

Central Valley Anadromous Salmonid Hatcheries

Thoughts on Monitoring
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Five CV Hatcheries producing fall Chinook

Produce and release 30 million smolts/year

Don't know much about the fate of the
production releases and their affects on
naturally spawning stocks

In the past there has been more interest in
production that in estimating effects

The times are a changin'

Calfed may be funding the initial stages of a constant fractional marking program

DWR and DFG are gearing up to mark all Chinook production with a unique otolith mark – the first year will be a proof of concept

Calfed is funding a program to design more robust escapement estimating procedures

There is much more interest in assessing the contribution and impacts of mitigation hatcheries

But it is not quite clear sailing yet

If Callfed funds much of the start up costs of CFM – someone(s) need to keep it going.

Ditto escapement surveys – design is not enough – we need people and money

Finally, counting the adult fish is not all there is. We need to know how many of the fish have cwts – and know it in a quantitative sense. Both in the ocean and freshwater.

And the data have to be readily accessible

The PSMFC tag data base offers the platform for the tag release and recovery data base.

The platform works as well as the data that go into it.

- The release data need to be accurate
- The recovery data need to be accurate and complete.
- We have a ways to go but it can be done.

And we are still not through

Someone(s) need to look at the data, figure out what is going on and report on it – preferably with some of the information going into the open literature

What are some examples of interesting hatchery related data

Survival of tagged late fall Chinook from CNFH.

Since 1992 DWR has funded a program to tag essentially all fish released on site.

Do survival to and through the Delta and back to the streams tell us anything about temporal variations in survival – and their explanation?

Have not seen such an analysis of the data?

Livingston Stone Winter Chinook

Thus far this has been the best documented analysis of the contribution and potential effects of a hatchery in this system – albeit a supplementation not a production hatchery.

There are some impacts – overall conclusion might be that the hatchery is now working as conceived

There were problems when hatchery was on Battle Creek

Enough material available for a great paper

Spring run on the Feather River – is there one?

- Genetic data indicate putative FR springs look a lot like FR, and other Central Valley falls
- Wanted to examine this question in detail
 - Three years ago we started tagging all FR springs.
 - Released $\frac{1}{2}$ in river, other half in San Pablo Bay
 - Two years ago we left the ladder open during the late spring early summer months.

Chinook salmon entering FRH – May and June 2005

DATE	NUMBER TAGGED	NUMBER WITH AD CLIP
5/17/2005	228	116
5/31/2005	380	163
6/3/2005	144	72
6/9/2005	798	420
6/13/2005	674	373
6/16/2005	721	366
6/20/2005	821	431
6/23/2005	673	305
6/27/2005	766	382
6/30/2005	300	134
7/5/2005	690 RETURNED UNTAGGED	
TOTALS	5,505	2,762
% OF TAGGED		50.17

Feather River spring run cont.

- When the gates were open, all fish entering the hatchery were tagged with visible external tags and released to the river.
- Fish re-entering the hatchery in September with the visible tags will be spawned as spring run.

Springs on the Feather Continued

- Some of the salmon died during the process.
- 31 of the mortalities has recoverable tags
- Of these tags, about one half had been released on site and the others in the estuary – somewhat surprising but small sample size.
- 27 of the released fish had been called springs by the hatchery and the other 4 were released as falls – much better run fidelity than expected
- Study will be continuing and it will be interesting to see when the newly designated hatchery springs return.

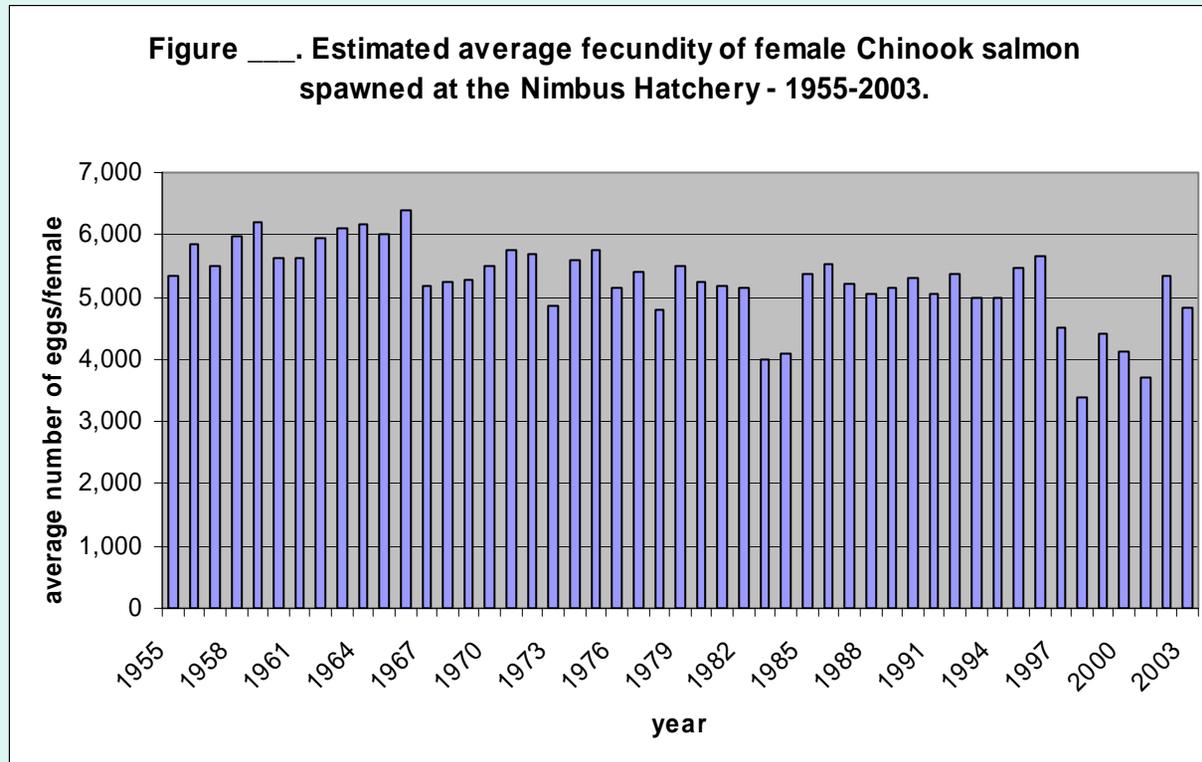
Data from the annual hatchery reports

- Each DFG hatchery has prepared annual reports since they first started.
- They are somewhat hard to come by and many may still be in draft form.
- They do contain a wealth of data on such things as sex ratio, fecundity, disease problems, number of eggs produced and survival of eggs to swim up.
- Early there was considerable transfers of eggs and juveniles among the State and federal hatcheries, Now much more limited.

DFG annual reports

- It doesn't appear there has been much of an examination of these data by DFG or other biologists.
- I have worked on FRH report and now on Nimbus summary.
- The idea is assemble sort of a history of each of the DFG hatcheries.
- USFWS handled CHFH and LSNFH in its 2001 BA

Average fecundity at NFH – 1955-2003



NFH fecundity - comments

- The assumption was that fecundity was 6500 eggs/female in the design phase.
- Average has been around 5300.
- Fecundity is derived by dividing total egg by number of females spawned.
- Need some actual egg counts – starting the process
- Need to know age structure. In the lowest fecundity recorded they spawned over 800 jills – two year old females. Were they small threes

The DFG annual reports

- Invaluable source of information
- They could be better, especially if the information is going to be analyzed by biologists.
- Recommendation – The hatchery supervisor, hatchery managers and some biologists (with both monitoring and research bent) get together to review the annual report structure and recommend how they may be improved
- The improvements may mean more data collection and thus more money will be needed to collect and record the data.

Finally – finally!

- We need to think more collectively about CV hatcheries – both state and federal
- Perhaps establish a group of hatchery managers and biologists to help figure out the role of hatcheries in the system. Something akin to the Escapement Work Team/
- Maybe periodically bring in outside experts to help us review where we have been and where we should be going – both in operations and monitoring.