

Enhancing Amphibian and Reptile Biodiversity on Golf Courses Through Use of Seasonal Wetlands

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Objectives:

1. Collect census data and conduct experiments related to amphibian and reptile use of seasonal wetlands and compile results into a wetland design and management plan for existing and future golf courses.

Start Date: 1999

Project Duration: 2 years

Total Funding: \$46,922

In the second year of our study, we continued sampling the amphibians and reptiles that use wetland habitats on golf courses in the Central Savannah River Area (CSRA) of South Carolina and Georgia.

We compared these survey data from golf courses to species surveys at nearby (off-course) seasonal wetlands. In addition, two of the courses sampled have on-course seasonal wetlands which allowed us to compare amphibian diversity on these courses to the other three courses that do not have seasonal wetlands.

We continued to make progress on the literature compilation, unpublished database search, statistical model formulation, and development of educational products. Most of our efforts this past year were focused on field sampling, however. In the coming year, two to three additional courses will be sampled.



Researchers at the Savannah River Ecology Laboratory discuss how reptiles and amphibians are reared in the laboratory.



Several small frog species need seasonal wetlands that do not contain fish or larger frogs and toads that prey upon them.

Although sampling is not completed, some trends are evident from our data. An overall comparison of amphibian species numbers on golf courses relative to off-course seasonal wetlands reveals that fewer species inhabit the golf course landscape (14 species versus 21 at comparison wetlands).

The difference between the two landscapes results largely from the paucity of seasonal wetland amphibian species on golf courses. Fourteen seasonal wetland species were captured at off-course wetlands, and only five were found on golf courses. A similar pattern emerges when comparing courses with and without seasonal wetlands.

Our data documented that most of the wetlands we sampled on golf courses harbored large populations of numerous fish species, and consequently these same wetlands contained very few amphibian species. A greater variety of amphibian

species was found in both on-course and off-course seasonal wetlands compared to permanent lakes and ponds.

Our sampling of golf courses thus far indicates that: 1) permanent wetlands are far more numerous than seasonal wetlands on courses, 2) the permanent wetlands on courses harbor large numbers of fish species, 3) amphibian species that use seasonal wetlands are generally absent from golf courses, and 4) courses that have seasonal wetlands have different amphibian species present than those courses with only permanent wetlands.

As we continue to sample and add new courses, it is likely that these trends will

Summary Points

- Fewer species inhabit the golf course landscape compared to off-course seasonal wetlands (14 species versus 21 species at comparison wetlands).
- Most of the wetlands sampled on golf courses harbored large populations of numerous fish species and consequently these same wetlands contained few amphibian species.
- A greater variety of amphibian species was found in both on-course and off-course seasonal wetlands compared to permanent lakes and ponds.