

McNabney Marsh
2015 Nesting Bird Surveys



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October 2015

INTRODUCTION

In cooperation with the Peyton Slough Wetlands Advisory Committee (PSWAC), the Mt. View Sanitary District (MVSD or the District) requested that a fifth annual nesting bird survey be conducted in McNabney Marsh (the Marsh) during the 2015 breeding season. The survey was intended to collect data on nesting species for comparison with data collected in 2002–2004 and 2011–2014. The 2015 survey is the fifth consecutive annual survey documenting nesting bird activity during the “implementation phase” of a proposed tide gate management program for a five-gate water control structure on Peyton Slough. Although the tide gate is operated by Eco Services (formerly Solvay Chemicals, formerly Rhodia Inc.), the management plan/operations schedule is a cooperative effort between MVSD, Eco Services, and the PSWAC, intended to better manage McNabney Marsh for bird nesting success.

Since the tide gates on Peyton Slough began operations in June 2009, the Marsh has experienced significant impediments to drainage. Stagnation is confounding the management of algae growth, water quality, nuisance odors, nesting bird reproduction, and other factors related to marsh health. One potential contributing factor in the poor drainage of the Marsh is a possible constriction on Peyton Slough at a Union Pacific Railroad (UPRR) bridge. It is unclear at this writing whether the bridge is the primary constriction preventing free flow. Analysis of the hydrology of Peyton Slough as it affects water exchange in the Marsh was conducted in 2013 and 2014 by HDR, Inc. A Draft Analysis Report was completed by HDR in September 2014. 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 a combination of factors are moderating flows into and out of 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. Whatever the cause(s), the pumped-up water levels create challenges for ground-nesting species that have depended on the Marsh for nesting habitat for decades.

The District is aware of these challenges and, in an effort to mitigate their effects on nesting birds, has constructed and installed nesting rafts that are unaffected by water levels. A variety of substrates (vegetation and sand) were added to the rafts, as well as rocks of various sizes, turf grass, branches, and other cover objects, in hopes of attracting a number of nesting waterfowl and shorebirds species. Eight 36” x 60” rafts were deployed in 2012; twelve 16” x 30” rafts in 2013; and eight 4’x10’ rafts (Figure 1), in various configurations,

Eco Services operates the tide gates on Peyton Slough with the primary goal of watering a downstream pickleweed (*Salicornia* sp.) mitigation site (South Marsh) on the north side of Waterfront Road. As it has since 2013, MVSD supplied annual water-level data in McNabney Marsh to Eco Services, which used the data to determine the extent and duration of tide gate operations suitable for watering South Marsh without impacts to nesting birds in McNabney Marsh. Using the 2013 and 2014 nesting season experiences as a guide, Eco Services and MVSD elected to maintain water levels below 2.5 feet (measured using the staff gauge at the East Channel tide gate) with no mandated minimum water level. This was expected to help reduce the amount of gate manipulation required. It was noted, however, that water levels held below 1.9 feet for prolonged periods of time attracted birds to lower elevations for nest site

Figure 1. A large raft, comprised of four, 4'x 10' single rafts and covered with sod, was moved into the south end of McNabney Marsh in February 2015.



selection, increasing the incidents of nest flooding. It was determined that this condition should be avoided to the extent possible. It was also noted that water levels above 2.8 feet were equally undesirable, as they flooded Waterfront Road and other infrastructure.

METHODOLOGY

The Wildlife Project initiated survey efforts during year five 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 2011–2014) and conducting field surveys for nesting activity throughout the Marsh in 2015.

Surveys used three pre-established transects and four pre-established 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 2).

Figure 2. Location of 3 transects and 4 observation points used to document migratory bird nesting in McNabney Marsh, Martinez, CA.



Observation points were located in associated areas, and a spotting scope was used to scan larger areas for nesting birds and for breeding and nesting behavior.

Surveys began in mid-March 2015 and were conducted every other week through August 3, 2015. Transects and observation point surveys were organized in such a way that all data could be collected before noon each 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 continued 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 gauge was checked once or twice on most days throughout the season by MVSD staff and reported to Eco Services 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 gauge numbers reported here have not been correlated to any known elevation metric and are simply treated as relative levels.

RESULTS

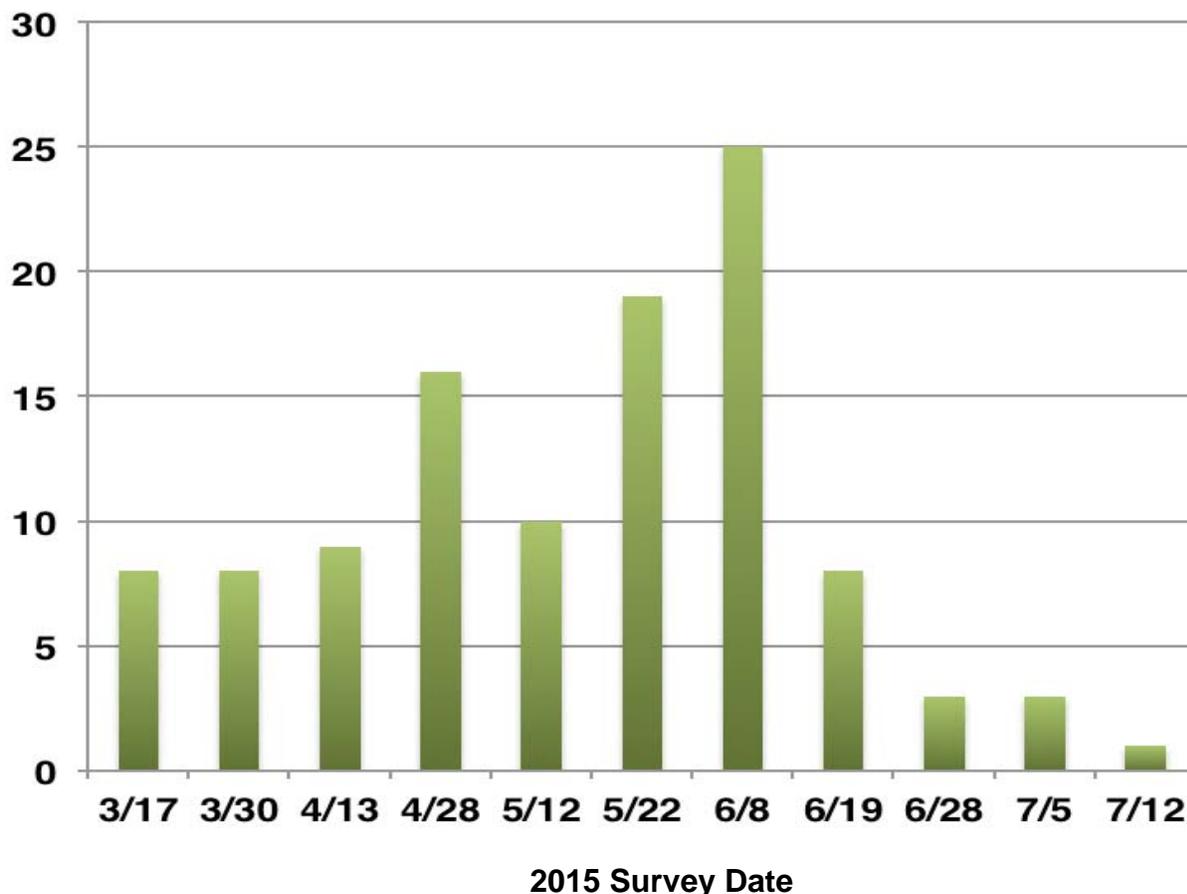
Field surveys began after the first detected nest was reported. Transects surveys were conducted from March 17 to July 12, 2015, resulting in an average of 23 species observed per survey (range = 18–29). Total numbers of individual birds ranged from 189 to 287 (mean = 241/survey).

This count was approximately 80 percent of the average number of birds observed in 2014. Nesting was initially observed on March 17, 2015, with Canada Goose (*Branta canadensis*) and Suisun Song Sparrow (*Melospiza melodia maxillaris*) being the earliest nesting species observed. Nesting activity peaked in early June; approximately four weeks later than in 2013 and two weeks later than in 2014 (Figure 3).

Seven ground-nesting species were observed nesting during the 2015 season: Canada Goose, Mallard (*Anas platyrhynchos*), Cinnamon Teal (*A. cyanoptera*), Gadwall (*A. strepera*), Killdeer (*Charadrius vociferous*), Black-necked Stilt (*Himantopus mexicanus*), American Avocet (*Recurvirostra americana*), and Suisun Song Sparrow. Six additional species that regularly nest in the Marsh were also observed: Barn Swallow (*Hirundo rustica*), Tree Swallow (*Tachycineta bicolor*), Marsh Wren (*Cistothorus palustris*), Black Phoebe (*Sayornis nigricans*), San Francisco Common Yellow-throat (*Geothlypis trichas sinuosa*), and Red-winged Blackbird (*Agelaius phoeniceus*). The composition of nesting species in 2015 was similar to that in 2014, with the exception of a conspicuous decline in Great-tailed Grackle (*Quiscalus mexicanus*), a normally common nester in emergent vegetation in the Marsh.

The first observed chicks were recorded on April 28 (Canada Goose) and the last chicks observed were from anecdotal surveys on August 3 (Black-necked Stilt). At least 17 chicks reached the fledgling stage during the 2015 survey period (Figure 4).

Figure 3. Observations of active nests detected during surveys for nesting birds in McNabney Marsh, Martinez, CA, 2015.

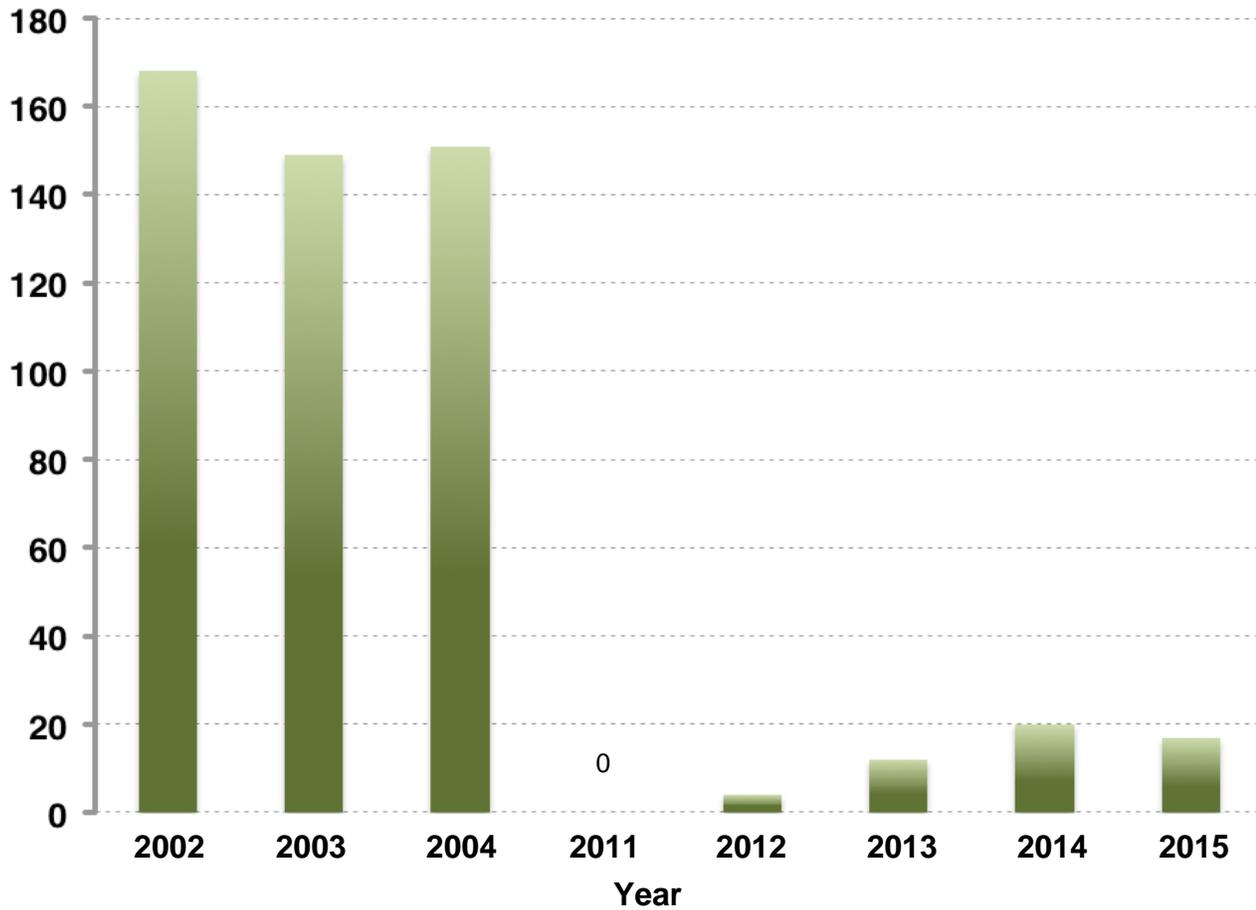


DISCUSSION

The 2015 nesting season for migratory birds in McNabney Marsh appeared to begin the last week of March—similar to 2013 and 2014, but approximately one week earlier than in the 2011 and 2012 nesting seasons. In that field surveys began after the first detected nest was reported, and noting that nesting activity in the general region initiated earlier (mid-March) than what we observed in the Marsh, we speculate that the birds in the Marsh likely also initiated nesting activity in mid-March, undetected by monitors.

Our surveys focused primarily on ground-nesting birds that might be impacted by hydrologic management changes. Water level control in 2015 improved greatly from previous years; an improvement attributable to Eco Services changing one of the three flap gates to a sluice gate in XXXX, which offered more predictable control over water levels. (A second flap gate was

Figure 4. Number of observed fledglings in McNabney Marsh 2002–2004 and 2011–2015.



changed to a sluice gate in October 2015, which may help manage water levels in 2016.) Notwithstanding improvements, at least four days were reported on which water levels exceeded the 2.3-foot level (the optimal level from 2013), although zero days exceeded 2.5 feet. (It was noted on several days, however, that water levels had likely exceeded 2.5 feet during overnight high tides, judging by leftover debris [duckweed] found on the staff gauge the following morning.) Surveys in 2015 did not detect a single nest flooded—but then again, data showed that nearly all shoreline nesting has ceased at the Marsh, suggesting that birds may have learned to avoid flooding by abandoning that habitat. The elimination of nest flooding is an apparent improvement over 2014 and 2013, when 50 and 75 percent, respectively, of nests succumbed to flooding, but it actually represents a significant loss in appropriate and historic habitat.

We observed a dramatic decrease in two species that we have monitored in the last five years: Great-tailed Grackle and Marsh Wren (although Marsh Wren is not a ground-nesting bird, and therefore not a bird for which nests were counted) We noted a near-elimination of emergent vegetation along the fixed transects and a corresponding decrease in nesting habitat and nesting activity of these two species within our survey areas in McNabney Marsh. This is almost certainly due to changes in water quality (increases in salinity) that have transformed the Marsh

into an unfavorable site for emergent vegetation (i.e., *Typha*, *Schoenoplectus*, *Phragmites*, etc.), and consequently a habitat unsuitable for Marsh Wrens and Great-tailed Grackle to nest in.

Both Ridgway's (= Clapper) (*Rallus obsoletus*) and Black Rails (*Laterallus jamaicensis*) have also been known recently and historically to nest in McNabney Marsh. The significant reduction in emergent vegetation in the Marsh is likely affecting their numbers in the survey area. If increases in emergent vegetation occur, both Ridgway's and Black Rails may again utilize the site. Presence of these species should be considered possible.

Anecdotal follow-up surveys and scheduled nesting bird surveys indicated that nesting activity declined in the second week of June and ended by late July. Based on surveys conducted in 2002–2004, the normal decline in nesting would be expected to occur approximately late June or early July; however, some inter-annual variability is expected. At least 17 fledglings were observed in McNabney Marsh in 2015—a decrease from 2014 and no more than 11 percent of the levels from 2002 through 2004, when surveys indicated that fledglings from eight species were observed during May and June (Canada Goose, Mallard, Northern Pintail, Cinnamon Teal, Gadwall, Killdeer, Black-necked Stilt, and American Avocet). The 17 fledglings observed in 2015 were of five species: Canada Goose, Mallard, Cinnamon Teal, American Avocet, and Black-necked Stilt.

It is worth noting that on May 22, 2015, biologists detected nesting activity by Black-necked Stilts and American Avocets on several of the large-scale floating nesting rafts. This observation is significant, because Black-necked Stilts have now used rafts of various sizes for the last three years. American Avocets did not use the small nesting rafts in previous years, but several pairs did use the larger rafts in 2015 (Figure 5). Artificial nesting substrate appears to be increasing the potential nesting sites for these two shorebird species, which would otherwise likely number at or near zero in McNabney Marsh (Table 1).

MANAGEMENT RECOMMENDATIONS

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

Going forward, 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. 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 (specifically, raising water levels above 2.5 feet) should be carefully controlled or avoided between early March and the end of July, in perpetuity.

Table 1. Usage and success on nesting rafts in McNabney Marsh 2013–2015. Not all rafts were used every year, and some were reused; only those used are listed below.

Year of use	Raft size	Species utilizing rafts	Result
2012	36" x 60"	Canada Goose	Nest & eggs, no fledglings
	36" x 60"	Canada Goose	Nest & eggs, no fledglings
	36" x 60"	Canada Goose	Nest & eggs, no fledglings
	36" x 60"	Canada Goose	Nest & eggs, no fledglings
	36" x 60"	Canada Goose	Nest & eggs, no fledglings
	36" x 60"	Canada Goose	Nest & eggs, no fledglings
2013	16" x 30"	Black-necked Stilt	Nest only
	36" x 60"	Canada Goose	Nest & eggs, no fledglings
	36" x 60"	Canada Goose	Nest & eggs, no fledglings
2014	36" x 60"	Black-necked Stilt	Nest, presumed fledgling
2015	4' x 10'	Black necked Stilt	Nest, presumed fledglings
	4' x 10'	American Avocet	Nest, one fledgling
	4' x 10'	Black necked Stilt	Nest presumed failed
	4' x 10'	Black necked Stilt	Nest, presumed fledglings
	4' x 10'	American Avocet	Nest presumed failed
	4' x 10'	American Avocet	Nest presumed failed

Figure 5. A 4' x 10' raft with sand substrate used by American Avocets in July 2015.



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 necessary during nesting season, develop a water regime that will protect nests without increasing stagnation in the Marsh (which might also increase algae growth and nuisance odors).
- 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 may be concluded when data suggest fledgling rates no longer fluctuate significantly from one year to the next.
- Using the East Channel staff gauge or other acceptable means, conduct daily water-level monitoring in McNabney Marsh in conjunction with annual migratory nesting bird surveys.
- Continue to add 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.