Golf Courses as Hotspots for Biodiversity in the Desert Southwest

Michele Zwartjes
US Forest Service

Objectives:

1. Evaluate the possible role of golf courses in mitigating the loss of riparian habitats for resident and migratory birds.
2. Determine how the type and distribution of vegetation on golf courses may influence its value as habitat for resident and migratory birds.

Start Date: 2000
Project Duration: 3 years
Total Funding: $86,400

Riparian systems serve as critically important wildlife habitat in the desert environment and are also one of the most endangered ecosystems in the western U.S. With permanent water sources and vegetation that is similar in composition and structure to that of riparian systems, golf courses in the Southwest may provide important habitat for wildlife that normally utilize riparian systems. The goal of this study is to determine the importance of golf course habitats in the desert Southwest for breeding, wintering, and migratory birds. We also want to determine which components of the golf course habitat are correlated with bird abundance and species richness in order to provide future direction for managers in improving quality avian habitat on their courses.

Ten study sites were involved in this research project, five golf courses and five natural reference sites, all situated in the area of Albuquerque, New Mexico. Each course is paired with a natural reference site, an area of nearby open space that as closely as possible represents the habitat that existed at each course site prior to the construction of the course. A comparison of the two sites will provide information on how the avian community has been altered by the introduction of the golf course. Bird surveys, by point counts, were conducted at each site once a month over a period of two years. The abundance and productivity of cavity nesting birds was measured at a subset of the sites using nest boxes over the same time period.

Preliminary results indicate that golf courses in the desert environment may provide important habitat for resident and migratory birds.

Quantitative measures of the vegetation at each site-measures such as tree and shrub density, canopy cover, and vertical foliage volume–have been completed. Both vegetation and surrounding land use will also be assessed using aerial photography and GIS (Geographical Information Systems) technology. Our aim is to pinpoint those features of the golf course landscape that provide quality habitat for both resident and migratory birds.

Preliminary analysis of the results from the bird surveys indicates the species composition on golf courses is significantly different from that of the natural reference sites. Many of the bird species observed were found only on the golf course sites, and never on the reference sites. Most often bird species unique to the golf courses were birds often associated with riparian zones, such as yellow warblers, indicating that golf courses in the desert may indeed play some role as surrogate riparian areas. However, there were also native specialists, such as black-throated sparrows, that were found on the reference sites, but never on the golf courses.

Several of the golf courses had significantly greater numbers of birds than their paired reference sites. This data is now being analyzed to weight the various species observed according to whether they are widespread, common, or introduced species (such as grackles or house sparrows) or more "desirable" native birds with more local distributions. With one exception, birds using the nest boxes on golf courses tended to be exotic species, whereas nest boxes on the paired reference sites were local natives.

Several of the golf courses had significantly greater numbers of birds than their paired reference sites.

As we finalize data analysis, our goal is to be able to provide specific recommendations on how to best manage the vegetation and water sources on golf courses to increase native avian diversity. As native birds are important indicator species, improvements to increase avian diversity on courses should serve to increase overall native biodiversity, as well.

Summary Points

- Preliminary results indicate that golf courses in the desert environment may provide important habitat for resident and migratory birds, and especially those species that tend to be associated with riparian areas. Several of the courses in this study have significantly greater avian abundance and species diversity than their paired reference sites. However, the golf courses also tend to attract a large number of cosmopolitan and/or exotic bird species.
- Final analysis of the data will be utilized to provide specific recommendations to how best to manage various features of the golf course landscape to improve habitat quality for native birds, resulting in increased avian diversity, as well as overall native biodiversity.