**Summary**

I previously understood the rationale behind both recycling and LSDR at the Cougar Trap was to avoid transport of “NOR immigrants” above the dam, based on the clear statements to this effect in reports and manuscripts (relevant excerpts below), but Kathleen corrected me that the purpose goes beyond just preventing NOR immigrants from being placed above the dam. Instead, the goal is to prevent ANY NOR from being released above the dam, until downstream passage can be assessed. This rationale fits with the statement from Jeffrey Ziller (see email exchange from August 15th 2022 between Dayan, Ziller and Ryan Couture below).

I think the confusion on my part stems in part from thinking of NOR immigrants as mostly being from the mainstem, not from the South Fork, but downstream of the dam, because the downstream release site is below the confluence with the mainstem. So when statements like “NOR population that spawns/exists below Cougar” are made, I’ve thought of these as mostly mainstem fish. It’s clear this isn’t the case.

**Main Questions**

Even after clearing this up, there are still three areas for confusion going forward:

(a) Why is the stated motivation in previous manuscripts reports different from the one today? Did something change since 2015? It would seem so given the red highlight below, but it would be good to confirm.

(b) If the goal is to prevent releasing any NOR fish above the dam, why have over 500 NOR salmon have been recycled downstream, captured a second time at Cougar Trap and released above the dam since the transition from LSDR to recycling all NORs in 2015? Is this a compromise between ODFW and USACE?

(c) How should we interpret the finding that since 2016, 44% of recycled NORs never return to the trap and that some of these individuals can be identified as carcasses on the South Fork? Is this the intended outcome of recycling or an indication that recycling is negatively impacting the productivity of the above dam population?

**Other Questions**

(a) Why are mainstem spawning ground survey samples genotyped alongside the South Fork in 2014? Ask Nick

(b) Since the downstream release location is below the confluence with the mainstem, is there an interest in understanding if recycled NORs from the Cougar trap tend to return to the South Fork or remain on the mainstem? We have a lot of mainstem spawning ground survey samples in hand and a small number already genotyped. Is there an interest in genotyping these SGS samples going forward?

(c) What are the current downstream passage conditions at Cougar Dam. Is the temperature control tower considered downstream passage? Let’s be careful with language here.

**Email Exchange Excerpts August 2022**

**Dayan:** Kathleen and I were curious, do you know what motivated the decision to stop the LSDR program and start recycling all NORs from 2015 onwards?

**Couture**: This protocol was put into place to prevent “mining” the NOR population that spawns/exists below Cougar, in part due to the low RRS/CRR for fish released above Cougar.

**Dayan:** The previous genetic pedigree studies indicate that few NORs produced below the dam enter the trap prior to September 1st. Naturally, there's a trade-off between the additional handling/migration stress due to recycling and excluding NORs from below the dam. I understood the LSDR as an attempt to find a balance. To clarify, I was curious if you could help us understand what motivated the choice to discontinue the LSDR protocol and transition to recycling all NORs, regardless of date.

**Ziller:** The bottom line was that putting any wild origin fish above Cougar made no sense given the horrifically bad survival rates of fish passing through the dam at that time. We were basically wasted natural production at a time when we needed higher survival.  Now that we have interim measures in place and we are collecting some survival data, I’m hoping we can get to a point where we feel more confident in their ability to survive passage at Cougar Dam and contribute to the population above

**Report/Manuscript Excerpts**

In 2013, managers adapted their trap and transport methods

in an effort to only release offspring from past reintroductions

above Cougar Dam and avoid upstream transport of immigrants.

- Sard 2016

Similar to 2013, the LSDR method was effective at limiting the reintroduction of NOR immigrants when the method was applied to NOR adults collected after September 1st in 2014 and 2015. In both 2014 and 2015, few of the possible NOR immigrants that returned after September 1st were actually reintroduced. The LSDR method was applied throughout the spawning migration in 2015, and we again found that few of the NOR immigrants collected at the Cougar Trap before September 1st in 2015 were actually released above Cougar Dam. However, 46 of the 159 adult offspring of HxH parents (i.e. F1s) that entered Cougar Trap before September 1st were not reintroduced as a result of the LSDR method. Exclusion of these F1 individuals presumably reduced the population productivity above Cougar, but this cost to the reintroduction program should be weighed against the benefit of safeguarding the offspring of NORs from potentially high dam passage mortality.

- Banks 2016

Managers anticipated this result in 2013, and implemented a process we refer to as the late season downstream release (LSDR) method, which was intended to prevent transportation of NOR Chinook that were not produced above Cougar Dam.

- Banks 2014

Given the typical homing behavior of Chinook salmon, most NOR immigrants were likely produced elsewhere in the McKenzie River basin.

- Sard Dissertation

Managers wanted to limit the trap and transport of immigrants because the existing population of NOR Chinook salmon in the McKenzie River, a likely source of immigrants to the trap, is considered the only ìgenetic legacyî population of the ESU (HSRG, 2009), and is thought to present unique genetic and life history diversity. Subjecting this legacy population to the potential risks of a novel reintroduction program, with uncertain juvenile dam passage survival (Beeman et al., 2014), was unacceptable to local managers. However, managers were amenable to the trapping, transport and above-dam release of those adult salmon that had been naturally produced through the reintroduction of hatchery fish.

- Sard Dissertation