The Mystery of the Disappearing Salmon
by Dan Bacher
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State and federal scientists, as they finish doing salmon carcass surveys on the Sacramento, American and Feather rivers this fall, will be analyzing why this year's salmon returns were so poor as compared with their pre-season ocean abundance estimates.

In a year where salmon were supposed to be bountiful in both the ocean and river fisheries, this has been one of the poorest fishing seasons on record for the Sacramento River and its tributaries.

Rene Villanueva of Steelie Dan’s Guide Service, like many other guides and captains on the Sacramento, complained about the very tough season. “It’s the worst salmon season on the river I’ve seen since 1970, when I began fishing the Sacramento,” said Villanueva. “I’ve seen drought years where the salmon came in late, in early
November, but I’ve never experienced a season like this.”

The ocean was also strangely absent of fish, with the exception of spurs of action from Monterey to Fort Bragg. The only area that had any consistent salmon fishing was off the Sonoma County coast. This was in spite of a forecasted ocean abundance of Central Valley stocks in 2006 of 632,482 fish, based on a return of age-2 fish (jacks and jills) in the fall of 2005.

Last season the Department of Fish and Game (DFG) and Pacific Fishery Management Council (PFMC) estimated the largest ever abundance of Central Valley salmon -- 1.7 million fish. However, the spawning escapement on the Sacramento, Feather, American and Yuba rivers, though good in fall 2005, didn’t come close to what you would expect from the pre-season projections.

Returns to the fish hatcheries and the rivers are significantly lower than they have been over the past five years. For example, the returns to the DFG’s Feather River Fish Hatchery and Coleman National Fish Hatchery to date are half or less of last year’s runs, while Nimbus Fish Hatchery on the American River didn’t open its ladder until a week later than normal.

Anglers, biologists and fish advocates have discussed a number of theories as to why the populations of king salmon are down this year. Possible theories for the low numbers range from highly unusual ocean conditions to increased Delta pumping operations. A retired DFG captain, H.A. Carling, is convinced that the operation of Coleman Fish Hatchery is to blame for the low return of fish on the main Sacramento.

In a letter to Congressman Wally Herger and copied to the DFG Director, Carling accused the federal government’s operation at Coleman Fish Hatchery of “decimating” “a once great” multi-million dollar resource.

“The Coleman hatchery was constructed to mitigate for miles of prime spawning
grounds blocked when Shasta Dam was constructed,” said Carling. “An estimated half million adult salmon were affected. Instead of doing this, it appears that the management policy is to destroy a large part of what few adults now return. Salmon counts over the Red Bluff Diversion Dam have gone from about 30,000 fish to 4,909. Last year to date, the count was 10,634 salmon. What is happening?”

Carling gave an alarming account of federal officials killing large numbers of salmon before they spawned.

“On September 30, 2005, I watched as hundreds, if not thousands, of adult salmon were killed, packed with ice in ‘food bank’ containers and loaded onto two refrigerated 18 wheelers,” he explained. “Not one salmon was spawned. These were summer run and probably some endangered spring run also. Who knows what else is happening at this facility?”

He then blasted the U.S. Fish and Wildlife Service, questioning whether they may be intentionally trying to kill off the salmon run.

“What is the goal of the service?” he said. “Maybe to reduce the run to such a degree that they can shut down all salmon fishing. They did a pretty good job in the ocean this year. Only the Sacramento-San Joaquin River fish populations prevented a 100 percent closure.”

Carling asked for a “full scale” investigation of the Coleman Hatchery operation. “If they don’t want to operate at 100 percent of capacity, which includes transporting smolts to tidewater, then I would suggest that you take action to transfer operation to the California Department of Fish and Game along with the necessary funding. This is too valuable a resource to lose,” he stated.

Carling hand delivered the letter to Herger’s office and mailed it to DFG Director Ryan Broddrick, but he hasn’t heard a reply yet.
Scott Hamelberg, manager of the Coleman Fish Hatchery, said he couldn’t “officially” specifically respond to Carling’s letter, since the service hadn’t received the letter from Carling or Herger.

However, in the course of a phone interview, he did explain his observations about this year’s salmon run in relation to past ones and discussed the current hatchery practices.

The number of fish returning to the hatchery has already exceeded 65,000 and he expects the total run to exceed 70,000 salmon. In contrast, last year saw over 160,000 fish return to the hatchery, a very good year for salmon returns to Battle Creek, although many anglers reported slow fishing.

“The low returns this year are not due to hatchery practices,” he emphasized. “Hatchery practices have been consistent for the past decade. We have released 12,000 million smolts every year and have spawned 5,000 to 10,000 brood stock.”

Regarding concerns that the fish are being killed in alarmingly high numbers, he said that fish not used for breeding purposes are “excessed” -- harvested -- and provided to the California Environmental Emergency Food Link. He said they take fish from throughout the run for spawning purposes -- and “excess” the others -- to provide genetic diversity.

“We don’t spawn 5,000 fish, meeting our allotment, and then stop spawning for the season,” he explained. “We might spawn 100 to 200 fish then wait for more fish to move into the facility and then spawn them, so we are taking the fish from different times during the run. This is proper resource management in terms of genetic maintenance.”

I asked him why the majority of these fish couldn’t be put back into the creek or river for harvest by anglers or to become part of the food chain.
Hamelberg contended it would not be feasible as far as limited hatchery resources are concerned. “Then there is not telling whether these fish, already having gone past plenty of anglers, would be caught,” he explained.

I cited recent scientific data that indicates that marine recycling -- the process by which the nutrients from carcasses of salmon returning from the ocean help sustain aquatic invertebrates and the entire river ecosystem -- plays a big role in the life cycle of the salmon.

He acknowledged the importance of marine recycling. “The hatchery’s objective is to leave 20,000 fish in the creek so they would provide marine recycling for the ecosystem and the juvenile fish,” he stated.

“These salmon populations go through abundance cycles over the years,” Hamelberg emphasized. “If you look at the history of returns to Coleman over a 60 year time period, you would describe this year as an average year. Most people are looking at narrow time span, while as a biologist I am looking at long term trends.”

In contrast to the numbers of fish that have already returned to Coleman this year, he noted that in 1992 only 11,000 salmon returned to Battle Creek and the hatchery took in 7,000 fish. However, this downturn was explainable by the drought from 1987 to 1991, while this year’s drop from last year’s run is harder to explain.

Anna Kastner, manager of the Feather River Fish Hatchery, also reported lower numbers of salmon at the Oroville facility. “We have received 11,383 fall run fish this year, compared to 22,405 fish by the same date last year,” Kastner said. “I thought that we would have a huge run, but that’s not the case. I don’t know what happened on the ocean or river -- it’s a mystery. Our spring run returns were good, but it’s been a weird year; the fish did totally different things than normal.”

The Nimbus Fish Hatchery spawned its first batch of salmon on November 7 -- and the numbers of fish received were roughly the same as those reported last year. “We
went through about 750 adults to spawn 46 pairs on November 8, said Bob Burks, manager of the Nimbus Fish Hatchery. “That’s about half of what we spawned by the same date last year, but last season we started spawning a week earlier.”

“Although a few less fish have shown than we expected, we are seeing bright fish move into the system,” he noted. “The green fish we put back were not even close to spawning. People were hoping we would be buried in fish, but that’s not what’s happening now.”

One likely reason for the low returns is unusual ocean conditions associated with global warming that increased salmon mortality. “Highly unusual oceanographic conditions were observed off the coasts of Washington, Oregon and California during 2005,” according to a Preseason Report from the PFMC. “Upwelling conditions, which bring cold, nutrient rich waters to the surface, did not materialize as usual in mid April, resulting in conditions that had not been observed in the last 50 years.”

Even more alarming, the Associated Press reported on October 31 that a huge dead zone off the Oregon coast this summer killed fish, crabs and sea worms. The dead zone in 2006 “lasted nearly three times longer than any of its predecessors before dissipating with autumn's change in the weather,” according to AP.

It appears that the pre-season abundance projections by the PFMC were very wrong, based on this season’s river and ocean fishing reports and the returns of spawning adults this fall. It is interesting that this year’s three-year and four year old adults were spawned during the first two years of the Pelagic Organism Decline in the Delta. State and federal scientists have pinpointed three major causes of the decline: (1) increases and changes in water exports, (2) toxics, including herbicides and pesticides, and (3) presence of exotic species.

I suggest that the dramatic Delta food chain decline starting in 2002 may already be having a big impact on the wild and Coleman Hatchery salmon smolts as they move through the Delta. However, this doesn’t explain why the Feather River hatchery
counts are down also, since the salmon smolts are released into San Pablo Bay below the Delta.

When the final hatchery counts and river carcass surveys are compiled after the runs are over this year, it will be interesting to see whether the state and federal governments reevaluate their methods of developing pre-season ocean salmon abundance estimates for coming years. Being completely wrong two years in a row doesn’t build much confidence in their data!

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