

## **Floating Islands Enhance Salmonid Recovery by Creating Alternative Nesting Habitat for Caspian Terns**

**Project Location: Dutchy Lake, Oregon and Sheepy Lake, California USA**

Bird monitoring results have demonstrated that floating islands can provide secure nesting habitat for Caspian terns and other bird species in areas where no natural nesting habitat exists, and where construction of rock islands is not feasible. Two recent projects have enhanced recovery of salmonids (salmon and steelhead) by encouraging relocation of Caspian terns to areas far from where juvenile salmonids migrate. Floating islands offer a potentially effective habitat alternative to traditional rock islands if the water depth is greater than 18 inches, or if the water body cannot be drained for construction of a traditional island.

### **Background:**

In 2008, the U.S. Army Corps of Engineers (USACE) began implementing the actions outlined in the January 2005 Final Environmental Impact Statement for “Caspian Tern Management to Reduce Predation of Juvenile Salmonids in the Columbia River Estuary.” This management plan, which was developed jointly by the USACE, U.S. Fish and Wildlife Service, and NOAA Fisheries, seeks to redistribute Caspian terns from the Columbia River estuary to alternative colony sites in interior Oregon, interior California and the San Francisco Bay area by 2015.

The goal of the plan is to reduce Caspian tern predation on migrating juvenile salmonids in the Columbia River estuary, and thereby enhance recovery of salmonid stocks from throughout the Columbia River basin. Thirteen of 20 evolutionarily significant units of Columbia River salmonids are currently listed as either threatened or endangered under the U.S. Endangered Species Act.

Caspian terns require unvegetated, sandy habitat that is proximate to water and isolated from predators, i.e., they require islands upon which to nest. Normal USACE practice for habitat enhancement is to construct a nesting island by simply piling rock, gravel and sand into an existing body of water that has been drained or drawn down until it is higher than the water surface when the water body is at full pool. This labor-intensive process requires huge trucks and heavy equipment, disturbs the water body, benthic zone and shoreline, and does not guarantee that the new island will remain isolated from land (if the water level drops) or above water (if the water level rises). Floating Habitat Islands suffer none of these limitations since they float on the surface of the water, but they are typically more expensive.

The USACE teamed with the U.S. Geological Survey, Oregon State University (OSU), Oregon Department of Fish and Wildlife, Real Time Research, U.S. Fish and Wildlife Service, Floating Island International (FII), and Floating Islands West (FIW) in an innovative program to create “floating tern islands.” Two large floating islands have been installed,

one in Interior Oregon and the other in the Upper Klamath Basin, by a contractor, Just Buckets Inc., in conjunction with FII and FIW.

**Dutchy Lake – Oregon:**

In February 2009, FII and Just Buckets built and launched a 22,000-sq. ft. floating island at Dutchy Lake, which is in the Summer Lake Wildlife Area in Oregon. The island is 19 inches thick and has a flat stone perimeter. The interior of the island contains six inches of crushed stone, pumice and rhyolite mix. This island also has a floating observation blind attached to one corner of the island, as well as audio playback systems (broadcasting Caspian tern calls) and tern decoys.

Bird Research Northwest’s monitoring team characterized the 2009 nesting season on the Dutchy Lake floating islands as a great success, with eight nesting pairs having hatched 13 young terns, of which eight succeeded in fledging. In 2010, no Caspian terns initiated nests on the Dutchy Lake floating island, although they and other water birds frequently used it as a roost site. Instead, Caspian terns in 2010 nested on the rock core island in the East Link Impoundment at Summer Lake Wildlife Area, which is approximately five miles away.

**Sheepy Lake – California:**

In February 2010, FIW and Just Buckets built and launched a 40,000-sq. ft. floating island at Sheepy Lake in Lower Klamath National Wildlife Refuge. The island thickness was 22 inches, with sloped ends of paving stone to enable access to the water by pre-fledged young terns. One long side and half of one end included a planting area designed as a wind break. Bullrush, red-twigged dogwood and sand willows were planted in the seven-foot-wide perimeter areas.

**Figure 1. Adult Caspian Terns Counted at the Sheepy Lake Floating Island**  
(Figure courtesy of Bird Research Northwest, [www.birdresearchnw.org](http://www.birdresearchnw.org))

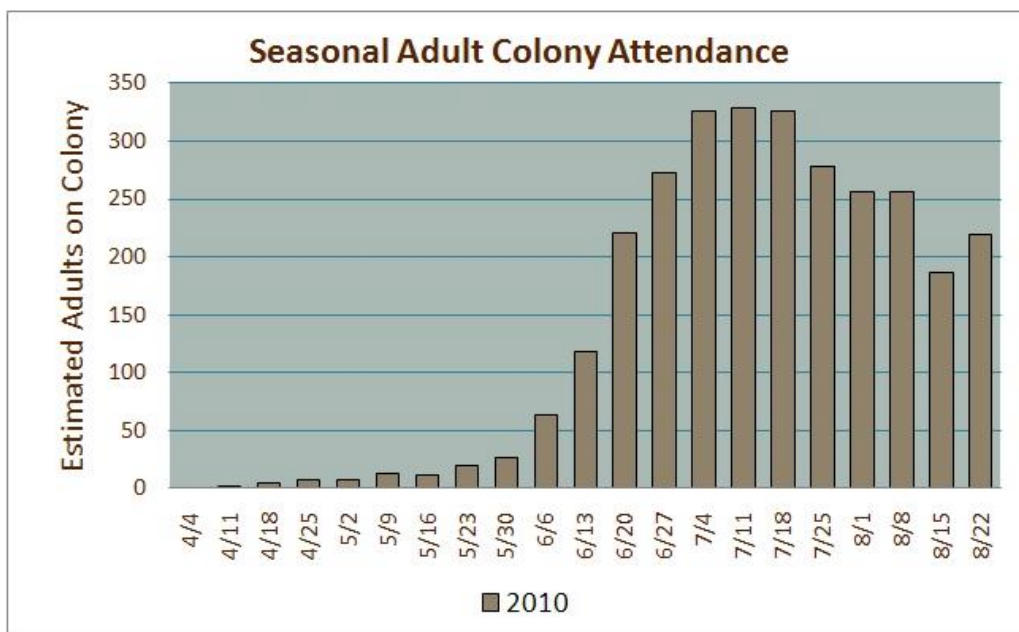


Figure 1 shows the number of Caspian terns colonizing the new floating island during the 2010 nesting season. This innovative island has been a tremendous success, as the Sheepy Lake tern colony appears to have had the highest nesting success of any Caspian tern colony in the region during 2010.

The island interior contains seven inches of the same crushed stone, pumice, and rhyolite mix used at Dutchy Lake. An extensive anchoring system was connected to all four corners. A floating observation blind was attached to one corner of the island, with two audio playback systems, and 250 Caspian tern decoys were placed on the island.

**Table 1. Nesting Results for Artificial Islands in Interior Oregon and Northeastern California – August 2010**  
(Data courtesy of Bird Research Northwest)

Parameter Measured	Sheepy Lake	Dutchy Lake	Conventional Rock Core Island (East Link)
Species nesting on the island	Caspian terns, California gulls, ring-billed gulls	None	Caspian terns, California gulls, ring-billed gulls
Size of Caspian tern colony	258 breeding pairs; 167 chicks fledged	0	18 breeding pairs; 4 chicks fledged
Nesting success	0.65 young fledged per nesting pair	N/A	0.22 young fledged per nesting pair

2010 was a very poor nesting season for Caspian terns in interior Oregon and northeastern California. Small numbers of breeding terns and low nesting success was widespread, but the Sheepy Lake floating island colony was a notable exception.



*Completing the floating island at Dutchy Lake, Oregon*



*Overhead view of floating island -- Sheepy Lake, California*



*Caspian terns and fledglings -- Sheepy Lake, California*

For more information on these floating island systems, contact Laddie Flock at [laddie@floatingislandswest.com](mailto:laddie@floatingislandswest.com) or 866-798-7086.