

## **Project succeeding to relocate Caspian terns**

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A major initiative to create alternative nesting sites for the largest colony of Caspian terns in the world – and to help protect juvenile salmon and steelhead in the Columbia River – is finding early success.

A recent survey of a new nesting site at Crump Lake in southern Oregon, which was just constructed in February by the U.S. Army Corps of Engineers, found more than 135 nesting pairs of Caspian terns, as well as more than a thousand pairs of gulls and two nesting pairs of double-crested cormorants.

Redistributing the terns is critical because research by Oregon State University scientists found that terns and cormorants annually consume more than 10 million juvenile salmon and steelhead migrating through the Columbia River estuary en route to the Pacific Ocean. OSU researchers helped lure the Caspian terns to Crump Lake, which is northeast of Lakeview, with decoys and recorded sounds of nesting terns that they had recorded in the Columbia estuary.

"It is amazing that more than 520 Caspian terns have found the new island, which was only constructed five months ago – and that some have decided to nest there," said Dan Roby, an OSU professor of fisheries and wildlife and principal investigator in the study. "There is a history of nesting at Crump Lake and clearly the birds have some kind of 'populational' memory of the place. That is a real key to the success."

The joint effort between the Corps, OSU, Real Time Research, Inc., and the U.S. Geological Survey's Oregon Cooperative Fish and Wildlife



Research Unit is being funded by a \$2.1 million grant to OSU from the Corps and Bonneville Power Administration.

The Corps' avian predation program aims to reduce the number of young salmon consumed by terns in the estuary and "substantially improve the survival of fish listed as threatened or endangered" under the Endangered Species Act, said Geoff Dorsey, a wildlife biologist with the Corps' Portland District.

The initiative seeks to redistribute a portion of what researchers say is the largest Caspian tern colony in the world. Last year, OSU researchers counted 9,900 pairs of nesting terns on East Sand Island near the mouth of the Columbia River – which accounts for an estimated 70 percent of all Caspian terns nesting in the Pacific Coast region from Alaska to Baja California.

In the late 1990s, the Corps relocated the terns to East Sand Island from another Columbia River location 16 miles upstream – Rice Island – after an OSU-led research team discovered the colony there had eaten some 12 million young salmon in one year, an estimated 10 percent of the juvenile population from throughout the entire Columbia basin. East Sand Island is only five miles from the ocean and the waters there support a wider variety of fish, including herring and anchovies, than do the fresher waters upstream near Rice Island.

"Terns are fish-eating birds that eat large quantities of small fish," Roby said. "When we looked at what the terns on Rice Island consumed, we found that three-fourths of their diet was juvenile salmon and steelhead. That is not good."

Rice Island was, perhaps, the "worst possible location" for the world's largest Caspian tern colony – at least, from the perspective of restoring the 13 threatened or endangered stocks of Columbia Basin salmon and



steelhead, the OSU researcher said.

This early relocation worked better than anyone expected, Roby pointed out. The East Sand Island colony now consumes less than half as many young salmon and steelhead as the former Rice Island colony – an estimated 4-6 million juveniles per year – but "that is still too many," he added. Now the project investigators are following up with the planned second phase of the initiative, an effort to redistribute the terns to more nesting sites away from the Columbia River.

"The world's largest Caspian tern colony is still located in the Columbia River estuary, and though the East Sand Island location is a big improvement over Rice Island, it always was considered just the first step in the management solution," Roby said. "There are still too many terns for that location because of their impact on the survival of threatened and endangered salmon from throughout the Columbia Basin.

"Some people have called for shooting the terns to protect the fish," he added, "but that solution is far less than ideal. Caspian terns are not a numerically abundant species. They just happen to have concentrated their nesting activities in this one location, which is an unfortunate location at that."

One reason for the super-colony at the mouth of the Columbia River, Roby said, is that the birds' historical nesting sites in the western United States have been destroyed by human activities. The draining of marshland habitat in some locations, and the flooding of historical nesting sites in others, has decimated their favored nesting habitat – bare sand islands.

Now, working with a plan developed by the U.S. Fish and Wildlife Service, the Corps and NOAA Fisheries, the OSU-led team is starting to restore alternative nesting colonies for Caspian terns. In addition to the



Crump Lake site, the Corps created an artificial island in Fern Ridge Reservoir in the Willamette Valley, and plans to build three half-acre islands in the Summer Lake Wildlife Area in southern Oregon this summer and next. The plans at Summer Lake include the construction of a half-acre floating island made of recycled plastic with a coarse sand and gravel surface.

Crump Lake and Summer Lake are historical nesting sites for terns, Roby said, but Fern Ridge is not. And thus far, the terns have been slow to embrace Fern Ridge as a nesting site.

"We knew Fern Ridge would be a long-term project that may take several years to find success," Roby said. "The first step was to provide the habitat. Then we added the social attraction through decoys and sound systems and now we need to keep the humans and predators away – and wait for the birds to find it and settle in."

Artificial islands comprised of Columbia River dredged materials – perfect nesting habitat for the birds – have been around since about 1930, yet it wasn't until 1984 that Caspian terns established a nesting colony there.

The Caspian tern management project also calls for establishing and/or restoring three alternative nesting sites in the San Francisco Bay area, where the OSU-led team also has a research crew.

The development of alternative habitat at Crump Lake continues and nearby Summer Lake will allow the Corps to reduce the tern nesting habitat at East Sand Island on the Columbia River in 2009 by one acre. The environmental impact statement calls for the reduction of one acre of habitat there for every two acres constructed elsewhere. Dorsey said the Corps plans to leave 1.5 to 2 acres of Caspian tern nesting habitat on East Sand Island – enough to support a colony about one-third to one-



half the size of the current colony.

Ultimately, Dorsey said, East Sand Island could be an acre to an acre-anda-half of nesting habitat under the final management plan if sufficient habitat is constructed elsewhere.

Redistributing terns is not without risk, Roby says. When researchers helped establish the new colony on East Sand Island, they were not certain the colony would thrive and they were unsure whether the move would reduce the birds' reliance on young salmon as a food source. The terns also required some protection from predators; an estimated 200 gulls, a more abundant species, were shot during the first two years at the East Sand Island tern nesting site.

"Officials from the National Audubon Society's Seabird Restoration Program told us we'd probably have to initially conduct some lethal gull control," Roby said, "or the gulls could prevent the tern colony from becoming established."

With more than 1,000 pairs of gulls nesting on the new island in Crump Lake, the terns have had some difficulty protecting their eggs from the more aggressive and voracious gulls, Roby said. The nesting season peaks in mid-June and the researchers hope to see some chicks emerge within the next 2-3 weeks.

There also is the obvious question about what comprises the terns' diet at Crump Lake. Most of the birds there are eating bullheads and the small, but abundant tui chubs – the same species of fish illegally introduced into Diamond Lake, prompting state officials to poison the lake to get rid of them. Tui chubs are native to Crump Lake and provide a stable food supply for a variety of fish-eating birds, including terns.

OSU researchers and the Corps have built a blind on the island and are



using it to study the Caspian terns, cormorants and gulls while avoiding the possibility of disturbing the nesting birds. Already they have spotted terns that researchers banded during previous studies. These bands reveal that some of the terns came from East Sand Island and Rice island in the Columbia River estuary, while others originated from Potholes Reservoir near Moses Lake, Wash., and Crescent Island, near Pasco, Wash.

"We are encouraged by the observation of birds from multiple locations," Dorsey said. "They help prove that terns can be attracted to alternative locations, away from the Columbia River estuary."

The goal of the project, Roby reiterated, is not to reduce the overall number of Caspian terns in the region – an estimated 13,000 to 14,000 nesting pairs. It simply is to redistribute the population to lessen their impact on the survival of juvenile salmon from the Columbia River Basin. Research revealed, for example, that a single colony of 500 pairs of Caspian terns consumed one-third of all the Snake River juvenile steelhead that attempted to migrate past the tern colony during a drought year.

"The key to limiting the conflict between protected migratory birds like Caspian terns and threatened and endangered populations of fish like Columbia Basin salmon and steelhead is to create or restore nesting habitat for the birds in locations where fish stocks of special concern do not comprise much of the diet," Roby said.

"The new island at Crump Lake, which restores a natural island that was destroyed in the 1950s by artifact hunters, is a big step in the right direction."

Source: Oregon State University



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