A fine scale census of herons and egrets on Bolinas Lagoon

Local Values

by Emiko Condeso

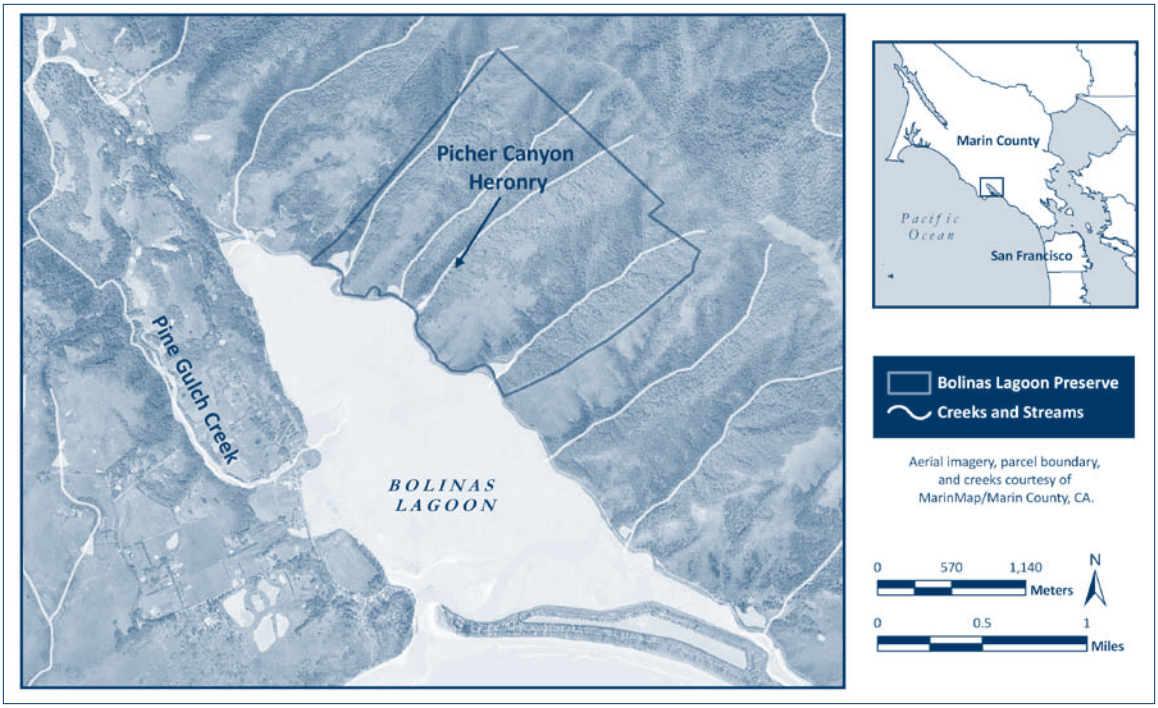

Figure 1. Bolinas Lagoon and vicinity.

In the afternoon light, the expanse of Bolinas Lagoon is a mirror whose surface is broken by exposed mudflats and rafts of floating waterbirds. The water ranges from shallow, to deep and salty, to brackish, providing a wide variety of habitats for wildlife. More often than not, herons and egrets can be seen in the shallows, foraging singly or in groups. During the breeding season, one of the largest and longest-lived heron and egret nest sites in the Bay Area can be found on the northeast shore of the lagoon at Picher Canyon, Audubon Canyon Ranch (Figure 1).

For more than 40 years, researchers at ACR have monitored the Picher Canyon heronry, using a meticulous, twice-weekly field protocol to obtain measures of colony size and reproductive success. These and other data have contributed to the recognition of Bolinas Lagoon as a wetland of international importance by the Ramsar Convention (see Ardeid 2006). Although the heronry is intensively studied, we have only just begun to examine how these birds utilize the lagoon itself. Because nesting herons and egrets tend to restrict their foraging to wetlands close to their nest sites (Kelly et al. 2008), Bolinas Lagoon is more than simply a beautiful sight—it is critical habitat upon which the reproductive success of the heronry depends.

Understanding the patterns of wading bird use of the Bolinas Lagoon will greatly enhance our ability to address local management concerns and also help to develop a more general understanding of how herons and egrets use the wetland landscape. Previous work by PRBO Conservation Science shows that numbers of herons and egrets on the lagoon have fluctuated over time (Shuford et al 1989). However, we do not yet understand the extent to which heron and egret abundance and distribution in the lagoon varies in relation to fine-scale characteristics of habitat. To address this question, and to augment a separate investigation of heron and egret foraging behavior, researchers at ACR conducted standardized censuses of Great Egrets, Great Blue Herons, and Snowy Egrets on the lagoon. From specified locations along the shore, they used binoculars and telescopes to identify the species and locations of all wading birds on the lagoon. Each one-hour census took place on a medium tide (2.5–3.5′ above mean lower low water). We noted whether observed birds were solitary or in groups, whether they were in a foraging or non-foraging posture, what type of habitat they were in (emergent vegetation, upland, mudflat, etc.), and the depth of the water relative to the birds' legs. The specific location of each individual or group was recorded on an aerial photo. These data were then entered into a Geographic Information System (GIS) for analysis.

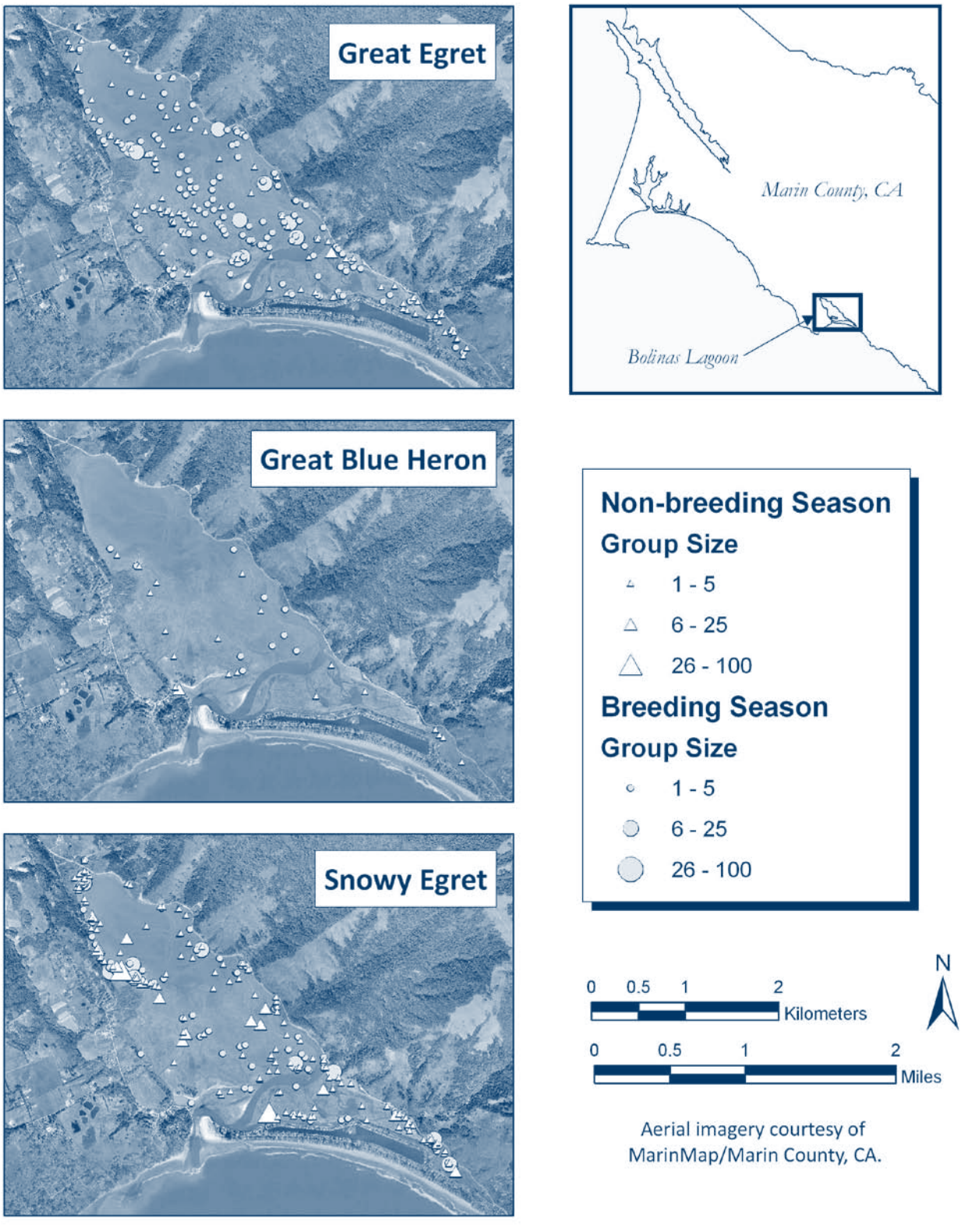

Figure 2. Distribution of herons and egrets on Bolinas Lagoon in the non-breeding (triangles) and breeding (circles) seasons (August 2005 to February 2006 and March–July 2006, respectively). The sizes of symbols represent the number of individuals in a group of foraging birds (group diameter ≤ 100 m). This figure represents cumulative use of the lagoon by these species over one calendar year and does not represent the number of birds observed at any one point in time.

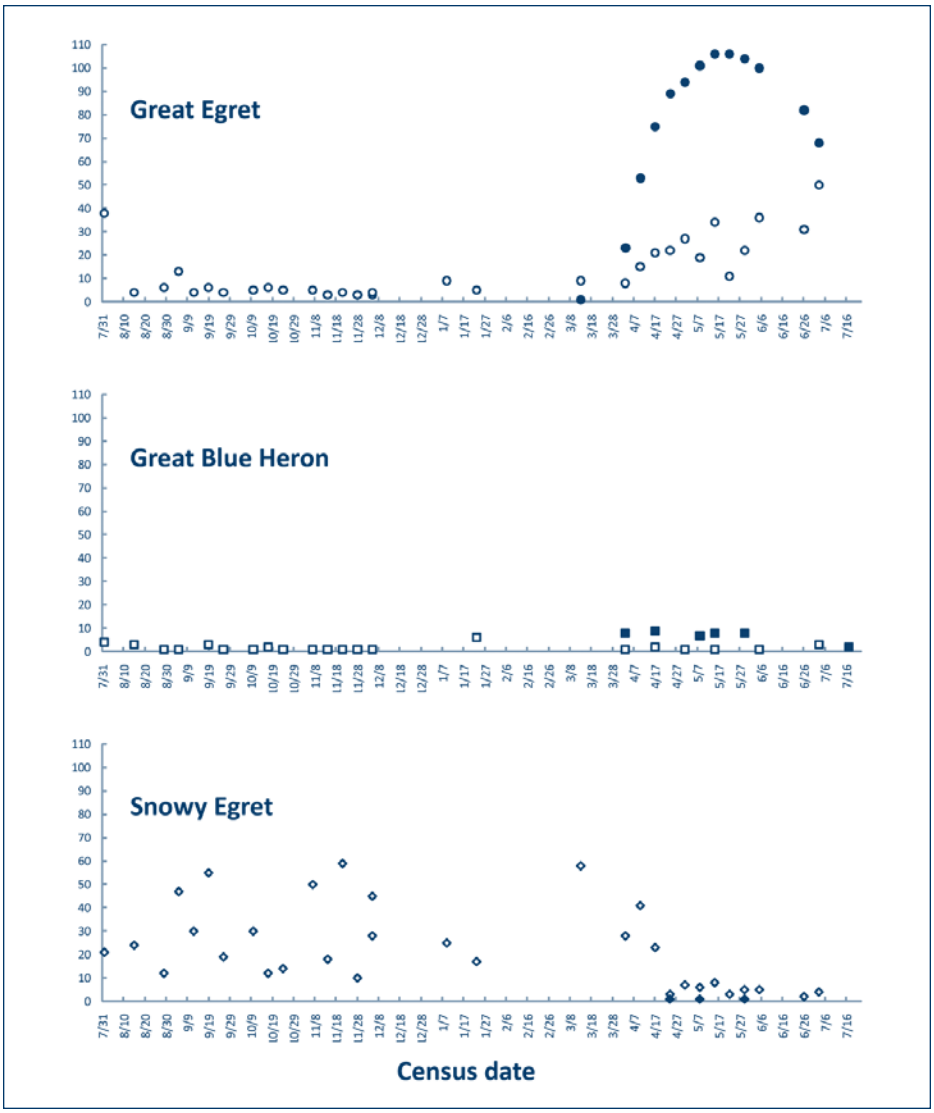

Figure 3. Abundance (open symbols) of Great Egrets, Great Blue Herons, and Snowy Egrets on Bolinas Lagoon and the number of nests (filled symbols) of each species observed at the Picher Canyon heronry, Audubon Canyon Ranch, by census date (August 2005–July 2006).

Great Egrets are a constant presence on the lagoon during the non-breeding season, typically numbering less than ten individuals at any given time (Figure 2). During the breeding season, however, the number of Great Egrets observed on the lagoon increases dramatically. This increase is consistent with the number of active nests at Picher Canyon. Great Blue Herons are not as abundant as either Great Egrets or Snowy Egrets on Bolinas Lagoon, nor do they nest in great numbers at Picher Canyon (Figure 2). Colonies of Great Blue Herons are typically small throughout the Bay Area (Kelly et al. 2006). Snowy Egrets have thus far been only occasional nesters at Picher Canyon; however, they make great use of the lagoon during the non-breeding season. During our census periods as many as 60 Snowy Egrets were observed on the lagoon at once (Figure 2). Snowy Egret use of the lagoon drops off sharply after the onset of the breeding season, when they are presumably tied to foraging areas closer to their breeding sites (Figure 2; Kelly, 2008).

During both the breeding and non-breeding seasons, all species tended to congregate at creek deltas and slough margins. Great Egrets are more widely distributed throughout the lagoon than the other species observed, which may be related to their abundance and foraging behavior (Figure 3). We recorded Great Egrets in the center of the lagoon and the area south of the mouth of Pine Gulch Creek (Figure 1), places both Great Blue Herons and Snowy Egrets tended to avoid. During our study period, Great Egrets foraged individually or in small groups. Great Blue Herons were seldom found in groups, and they favored the Pine Gulch Creek delta, the area around Kent Island, and the east shore of the lagoon near the channel (Figure 3). This is consistent with their solitary nature and a few studies suggesting that Great Blues tend to return to specific feeding areas (e.g., Dowd and Flake, 1985). During the non-breeding season, large groups of Snowy Egrets also concentrated in areas of the lagoon where fresh water drains into the estuary, such as the mouth of Pine Gulch Creek. Individuals and small groups of Snowy Egrets were found in most of the shallower parts of the lagoon. During the breeding season, Snowy Egrets foraged in smaller groups or alone, though groups of 5–10 birds could still be found.

Though extensive use of Bolinas Lagoon by herons and egrets is well known, understanding and quantifying what makes habitat in this estuary preferable is actually quite difficult. The information presented here is part of a work in progress, and areas of the lagoon with relatively little observed use may still be very important to the birds at times when they were not observed. Precisely what is needed to support healthy populations of herons and egrets is a question often asked of conservation biologists, yet supportive data are usually lacking. ACR has begun to address this question for Bolinas Lagoon, and it is our hope that future work will allow us to develop a more general understanding of these species' habitat needs. Ultimately, such information may be important in evaluating and protecting wetland quality wherever herons and egrets occur.

References cited

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