

McNabney Marsh
2011 Nesting Bird Surveys



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Introduction

In cooperation with the Peyton Slough Wetlands Advisory Committee (PSWAC), Mt. View Sanitary District (MVSD) requested that a breeding bird survey be conducted in McNabney Marsh during the 2011 breeding season. The survey was needed to collect information about breeding birds on site, to compare data with that collected in 2002, 2003, and 2004, and to begin a series of annual surveys that could assist MVSD and the PSWAC to better manage McNabney Marsh for nesting bird success.

METHODOLOGY

The Wildlife Project initiated year 1 of a multi-year nesting bird survey in McNabney Marsh. This work included studying previous nesting bird data provided by MVSD, creating appropriate data collection worksheets and electronic spreadsheets to determine the best times to survey, considering time of day and tidal action, and collecting data on nesting birds in the marsh.

Three transects and 4 observation points were established in order to create repeatable data collection locations that could be compared over time. Transects were established along the northern, eastern, and southern shoreline borders of the marsh (Figure 1). Observation points were placed in similar areas, where a spotting scope was used to scan larger areas for nesting birds and breeding and nesting behavior.

Surveys began in March 2011 and were conducted every other week through June 30th, 2011. 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, etc. Counts at observation points were typically conducted in conjunction with the associated transects. All nesting birds reported were mapped on aerial photos.

RESULTS

Nine field surveys were conducted, resulting in an average of 21 species observed per survey (range = 16-27). Observations of individual birds ranged from 81 to 224 (mean = 138.8/survey). Nesting was initially observed on April 4th, with Canada Goose being the earliest nesting species observed. Nesting continued throughout the survey period and peaked during the latter portion of April, with 16 nests active along transects and within the areas viewable from the observation points. The first observed chicks were recorded on May 12th (Canada Goose) and the last chicks observed were on June 8th (also Canada Goose). Nesting behavior peaked during the April 27th nesting survey (Figure 2). Chicks within or associated with nests were first observed on May 12th. Notably, unlike in 2002-2004, no chicks reaching the fledging stage (i.e., becoming independent) were observed in 2011.

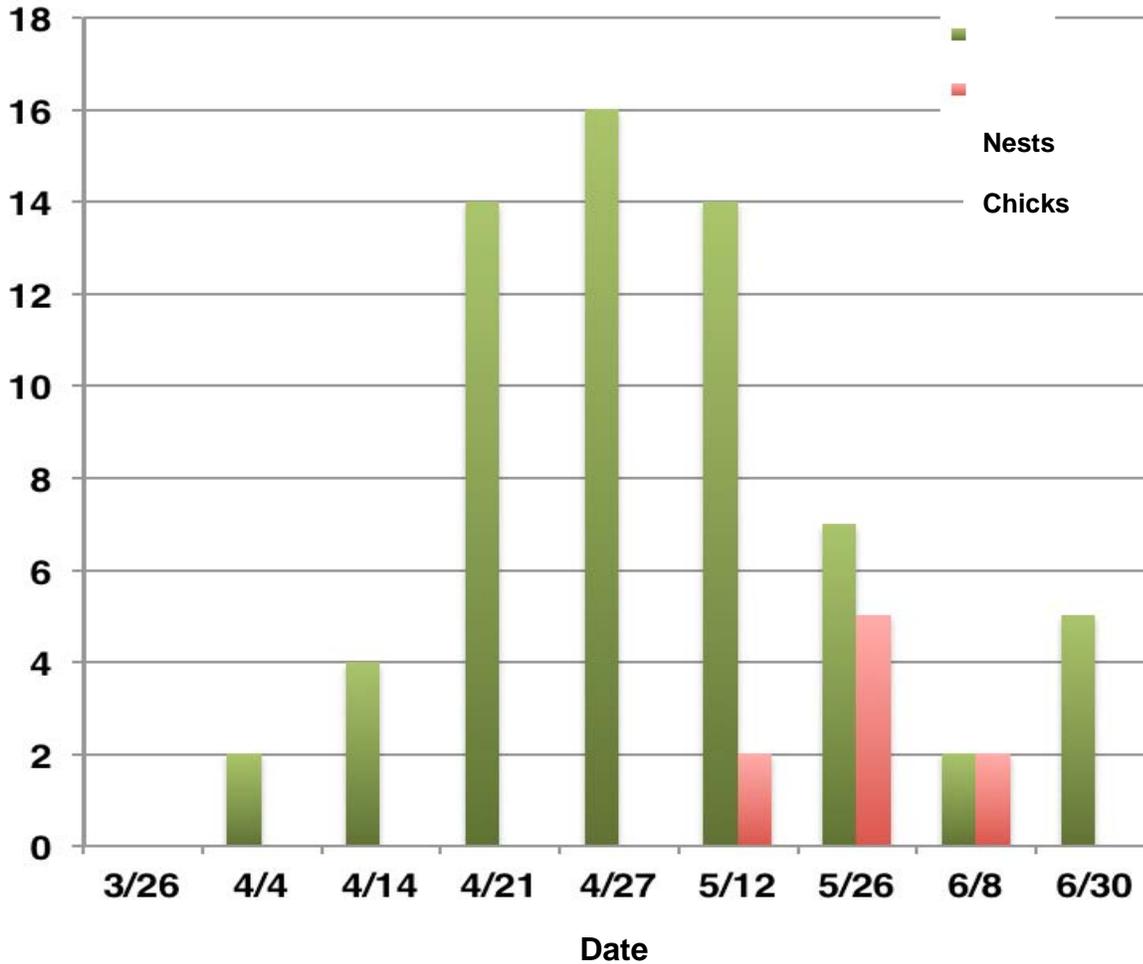
DISCUSSION

The 2011 nesting season for migratory birds in McNabney Marsh appeared to begin the first week of April. We speculate that the actual nesting season likely initiated in mid-March or

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



Figure 2. Observations of active nests and chicks on each survey day in McNabney Marsh, 2011. Nests that were abandoned, predated, inundated, or otherwise lost were not included.



earlier, as did other nesting activity for the year in similar areas. On March 24th, however, a large rain event occurred, and McNabney Marsh was flooded. This rain event likely obscured any evidence of nesting in the marsh. Nesting was reinitiated in early April, after the effects of high water receded. Bird nesting among and within emergent vegetation may have occurred earlier. For this survey effort, we noted when we observed Marsh Wren, Red-winged Blackbirds, and other non-ground nesting species. Our surveys, however, focused primarily on ground nesting birds that might be impacted by hydrologic management changes.

Canada Goose was the first species observed nesting. Nesting activities were located along the shoreline (e.g., uplands) due to the high water levels in the marsh from the rain event of March 24th. Such nest site selection, however, presumably increased predation potential. We documented 100% predation of observed Canada Goose nests within upland areas. After high

waters receded (approximately mid-April), Canada Goose nests were constructed only on marsh islands.

Nesting activity increased significantly during the third week of April. Several species were observed nesting, including: Canada Goose, Killdeer, Black-necked Stilt, American Avocet, Cliff Swallow, Barn Swallow, 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: Mallard, Northern Shoveler, Savannah Sparrow, San Francisco Common Yellow-throat, and Great-tailed Grackle.

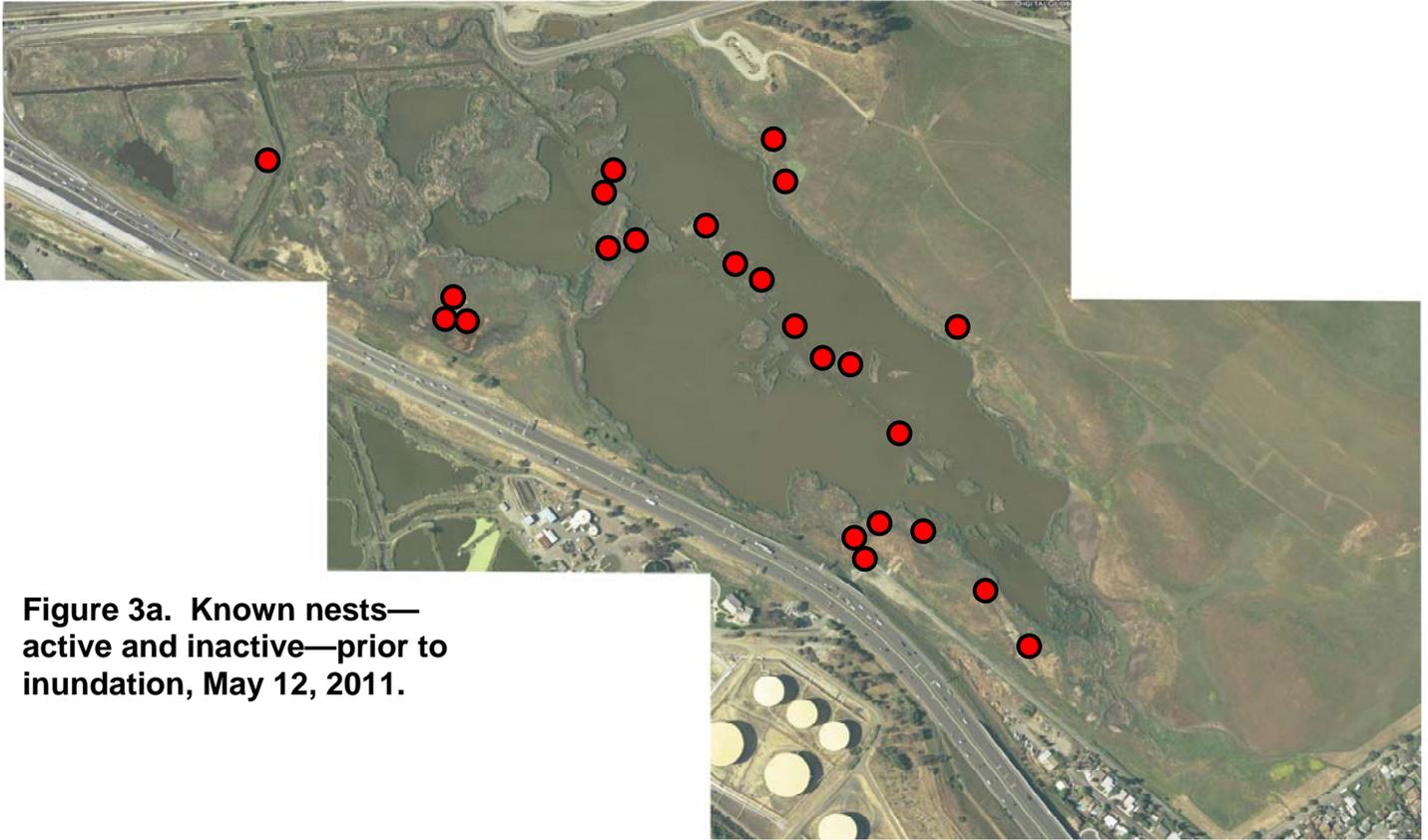
Encouraged by various members of the PSWAC Tide Gate Operations sub-committee, Rhodia Inc., opened its tide gates on May 16th, to allow tidal water to enter Peyton Slough and Rhodia's wetlands. Prior to the opening of Rhodia's tide gates, MVSD closed the East and West Channel gates in an attempt to keep tidal water out of McNabney Marsh and protect nesting birds. This action was deemed unsuccessful on May 17th when it was clear tidal water was inundating McNabney and compromising nest sites. MVSD requested that Rhodia close the tide gates to avoid compromising additional nest sites; gates were closed in the afternoon of May 17th.

The water level in McNabney Marsh after the May 16th tide gate opening inundated nearly all monitored nests. The inundation event resulted in a loss of nesting attempts for all ground nesting birds within the flood plain, including, but not limited to: Canada Goose, Killdeer, Black-necked Stilt, American Avocet, and Suisun Song Sparrow (Figure 3a and b). A single American Avocet nest on the un-inundated portion of an island, one Killdeer nest constructed higher than the flood limit, and three Suisun Song Sparrow nests built close to the ground in small shrubs, were still intact after the inundation event.

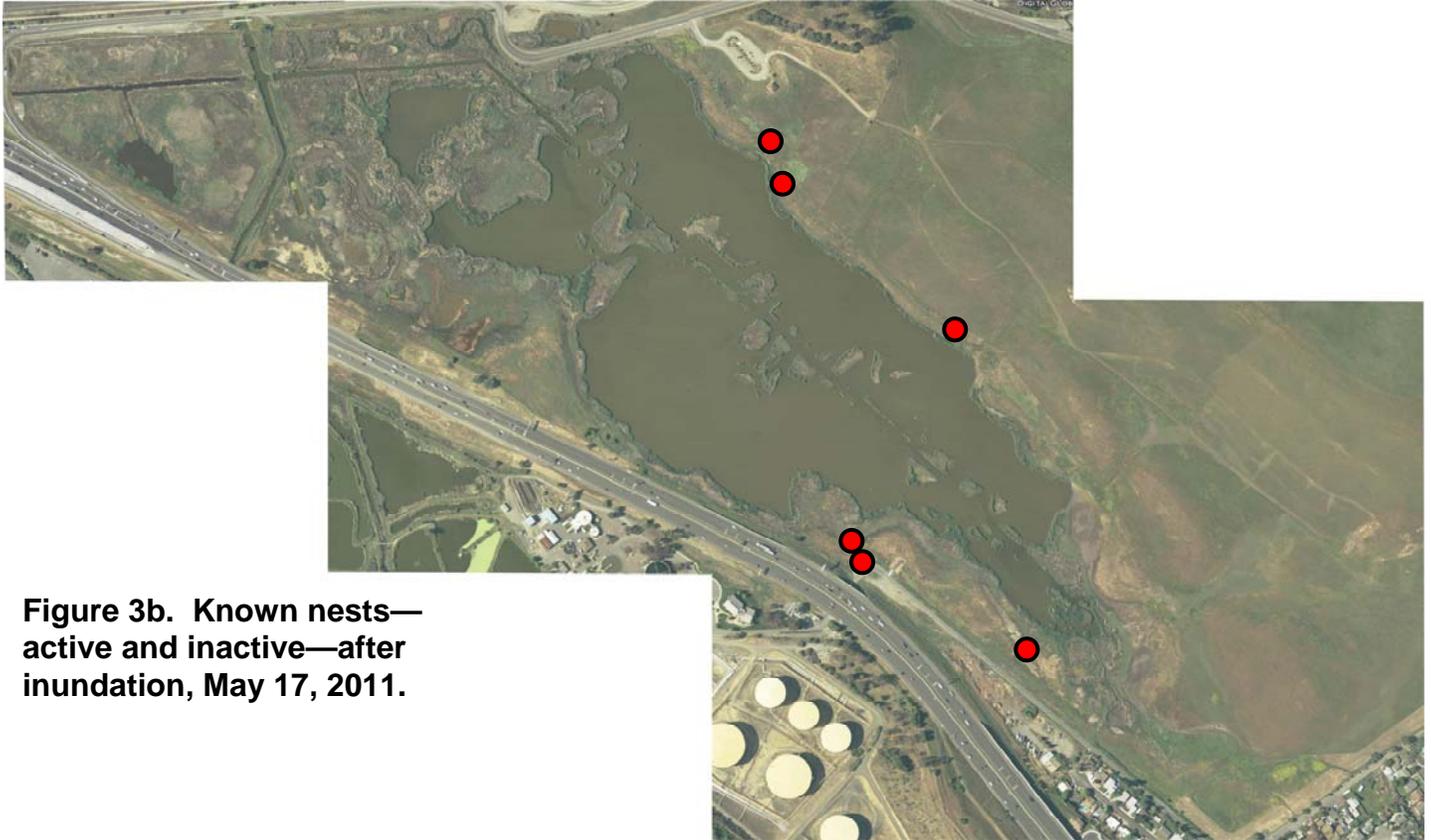
Suisun Song Sparrow nests and the remaining Killdeer nest, which were located randomly within the upland prior to the inundation, became associated with the high water line. That high water line was observed as a pathway for predators. Over the course of several days, predators took all of the remaining ground level nests. Observations subsequent to the flooding event (beginning May 25th) included re-nesting attempts by Canada Goose and American Avocet on marsh islands, and Killdeer along upland edges.

Anecdotal follow-up surveys and scheduled nesting bird surveys indicated that nesting activity declined steadily following the flooding. 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. A critical reduction in the number of fledglings in McNabney Marsh occurred in 2011 as compared with findings in 2002-2004 (Figure 4). 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. Notably, none of these species, nor any others, produced fledglings in 2011.

Based on our observations, we attribute the absence of nesting success in McNabney Marsh to two confounding elements: 1) a significant natural rain event that occurred in late March, which would have elicited a re-nesting event in early April (supported by observations), and 2) the

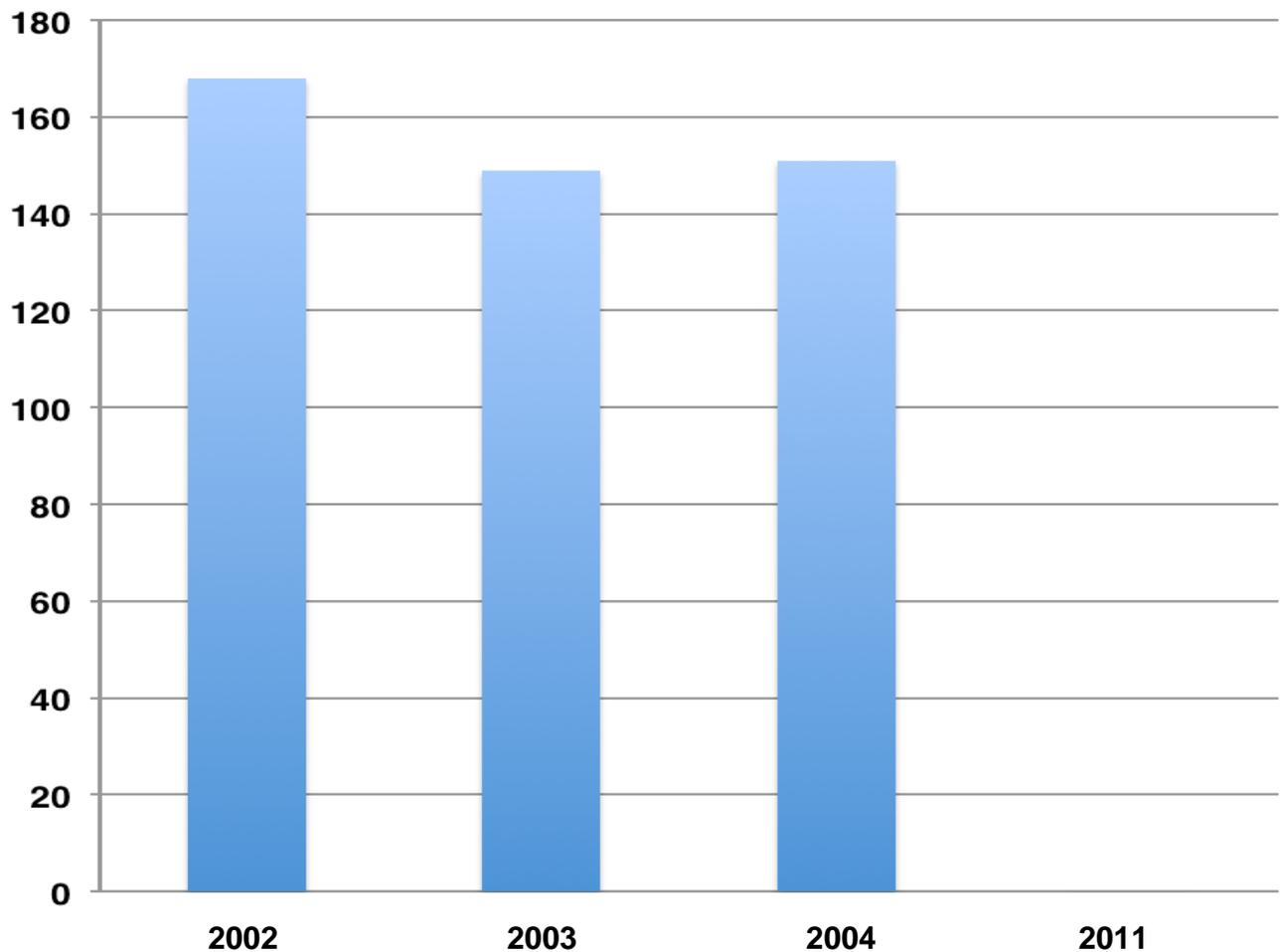


**Figure 3a. Known nests—
active and inactive—prior to
inundation, May 12, 2011.**



**Figure 3b. Known nests—
active and inactive—after
inundation, May 17, 2011.**

Figure 4. The number of fledged birds per survey year, from eight bird species combined, which are typically found nesting on McNabney Marsh. Note: 2011 data is zero.



opening of the tide gates on May 16th, resulting in McNabney Marsh being flooded during the peak nesting period. Given that the natural nesting season would likely have begun earlier in March—in the absence of the late rain event—many young birds would have hatched and been mobile prior to the anthropogenic flood event. In this scenario, some species would have fledged young in 2011.

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 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 weekly water level monitoring in McNabney Marsh, in conjunction with annual migratory nesting bird surveys.
- Work cooperatively with PSWAC to manage the marsh in a manner that promotes the fledging of migratory nesting birds.