Jeanine Townsend
Clerk of the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95814-0100
FAX TO: (916) 341-5620
EMAIL TO: commentletters@waterboards.ca.gov

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SWRCB Clerk

"Comment Letter – Bay Delta Plan SED"

Dear Water Resources Control Board Members:

Thank you for this opportunity to express my concerns. I am certain you are hearing a great deal about the plight of salmon in the Delta, and indeed the waterflow needs of salmon should be a primary consideration.

I wish to speak, however, on behalf of the largest freshwater fish in North America: the 260 million year old iconic ancestor fishes that also populate the delta. Our own green and white sturgeon have survived earth changes for millenia but now are in steep decline due largely to our human disruption of the normal water flows through the delta.
They are deprived of access to their natural upstream spawning grounds by dams (and fish ladders don't help them); they require cold water to thrive and reduced flows tend to be warmer; being extremely long-lived they accumulate pollutants in their flesh and organs--therefore it is critical that pollutants be minimized by dilution or be prevented from entering rivers in the first place. Both of these conditions--warm water and the presence of pollutants-- are exacerbated by reduced flows and result in decreases in dissolved oxygen levels to which sturgeon are extremely sensitive.

An eco-artist, I did quite a bit of research about the status of sturgeon in the delta before creating a 20' sturgeon sculpture for a show at Los Medanos College in Antioch. I wanted to remind viewers of how enormous delta sturgeon used to be, and perhaps to inspire us all to improve conditions in the delta so that they might once again thrive and thrill us with their size and ancient presence.

There are economically significant sturgeon catch and release fisheries in the rivers in Oregon and Washington--if sturgeon populations were restored to health in the delta that could be the case here as well. The delta could be a destination point for experiencing these awe-inspiring prehistoric beings!

"But the daunting tasks of restoring water flow, cooler temperatures and spawning habitat in the sprawling Delta have yet to be discussed, let alone tackled" says Jennie Lay in "Failing Bay-Delta may take a living fossil with it" (High Country News).

Instead, sturgeon numbers have crashed to just 7% of their 1998 population.
The estimated abundance of green sturgeon in the Sacramento River plummeted by 95 percent between 2001 and 2006, with only an estimated 50 pairs of spawning fish remaining. Severe declines in both green and white sturgeon parallel the collapse of other fish species in the Sacramento-San Joaquin Delta, such as delta smelt, longfin smelt,

Sacramento splittail, threadfin shad, and striped bass, due to the combined effects of Delta water diversions and exports, pesticides and pollution, and introduced species.

Scientists are scrambling to try to understand the reproductive cycle of sturgeon before it is too late. What they do know is that sturgeon begin migrating in streams during winter, with large peak flows triggering the spawning between February and early June. The optimal water temperature for spawning falls in the range of 8-19°C. Fish biologists believe the white sturgeon pick deep swiftwater areas to spawn such as riffles or pools with rock and gravel substrate. The "fry" are have very specific requirements about the degree of salinity in the water at various age markers.

In my artist's statement I attempted to describe how dire their situation is:

"The Delta isn't in good shape. The system is collapsing," says Melissa Neuman, recovery coordinator for NOAA Fisheries.
Like other native fish that migrate through the Delta, sturgeon have suffered from habitat loss and degradation, exclusion from spawning areas, reduced freshwater flows due to dams, water diversions and exports, and depressed populations of prey fish.

Because of their long life span and eating habits white sturgeon tend to concentrate in their flesh the industrial pollutants and chemicals washing off farm, forest, urban and agricultural lands. They feed on any sort of organic matter found while scavenging including raw sewage, paper mill wastes, plants sprayed by pesticides, and invasive clams that have already concentrated selenium. The bioaccumulation of toxins like PCB's, selenium, mercury, dioxins and other contaminants then inhibit sturgeon growth and decrease egg and larval survival.

Sturgeon are also highly vulnerable to low dissolved oxygen levels caused by "eutrophication" (when high levels of pollutants like nitrogen and phosphorus cause algal blooms that leach oxygen from the water.) Like dams, these invisible "hypoxic zones" become a deadly blockade for spawning sturgeon and other fish. Global warming exacerbates this as warmer waters hold less oxygen.

Low river flows impede fish passage, concentrate pollutants, raise water temperatures, decrease dissolved oxygen, and eliminate migratory clues.

According to Tina Swanson, executive director and chief scientist with the Bay Institute, reductions in freshwater flow harm the overall health of the estuary and watershed ecosystems and have degraded its ability to support its valuable fisheries and wonderful fish like white sturgeon.

So what difference would it make if sturgeon disappeared altogether from the Delta? According to Kueltz, "They are one of those key species that contribute to ecosystem health in the Delta water system". One ecosystem service they provide is their control of populations of invasive overbite clams that would otherwise consume all the plankton that is needed to feed native species.

Another critical service they render may be to help protect the dissolved oxygen level of the entire Delta ecosystem. John McCosker at the Academy of Sciences explains: The Delta is

overloaded with sediment from hydraulic gold mining and bad forestry. A stagnant sedimentary layer can become anoxic (no oxygen) and then everything dies. Worldwide many estuaries are dying. That sediment requires “bioturbation”. Sturgeon, In their incessant search for food sunken into the muck at the bottom, essentially “plough” and turn over the sediment, oxygenating it and thus contributing to the health of the overall estuary system.

Sturgeon may “serve” us in more intangible ways as well. There is something ineffable about “close encounters” with a primordial being. The radiant faces of fishermen embracing their “monster” sturgeon catches before releasing them attest to this.

So we really cannot afford to sacrifice a critical species like sturgeon in order to bolster unsustainable and wasteful agricultural uses of our limited water. Through better management of snowmelt, water efficient irrigation practices, and replacing lower-value, water-intensive crops with higher-value, water-efficient crops, we could grow more food with less water.

It is essential that at least 60%of unimpeded flows be released from January to June and that adequate flows be maintained during the summer for sturgeon and other fishery health and for human recreation.

We need a healthy population of sturgeon in the delta in order to maintain delta health!

We humans need to acknowledge our past omissions and now assume full responsibility for improving the survival likelihood of these magnificent creatures!

Please mandate 60% of unimpaired flows in the San Joaquin and its tributaries and support the continued existence of green and white sturgeon in our midst.

Thank you
Christina Bertea
477 North Street
Oakland
CA 94609

eco-artist
board member, Women’s Environmental Art Directory
board member, Metaphor Project
Greywater Action lecturer/instructor
plumbing contractor