

NW FISHLETTER

Home | NewsData | Contact Us | Archives

SERVICES

NW Fishletter

NW FishWeb

Fishletter Archives

Fish.Net Links

Fish.Net Search



Comments:

Issue comments, feedback, suggestions

NW Fishletter #319, June 28, 2013

[1] Big Questions Still Haunt Lower Snake Hatchery Plan

The **latest review** of hatchery operations that mitigate fish losses from the four lower Snake River dams says the \$30-million annual program is generally well-run, but whether it really helps or hinders ESA-listed wild stocks is still unknown.

The question was raised 15 years ago when the Independent Scientific Review Panel conducted a review of the steelhead component of the Lower Snake Compensation Program, which was launched in 1976 to boost spring Chinook, steelhead and fall Chinook numbers.

The ISRP also raised the question in its latest May 28 review of the steelhead component. The panel said the earlier question about "whether harvest mitigation programs and wild stock recovery can be conducted/achieved concurrently," is as germane today as it was back then.

The panel noted that many management actions have been implemented and evaluated over the past 15 years to cope with possible ill effects on wild stocks--smolt releases have been reduced, acclimation ponds have been built to reduce straying, hatchery adults have been trapped at weirs to keep them off spawning grounds, and managers have shifted to using local broodstocks when hatcheries are used to supplement wild populations.

"Particularly," said the ISRP, "it is difficult to effectively maintain the past emphasis on providing harvest while efforts are being made to develop 'endemic' stocks."

The latest ISRP review trotted out recent studies on Hood River steelhead that raised some serious questions over the value of supplementation. "The predominant understanding is that hatchery conditions will negatively impact the long-term fitness of salmonids due to inadvertent domestication," said the ISRP. "The alternative view is that the genetic risks associated with hatcheries have been overstated and that evidence supporting fitness loss is often confounded by factors such

ENERGY JOBS PORTAL



Check out the fastest growing database of energy jobs in the market today.

WHAT'S NEW



May 23-24, 2012
Seattle, WA

as broodstock origin and management decisions."

But the report also points out that a recent study of hatchery spring Chinook (Hess et al., 2012)--which looked at hatchery and wild populations in Johnson Creek, Idaho, a tributary of the South Fork of the Salmon River--found no differences in reproductive success between natural origin springers and hatchery-origin fish.

More recent work cited in the report, led by NOAA fisheries scientist Ewann Berntson and her colleagues, has come up with similar results for spring Chinook in Catherine Creek, a tributary of Oregon's Grande Ronde, but they did find significant reductions in steelhead fitness in a population in Big Sheep Creek in the Imnaha Basin.

The ISRP noted that Berntson found that the relative reproductive success of hatchery steelhead was 30 to 60 percent of natural-origin cohorts, with fish origin, length, return date, and the number of same-sex competitors having the greatest effects on it.

Fish origin played the largest role, the panel said, "but natural-origin spawners were less impacted by spawner density than hatchery fish and the influence of same-sex competitors was more strongly felt by females than males. This suggested that spawning habitat might be limited under certain densities."

Berntson's results suggest it was unlikely that domestication or genetic changes to hatchery fish caused by exposure to hatchery conditions could explain the differences they observed in recruits per spawner. The scientists found that two-thirds of more than 100 natural-origin adults examined had at least one hatchery parent, which tracks with the earlier operations that allowed large numbers of hatchery steelhead to spawn in Little Sheep Creek. Instead, they point to the obvious environmental differences between hatchery and wild fish.

"Thus, the fact that significant differences were found in the RS [recruits per spawner] of hatchery and natural-origin adults spawning in Little Sheep Creek suggests that environmental factors may be largely responsible for the differences seen," said the ISRP report. "If genetic changes had occurred, the expectation would be that NORs [natural-origin recruits] with hatchery ancestry would be impacted and therefore have similar or possibly slightly greater RS values to those achieved by hatchery fish. That was not the case. NORs that had been removed from the hatchery environment for one or more generations had almost double the RS values of hatchery adults."

To investigate this further, the ISRP said, the breeding success of adults produced by naturally spawning hatchery fish needs to be compared to the breeding success of natural origin adults. In a study of this kind, both types of adults would experience similar early environments, so differences in RS could be caused by genetic differences rather than a possible combination of environmental and genetic effects. The ISRP said Berntson and her colleagues plan on future studies to examine this issue.

The ISRP said Berntson's work on spring Chinook that supported other findings was also important, and led the panel to conclude that "[d]istinct differences in how hatchery exposure affects steelhead and Chinook appear to exist. An intriguing question is why is this occurring? Perhaps it is simply a difference in the number of fish used as broodstock." (Berntson told *NW Fishletter* that she is expanding her analysis of the spring Chinook, but it was too early to tell if it would back up her earlier results.)

The panel said measuring "possible" demographic and genetic impacts of supplementation on the wild steelhead populations in the lower Columbia River and project area represents the next big challenge for the LSRCP program."

The lower Snake compensation plan, which uses 28 facilities in three states, has several goals in place for adult returns above Lower Granite Dam after lower river levels and ocean harvest-55,100 steelhead; 58,700 spring Chinook, and 18,300 fall Chinook.

The ISRP report noted that the steelhead projects have reached their adult return goals above Lower Granite Dam 87 percent of the time over the past ten years, "in part because harvests in the lower river have been greatly curtailed."

"As a result," the report continued, "sport harvests in the project area have increased from those achieved before the LSRCP," which it said averaged 20,000 to 28,000 fish per year.
-Bill Rudolph

The following links were mentioned in this story:

[latest review](#)

[More recent work](#)

◆ **Subscriptions and Feedback** ◆

[Subscribe to the Fishletter notification e-mail list.](#)

[Send e-mail comments to the editor.](#)

THE ARCHIVE :: Previous *NW Fishletter* issues and supporting documents.

NW Fishletter is produced by
Energy NewsData.
Publisher: Cyrus Noë, *Editor:* Bill
Rudolph
Phone: (206) 285-4848 Fax: (206)
281-8035

[Home](#) | [Sample Requests](#) | [Contact Us](#) | [Archives](#)

© 2013 Energy NewsData