

Project Number: 23040

Project Title: Re-introduction of Lower Columbia River Chum Salmon into Duncan Creek

Sponsor: PSMFC, WDFW

CBFWA Comment # 1

The technical reviewers questioned whether the necessary paperwork could be completed by September 30, 2001 but NMFS believes it can be done.

Sponsor Response to #1

The proposal sponsors agree with National Marine Fisheries Service (NMFS) the necessary paperwork should be completed prior to the August 2001 work window and no later than the September 30, 2001 deadline. The sponsors are actively working with NMFS to have the permits and approvals secured.

Washington Department of Fish and Wildlife (WDFW) biologists Steve Manlow and Eric Holman are in the process of filling out the necessary permit applications including the following: Hydraulic Protection Application, Shoreline Substantial Development Permit, National Scenic Area, Section 404(d) and the Shoreline Environmental Protection Act (SEPA) checklist. The Section 404(d) will allow NMFS to weigh in through a Section 7 consultation. WDFW will use the existing Biological Assessment (BA) for the Duncan Creek dam fish passage modification as the basis for a BA for this project and will modify it accordingly. WDFW will be meeting with NMFS field staff to discuss the project at our next WDFW/NMFS coordinational meeting in Vancouver, which is in the next two months.

ISRP Comment #1

Objective 1 of the proposal meets the High Priority criteria, namely creation or cleaning up of the spawning grounds. The remainder of the objectives does not meet the threshold criteria of one-time funding for on-the-ground benefits.

Sponsor Response to #1

The remaining objectives are the capturing and artificial spawning of chum salmon from adjacent stocks, the incubation and marking plus rearing and release of re-introduced chum fry into Duncan Creek. The proposal sponsors believe these objectives address the threshold criteria of one-time funding for on-the-ground benefits.

Most of the costs for capturing and artificial spawning of the adults plus the incubation, marking, and rearing of the chum fry would be a one-time purchase of equipment. Seines and collection tubes would be purchased for the capturing of brood stock. Portable shelter and electronic balances would be used for the artificial spawning. For incubation of chum fry, plumbing, an alarm system and the Remote Site Incubators would be purchased. A power supply, flex hose, chiller boxes, and chillers would be purchased for marking the chum fry. Plumbing, flex hoses, valves, and raceways would be purchased for the rearing of the chum fry.

Of the adjacent stocks for supplementation, one possible brood stock source could be the chum spawning at the higher flows/elevations in the mainstem Columbia. The Hamilton Slough (the mainstem Columbia between Ives Island and the Washington mainland shore) spawners are at greater risk of inadequate water flows for incubation and emerging. These fish are not fully protected as stated in the FCRPS Biop.

Using the chum from Hamilton Slough for Duncan Creek supplementation would void a negative and generate a positive. Instead of a possible total loss of the higher chum redds in Hamilton Slough, a possible 90% egg to fry survival rate could be generated by artificially spawning these fish and releasing the resulting fry into Duncan Creek.

The on-the-ground benefits would be the resulting fry from the supplementation efforts. If the chum are left to spawn at the higher elevations in Hamilton Slough, the egg-to-survival rate could be 0%. Using the equipment listed above and methods listed in the proposal, a 90% egg-to-fry survival rate and a 90% survival rate during the rearing period to release is expected from the artificially spawned eggs. If 25 female chum carrying an average of 3,000 eggs are artificially spawned and the survival rates listed above are achieved, then a minimum of 60,750 chum fry would be released annually into Duncan Creek.

(Note: This survival rate was achieved for the 1998-1999 brood stock collection at Grays River. The 2000 data is currently incomplete).

ISRP Comment #2

Natural recolonization by the remnant chum stock in Duncan Creek should be pursued prior to introduction of outside stock.

Sponsor Response to #2

The project sponsors also concur that the natural recolonization by a remnant Duncan Creek chum stock would be the preference. However, even if a remnant population remains, there may be too few fish to prevent inbreeding and genetic drift plus establish a self-sustaining natural spawning population. This could occur if the population is <50 fish (25 females).

The Duncan Creek chum returns in recent years have been few to non-existent. In the 22 years that spawning ground surveys were conducted since 1968, chum were found in only 6 of the years. The peak live and dead fish count was 4 fish in 1970.

Natural recolonization is more likely to be the result of Hardy/Hamilton/Ives chum straying into the Duncan Creek. Recent radio tagging studies of chum salmon in the area indicate that some straying likely occurs between Hardy and Hamilton creeks plus the Ives Island area. However, it is unclear whether sufficient numbers of strays from these stocks would occur into Duncan Creek.

The peak counts of live and dead fish in Hardy and Hamilton creeks have averaged 140 and 217 fish, respectively, since spawning ground surveys have been conducted. Spawning ground surveys began in 1944 for Hamilton Creek and 1957 for Hardy Creek.

Duncan Creek spawning ground surveys would be conducted in the fall 2001. If insufficient numbers of fish are present through natural recolonization (i.e. <50 fish), then the proposal sponsors suggest the capturing and artificial spawning of adjacent stocks.

The project sponsors believe they can successfully capture the chum in Hamilton Slough. Beach seines with small gillnet mesh will be used for capturing the brood stock. This gear has been successfully used to collect chum on the Grays River. In 2000, a total of 252 chum were captured there.

If >25 females are captured from the mainstem Columbia, the remaining fish might be taken from Hardy or Hamilton creeks. Trapping efforts funded through BPA are currently underway to estimate those returns. Those efforts will be utilized in brood stock collection from those streams.

ISRP Comment #3

The proposal might be funded at a reduced level for work on the spawning sites.

Sponsors Response to #3

The project sponsors would like to see funding approved for both the spawning habitat improvement and the supplementation efforts. Both efforts compliment each other. In addition, both are cost effective and provide an immediate assist in the efforts to recover Columbia River chum salmon.

If this proposal is funded at the reduced level for the work on the spawning sites, the sponsors believe the proposal should be ranked higher. The proposal was ranked High Priority "A" in the CBFWA review. In addition, NMFS noted the connection of this project with the Biop. The ISRP also noted that Objective 1 of the proposal meets the High Priority criteria.

The ISRP also noted the cost considerations could elevate a Category B proposal above a Category A proposal. Listed below are examples of the costs and benefits of the spawning channel construction and supplementation efforts listed in this proposal.

The spawning channels in Duncan Creek are expected to cost approximately \$300,000. An estimated 18,726 square feet of improved spawning area will be developed. The resulting cost is approximately \$15 per square foot.

Duncan Creek spawning channels will increase the amount of spawning area in the Hamilton/Hardy/Ives area by nearly 50%. Hamilton Springs spawning channel is approximately 3,400 square feet; mainstem Hardy Creek 11,900 square feet; the new but untested Hardy Creek side channel 6,000 square feet; and the mainstem Columbia including Hamilton Slough, 18,000 square feet. All total, the Hardy/Hamilton/Ives area has approximately 39,300 square feet of spawning area.

The Duncan Creek spawning ground channels could support nearly 2,700 female chum. Using the 18,726 square feet divided by an average of 7 square feet per female (the preferred lower spawning density), then 2,675 females could utilize the improved spawning area.

The capture and spawning of brood stock, marking of the embryos, monitoring the incubation system, collecting samples of fry before release, counting and feeding fish, plus cleaning raceways and liberating fry is expected to cost approximately \$38,000 annually. If a minimum of 60,750 chum fry are produced through annual supplementation efforts, then the average cost would be less than \$0.50/fish. One question we can't answer is how much it would cost the power system to provide water over the highest chum redds in Hamilton Slough. One could only guess it is substantially more than the estimated annual cost of supplementation.

The project sponsors have tried to be cost conscious on this proposal. For example, Pacific States Marine Fisheries Commission (PSMFC) was used as the lead contractor. One reason PSMFC was chosen is their lower overhead rates (15%) and pass-through rates for subcontractors (2%) compared to a possible 30% overhead rate by WDFW. Other reasons to use PSMFC is it should minimize problems associated with developing the contracts, billings are more timely, budgets can be monitored effectively, etc.

ISRP Comment #4

Long-term funding for further introduction of chum stock and O&M and M&E might be sought during the rolling review of the Lower Columbia Province.

Sponsors Response to #4

Columbia River chum returns since the 1960s have been stable albeit at low levels. The estimated returns averaged 3,000 fish/year. However, the returns may be negatively affected by the loss of an improved spawning channel in the Grays River system. High flows breached the Gorley Spring spawning channel in December 1999. Over 500 chum were counted in the creek in 1999. It is assumed the production from those fish was zero. The spawning channel has not been restored.

Gorley Creek was a major component of the Grays River return. From 1986-1999, the peak live and fish count in Gorley Creek averaged 318 fish. In comparison, the mainstem and West Fork Grays River and Crazy Johnson Creek averaged 677 fish during the same period. Of the nearly 1,000 fish counted in the Grays River system, approximately 32% of the fish were found in Gorley Creek.

Gorley Creek spawning channel was also a major component of the Columbia River return. The Hamilton/Hardy/Ives area peak live and dead fish counts averaged 395 fish from 1986-1999. Added to the Grays River system, an average of 1,390 fish were counted in the Columbia River chum index areas during this period. Therefore, 23% of the total fish counted in the lower Columbia were fish observed in Gorley Creek.

The loss of Gorley Creek means only one proven spawning channel for Columbia River chum remains; Hamilton Springs. A side channel on Hardy Creek has been developed for chum spawning. However, that area remains untested. Duncan Creek would be only the third improved spawning channel for lower Columbia chum.

As noted above, Columbia River chum returns have been stable albeit at low levels. Recent events may contribute to a decline in future returns. Supplementation into Duncan Creek could be used to compensate the loss of Gorley Creek. In addition, supplementation could be used to offset the potential loss of the higher chum redds in Hamilton Slough.

Extensive non-index chum spawning ground surveys were made on the lower Columbia this past fall. No fish were found on the Oregon side. Only one population >100 fish was found in Washington. That population was found in the mainstem Columbia just upstream from the I-205 Bridge. However, that population is also subject to Columbia flows and tides. The tidal affect on the lower site exposed the redds at low tide. In addition, the uplands of the upper spawning site have been proposed for high density housing. The ground has already been prepared for development. No other chum populations were found in the Hardy/Hamilton/Ives area.

Spawning ground channels and supplementation have been identified as possible remedies for chum restoration. On the Columbia River, the Columbia River Subbasin Plans listed this course of action. More recently, the Hatchery Genetic Management Plan for the Grays River also suggested similar plans. In Hood Canal, similar plans have lead to the recovery of summer chum stocks through the Summer Chum Salmon Conservation Initiative.

WDFW has discussed and planned recovery efforts for Duncan Creek chum since the 1960s. Other than Hardy/Hamilton/Ives Island, Duncan Creek is the only other known chum spawning location just downstream from Bonneville Dam. Recent extensive spawning ground surveys did not reveal any other populations in the immediate area. The spring sources in Duncan Creek are still present in the historic locations. The local landowners have shown their commitment to the recovery of Duncan Creek chum. The Skamania Landing Owners Association contributed \$130,000 in cash towards the modification of the dam. The recent loss of Gorley Creek and the potential loss of chum redds at higher elevations in Hamilton Slough may have negative effects on future Columbia River chum returns. Columbia River chum recovery plans have been in place for years. Rather than continuing the trend of waiting, the sponsors would encourage the Northwest Power Planning Council members to move forward through the immediate funding of this proposal in the High Priority Process rather than delaying to the Provincial Review.

From: "Joe Hymer" <HYMERJAH@dfw.wa.gov>
To: GWCB.GWPDJ(Tom)
Date: 2/11/01 1:41PM
Subject: Responses to ISRP/CBFWA High Priority Recommendations

The sponsors of the "Re-Introduction of Lower Columbia River Chum Salmon into Duncan Creek" Project #23040, appreciate the opportunity to respond to the concerns and comments noted by CBFWA and the ISRP. We acknowledge and understand the issues raised and considered many of them in the initial design of this project. The following are our responses to the key items mentioned in the reviews.

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