

Avian Community Response to a Golf Course Landscape Unit Gradient

David H. Gordon
Clemson University

Objectives:

1. Determine the composition and species richness of avian communities occupying a gradient of golf course landscape units and habitat types located along the South Atlantic coast during the breeding season.
2. Examine the influence of landscape context and characteristics of golf course on the composition and species richness of avian communities.
3. Produce a technical publication with management and design recommendations, brochure, and color poster targeted at golf course stakeholder groups.

Start Date: 1998

Project Duration: 3 years

Total Funding: \$61,301

Although golf course construction significantly alters the natural wildlife habitat matrix, the post-construction complex of remnant, disturbance, and introduced habitat patches can provide valuable habitat for avian species including neotropical migrant land birds.

Golf courses are typically planned and constructed as an integral component of private unit residential developments. Thus, the golf course landscape unit consists of the course itself (fairways, greens, rough, and out-of-play areas), areas occupied by human habitations, and relatively undisturbed managed and/or natural areas.

Management of this landscape unit is influenced by independent and joint actions of course operators and property owner associations. Both parties have a vested interest in maintaining an aesthetically pleasing tract of "green space" often with a coincidental interest in wildlife values.

This project is assessing the value of golf courses to breeding bird species by evaluating how birds occupy golf courses with different designs and habitat configurations. Cooperators include participating golf courses, Clemson University, U.S. Fish and Wildlife Service, South Carolina Cooperative Fish and Wildlife Research Unit, South Carolina Turfgrass Foundation, and Winyah Bay Focus Area Task Force.

The two-year study is being conducted on golf course developments located along



Establishing and maintaining native areas within the golf course property will help provide habitat for migrating birds.

the upper coast of South Carolina near Myrtle Beach. The area has over 100 courses and the highest density of championship-yardage golf courses in the world. A sample of golf courses was selected for study representing a landscape modification gradient ranging from highly altered sites with limited habitat to sites with less alteration and the highest habitat value.

Meetings were held with golf course superintendents to: 1) discuss and plan the design of the study, 2) insure collection of information relevant to golf course management for practical application of study results, and 3) plan field sampling techniques to avoid conflicts with normal golf course activity and play.

Election of study sites was accomplished through a combination of field visits and

examination of color-infrared aerial photography. Habitat or vegetation features of each golf course were determined using GIS technology integrated with remote sensing and image analysis technology to further analyze photography. Habitat features include the composition, size, shape, type, number, heterogeneity, and boundary characteristics of vegetation patches occurring on golf courses.

During May and June, breeding birds on each golf course are surveyed using a random sample or fixed station point counts plotted on maps produced from color-infrared aerial photos.

During 2000, a total of 301 bird point counts were conducted on 12 golf courses along the north coast of South Carolina. The number of bird species per golf course ranged from 36-49 and the total number of birds ranged from 170-620 per course. Eighty-five bird species were detected of which 27 were neotropical migrants.

Summary Points

- Selection of study sites was accomplished through a combination of field visits and examination of color-infrared aerial photography.
- Habitat or vegetation features of each golf course were determined using GIS technology integrated with remote sensing and image analysis. Habitat features include the composition, size, shape, type, number, heterogeneity, and boundary characteristics of vegetation.
- A total of 301 bird counts were conducted on 12 golf courses along the north coast of South Carolina. Eighty-five bird species were detected of which 27 were neotropical migrants.