

Applied Studies Question #17: Will landside public access significantly affect birds or other target species on short or long timescales?

Background

Project Objective #3 states that the South Bay Salt Pond Restoration Project will provide public access opportunities compatible with wildlife and habitat goals. The FWS and DFG are dedicated to providing high-quality recreational opportunities as part of the Restoration Project. However, the potential for conflict exists between the goals of restoring and managing habitat for wildlife (Objective 1) and providing public access (Objective 3) (DeLong 2002). Researchers agree that breeding birds are very sensitive to human disturbance, whether the disturbance is from trail use, boats, or research (Carney and Sydeman 1999). In their review of human disturbance of nesting colonial waterbirds, Carney and Sydeman (1999) found scientific research and visitors (recreationists and ecotourists) had a range of impacts on a number of nesting species. Studies of landside recreational activities and non-breeding shorebirds, waterfowl and colonial waterbirds show that bird responses vary based on a number of factors, such as proximity of approach, directness of approach, species, time of year, habituation, location, speed of movement, and type of recreational activity. Direct approaches by people on foot are very disruptive causing flight and reduced foraging times in a many shorebird species compared with undisturbed birds (Thomas, et al. 2003, Burger and Gochfeld 1993). Burger and Gochfeld (1991) also found that pedestrians always disturbed shorebirds if they approached birds directly, but there was no significant disturbance from walkers a path. Some species are more sensitive than others. Pease et al. (2005) and Klein, et al. (1995) found that ducks exhibited significant negative responses to birding, walking and bicycling. Other studies (Josselyn et al., 1989; Rodgers and Schwikert, 2003) have found that larger birds flush at much greater distances in response to human presence than smaller birds. Gill et al. (2001) studied the abundance of black-tailed godwits (*Limosa limosa*) at four coastal estuaries in England and found no effect of human activities, including footpath use, on bird numbers. Habituation is also an important factor. For example, Ikuta and Blumstein (2003) found birds were significantly more sensitive to disturbance at the low human use sites, suggesting birds became habituated to humans in the high traffic areas. In their study of trail use effects around the San Francisco Bay, Trulio and Sokale (in review) found, overall, no consistent difference in bird numbers, species richness or foraging behavior of between trail and non-trail sites dominated by shorebirds at three locations around the San Francisco Bay. Tangential trails with no fast or loud vehicles and the dominance of small shorebirds may have contributed to these results.

The literature indicates a need for these specific studies:

1. What is the effect of trail use on waterfowl? Many trails are planned adjacent to ponded habitat, but we have no information on how waterfowl might respond to those trails.
2. What is the effect of trail use on California clapper rails? We also have no data on the effects of trail use on California clapper rail habitat use and breeding. Wildlife agencies assume the effect is negative, but there are no data to support that assumption.

3. At what distance should nesting islands be placed from trails for various species to avoid impacts? Nesting birds are very sensitive to human disturbance, but the distance at which that impact is negligible is unknown.
4. What is the response of shorebirds at sites before trails exist compared to after they are opened? Studies of shorebird response to trails before and after trails are introduced would add to our knowledge of trail effects on shorebirds.

Study Design Concepts

1. What is the effect of trail use on waterfowl?

- Study Population and Sites: Waterfowl in the South Bay, especially those in ponds designated for public access, as well as at non-public access sites.
- Parameters Measured: Bird buffer distances, sustained changes in abundance and/or species richness, impacts to bird survival, availability and quality of impacted and nonimpacted habitat
- Study Design: For buffer distances, study the distances birds are distributed from levees not used for public access and those that are. Calculate the amount of area that is impacted, i.e. from which birds are excluded, when disturbed by people.
- Time Frame for Study: 1-2 years
- Estimated Study Cost: Tentative cost estimate: \$20,000. This study is underway by Heather White, Master of Science Student, Environmental Studies Department, San Jose State University.

2. What is the effect of trail use on California clapper rails? This study would need to be designed in conjunction with US Fish and Wildlife Service Refuge and Endangered Species staff.

3. At what distance should nesting islands be placed from trails for various species to avoid impacts? See Pond A16/SF2 experiment for this design.

4. What is the response of shorebirds at sites before trails exist compared to after they are opened? See Pond E12/13 experiment for this design.

Management Options

Findings will be used to design public access so that it does not have significant impacts on the target species. Design may include keeping public at an appropriate distance from wildlife, permitting only certain recreational activities, excluding public access with significant impacts altogether, or allowing public access with significant impacts in certain proscribed areas while maintaining large refuges with no public access.

Citations

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