

Par for the Course

A preliminary look at the breeding success of Tree Swallows and Eastern Bluebirds on golf courses

By TINA PHILLIPS and CAREN B. COOPER

The Birdhouse Network

There are more than 16,000 golf courses across the United States - open green areas that are attractive to aerial insectivores such as Eastern Bluebirds and Tree Swallows. In addition to feeding on insects around golf courses, cavity-nesting birds may find places to nest, thanks to the efforts of bird lovers who put up nest boxes. But are golf courses suitable for cavity-nesting birds, especially where pesticides may place them at greater risk of exposure to potentially harmful chemicals?

In 2001, The Birdhouse Network introduced the Pesticide Study to evaluate whether areas where pesticides are used, such as golf courses and agricultural fields, are good habitats for cavity-nesting birds to raise their young. The study asked participants to provide information about pesticide applications near nest boxes, in addition to data on breeding success. Given the documented negative effects of pesticides on a variety of animals, from frogs to birds to mammals, we expected that birds nesting in areas where pesticides were applied would have poorer nesting success than those in areas without pesticides, either directly from chemical-induced abnormalities or indirectly from lower prey abundance. However, a preliminary analysis of all reported habitats, including golf courses, indicates no significant differences in clutch size, brood size, or number of fledglings of Tree Swallow and Eastern Bluebirds nesting in areas with and without pesticides.

Participants collected data for the Pesticide Study between 2001 and 2004 from across the continent and reported on the nesting success of 13 cavity-nesting species. Because of the small sample sizes for many of the species, we limited this initial analysis to Eastern Bluebirds and Tree Swallows, two of the most prevalent cavity nesters inhabiting golf courses. More than 400 nest-box monitors provide information about the presence of pesticides within 100 feet of nest boxes, the type of pesticide used, the frequency and

start of application, and the crop type, if any. Participants also reported standard data on breeding, such as the date when the first egg was laid and the number of eggs, chicks, and fledglings. We limited the analysis to nest attempts with a known first-egg date, a total of 1,399 attempts for Eastern Bluebirds and 866 attempts for Tree Swallows.

When we analyzed all habitats together, we found no differences in clutch size, brood size, or number of fledglings of Tree Swallows and Eastern Bluebirds in areas with and without pesticides. In this crude analysis, failing to detect any overall negative effects of pesticide application near nest boxes is not altogether surprising, because many factors influence breed-

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ing success. For the effects of pesticides to be obvious, we must detect variation above and beyond that caused by factors such as latitude, season, and habitat. Yet, even after controlling for latitude and season, we find equal reproductive performances in areas with and without pesticides.

Habitat is an important confounding variable in interpreting results of the Pesticide Study. We looked at the reproductive performance of Eastern Bluebirds and Tree Swallows in four different habitats-agricultural areas, golf courses, parks and fields, and residential areas. We found that fledge rates and hatch rates were slightly higher on golf courses. This indicates that the larger variation arising from differences in habitat may override the smaller variation potentially created by pesticide application.

Why do golf courses appear to be such good habitats for some cavity-nesting birds-a finding noted by other researchers

as well? A recent study conducted by Dan Cristol at the College of William and Mary in Virginia examined the nesting success of Eastern Bluebirds on and off golf course and also found that overall productivity was about the same. Interestingly, in Cristol's study, golf course birds laid slightly more eggs and produced more fledglings, but also experienced more nest failures. A study by Mark Stanback at Davidson College in North Carolina found slightly, but not significantly, poorer reproductive performance of birds nesting on golf courses, with the exception of chick condition, which he found to be significantly poorer on golf courses. Although preliminary, our study spans the entire breeding ranges of

Eastern Bluebirds and Tree Swallows and corroborates the findings of the local studies by Cristol and Stanback. On golf courses in any region, some combination of currently unidentified features may override significant detrimental effects of pesticides. Stanback suggested one feature that might make golf courses partic-

ularly attractive to Eastern Bluebirds: insects might be easier to find in the short grass of golf courses than in the tall grass of hayfields.

Another reason may have to do with predation. We found that in boxes with at least one egg laid; nearly 80 percent of all nest boxes occupied by Eastern Bluebirds on golf courses were equipped with predator guards, compared with only 50-60 percent in the other habitats. We found that nest boxes with predator guards in agricultural areas, parks, and residential areas fledged more young than those without guards. We could not make a similar comparison for golf course because of the small sample size for boxes on golf courses without guards. These results underscore the importance of providing boxes with predator guards, especially in predator-prone areas such as parks. They also point to the difficulty of testing apart

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Musing the Minutes

By RICK TRAVER, CGCS
Monticello Country Club

I know it often seems like all we talk about is the weather, but yesterday another storm blew through and my daughter of eight years asked me if this was like being in a hurricane. While I was telling her it was like a hurricane except that hurricanes last for days, the realization of what an actual hurricane is like started to set in. All over our news programs the aftermath of a half-hour storm. We lost a few homes in the metro and while this is devastating to the people it happened to, the mess that the people affected by Katrina and now Rita must just be unbelievable. How blessed we are to live in the great state of Minnesota! Yeah, we have a tornado once and again or some snow and an occasional flood, but it is all much more manageable than so many of these natural disasters that seem to be on an ever increasing level in other parts of the country.

Well, you didn't read this to get my editorial on weather, so here is the latest from your MGCSA Board of Directors. We met on September 15 at the University of Minnesota. Thanks to Dr. Horgan, Dr. Watkins and Larry Vetter for the accommodations, I always enjoy visiting one of my old campuses.

Scott Turtinen reported from the business office that the MGCSA website is generating between 140 & 200 hits a day. We asked that he see if he could get some more specific numbers about time spent on the site and the pages that were hit to give a more accurate picture of who might be hitting on our web site. Scott also researched the cost of having *Hole Notes* be a 100% color publication and the increase in costs would be more than offset by the color advertising so we elected to go to a full color publication.

Turtinen mentioned that the MGCSA office has received several phosphorus coupons that were published in *Hole*

Notes. If you are not aware, the only obligation you have to renew your phosphorus training is to read the article in the September issue of *Hole Notes* and send in the Phosphorus Fertilizer re-training coupon. This will satisfy our requirement with the state.

Paul Eckholm, CGCS, reporting on the state legislature, stated that the U of M is trying to get the governor to call a special session to address a new stadium. Our hope is that if this does come to pass that the governor will have the foresight to

limit the session to one topic and not allow our legislators to tack on any extra issues and fees like the last special session.

Dr. Brian Horgan reported on the University of Minnesota. It appears we may have a building for

Turf Research. If you are familiar with the U of M St. Paul Campus. We will be getting the old Head and Green houses. This facility is no longer being used for the Ag students and the Capital Oversight Committee seems to be on board since we will be remodeling an existing building. Great News! Dr. Horgan gave us a tour and it looks like it will be a super fit to the program. We will need to generate some funds for the remodel, so if you know of an alumnus that loves golf, have we got a project for him or her.

Rob Panuska presented a letter that will be sent to the members regarding the hiring of a pathology person at the U of M. We have had a difficult time getting the U of M to replace Jon Powell after he left and it appears that an Extension/Pathologist is a possibility in the future. We need to create a groundswell among our members to send letters to the appropriate people at the U pushing for this position to have a turf focus. Keep an eye out for the e-mail, which will have addresses, contacts, etc...

Have a great month!!! - Rick

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the effects of predator guards and pesticides on golf courses; since there is little opportunity for comparison (most golf courses have pesticides and predator guards).

Before nest-box monitors hit the links with a cart full of nest boxes in tow, they should familiarize themselves with the golf course superintendent, who is interested foremost in providing the best experience possible for golfers. Golf course superintendents need to know the benefits of having nest boxes on the course, such as an increase in the number of insect-eating birds. Other practical aspects of golf course trails also need to be considered, such as placement of boxes and devising a monitoring schedule that minimizes interference with golfers. Although our preliminary results suggest that golf courses do provide suitable habitat for cavity-nesting birds, there are still many consequences that we are unable to examine. For instance, we do not know whether fledglings from golf courses have higher survivorship than those in other habitats or whether disturbance from golfers has any effect on nesting success.

As urbanization continues to expand into once-natural areas, wildlife will by necessity have to make use of managed areas such as golf course. For some species, golf courses may be the best available habitat to nest. The Birdhouse Network will continue to explore how habitats affect nesting success. We ask that nest-box monitors continue to enter data about pesticide use into The Birdhouse Network's database.

(Editor's Note: Tina Phillips is project leader of the Birdhouse Network. Caren B. Cooper is a research associate in the Lab's Bird Population Studies program.)

Donating Time–

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and repairing ball marks. They are also taught the finer points of golf including putting, chipping, bunker play, long irons and woods. The final day is fun-filled, including a four-hole mini-tournament, pizza party and prizes.

Over the last eight years, I have donated my time toward the junior clinics. It has been rewarding and enjoyable. Hopefully, the sport will continue to grow with all the juniors playing and learning from the PGA pros and superintendents.