

***McNabney Marsh***  
***2014 Nesting Bird Surveys***



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September 2014

## Introduction

In cooperation with the Peyton Slough Wetlands Advisory Committee (PSWAC), the Mt. View Sanitary District (MVSD or the District) requested that a fourth nesting bird survey be conducted in McNabney Marsh (Marsh) during the 2014 breeding season. The survey was intended to collect data on nesting species, and to compare with data collected in 2002–2004, and 2011–2013. The 2014 survey is the fourth year of 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 Solvay Chemicals (formerly known as Rhodia Inc.) the management plan/operations-schedule is a cooperative effort between MVSD, Solvay, and the PSWAC to better manage McNabney Marsh for nesting bird success.

It was initially believed that a constriction on Peyton Slough, at a Union Pacific Railroad (UPRR) bridge, was the primary cause of poor drainage in McNabney Marsh. It is unclear at this writing whether the bridge remains the primary constriction preventing free flow. Whatever the cause, 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 the Marsh for nesting habitat for decades. An analysis of the bathymetry of Peyton Slough was conducted by HDR in 2013 and 2014, but the final report is not yet available. Preliminary evidence suggests that siltation from an undetermined source has accumulated approximately 500 feet downstream of the UPRR railroad bridge, likely impeding water flow. The general consensus is that there are confounding effects from a combination of factors moderating flows into the Marsh, including a possible constriction at the railroad bridge, silt deposition in the slough, and/or timing and degree of control of the tide gates in Peyton Slough.

The District is aware of these challenges, and in an effort to increase benefits to nesting birds, constructed and deployed nesting rafts that would be unaffected by water levels. Eight rafts were deployed in 2012 and 12 in 2013 for a total of 20 rafts placed throughout McNabney in 2014. A variety of substrates (vegetation and sand) were added to the rafts to attract nesting waterfowl and shorebirds. Additional temporary habitat enhancements included utilizing cut vegetation to create nesting mounds on several islands to increase nesting elevation, which could prevent potential flooding from tide gate operations.

Between the 2013 and 2014 nesting seasons, Solvay replaced one of three flap-style tide gates with a sluice tide gate. This change allowed for greater control of water levels with increased predictability and repeatability. The desired effect was for water levels in McNabney Marsh to be managed at levels that were more appropriate for nesting bird activity and reduced flooding potential in upstream areas.

As in 2013, MVSD continued to work with Solvay to manipulate water levels in February and

March to encourage ground-nesting species to nest at higher elevations. Using the 2013 nesting season experience as a guide, Solvay and MVSD decided to keep water levels below 2.5' (measured using the staff gage at the East Channel tide gate) but did not choose a minimum water level. This was expected to help reduce the amount of gate manipulation required. It was noted however, that water levels below 1.9' for prolonged periods of time could increase nest flooding, by tempting birds to choose lower elevations for nest site selection, and should be avoided to the extent possible. It was also noted that levels above 2.8' flooded Waterfront Road and other infrastructure.

## **METHODOLOGY**

The Wildlife Project initiated survey efforts during year 4 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 2011–2013) and conducting field surveys for nesting activity throughout the Marsh in 2014.

We continued to use three pre-established transects and four observation points in order to create repeatable data collection locations that could be compared over time. Transects were located along the northern, eastern, and southern shoreline borders of the Marsh (Figure 1). Observation points were located in similar areas, and a spotting scope was used to scan larger areas for nesting birds, and breeding and nesting behavior.

Surveys began in late March 2014 and were conducted every other week through August 4, 2014. Transects and observation points were organized such that all data could be collected before noon of each survey day. 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.

Although preexisting islands continue to erode in the Marsh, it was hoped that most or all detected ground nests would be free from flooding and destruction if water levels did not exceed 2.5 feet. The staff gage was checked once or twice on most days throughout the season by MVSD staff and reported to Solvay via email and/or the Google Docs spreadsheet created in August 2013 for this purpose. If necessary, a recommendation for gate adjustment was offered. Note: the staff gage numbers reported here have not been correlated to any known elevation metric and are simply treated as relative levels.

## **RESULTS**

Field surveys began after the first detected nest was reported. Transects surveys were conducted from 31 MAR to 4 AUG 2014, resulting in an average of 22 species observed per survey (range = 13–29). Total numbers of individual birds ranged from 116 to 334 (mean = 306.5/survey).

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

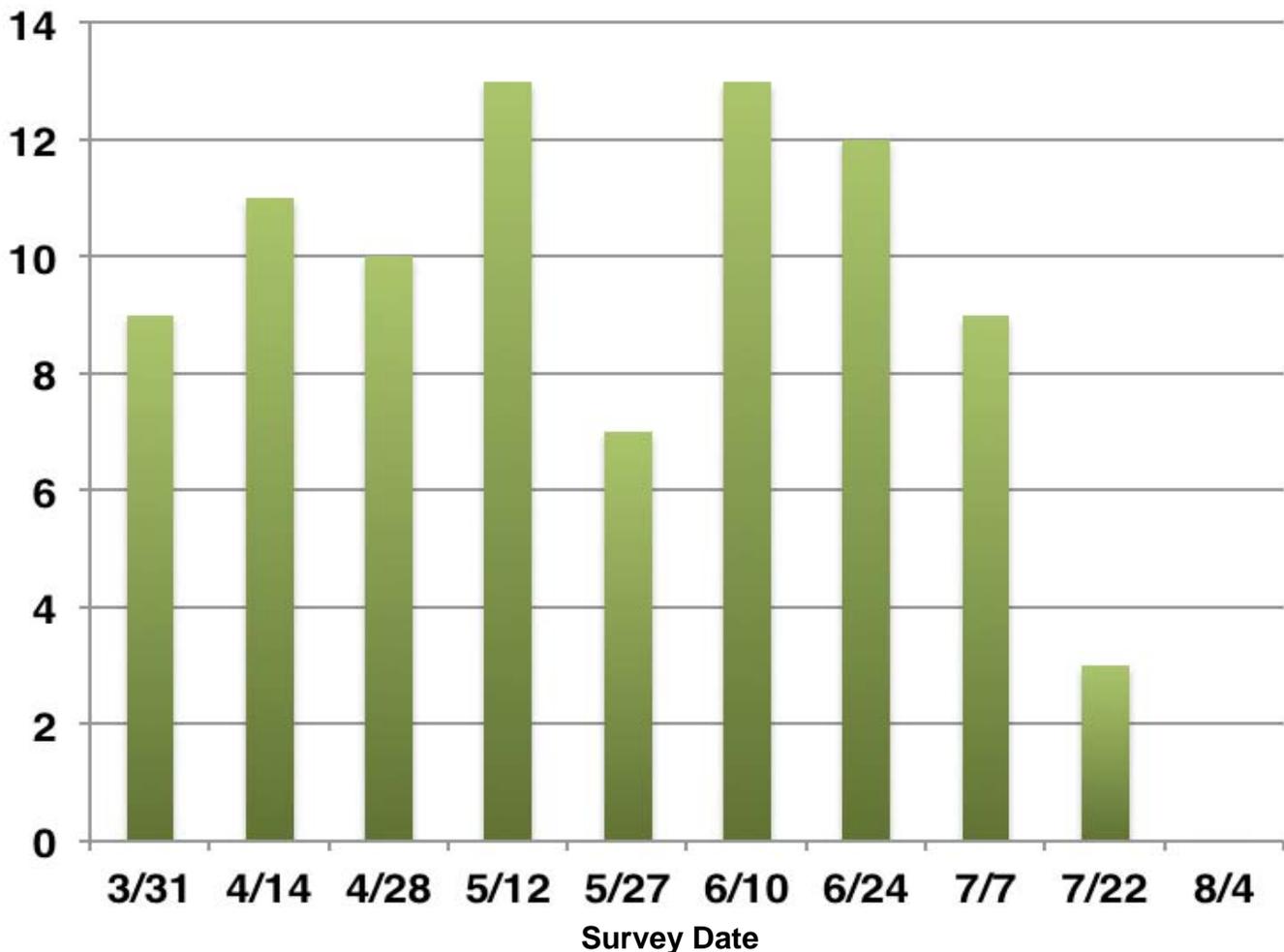


This is approximately 50% of the average number of birds observed in 2013. Nesting was initially observed on 31 MAR 2013, with Canada Goose being the earliest nesting species observed. Nesting activity peaked in mid-May 2014, which is approximately 2 weeks later than 2013, and again in mid to late June, which was also 2 weeks later than 2013 (Figure 2).

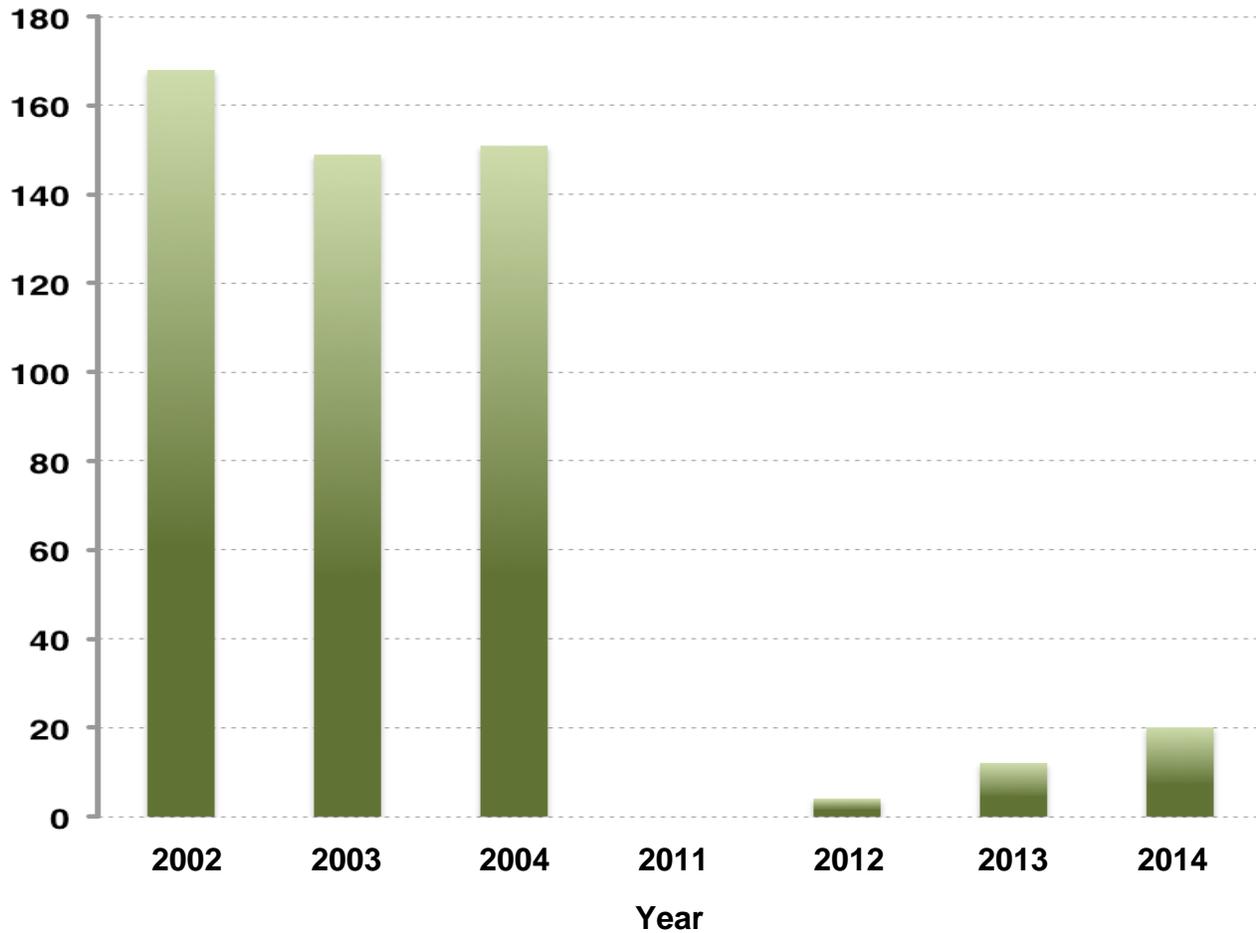
Numerous species were observed nesting during the 2014-nesting season, including: Canada Goose, Mallard, Killdeer, Black-necked Stilt, American, Avocet, Barn Swallow, Tree Swallow, Marsh Wren, Black Phoebe, San Francisco Common Yellow-throat, Savannah Sparrow, Suisun Song Sparrow, Great-tailed Grackle, and Red-winged Blackbird.

The first observed chicks were recorded on 28 April (Canada Goose) and the last chicks observed were on June 7<sup>th</sup> (Mallard, Marsh Wren, and Barn Swallow). At least 20 chicks reached the fledgling stage during the 2013 survey period (Figure 3).

**Figure 2. Observations of active nests detected during surveys for nesting birds in McNabney Marsh, Martinez, CA, 2014.**



**Figure 3. Number of observed fledglings in McNabney Marsh 2002–2004, and 2011–2014.**



## **DISCUSSION**

The 2014 nesting season for migratory birds in McNabney Marsh appeared to begin the last week of March, which was similar to 2013, but is approximately one week earlier than the 2011 and 2012 nesting seasons. We speculate that the actual nesting season likely initiated in mid-March, as did nesting activity in the general region.

Our surveys focused primarily on ground nesting birds that might be impacted by hydrologic management changes. Four nests of Canada Goose were detected March 31, which then initiated surveys every other week. On May 5, a peak in the nesting count ( $n = 13$ ) was observed. This is approximately 2 weeks later than in previous years. However, a second peak in nesting occurred June 10, which was also observed in 2013, and occurred 2 weeks earlier than in 2014. Survey efforts for the entire 2014 nesting season resulted in 40 ground nests detected.

The PSWAC, MVSD, and Solvay worked cooperatively to implement the recommendations for tide gate operations developed to allow Solvay to flood irrigate a mitigation pickleweed marsh

on their property downstream from McNabney Marsh, while not flooding nests in McNabney. As part of the recommended procedure, MVSD placed staff gages in Peyton Slough and McNabney Marsh, working closely with Solvay to determine appropriate water levels that could protect most nests, avoid flooding on adjacent properties, and provide flood irrigation to Solvay's pickleweed marsh. The selected range on the East Channel staff gage for 2014 was at or below 2.5 feet. It was feasible for water levels to fall below 1.9' as long as the substrate was not allowed to dry sufficiently to attract birds to nest at these lower elevations.

Water level control in 2014 improved greatly from previous years, and is attributed to changing one of the three flap gates to a sluice gate, which offered more predictable water levels. Nevertheless, at least 4 days were reported where water levels exceeded the 2.3-foot level (the optimal level from 2013), but zero days exceeded 2.5 feet. It was noted on several days that water levels likely exceeded 2.5' during overnight high tides, which was determined by observations of leftover debris (duckweed), which was found on the staff gage the following morning. Twenty nests (50%), among all nests detected, were determined to be flooded during the survey efforts. Although this is an improvement over 2013, when 71% of nests succumbed to flooding, these 20 nests are still afforded protection under the Migratory Bird Treaty Act, and likely represent a far greater number of flooded nests throughout the Marsh.

Anecdotal follow-up surveys and scheduled nesting bird surveys indicated that nesting activity declined in the third week in July (1 nest detected). Based on surveys that were conducted in 2002, 2003, and 2004, the normal decline of nesting would likely occur approximately in late June or early July; however, some inter-annual variability is expected. At least 14 fledglings were observed in McNabney Marsh in 2014 during the first nesting wave. An additional 17 fledglings were observed in July, during the second nesting wave, which is a 160% increase from 2013. Surveys during 2002-2004 indicated that 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. Our 2014 observations included fledglings from only three species: Canada Goose, Mallard, and Black-necked Stilt.

It is worth noting that on March 31 and June 24, biologists detected nesting activity by Black-necked Stilts on one of the floating nesting rafts. This observation is significant, because shorebirds are not known to use rafts of this size. Artificial nesting substrate used by shorebirds has typically been in the form of altered barges and other very large structures. Observations suggest that both stilt nests failed because of causes unknown.

In February 2013, MVSD's District Biologist detected a California Black Rail in McNabney Marsh near the East Channel Tide Gate. A formal survey for both California Black Rail and California Clapper Rail was initiated and completed in winter/spring 2014. The avian biologist detected and confirmed California Black Rail during the nesting period (Edelstein 2014). These ground nesting birds are Fully Protected in the State of California and must be carefully considered during all management activities that affect the marsh.

## 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 marsh 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, in perpetuity.

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. If tidal action is desired in the spring and summer months, tide gates should be opened prior to March 1<sup>st</sup> 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 fledgling rates no longer fluctuate significantly year-to-year.
- Conduct daily water level monitoring in McNabney Marsh, using the East Channel staff gage, or other acceptable means, in conjunction with annual migratory nesting bird surveys.
- Avoid any take of California Clapper Rail and California Black Rail or their nests at any time.
- Construct numerous floating or stilted nesting platforms of various sizes and styles for nesting birds in the Marsh. Add nest boxes for tree swallow where appropriate.
- Work cooperatively with PSWAC and tide gate operators to manage the marsh in a manner that promotes the fledging of migratory nesting birds, California Clapper Rail, and California Black Rail.

Figure 4. Locations of California Black Rail (CABR) at McNabney Marsh, Martinez, CA, 2014.

