# Wildlife Habitat Analysis for Alcatraz Island, Golden Gate National Recreation Area, California

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In 1989, the San Francisco Bay encompased 1,419 $Km^2$. Historically, fill and development have reduced the bay by 30% (601 $Km^2$), reducing the wetlands and wildlife habitats proportionately. If this trend continues, parks, historical sites and other protected areas become more important to maintain populations of native species in the urban context. Through the analysis of wildlife habitat on Alcatraz, we planned to demonstrate the value of geographic information system (GIS) methodology as an analytical tool for micro site analysis. Alcatraz Island encompasses 9.1 ha (22.5 acres) in the middle of San Francisco Bay. The island is a National Historic Landmark, managed by the National Park Service as part of the much larger (3,036 ha) Golden Gate National Recreation Area, California.

Wildlife observation databases had 3344 records including 2339 records with locational information. A total of 108 bird species were observed on Alcatraz from 1980 to 1990. One amphibian and one mammal species inhabit the island. From the 1985 wildlife habitat map 39% (3.55 ha) of the island was classified as concrete. Fifteen sublocations were identified on the island comprising 6.81 ha of wildlife habitat. The current trail system covers 0.73 ha, 8% of the island surface. A proposed trail would cover 0.45 ha, 5% of the island surface. Modelling with a geographic information system (GIS) showed that a 17% reduction of existing habitat could result for species activity and richness. The proposed trail could potentially reduce black-crowned night heron habitat by 0.68 ha, 8.4% of the island surface, but 22% of existing heron habitat.

Several management recommendations were made to protect wildlife values on Alcatraz. It is important to manage the island as a dynamic system with an ever changing species composition and to not preclude through management actions the natural colonizations and extinctions that would occur on the island. However, total size of the island, effective size and carrying capacity will remain the major constraints to wildlife diversity on Alcatraz.