

**HERON AND EGRET MONITORING RESULTS
AT MARIN ISLANDS NATIONAL WILDLIFE REFUGE:
2019 NESTING SEASON**

A Report to the San Pablo Bay National Wildlife Refuge



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INTRODUCTION

Audubon Canyon Ranch (ACR) has been monitoring the number of nesting herons and egrets at Marin Islands since 1979, and the annual reproductive success of Great Egrets and Great Blue Herons there since 1993. Nests are monitored annually, during repeated visits, from viewing positions on East Marin Island and by boat. This work is part of an ongoing, regional study of heron and egret colonies in the northern San Francisco Bay area (Kelly and Nur 2015a, b, Kelly et al. 2006).

The Marin Islands supported large numbers of nesting herons and egrets from at least as early as 1979 through 2015 (Table 1). In 2015, all the nesting Snowy Egrets and Black-crowned Night-Herons abandoned the site before completing the nesting cycle and there were substantially reduced numbers of Great Egrets and Great Blue Herons (Kelly and Fischer 2018). Since the 2016 season, West Marin Island has supported zero nesting herons or egrets, and East Marin Island has supported only small numbers of nesting Great Blue Herons. Here I present my detailed observations of heron and egret nesting activity on the Marin Islands in 2019.

METHODS

Detailed methods for monitoring the numbers of heron and egret nests and estimating reproductive success of Great Egrets and Great Blue Herons are described in Kelly et al. (2006, 2007). In 2019, I made six visits to East Marin Island in 2019 (20 March, 8 April, 7 May, 25 May, 18 June and 10 July). On each visit I circled the islands by boat (18-foot Boston Whaler or 13-foot kayak), using 10x binoculars to search all trees and shrubs for evidence of nesting herons and egrets. On each visit I also landed on East Marin Island to conduct further searches and to monitor the fates of previously-located nests (using a telescope). I followed biosecurity protocols for every landing on East Marin Island, using the provided spray bottle and boot brush at the dock to clean footwear and telescope tripod feet. I also searched all appropriate habitat for nesting Black Oystercatchers and counted the number of nesting Western Gulls (almost exclusively on West Marin Is.) from the boat and while on East Marin Island.

RESULTS AND DISCUSSION

In 2019, there were no observed nesting attempts by herons and egrets on West Marin Island. A total of 6 nest platforms were occupied by Great Blue Heron at some point during the season, but two of these were only occupied briefly early in the season and no evidence of incubation or chick-rearing was observed. The other four Great Blue Heron nests on East Marin Island reached at least the incubation stage. This is well below the number of nests when Great Blue Herons also nested on West Marin Island, but similar to recent years when they only nested on East Marin Island (Table 1). In 2019 at least two nests successfully fledged young; these confirmed successful nests fledged a total of three chicks between them. It is likely that a third nest also fledged at least one chick. This nest was not located until 18 June, late in the nesting cycle. On this date I heard calling chicks from the vicinity while ashore on East Island; I could not locate the nest visually from the island this day but upon reboarding the boat I was able to locate an adult Great Blue Heron on a platform but not count chicks. The following visit (10 July) the nest was empty but by this date most Great Blue Heron nests in our region have fledged. The fourth Great Blue heron nest apparently failed after being incubated for at least five weeks (normal incubation duration is 28 days). Overall nest success by Great Blue Herons on East Marin Island was 75%, and productivity was 0.75 chicks/nest.

I detected no evidence of Black Oystercatcher nesting on West or East Marin Island, although one – five individuals were seen on every visit, often in pairs. I counted a peak of 22 Western Gull nests along the grassy south- and west-facing slopes of West Marin Island. There was an additional Western Gull nest on the piling just off the eastern shore of East Marin Island. I did not observe any eggs or nestlings in any of these nests.

Table 1. Annual number of active heron and egret nests on East and West Marin Islands based on early-June counts conducted by boat and from East Marin Island, 1979-2019.

Year	Great Egret	Snowy Egret	Black-crowned	Great Blue
1979	58	262	98	0
1981	75	325	109	0
1982	187	500	80	0
1983	190	345	89	0
1984	139	347	54	0
1985	84	161	79	0
1986	160	126	40	0
1987	89	239	41	0
1988	77	212	35	0
1989	79	245	61	0
1990	119	300	37	1
1991	90	277	45	2
1992	189	220	30	1
1993	120	98	41	0
1994	163	8	32	2
1995	172	16	18	2
1996	148	36	22	3
1997	167	119	24	5
1998	155	117	53	7
1999	101	84	47	8
2000	134	156	50	9
2001	94	217	26	7
2002	121	204	64	7
2003	81	103	51	10
2004	83	59	29	12
2005	161	91	44	12
2006	126	116	41	9
2007	60	43	21	10
2008	52	132	40	6
2009	64	175	63	9
2010	64	102	31	8
2011	61	89	48	10
2012	53	121	26	8
2013	42	59	11	10
2014	36	94	26	6
2015	26	0	0	5
2016	0	0	0	1
2017	0	0	0	4
2018	0	0	0	8
2019	0	0	0	4

Disturbance by humans and nest predators

A pair of Common Ravens was apparently nesting on East Marin Island in 2019. As noted in previous reports (e.g. Kelly and Fischer 2018), the occasional, opportunistic predation of heron and egret nests by ravens is unlikely the primary cause of the widespread nest failure and abandonment observed in 2016. In 2019 I observed no evidence that ravens disturbed Great Blue Heron nesting attempts.

On multiple surveys I observed small power boats, kayaks or sailboats close to the islands, often fishing near the islands and crossing the channel between the islands (Figs 1-3). I did not observe direct, acute disturbance to nesting Great Blue Herons or any other birds as a result of these events. However, regular human presence close to the islands may cause chronic disturbance that could reduce the likelihood of herons and egrets, or other birds, nesting on the islands.

Figure 1. Power boat crossing at speed between East and West Marin Islands, 8 April 2019. Several nesting Western Gulls are visible on West Marin Island.



Figure 2. Boat fishing near East Marin Island, 8 April, 2019.



Figure 2. Boat fishing near West Marin Island, 8 April, 2019.



I observed scat on the wharf at East Marin Island that appeared to be raccoon scat, composed primarily of invertebrate exoskeletons. Raccoons are a potential nest predator of heron and egret nests. I did not observe any evidence of predation on Great Blue Heron nests in 2019.

As noted in previous reports, I advise against attempts to lure herons and egrets back to nest Marin Island using artificial means such as decoys. Decisions by the birds to nest elsewhere might be adaptive and luring them back may create a scenario where the islands appear to be suitable for nesting when in fact they are not. However, efforts to reduce the possible impacts of potential nest predators or human intrusion might interact with the natural tendency of these species to return to traditional colony sites, such as the Marin Islands, increasing the chance of recolonization in spite of previous disturbance (Kelly 2014). Reducing human presence near the islands during the beginning of the breeding season (Feb-Apr) could reduce the chance of birds prospecting for nest sites being dissuaded from nesting at Marin Islands.

Overall, the Main Islands remain an important nesting location for Great Blue Herons, which often nest in colonies of less than 10 nests. Continued management of the Marin Islands in their current, restricted access status is likely to continue to be beneficial to multiple bird species in this highly urbanized landscape.

Other bird species

While monitoring the heron and egret colonies at the Marin Islands, I opportunistically observed the presence of other bird species, on or within 200 feet of the Marin Islands (Table 3). I found one Canada Goose nest being incubated on East Marin Island, but I was not able to determine its fate.

Table 3. Bird species observed on or within 200 ft. of the Marin Islands.

	8 April	7 May
Canada Goose	x	x
American Widgeon	x	
Mallard		x
Bufflehead	x	
Great Blue Heron	x	x
Osprey	x	x
Black Oystercatcher	x	x
Spotted Sandpiper		x
Western Gull	x	x
Anna's Hummingbird	x	x
Allen's Hummingbird	x	x
Bewick's Wren	x	
Common Raven	x	x
Tree Swallow		x
Song Sparrow	x	x
Bushtit		x
House Finch	x	x

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