survival rates have remained consistently high over the program time series and have not limited the ability of CFH to reach production targets (Figure 4). Under the current management scenario, CFH has insufficient rearing capacity to produce 1.75M yearling steelhead smolts. The interim smolt release target of 843,000 has been consistently met since 2002 (Figure 5).

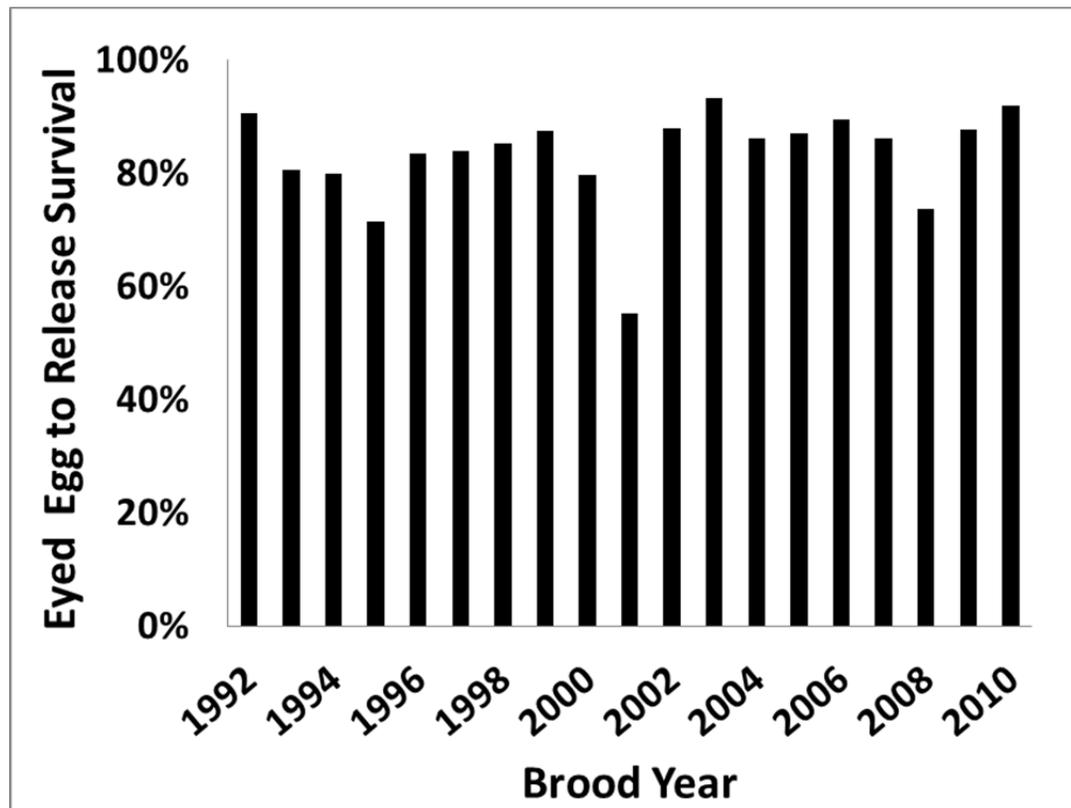


Figure 4. Eyed egg to release survival rates for steelhead reared at Clearwater Fish Hatchery 1992-2010

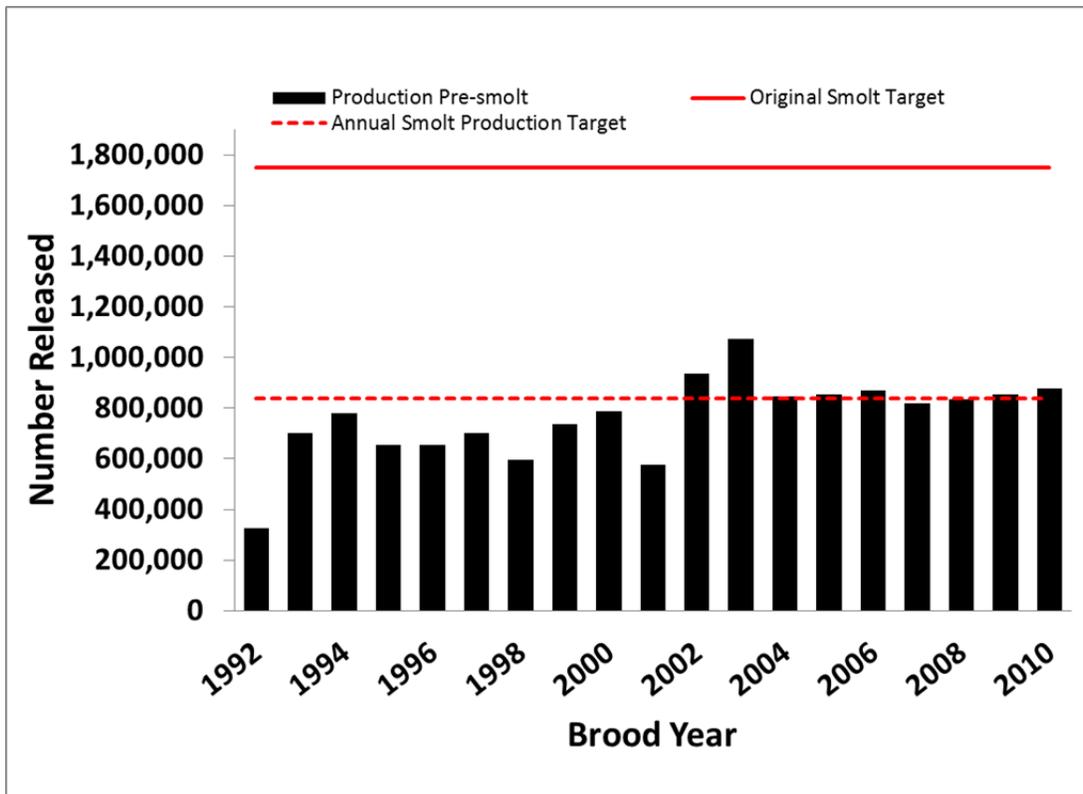


Figure 5. Number of yearling steelhead smolts released from Clearwater Fish Hatchery 1992-2010.

Survival of smolts from release sites to Lower Granite Dam is estimated using PIT tagged smolts. For migration years 1993-2011, estimated survival rates have remained stable and have averaged 75.7% (range: 58-86%) (Figure 6). While there really is not a benchmark or goal for juvenile survival to Lower Granite Dam for hatchery steelhead, survival rates observed from CHF are comparable to other facilities in the Snake River basin.

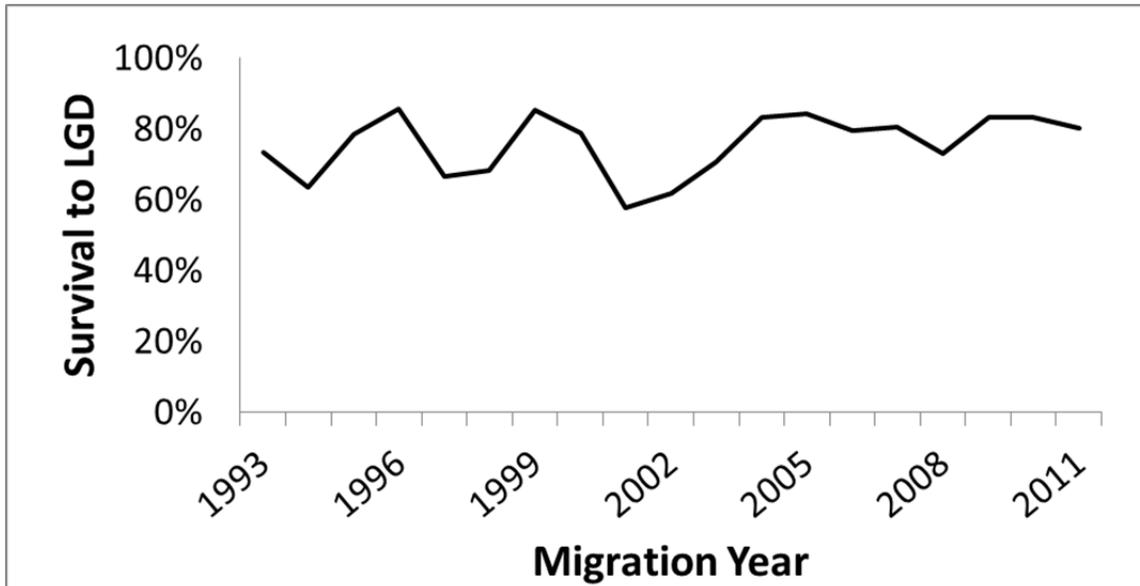


Figure 6. Estimated steelhead smolt survival from release site to Lower Granite Dam from Clearwater Fish Hatchery 1993-2011.

The number of total adults produced annually from CFH is estimated by summing hatchery rack returns, harvest estimates, and the fish recovered as strays. As described earlier in this document, the total adult mitigation goal for the LSRCPC Clearwater River program is 42,000 adults produced annually. Since 1996, the average annual number of adults produced from CFH is 13,287 (range: 2,484-24,504) (Figure 7). Since 2003, adult returns have averaged 18,106 annually. Over the history of the CFH program, the total mitigation goal has never been achieved. Given that CFH lacks the rearing capacity to rear the original smolt production target of 1.75M, this is not unexpected. Despite not meeting the mitigation goal, this program has helped to maintain robust fisheries in the Clearwater River.

It should be noted that estimating the total adult returns for CFH steelhead production is problematic in that IDFG has been unable to obtain a full accounting of the unharvested escapement. Managers suspect that under some flow conditions in the South Fork Clearwater River there is a migration impediment preventing adult steelhead from getting back to the release locations at the Red River and Crooked River satellite facilities. In the absence of complete escapement data, we are unable to directly estimate total adult returns. In the absence of a direct estimate we have used the observed SAR rate for steelhead returning to the DNFH trap as a surrogate to estimate adult returns for the CFH releases. By applying the DNFH SAR rate to the smolt releases from CFH we derive a total number of fish produced. All CFH adults recovered in fisheries or as strays are subtracted from the total. The balance represents the unharvested escapement.

In recent years, managers have been working to improve the quality of adult return data. Several changes in technology and infrastructure have been made to improve our ability to monitor the adult returns for the CFH steelhead program.

In brood year 2007, IDFG began tagging larger numbers of CFH steelhead with PIT tags to estimate the adult escapement to Lower Granite Dam. PIT tags provide valuable information related to migration timing, conversions between dams, and return rates. The first two-ocean adults returned to Lower Granite Dam during the 2010-2011 run year for CFH. When we compared the estimated escapement to LGD using the PIT tag method and the method of using the DNFH SAR as a surrogate, it appears that the traditional method overestimated the escapement to LGD for 2011. For the first few years of PIT tag return data, we have observed that PIT tags do underestimate the return due to tag loss and potentially a differential survival of tagged and untagged fish. The rate of underestimation also appears to be variable between facilities and across years. While PIT tags can provide other useful information such as migration timing and conversion rates, the variability associated with tag loss does limit the utility of PIT tags to estimate adult survival rates if the rate of tag loss cannot be estimated. In 2012, an in-stream PIT tag array was installed in the lower SFCR by the Nez Perce Tribe for monitoring both hatchery and natural adult returns to the SFCR. This array will provide valuable information for the hatchery return including timing of tributary entry, fidelity to release locations and conversion rates of fish detected at Lower Granite Dam to the SFCR.

In 2008, IDFG initiated the process of shifting the steelhead marking program to a genetic technology whereby essentially all progeny are tagged via Parental Based Tagging (PBT). This is accomplished by taking tissue samples from all adults that contribute to hatchery broodstocks. When any of their progeny are sampled (as juveniles or adults), the parents can be identified thus revealing the hatchery, stock, age, gender, and release site. When progeny from these adults return they are systematically sampled at Lower Granite Dam to directly estimate the stock and age composition of the hatchery-origin steelhead. Managers feel that this methodology will provide the most reliable return estimates.

In addition to refining monitoring methods for adult returns for the CHF program, IDFG is also working to develop a new trapping facility further downstream in a tributary of the SFCR. It is anticipated that this new location will provide a suitable site to collect the unharvested escapement in the South Fork and enable us to develop a localized SF Clearwater River steelhead broodstock.

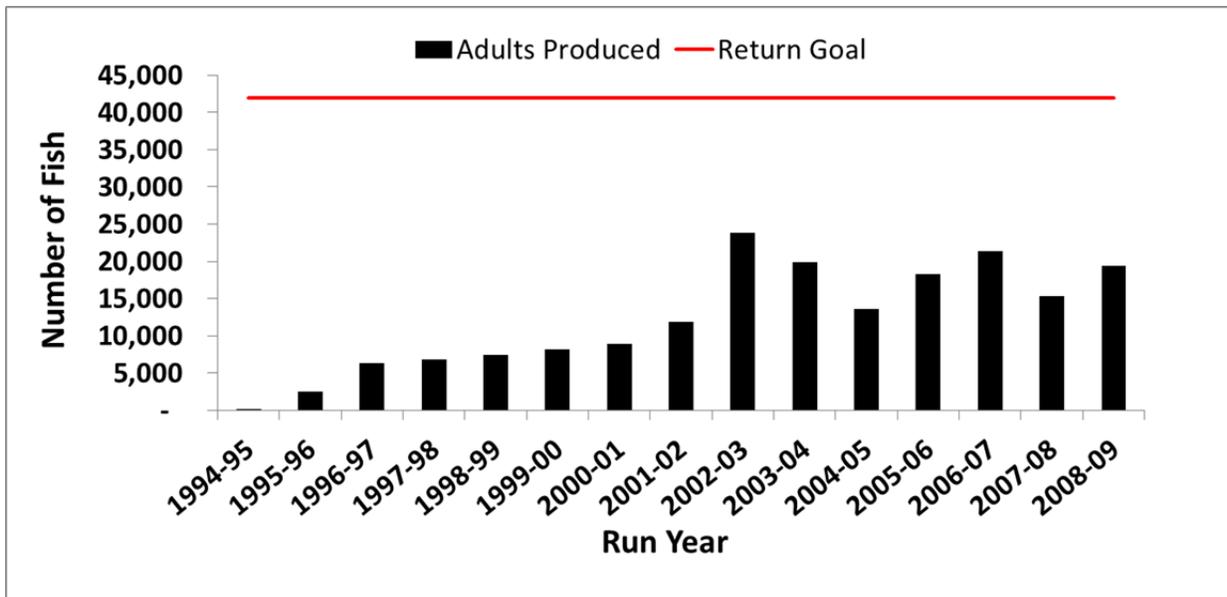


Figure 7. Total hatchery steelhead produced from Clearwater Fish Hatchery 1985-2011.

Assumptions that were initially used to size the LSRCF hatchery programs included a smolt to adult survival (SAS) rate of 2.4% to achieve adult mitigation objectives for CFH. For brood years 1992-2006 average SAS was 1.78% (range: 0.72-3.01%) (Figure 8). Given that the current rearing capacity at CFH will not support the original smolt release target of 1.75M yearling smolts, SAS is a useful to assess performance across programs regardless of the number of smolts released. For CFH, the SAS that was modeled as being necessary to achieve the mitigation objective has been reached in only three years since 1992 and is similar to what has been observed for the steelhead programs in the Salmon River.

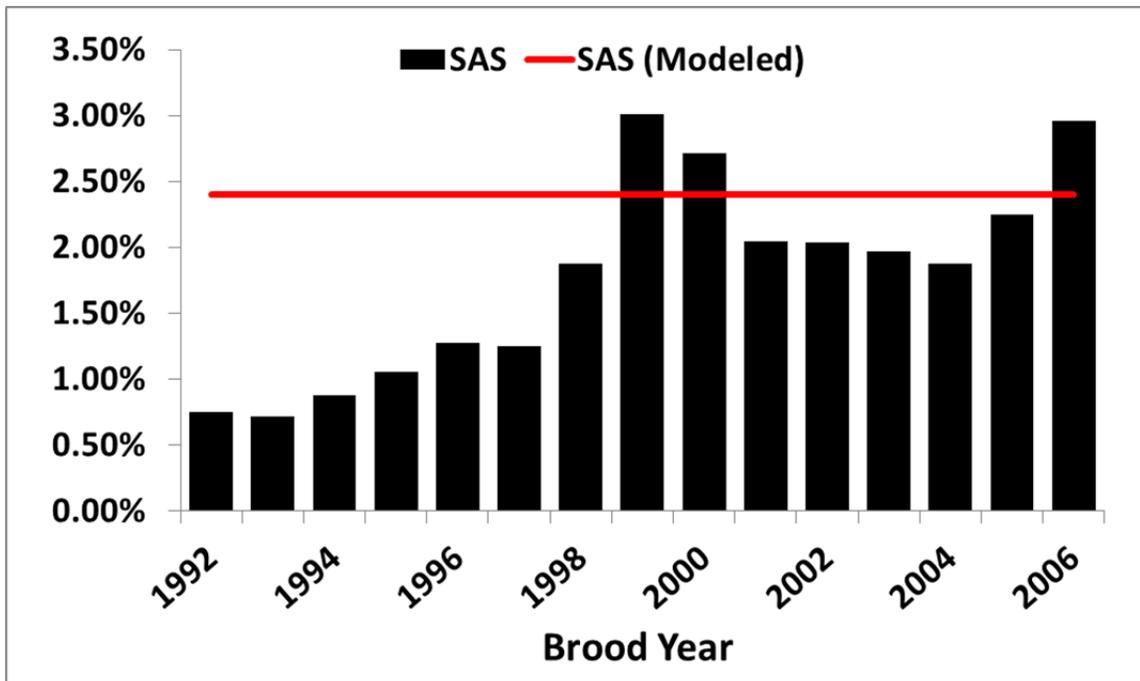


Figure 8. Estimated smolt to adult survival (SAS) rate for hatchery steelhead produced at Clearwater Fish Hatchery for brood years 1992-2006

Stray Rates

Adult steelhead recovered (fisheries, hatchery traps, spawning grounds etc.) anywhere outside of the direct path to the release location are considered strays. It is possible that fish harvested outside of the direct path to the release site during the summer and fall months may have ended up back on the direct path had they not been harvested but there is not a good method to estimate this parameter. It should also be noted that these stray rate estimates are based strictly on fish that are recovered as strays in fisheries and natural spawning areas where sampling programs are in place. Because not all fisheries and natural spawning populations are sampled, reported stray rates are likely underestimates. IDFG has historically used the Left Ventral (LV) fin clip as a flag for the presence of CWT in steelhead but that clip was discontinued in brood year 2006 for B-run steelhead. Any current recovery programs that are restricted to visual scanning for the presence of CWT will miss the CWT tagged fish and the stray rate will be underestimated. For brood years 1992-2007 estimated stray rate of adults from CFH averaged 0.8% (range: 0-6.8%) (Figure 9). The majority of fish recovered as strays from CFH were recovered upstream of Lower Granite Dam (90%). Some of the recoveries upstream of Lower Granite dam were in fisheries located immediately upstream of the direct path to the release location but based on the strict definition were included in stray rate estimation.

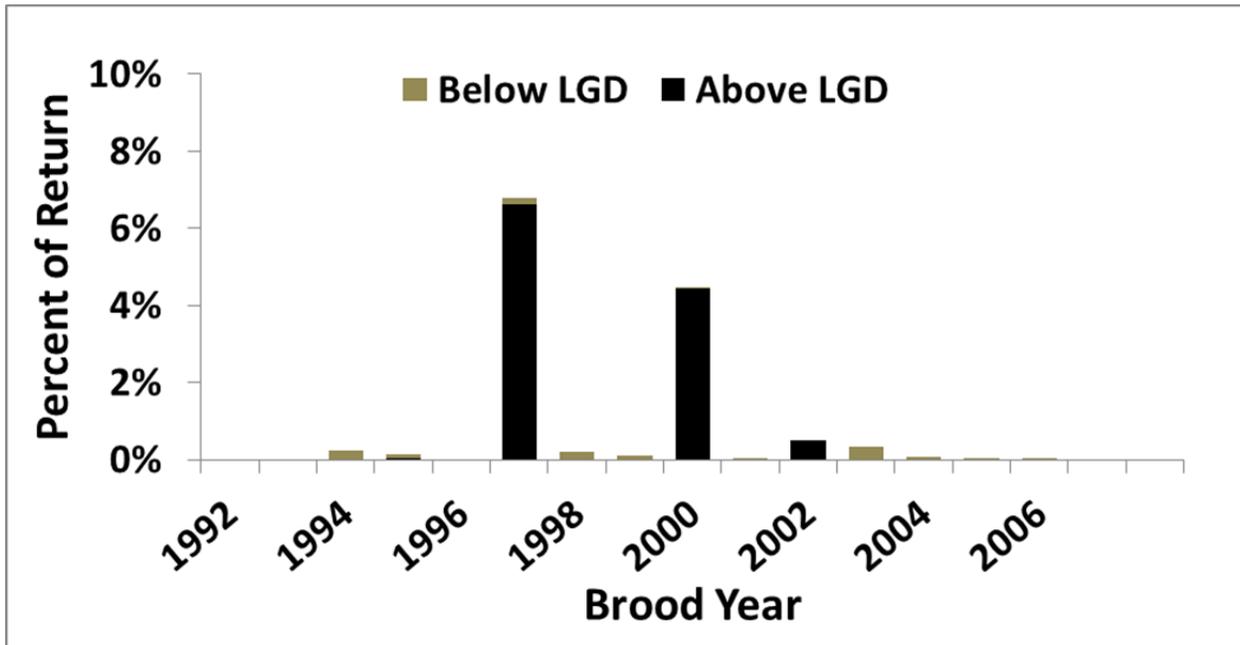


Figure 9. Estimated stray rates of hatchery steelhead produced at Clearwater Fish Hatchery for Brood Years 1992-2007. Estimated stray rates are differentiated for the areas upstream and downstream of Lower Granite Dam.

Contribution to Harvest

Harvest Downstream of Lower Granite Dam

As previously mentioned, the primary focus of the LSRCP hatchery program in the Clearwater River is harvest mitigation. Since the inception of the program, CFH has produced numbers of adult steelhead sufficient to maintain robust sport and tribal fisheries in Idaho and have also supported fisheries downstream of the project area (Figure 10). Over the CFH history, the estimated harvest rate in areas downstream from Lower Granite Dam averaged 4% (range: 1-13%). It should be noted however, when these harvest rate estimates are compared with the cumulative harvest information for B-run index stocks reported by the US v. OR Technical Advisory Committee (TAC) for the Columbia River downstream from McNary Dam, it appears that the harvest rates based on CWT expansions for CFH underestimate the actual harvest assuming that the CFH releases are harvested at a similar rate as the aggregate B-run index stocks used by TAC (Figure 10).

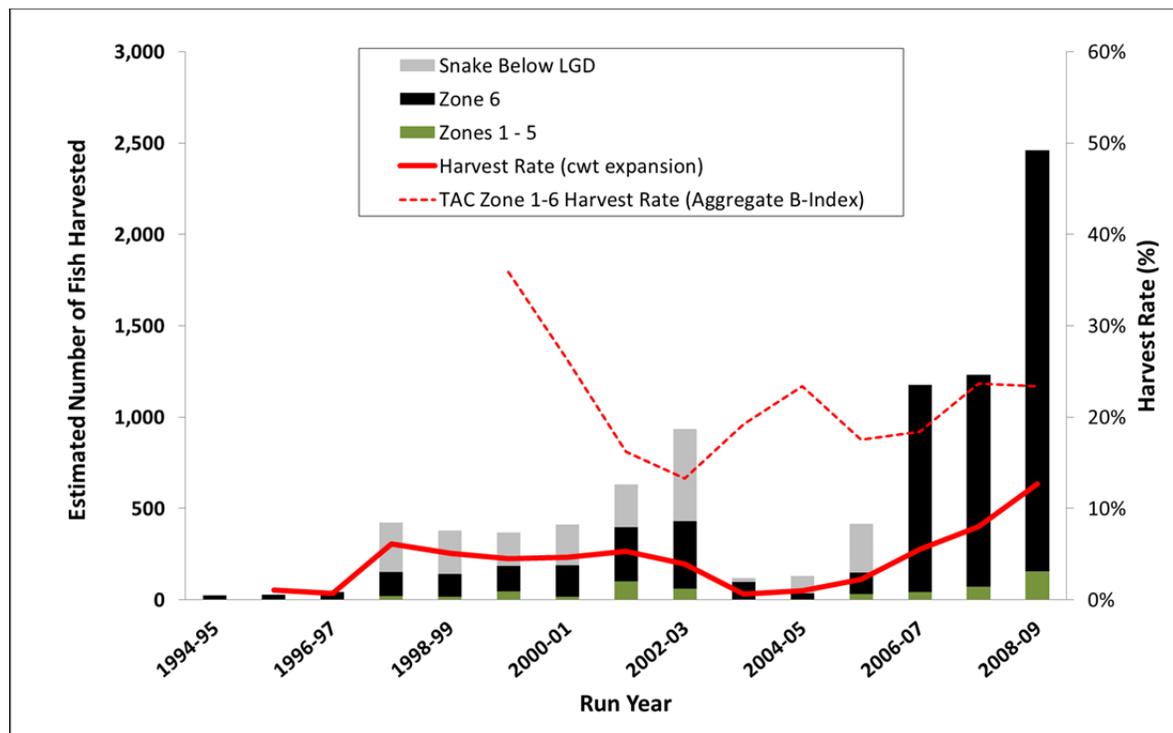


Figure 10. Estimated harvest rates of hatchery steelhead in the Columbia and Snake rivers downstream of Lower Granite Dam for return years 1995-2009. All fish were produced at Clearwater Fish Hatchery

If the CFH releases are harvested at a similar rate, there are a couple of possible explanations for why the harvest rates reported for these stocks are underestimated. First, there could be an insufficient number of fish marked with CWTs to accurately represent the stock composition of the harvest. Over the history of the CFH program, the major release groups from Clearwater hatchery have been tagged with CWT (usually 60-80K CWTs). However, in some years, not all of the release groups were tagged with CWT. In these situations, the CW tagged groups were used as surrogates to represent the untagged releases. If the untagged release groups survive at a different rate, or behave differently in the fisheries, a harvest rate estimate based on data from a tagged surrogate group would be biased. Given that the tagged and untagged release groups are the same stocks reared at the same facility, it is unlikely that a significant bias would result. A second possible explanation is that escapement estimates at LGD are overestimated for CFH. An overestimate of the escapement would artificially decrease the harvest rate downstream of LGD. To examine this, we have taken a preliminary look at the escapement data and summarized the total estimated escapement to Lower Granite Dam across all programs (Oregon, Idaho and Washington) located upstream of Lower Granite Dam and compared those totals to the window counts at Lower Granite Dam (Figure 11). For every year, the summed

escapement estimates are less than the total window counts for hatchery fish. Given this, it is unlikely that we are overestimating the escapement at Lower Granite Dam. However, as mentioned in the previous section, the one data point we have comparing a PIT tag derived escapement estimate with our traditional escapement estimate method indicated that we overestimated the escapement at Lower Granite Dam so it is possible that this could be contributing to the underestimation of the harvest. A third possible explanation is that CWTs from CFH are not being sampled representatively in the observed catch. We have no information to indicate this is happening but we are going to work with agency staff from Oregon, Washington and CRITFC to try and determine if this issue exists. We are also going to do a more thorough review of the historic CWT recovery data to try and resolve this discrepancy.

Beginning in the fall of 2011, with cooperation from CRITFC and WDFW, tissue samples from the observed harvest both above and below Bonneville Dam are being collected as part of the PBT steelhead tagging program initiated in brood year 2008. Samples will be analyzed to estimate the harvest contribution of Snake River steelhead in the Zones 1-6 fisheries. We will compare the results of the PBT stock composition analysis with the CWT analysis to help identify if the CWT data is biased.

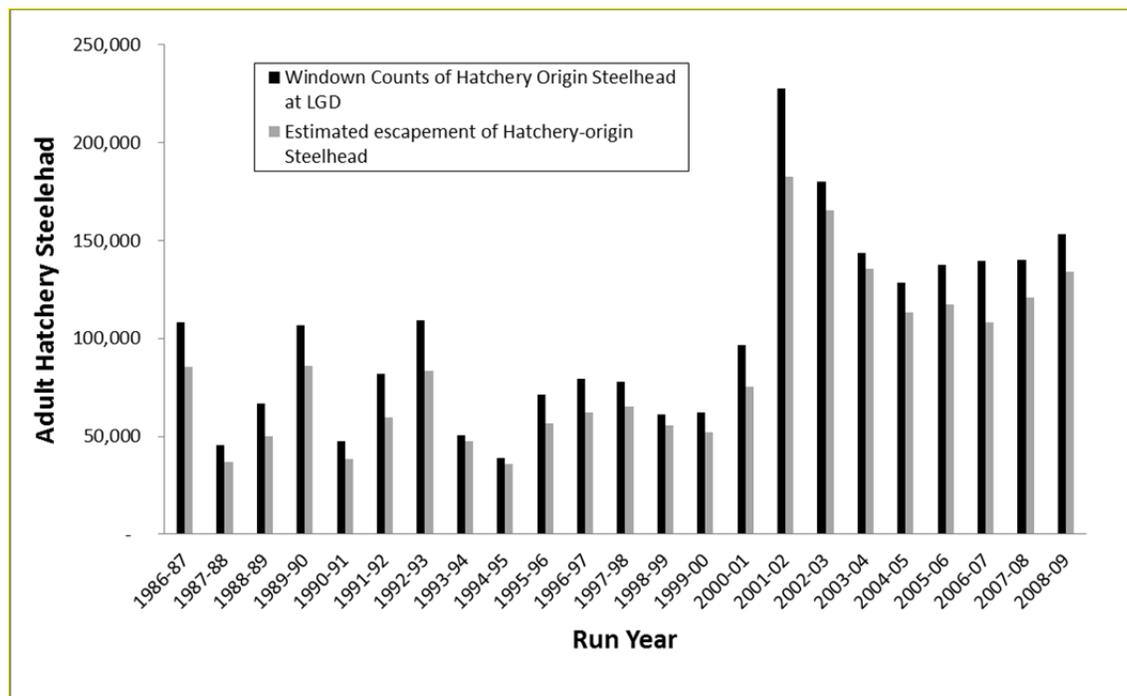


Figure 11. Comparison of the total estimated escapement of hatchery steelhead produced upstream of Lower Granite Dam to the window counts at Lower Granite Dam 1986-2009

Harvest Upstream of Lower Granite Dam

Over the history of the LSRCP program, Idaho has maintained consistent and robust steelhead fisheries in the Clearwater River providing anglers with abundant opportunity in both time and space. The number of adult steelhead from CFH harvested upstream of Lower Granite Dam annually between 1997 and 2011 averaged 16,628 (range: 608-14,006) (Figure 12). Harvest rates over the same period averaged 60.5% (range: 10.8-95.8%).

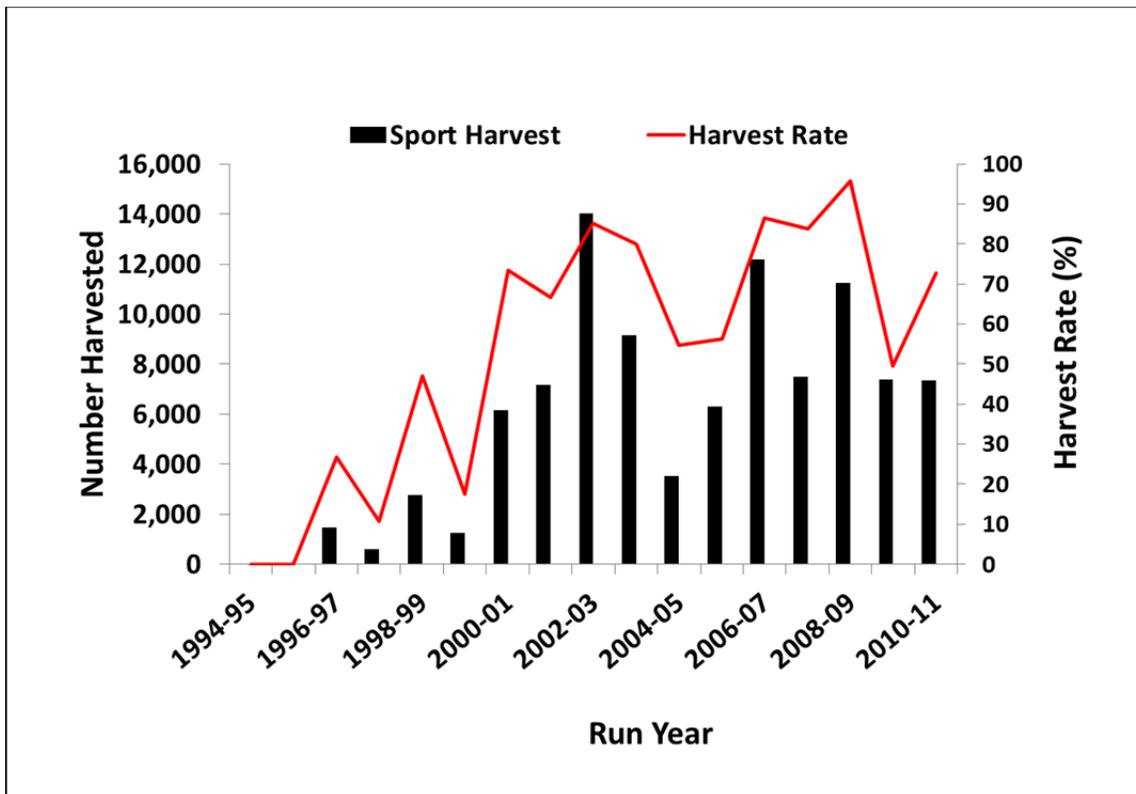


Figure 12. Estimated number of hatchery steelhead harvested upstream of Lower Granite Dam 1995-2011. All fish were produced from Clearwater Fish Hatchery.

There are currently 141 river miles open to steelhead fishing in the Clearwater River basin including 304 days open to steelhead fishing in all river zones with 273 days open to steelhead harvest in some river zones and a minimum of 197 days open to steelhead harvest in all river zones (Figure 13). Total annual angler effort in the Clearwater River since 1984 has averaged 152,800 angler days (range: 69,000-220,000 days) (Figure 14). Steelhead fisheries in the Clearwater River basin provide unique opportunity for anglers to spread out and achieve the

angling experience they desire in a variety of riverine habitats and conditions throughout the majority of the year.

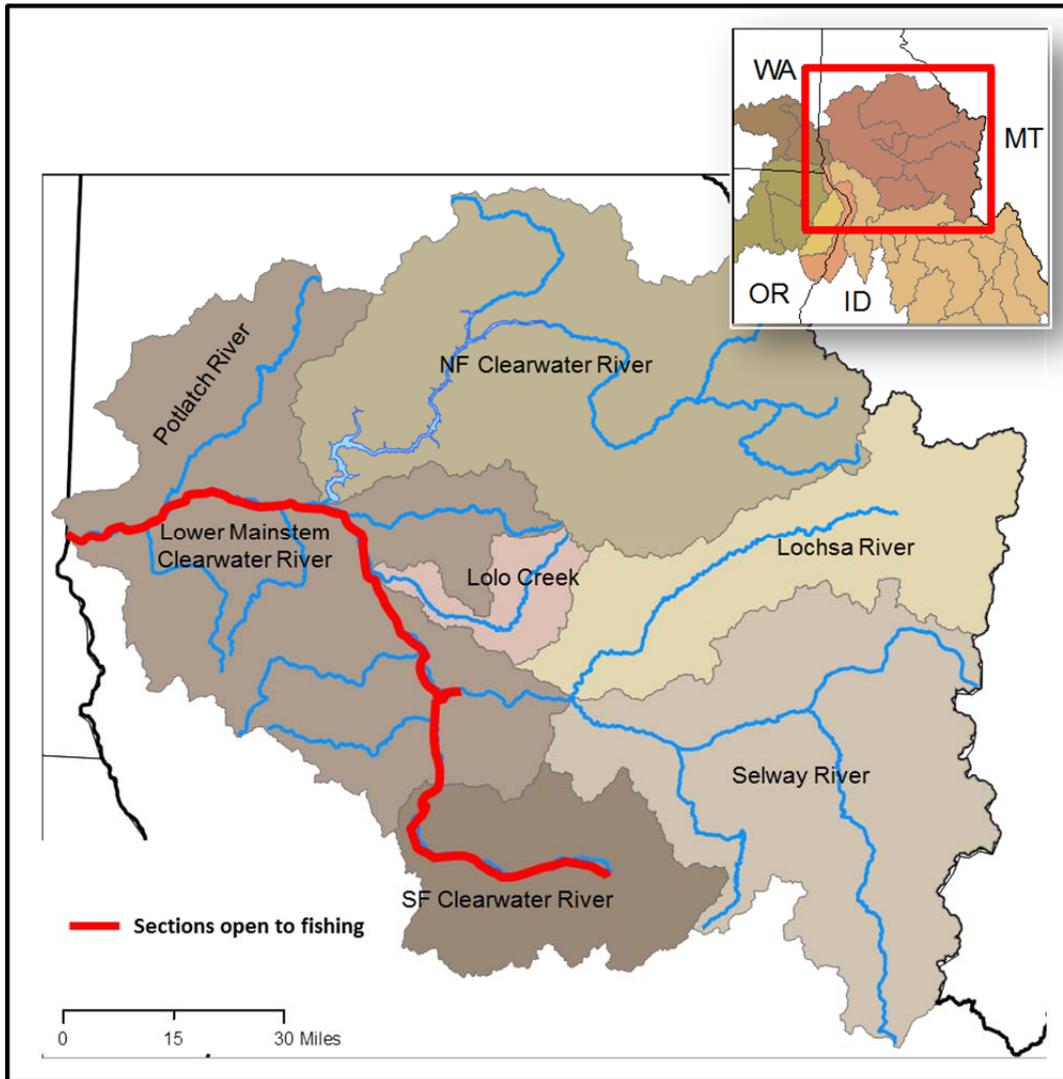


Figure 13. Hatchery steelhead fishing boundaries in the Clearwater River, ID.

When comparing harvest and angler effort over the program time series in the Clearwater River including the period prior to hatchery mitigation, the current harvest and angler effort estimates are considerably higher than the pre-mitigation period. It is important to note that the catch and effort displayed in Figure 14 represents the combined harvest and effort information for both the LSRCP and USACOE programs. To show the relationship with harvest and effort it was necessary to combine them since effort cannot be attributed to a single

program due to the significant spatial and temporal overlap of the programs (LSRCP and USACOE). The primary purpose of the figure is to convey that the hatchery mitigation program is maintaining sport fisheries relative to the pre-mitigation period.

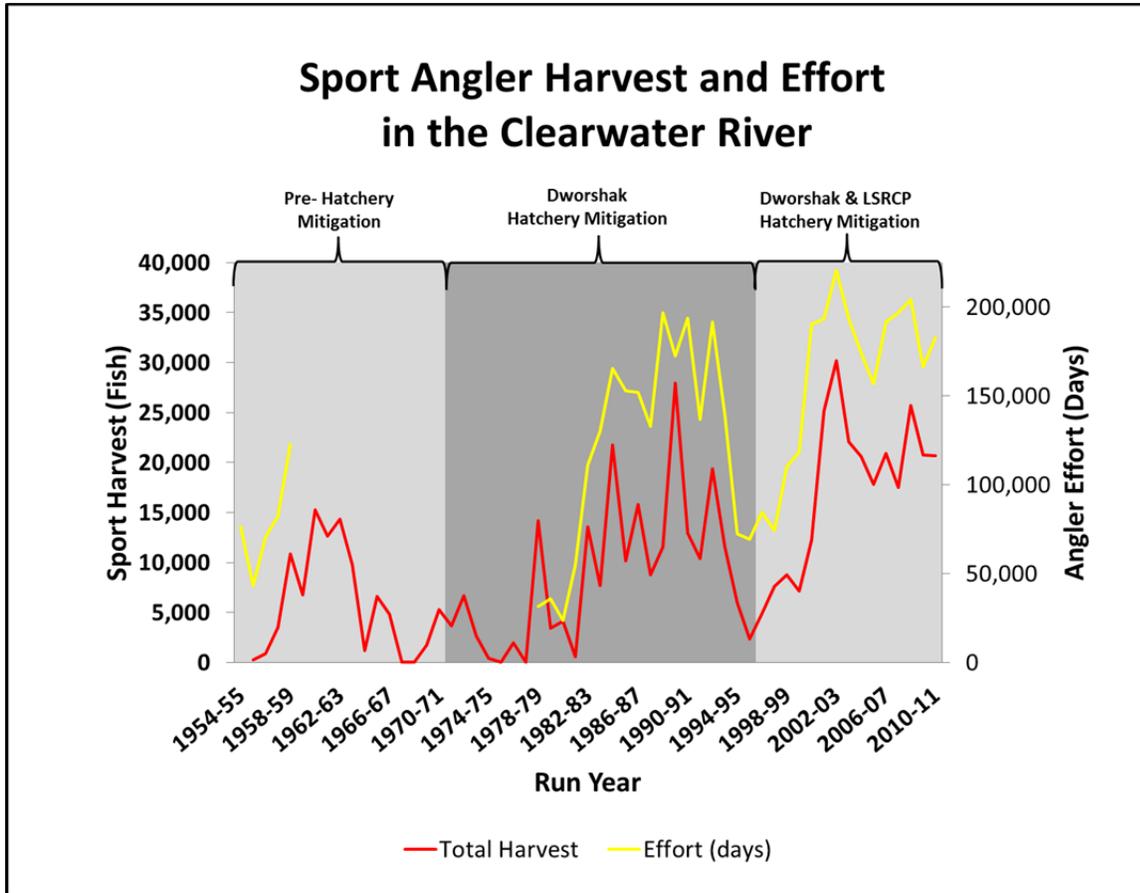


Figure 14. Estimated harvest and angler effort for the hatchery steelhead fisheries in the Clearwater River 1955-2011.

Summary and Moving Forward

Since the inception of the LSRCP hatchery mitigation program in Idaho, IDFG has prioritized harvest mitigation as the primary function of the hatchery program and has focused efforts to maximize SARs, provide anglers with abundant harvest opportunity, and to meet adult mitigation objectives. During this period, hatchery practices have been refined and with few exceptions, broodstock collection and in-hatchery survival has not limited the ability of managers to meet smolt production objectives. Hatchery adult returns from CFH have consistently provided robust fisheries upstream of the project area and have also contributed to fisheries downstream of the project area. While the total adult mitigation objective has

never been reached, CFH has produced on average 33% of the total mitigation goal since 1997 even though the rearing capacity at CFH is limited to approximately half of the original intended smolt production. Managers do have expectations to increase steelhead smolt production in the Clearwater River to meet mitigation objectives.

The Clearwater River represents a significant portion of the habitat in the Snake River that historically produced wild steelhead. Likewise, the Clearwater River hatchery steelhead program is the second largest hatchery steelhead program in the Snake River. In addition to the LSRCP hatchery mitigation, 2.1 million steelhead smolts that are part of the hatchery mitigation for Dworshak Dam is also operated within the Clearwater River in the same general proximity to the LSRCP program. Managers realize that operating a hatchery mitigation program this large is not without some risk to natural populations. Since the inception of hatchery mitigation efforts in the Clearwater, IDFG has maintained a management framework that emphasizes reducing interactions between hatchery-origin and natural-origin fish by confining hatchery releases to areas likely to have the least impact on natural populations.

The IDFG views the LSRCP hatchery steelhead mitigation program as a success story in that it has made significant progress towards achieving the targeted management objectives. This program has provided consistent and robust steelhead fisheries throughout the program history and has maintained the ability of managers to provide abundant angling and harvest opportunity over a vast landscape during the majority of each year. These fisheries have not only provided significant economic impacts to the state, but have also helped to maintain a connection between citizens and our natural resources.

The IDFG is fully committed to maintain and restore ESA listed populations of steelhead. At the same time we are also committed to continue the operation of the hatchery mitigation program. To address this, we have developed a management framework that incorporates both objectives. Hatchery and Genetic Management Plans (HGMPs) have been developed to describe the management goals, program plans, monitoring and evaluation plans, and plans for addressing risks associated with each of the programs. We view these plans as guidance documents and understand the need to remain flexible as new information becomes available to help guide and improve the programs in such a way to better achieve the stated IDFG management objectives.

Acknowledgements

We would like to extend our sincere appreciation to the dedicated staffs at the Clearwater Fish Hatchery and Dworshak National Fish Hatchery for their efforts in maintaining high quality fish culture operations in the Clearwater River. We would also like to thank the many cooperators in the basin that help to make this a successful program including staff at the IDFG regional office in Lewiston, Pacific States Marine Fisheries Commission, harvest monitoring crews, and the staffs from the Nez Perce Tribe and the US Fish and Wildlife Service. Lastly, we would like to thank the staff at the LSRCP office in Boise, ID for providing funding and support to maintain and improve the program.

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