I&M Protocols
Rice Island Gull Colony Nest Survey Protocol
Lewis and Clark National Wildlife Refuge
Willapa National Wildlife Refuge Complex

I. Purpose

Rice Island is a dredge placement island that was artificially created by years of channel dredging. Situated in the lower Columbia River, the island is surrounded by a highly productive rearing and passage area for salmonids and other fish species. The sand dunes and flats created by dredge placement became ideal nesting habitat for gulls, terns, and cormorants, and with an abundant food supply nearby, the western part of the island soon became one of the largest seabird colonies in the area.

Given the lower Columbia's importance for commerce, conservation, and outdoor recreation, disagreement over resource use is common. In a move to protect juvenile salmonids; Caspian terns (*Hydroprogne caspia*) and cormorants (*Phalacrocorax spp*.) have been hazed and killed on many islands in the lower Columbia, including Rice Island. Despite heavy hazing, the gulls have continued to nest on Rice Island, and it remains the largest gull colony in western WA and OR.

The physical environment in the lower Columbia is a state of constant flux, and in addition to hazing, habitat stability is a continued concern for nesting colonies. The river moves a tremendous amount of sediment, both depositing on and washing away sandy areas. The large amount of ship traffic, weather, and natural events can also cause changes in river hydrology. Rice Island is an active dredge placement area and undergoes continuous cycles of sand deposition and vegetation succession. Finally, sea-level rise may change large portions of this area, affecting not only nesting habitat, but foraging resources.

Despite these changes, the gull colony on Rice Island continues to persist. This colony represents a significant regional resource in an area of high use and rapid change, and the L&C will conduct an annual nesting inventory to document changes in colony size over time.

II. Procedure

Site Selection

Rice Island is situated within the boundary of L&C, but is a state-owned, manmade island created from deposition of dredge materials. Primary succession has occurred on the majority of the northern shore and in spots along the southern shore of the island. The west end remains in an early successional state with very little ground cover.

There are several *Larus* species. that utilize the western end of the island for breeding and nesting (figure 1). The most common are Western gull (*Larus occidentalis*) and Glaucous-

winged gull (*Larus glaucercens*). A small number of ring-billed gull (*Larus delawarensis*) has been seen on the island during the nesting season as well. Caspian terns formerly nested in this area in high numbers, but have been mostly hazed off the island. They can still be found adjacent to the gull nest territory, although they are generally not interspersed. High elevation dunes are typically colonized by terns while gulls have colonized the lower elevation sand flats.

Equipment

Equipment necessary for conducting gull colony surveys can vary depending on weather and individual surveyor preferences. At a minimum, each surveyor should have the following items: a GPS unit to record a track line (with units set to NAD83, UTM), data sheet/notebook, pencils, clipboard, relevant maps, radio/phone, rain gear, rubber boots, food, water, and emergency and first aid supplies. All of the areas listed in this protocol require surveyors to be dropped off by boat. Each surveyor should be prepared to ride in a boat and wear a personal floatation device.

Nest Detection

Surveys should be conducted by small groups with 3 or more members. Larger groups will reduce disturbance by cutting down the number of passes. Group members should be spread out at a distance that will allow verbal communication to their nearest neighbor and to ensure that no nests are being overlooked or double counted. This distance can vary based on habitat, but surveyors are typically separated by 20-25 meters.

The colony is then walked in a line across the width of the island. At the end, the line shifts down and the next swath is walked in the reverse direction. Individuals on the innermost and outermost surveys carry a GPS. The outermost surveyor will lay down a track line, and the innermost surveyor will follow a path parallel to the outermost track line of the previous pass.

Upon detection, nests should be inspected to determine whether or not the nest is from the current breeding season or a previous year. Most nests, if done at peak breeding, will contain eggs. Empty nests can be determined by the arrangement and freshness of vegetation lining the nest. Older nests are generally disheveled or flattened with old or decaying vegetation. Vegetation growth may also be present. New are more neatly arranged, tend to look dryer, and may contain down. Nests with hatchlings should not be approached.

Disturbance

This survey requires walking through the nesting colony. While this is often undesirable because of disturbance-caused nest mortality, this colony has shown remarkable resilience to active hazing and radical habitat alteration through dredge material placement. The short-lived disturbance caused by the survey, and the lack of nest predators in the area should have little

effect on nesting. That said, it is important to move through the transects quickly and steadily to allow birds to return to their nests as soon as possible.

Recording Data

Currently, the only information being collected is a total nest count. Several other pieces of data can be collected in the future, including # eggs per nest, # eggs hatched, and # eggs that have been abandoned, and species composition. Furthermore, estimates of adult population and number of breeding pairs could lend insight into colony stability and viability. Each surveyor should have a data sheet or a notebook for marking each nest they encounter.

Survey Dates and Times

Gull colony nest surveys should be conducted during the peak nesting period for the target species. This occurs in early–mid June. The survey should start mid-morning to give adequate time to complete all areas.

Weather Conditions

Avoid cold and rainy days that might expose the eggs to the elements. Consider travel conditions for volunteers coming from the local area and river conditions when boating to the survey sites.

Personnel

Necessary personnel include surveyors and boat operators. As many surveyors as possible will increase efficacy and lower disturbance. Given the size of the colony, a minimum of 3 people is necessary.

Data Storage and Analysis

Data will be stored in an Excel Spreadsheet and stored on the Willapa server.

Figure 1. Top: Location of Rice Island in Lower Columbia River Estuary. Bottom: Portion of Rice Island where gull colony survey is conducted.