

McNabney Marsh
2012 Nesting Bird Surveys



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Introduction

In cooperation with the Peyton Slough Wetlands Advisory Committee (PSWAC), the Mt. View Sanitary District (MVSD) requested that a 2nd year nesting bird survey be conducted in McNabney Marsh during the 2012 nesting season. The survey collected data on nesting species to compare with data collected in 2002–2004 and 2011. The 2012 survey is the second year of 2 annual surveys documenting nesting bird activity during the “implementation phase” of a proposed tide gate management program for a 5-gate water control structure on Peyton Slough. Although the tide gate is operated by Rhodia Inc., the management plan/operations-schedule is a cooperative effort between MVSD, Rhodia Inc., and the PSWAC to better manage McNabney Marsh for nesting bird success.

Because of a severe constriction on Peyton Slough, at a Union Pacific Railroad (UPRR) bridge box culvert, McNabney Marsh does not experience typical tidal action for the San Francisco Bay. The UPRR constriction allows a high volume of water from the Carquinez Straight to fill the marsh during high tides, but only a fraction of the volume drains out during low tides. The lack of drainage “pumps up” water levels in the marsh. This unnatural “pumping up” effect creates unusual challenges for ground nesting species that have depended upon McNabney Marsh for nesting habitat for decades.

Mt. View Sanitary District is aware of these challenges, and in an effort to increase benefits to nesting birds, constructed and deployed six floating nesting rafts with a variety of substrates (vegetation and sand) to attract nesting waterfowl and shorebirds in early March. Additionally, temporary habitat enhancements included utilizing cut vegetation to create nesting mounds on several islands in McNabney Marsh to help increase nest elevation, which could prevent potential flooding from tide gate operations.

METHODOLOGY

The Wildlife Project initiated surveys efforts during year-2 of a multi-year nesting bird survey in McNabney Marsh. This work included studying previous nesting bird data provided by MVSD (i.e., 2002–2004 and 2011), and conducting field surveys for nesting activity throughout McNabney Marsh.

Three transects and four observation points were established in order to create repeatable data collection locations that could be compared over time. Transects and observation points were established along the northern, eastern, and southern shoreline borders of the marsh in 2011 (Figure 1). A spotting scope was used at observation points to scan larger areas for nesting birds, and breeding and nesting behavior. Transects and observation points were organized such that

Figure 1. Location of 3 transects and 4 observation points used to document migratory bird nesting in McNabney Marsh, Martinez, CA.



all data could be collected before noon of each survey day. Surveys began in early April 2012 and were conducted every other week through 12 JUN 2012. Surveyors typically walked transects while collecting data on birds observed, nests observed, nesting activity, chicks hatched, chicks fledged, etc. Counts at observation points were typically conducted in conjunction with the associated transects. All nesting birds observed were identified to species and mapped on aerial photos.

Due to lack of nesting/fledgling success in 2011 (see 2011 nesting report), MVSD's District Biologist worked with staff at Rhodia Inc. to create a new water level regime/tide gate operation schedule beginning in late January through April 2012. The intent was to attempt to offset the "pumping up" effect by artificially raising water levels to heights similar to what would occur in early May. The regime consisted of opening one or more gates for several days and then closing all gates for several days to allow for drainage without allowing the lower elevations of McNabney Marsh to dry such that birds would begin nesting in areas that could flood. The goal was to persuade ground nesting birds to choose nest sites in higher elevations where tide gate operations would not impact nesting ability or success.

RESULTS

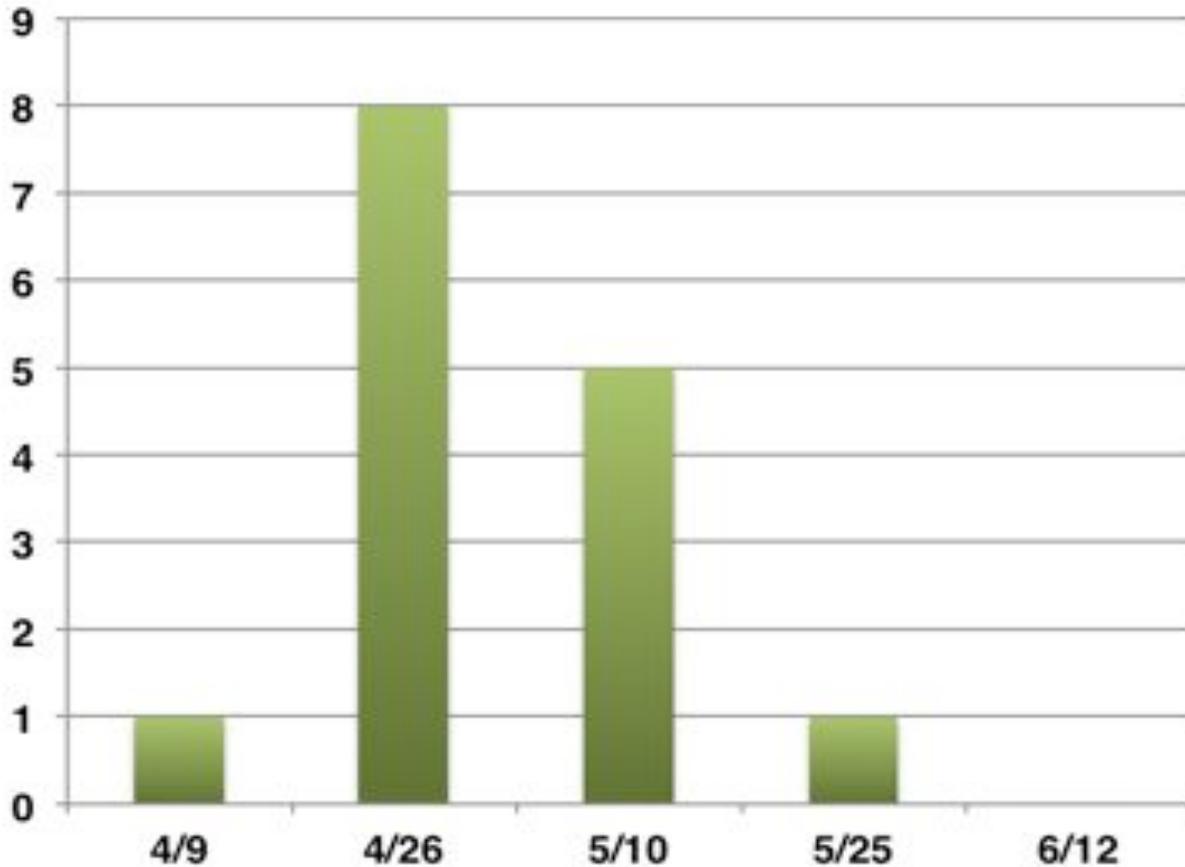
Field surveys began after the first detected nest was reported. Transects surveys were conducted from 09 APR to 12 JUN 2012, resulting in an average of 22 species observed per survey (range = 19–26). Total numbers of individual birds ranged from 136 to 302 (mean = 203.7/survey). Nesting was initially observed on April 9th, with Killdeer being the earliest nesting species observed. Nesting activity plateaued through May, with no more than 10 nests detected during any single visit (Figure 2). Several species were observed nesting during the 2012-nesting season, including: Canada Goose, Mallard, Killdeer, Marsh Wren, Suisun Song Sparrow, and Red-winged Blackbird. Many additional species were observed engaging in nesting behavior, but their nests were never located. These species included: Savannah Sparrow, San Francisco Common Yellow-throat, and Great-tailed Grackle.

The first observed chicks were recorded on 25 MAY (Canada Goose) and the last chicks observed were on 08 JUN (Canada Goose and Mallard). At least 4 chicks reached the fledgling stage during the 2012 survey period, with an additional 17 that were active, but not followed to the fledging stage (Figure 3).

DISCUSSION

The 2012 nesting season for migratory birds in McNabney Marsh appeared to begin the first week of April, which is approximately the same time frame for the 2011 nesting season. We speculate that the actual nesting season likely initiated in mid-March, as did nesting activity in the general region, but ground nesting birds in this area appear to initiate nesting slightly later than other species (e.g., Marsh Wren, Red-winged Blackbird, etc.). Our surveys, focused primarily on ground nesting birds that might be impacted by hydrologic management changes. A single Killdeer nest was detected 09 APR 2012, which then initiated surveys every other week.

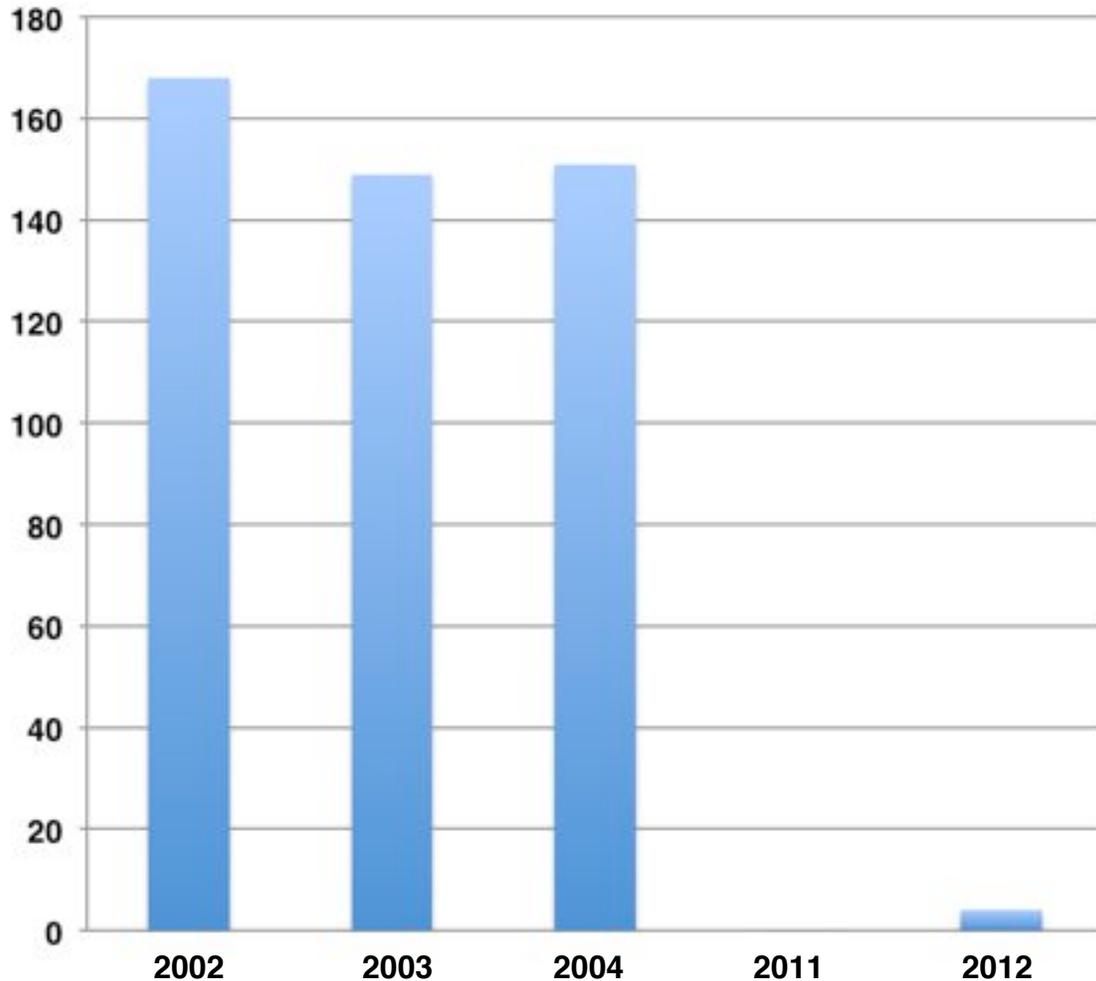
Figure 2. Observations of active nests detected during surveys for nesting birds in McNabney Marsh, 2012.



During the second nesting season site visit, eight ground nests were detected from the observation points, or along or adjacent to nest survey transects. Nests were found on the existing islands ($n = 3$), along the shoreline and adjacent uplands ($n = 2$), on an artificial raft ($n = 1$), and in gravel beds along the road edge ($n = 2$). Nesting activity through May increased to 10 nests, which is six fewer than the previous year.

Prior to or during nesting bird surveys in May and June 2012, on a number of occasions, water levels in the McNabney Marsh increased through the pumping effect of water flowing in without adequate draining (MVSD unpublished data). These higher water levels caused inundation of ground nesting birds and altered routes for predators, which resulted in predations to ground nesting birds and their nests.

Figure 3. The number of observed birds fledged per survey year, McNabney Marsh, 2012.
Note: 2011 data is zero.



Anecdotal follow-up surveys and scheduled nesting bird surveys indicated that nesting activity declined rapidly in the first week in June (0 nests detected). Based on surveys that were conducted in 2002, 2003, and 2004, the normal decline of nesting would likely have not occurred until late June or July, however, some interannual variability is expected. At least 4 fledglings were observed in McNabney Marsh in 2012, which is an important increase from zero fledglings in 2011 (Figure 3). Notably, only two fledglings were likely from nests on the site. Two Double-crested Cormorant fledglings were observed but they do not nest on the marsh. Surveys during 2002-2004 indicated that ground nesting fledglings were observed during May and June from eight species including Canada Goose, Mallard, Northern Pintail, Cinnamon Teal, Gadwall, Killdeer, Black-necked Stilt, and American Avocet.

Based on our observations, we attribute the absence of nesting success in McNabney Marsh to two confounding elements: 1) a decrease in species diversity and number—use of the site decreased from 2011, and 2) tide gate operations that allowed water levels to rise above levels selected in February and March 2012.

MANAGEMENT RECOMMENDATIONS

Understanding breeding behavior and nesting habitat requirements is necessary for obtaining optimal breeding success for both common and special-status species occurring in McNabney Marsh. Studies such as this provide information about the timing and extent of nesting activity on McNabney Marsh and should be considered when managing these wetlands for increased habitat function and value. All of the species that were documented as nesting in the McNabney are protected by the Migratory Bird Treaty Act and thus afforded a level of protection that precludes take of the individual birds, nests, eggs, or parts thereof.

Management actions including tide gate operation, vegetation control, silt removal, and levee maintenance and repair should fully consider the timing of nesting activity prior to any potentially harmful management action going forward. To avoid non-compliance with the Migratory Bird Treaty Act, tide gate operations that would significantly change water levels in McNabney Marsh and associated wetlands should be carefully controlled or avoided between early March and late July.

To best ensure the success of nesting birds in McNabney Marsh, the following Management Recommendations are strongly suggested:

- Avoid anthropogenic flooding events in McNabney Marsh between March 1 and August 1 of every year. If tidal action is desired in the spring and summer months, tide gates should be opened prior to March 1st so that water levels and shoreline areas are well established prior to ground nest site selection by nesting birds.
- Conduct monitoring of migratory bird nesting activity on an annual basis, following the methodology provided above. Data should be compared year to year. Annual monitoring can be concluded when data suggest annual changes in fledgling rates do not fluctuate significantly year-to-year.
- Conduct daily water level monitoring in McNabney Marsh, using the Peyton Slough staff gauge, in conjunction with annual migratory nesting bird surveys.
- Work cooperatively with PSWAC and the tide gate operator to manage the marsh in a manner that promotes the fledging of migratory nesting birds.