

The Missouri River Flood of 2011:

IMPACTS ON RESERVOIR FISHERIES

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Photography:

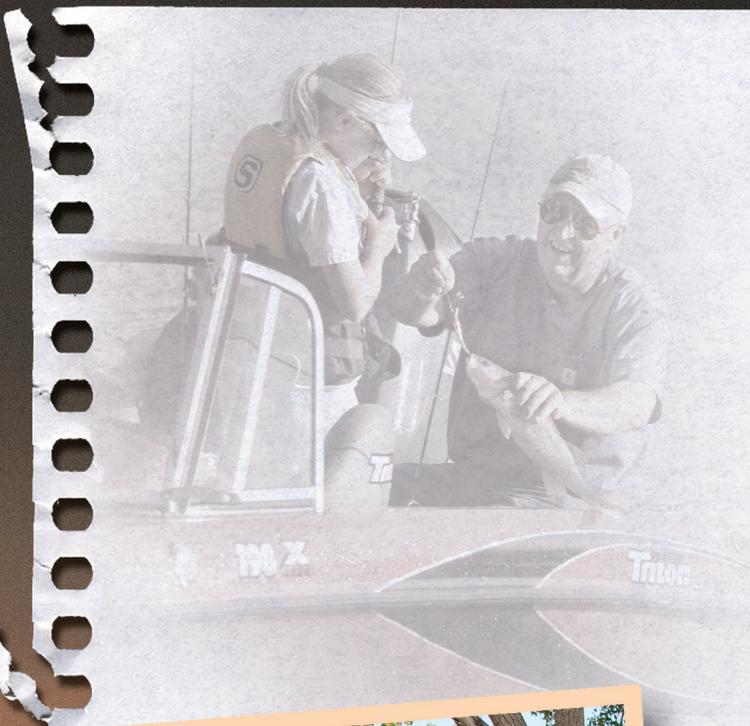
Sam Stukel

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By Chris Longhenry and Mark Fincel - Photography by Sam Stukel



This past summer, when the Missouri River reached flood stage, anglers, biologists and many others started questioning how it was going to affect Missouri River fisheries. Many South Dakotans remember the 1997 flood and the drastic loss of rainbow smelt through Oahe Dam that resulted in an imbalance between smelt, the primary prey fish in Oahe, and walleye, the highly sought after sport fish. Naturally, this was a big concern again in 2011 when total runoff was predicted to be 60 million acre feet compared to the previous record of 49 million acre feet in 1997.

As the water levels continued to climb through June 2011, Missouri River fisheries biologists started developing strategies to monitor the effects of increased water releases on the smelt population in Lake Oahe.



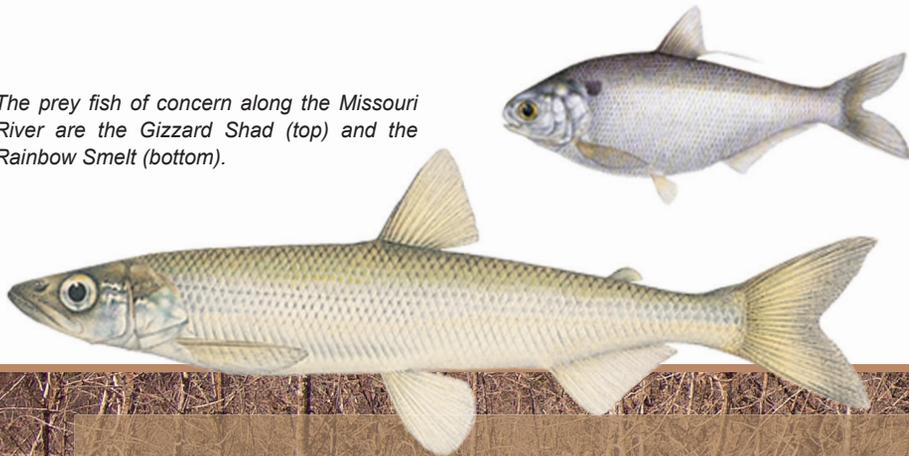
GF&P Staff is cautiously optimistic that the fisheries of the Missouri River will again provide anglers with fantastic fishing opportunities in 2012 and beyond.

Fisheries staff used hydro-acoustic sonar, to estimate the total number of smelt in Lake Oahe at the beginning of the flood. This survey was repeated to monitor the decrease in rainbow smelt throughout the summer and early fall. Also, fisheries personnel used trawl nets in the tailrace and stilling basin just below Oahe dam to estimate the number of smelt moving through the dam. A third sampling effort was to monitor the condition of walleye caught by anglers throughout the year. The last time the smelt population crashed, walleye condition quickly declined due to lack of sufficient food. Monitoring walleye condition over time was intended to provide an early indication of predator/prey imbalance in Lake Oahe.

It is no surprise that entrainment estimates, or fish loss through Oahe Dam, throughout the summer revealed high rainbow smelt loss, particularly in June, July and early August. However, favorable conditions in April of 2011 enabled rainbow smelt to produce a record spawn with an estimated 300 million age-0 rainbow smelt observed in early July. Despite the good spawn, it appeared that age-0 rainbow smelt fell victim to entrainment rapidly but leveled off by mid August. On a positive note, hydro-acoustic surveys suggested that adult rainbow smelt seemed to be less susceptible

to entrainment. This was further supported with only 11 adults being caught in tailwater trawling efforts directly below the dam. Estimated rainbow smelt numbers remaining in Oahe at the end of the summer were 11.4 million adults and 5.8 million age-0. These numbers are higher than previous rainbow smelt population estimates from July of 2001 or 2009, indicating that if conditions are again favorable in April, the smelt population could

The prey fish of concern along the Missouri River are the Gizzard Shad (top) and the Rainbow Smelt (bottom).



2011 Missouri River Fishing Report

The flood of 2011 severely limited access on Lakes Sharpe and Francis Case, however, anglers still had good success throughout the year on both reservoirs, especially in the areas just below the dams.

Also, catch rates in Lake Oahe were some of the highest recorded.

Quick statistics from the Missouri Rivers' upper three reservoirs:

	2011	2006-2010 AVERAGE
NUMBER OF ANGLER TRIPS	460,000	410,000
TOTAL WALLEYE HARVEST	900,000	512,000

possibly rebound quickly. Additionally, as of this fall, walleye condition has not decreased, and remains in the normal range for Lake Oahe walleye. This indicates that adequate food remains available for the walleye population.

The other Missouri River reservoirs were also affected by the flood of 2011. Lakes Sharpe and Francis Case both had lower gizzard shad production likely due to increased flows and decreased water temperature. This, however, did not seem to affect the walleye populations. Other prey fish were available and smelt passing through Oahe dam provided additional forage for downstream populations. Walleye production was low in Lake Sharpe this year but the walleye population in Lake Francis Case seemed to respond with high production. Walleye abundance in Lake Francis Case has shown a very strong relationship to the amount of water passing through the system. High water years typically result in good walleye production and 2011 was no different.



The 2011 flood has created a situation previously unknown by biologists who have worked on the river for many years. It is likely we will not see the full extent of the effects of the flood for years to come. However, biologists along the Missouri River

are working hard to evaluate these effects and provide this information to the public in a timely manner. Staff is cautiously optimistic that the fisheries of the Missouri River will again provide anglers with fantastic fishing opportunities in 2012 and beyond.

