

backgrounder

December 2006

Predator control helps salmon

Predation is part of the cycle of nature. However, several species, taking advantage of human changes to the environment, have become all too successful in preying on Columbia River salmon. The Bonneville Power Administration funds several programs to reduce the impact of key predators on salmon and steelhead in the Columbia River. These efforts are part of BPA's responsibility to mitigate impacts on fish and wildlife due to construction and operation of the hydroelectric Federal Columbia River Power System.

Northern pikeminnow

Since 1990, BPA has paid anglers to remove 2.7 million large northern pikeminnow from the Columbia and Snake rivers. As a result, millions of young salmon have survived that otherwise would have been eaten. BPA estimates that pikeminnow predation on young salmon and steelhead has been cut by 30 percent, saving 2 to 4 million juvenile salmon a year.



Northern Pikeminnow

The northern pikeminnow is indigenous to the Columbia River, but before the dams, it was not prevalent. Now pikeminnow thrive in the slackwater reservoirs. BPA's sport-reward program brings the pikeminnow population

back in balance. Harvested pikeminnow are used in liquid organic fertilizer for agriculture and fish meal for poultry and dairy cattle feed.

Anyone with a fishing license is welcome to participate each May through October. To find out how, go to www.pikeminnow.org

Caspian terns

Caspian terns were first observed nesting in the Columbia River estuary in 1984. By 1998, about 17,000 terns were nesting on Rice Island in the estuary, making it the largest colony in the world. That year, terns devoured an estimated 12.4 million salmon smolts, 13 percent of the year's entire seaward migration. Salmon comprised 73 percent to 90 percent of the terns' diet.



*Adult Tern with chick
Photo by Dan Roby*

Rice Island was created by the U.S. Army Corps of Engineers from dredge spoils and had little vegetation, making it perfect tern nesting habitat. Terns are a protected species under the Migratory Bird Treaty Act and cannot be harmed.

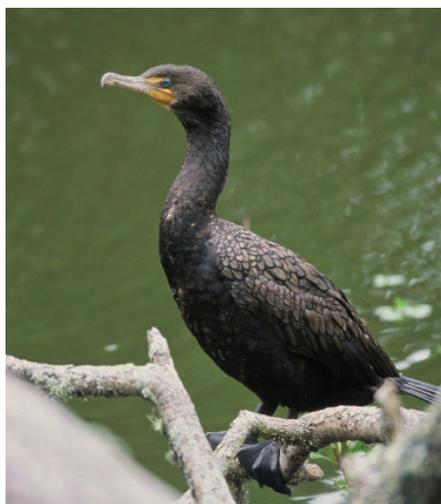
Beginning in 1999, the Corps enticed the terns to move to East Sand Island, closer to the river's mouth, where their diet might be more varied. The effort succeeded. By 2003, all terns nesting in the Columbia River estuary used East Sand Island. By 2005, the colony's salmon consumption declined to about 3.6 million.



Today, 70 percent of the entire western population of Caspian terns in North America nests on East Sand Island. The Corps is exploring potential alternate nesting sites in other areas in California, Oregon and Washington as a possible way to disperse the population and further diminish its impact. Once the new nesting sites are ready in 2010, tern habitat in East Sand Island will be reduced by planting native grasses on portions of the island.

Cormorants

In recent years, double-crested cormorant populations in the Columbia River estuary also have increased, from 100 pairs in 1989 to around 12,480 pairs in 2004, making it the largest colony of its kind on the Pacific Coast. These birds ate an estimated 6.4 million salmon and steelhead in 2004. A second cormorant colony near McNary Dam consumes salmon smolts passing that



Double-crested cormorant
Photo: U. S. Fish and Wildlife Service

point on their migration from the upper Columbia or Snake river to the sea. While cormorant populations are increasing in Oregon and California, they are decreasing throughout the rest of the Northwest. The

Corps is evaluating whether and how to address cormorant impacts on juvenile salmon.

Sea lions and seals

Bonneville Dam is 146 miles from the ocean. In recent years, California sea lions have been arriving below the dam in increasing numbers. In 2005, sea lions ate about 2,900 adult spring chinook, more than 3 percent of the returning adult salmon. A few sea lions figured out how to swim up the fish ladders. One was seen swimming past the fish-viewing windows in the dam. In 2006, the Corps installed bars intended to keep sea lions out of



Sea lion feeding on chinook salmon.
(Photo: Oregon Dept. Fish and Wildlife)

the fish ladders. At least one sea lion squeezed through the bars.

The federal agencies continue to investigate appropriate management actions to address marine mammal predation below Bonneville Dam. In 2005, the Corps, after conferring with federal and state fish managers, began encouraging the mammals to leave the area below the dam, using non-lethal hazing techniques such as fire-crackers, rubber bullets, high-pressure water hoses, Orca sounds and acoustic harassment. The hazing techniques were effective during use, but, when they stopped, sea lions returned. Sea lions are protected under the Marine Mammals Act. The state fish and wildlife departments of Oregon and Washington have applied for permission to move the most problematic individuals.

Sea lions primarily affect the early spring runs. The mammals arrive in February. In late spring, they leave for their breeding grounds in California and Mexico.

For more information

To find more about these programs, visit the following Web sites:

Bonneville Power Administration: www.bpa.gov

Columbia Bird Research: www.columbiabirdresearch.org/

Pikeminnow Sport-Reward Program: www.pikeminnow.org