Agencies Taking Measures to Protect Winter-run Chinook, Preparing to Release Approximately 600,000 Fish

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An increased number of hatchery-reared juvenile winter-run Chinook salmon produced from adults that were collected as a precautionary measure to offset anticipated in-river drought related mortality will likely be released in early February, state and federal officials said. Additional broodstock was collected last year at the U.S. Fish and Wildlife Service's (USFWS) Livingston Stone National Fish Hatchery (LSNFH) because this unprecedented drought is severely impacting survival of Sacramento River winter-run Chinook salmon, a state and federally listed endangered species.

This is the second consecutive year that juvenile winter-run salmon have experienced extremely poor survival during incubation and/or emigration to the ocean, substantially impacting the winter-run population. A third consecutive year would have dramatic adverse effects on the population.

Elevated water temperatures in the upper Sacramento River last summer and fall resulted in extremely high mortality (95 percent) of brood year 2014 winter-run egg and fry. Resource managers from the California Department of Fish and Wildlife (CDFW) believe that a collapse of the 2014 natural spawning winter-run brood year may have occurred. Of the naturally spawned juvenile winter-run Chinook that survived (five percent), it is estimated that 95 percent are in the Delta now and these remaining fish are being tracked carefully through enhanced Delta monitoring, implemented as part of the joint agency drought response. Biologists expect these fish to remain and rear in the Delta through mid-March, until they are cued to exit to the bay and ocean through a significant rain event.

Because of this, CDFW, USFWS and NOAA Fisheries have implemented measures like the collection of additional broodstock at LSNFH to protect the remaining winter-run from further harm and to improve their habitat. The hatchery currently has approximately 600,000 juvenile winter-run ready for release in the near future. This is over three times the size of the usual release.

Measures, which will continue to be implemented in the coming year, include:

- Increasing numbers of hatchery-produced winter-run juveniles and timing their releases to increase their chance of survival.
- Rescuing and relocating juvenile and adult salmon and steelhead back to the Sacramento River.
- Managing ocean and river salmon harvest to reduce winter-run catch.

- Increased monitoring of all stages of winter-run (e.g. redds, juvenile emigration downstream and through the Delta, and adult returns).
- Gravel and Habitat Restoration Projects on the upper Sacramento River
- Utilizing drought resources to focus on drought specific projects:
    - Enhanced salmon and steelhead monitoring in the Upper Sacramento River Basin
    - Restoration projects on Battle Creek
    - Developing plans for introductions of winter-run into Battle Creek

Careful management of the state's limited water resources to protect the remaining winter-run will be necessary to recover this important salmon species. One of the most important steps to the successful protection of winter-run is maintaining cool water temperatures from May through October in the upper Sacramento River where winter-run spawn. Winter-run depend on cool water for incubation and juvenile survival. Actions to address this issue are included in the Interagency Drought Operations Strategy Released on December 12, 2014 and Drought Operations Plan submitted to the State Water Resources Control Board on January 15, 2015. Another necessary step is to maintain river flow levels during key periods to prevent dewatering of winter-run eggs and recently hatched fry. Resource managers estimate the juvenile production and provide this information to state and federal agencies that operate the Central Valley Project and State Water Projects. State and federal partners along with water users are discussing these and other important steps.