**Caspian Tern Management Plan**

**(Avian Predation Monitoring)**

1. **PROJECT INFORMATION**

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| **P2 Identifier** | 152054 |
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1. **PURPOSE**

The purpose of this project is to comply with NOAA Fisheries 2008 (2010, 2014) Federal Columbia River Power System Biological Opinion (FCRPS BiOp). NOAA Fisheries has identified management of avian predators, including Caspian terns (CATE), as an important component of the overall program to improve the status of ESA-listed salmonid species. The FCRPS BiOp and Reasonable and Prudent Alternative (RPA) action 45 called for the development and implementation of a CATE management plan to increase survival of juvenile salmonids in the Columbia River. The *Caspian Tern Management to Reduce Predation of Juvenile Salmonids in the Columbia River Estuary: Final Environmental Impact Statement* (CATE Management Plan) was finalized in 2006, and a Record of Decision was signed by the Corps, the U.S. Fish and Wildlife Service (USFWS) and NOAA Fisheries in November 2006. Implementation of the management plan was initiated in 2007 and supplemented in 2013. The primary objective of the CATE Management Plan is redistributing the tern population by creating or enhancing nesting habitat at alternate sites in Oregon and California and reducing nesting habitat on ESI to 1.0 to support 2,500 – 3,125 pairs as alternate sites are developed.

1. **BACKGROUND**

In 1986, about 1,000 Caspian terns began nesting on Rice Island, located 15 miles upstream from the mouth of the Columbia River; by 1998, the colony had grown to about 9,000 pairs. In 1999 and 2000, management agencies decided to relocate the tern colony to ESI where, in addition to salmon smolts, many other marine fish are available for forage. The relocation efforts were challenged under the National Environmental Policy Act (NEPA) by the Seattle Audubon Society, National Audubon Society, American Bird Conservancy, and Defenders of Wildlife. In 2002, the parties involved in the lawsuit reached a settlement agreement which allowed for the continuation of the efforts to relocate terns to ESI and required the Corps, U.S. Fish and Wildlife Service (USFWS), and NOAA Fisheries to develop a long-term plan to manage the tern population with the goal of reducing predation on juvenile salmonids. By 2002, the entire tern colony had relocated to ESI and the colony had increased to nearly 10,000 pairs. Subsequently, federal agencies completed the CATE Management Plan and initiated implementation of the plan in 2007.

Between 2007 and 2012, 8.2 effective acres of new habitat were constructed at alternative nesting sites to support terns redistributed from the population in the Columbia River estuary (see Table 1). Because some islands are dry during drought years and therefore unsuitable for nesting, more habitat was constructed or enhance than was reduced on ESI according to what was proposed in the management plan.

Table 1: Alternative Nesting Sites for Caspian Terns

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| ***Year Constructed*** | ***Alternative Site*** | ***Location*** | ***Effective Acreage*** |
| 2007 | Fern Ridge Reservoir | Willamette Valley  Lane County, Oregon | 1.0 acre |
| 2008 | Crump Lake | Warne Valley  Lake County, Oregon | 1.0 acre |
| Dutchy Lake1 | Summer Lake National Wildlife Area  Lake County, Oregon | ~~0.5 acre~~ |
| 2009 | East Link Unit | 0.5 acre |
| Gold Dike | 0.5 acre |
| 2009 | Tule Lake – Sump 1B2 | Klamath Basin National Wildlife Refuge  Siskiyou and Modoc Counties, California | 1.35 acres |
| Orems Unit3 | 0.2 acre |
| Sheepy Lake | 0.8 acre |
| 2011 | Malheur Lake | Malheur National Wildlife Refuge  Harney County, Oregon | 1.0 acre |
| 2015 | Pond A16 (2 islands) | Don Edwards San Francisco Bay National Wildlife Refuge  Alameda County, California | 1.83 acres |
| Pond SF2 (3 islands) |
| ***Total Acreage Constructed*** | | | 8.18 acres |
| *1 Dutchy Lake (0.5 acre) was eliminated from the program in 2012 because of unsuitable nesting conditions due to submergence.*  *2 Tule Lake constructed as 2.0 acres, but effective acreage available on an annual basis is 1.35 since the lake is sufficiently watered two out of every three years.*  *3 Orems Unit constructed as 1.0 acres, but effective acreage available on an annual basis is 0.2 since the lake is sufficiently watered one out of every five years.* | | | |

Habitat reductions at ESI were initiated in 2007, and continued annually through 2011 by allowing vegetation to establish within the existing colony site and installing dissuasion material to preclude terns from nesting on bare sand. In 2013, available habitat for the Caspian tern colony was reduced to 1.58 acres and in 2014, it was reduced to 1.55 acres. Following completion of the nesting islands at Don Edwards San Francisco Bay National Wildlife Refuge, the nesting colony on ESI was reduced to 1.0 acres in 2015.

Annual preparation of the nesting colony at ESI requires site preparations in the spring to prepare suitable habitat. Site preparations include tilling the sediment to loosen the substrate and removal of encroaching vegetation. Vegetation removal is manual/mechanical in the spring, with limited herbicide application in the fall at the end of the breeding season.

In addition to site preparations, short-term monitoring is conducted annually throughout the breeding season to estimate the CATE population, nest density, and productivity at ESI and the alternate sites. Long-term monitoring plans would be initiated at the conclusion of short term monitoring, which concludes three years after habitat acreage is attained on ESI and the targeted number of nesting pairs in achieved. Long-term monitoring includes monitoring the regional (peak) colony size at all colonies throughout the Pacific Flyway in California, Oregon, Washington once every 10 years. In addition, long-term monitoring includes monitoring a select subset of sites every 2-3 years, inclusive of ESI.

1. **STATUS & ISSUES**

* The 2017 breeding season is Year 3 of monitoring after the final habitat reduction at ESI in early 2015 to 1.0 acre.
* In 2016, the estimated peak number of terns nesting on ESI was 5,200 breeding pairs.
* The Corps needs to discuss with the Adaptive Management Team and its cooperating agencies (USFWS and NOAA Fisheries) the shift to monitoring the ESI colony site every 2-3 years following the 2017 breeding season.
* Measures should be explored to reduce the amount of passive dissuasion deployed annually on ESI and level of human presence needed to effectively dissuade terns from beach and satellite colony areas. Possible measures include installing pre-season passive dissuasion more strategically and/or moving the designated tern habitat further from the beach.
* Observed nest densities exceed assumptions in Management Plan. Reducing the colony to 3,125-4,375 nesting pairs is unlikely to occur given the existing habitat acreage (1.0 acre) on ESI. Short-term monitoring actions are not considered complete until three years after ***BOTH*** criteria (habitat acreage and number of breeding pairs) are met.

1. **SCHEDULE & COST**

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| **YEAR** | **COST** | **MAJOR ACTIVITIES** |
| **FY17 Actual Obligation** | $278,612 | Regular monitoring, hazing and dissuasion on East Sand Island and Corps constructed islands |
| **FY18**  **PBUD** | $630,000 | Regular monitoring, hazing and dissuasion on East Sand Island and Corps constructed islands |

1. **PHOTOS & DRAWINGS**