Campus-Community Partnership Grant
Associated Colleges of the South Environmental Initiative

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Introduction:

The Davidson College Biology Department is dedicated to providing meaningful, educational opportunities for the surrounding community. The Town of Davidson has recently established Fisher Farm Park, a 200-acre reserve with hiking and biking trails and open space for community recreation. Fisher Farm Park is a valuable asset to the Davidson community, and providing educational opportunities will enhance its value. By providing nesting boxes for bluebirds, chickadees, titmice, and numerous other birds within the Park as part of an ongoing research project, the Davidson College Biology Department hopes to include the community in an off-campus educational opportunity. Involving the community in current biology research, while providing educational tours and bird viewing opportunities, will be an important enhancement of the educational and recreational value of Fisher Farm Park, as well as, establishing an important partnership between the Davidson College Biology Department and the surrounding community.

Project Description:

Although the nestboxes we will erect at Fisher Farm Park will be used for a variety of research projects in which community members can involve themselves, the initial phase will focus on the question of interspecific competition for nest sites within the guild of secondary cavity-nesting birds. Secondary cavity nesters are birds that build nests in tree cavities, but cannot themselves excavate a nest site; most such species readily breed in artificial nestboxes. Around Davidson, the three most common secondary cavity nesters are eastern bluebirds, Carolina chickadees, and tufted titmice. Of these birds, the largest and most common is the eastern bluebird.

Bluebirds were not always so common in the Southeast. Only 40 years ago, bluebird numbers were quite low. According to records from the annual Audubon Christmas Bird Count, bluebird populations in VA, NC, SC, and GA have steadily increased 500% in the last 40 years. On the other hand, chickadees and titmice numbers have remained unchanged over this period. Although bluebirds have long been painted as victims requiring special management considerations, it seems likely that the rapid growth of their population has had a negative impact on other local cavity nesters. Indeed, anecdotal evidence from nest boxes on golf courses in the Davidson area suggests that bluebirds may be limiting numbers of smaller cavity nesters (MT Stanback, unpubl data).

To determine whether bluebirds are limiting the population sizes of these smaller cavity nesters, Dr. Stanback and I will conduct an experiment at several sites in the Davidson area (the largest site being Fisher Farm Park). During November 2005 we will erect 20 pairs of boxes at Fisher Farm Park. Fisher Farm Park is ideal in that it consists

almost entirely of grassy meadow (preferred by bluebirds) and mature hardwood forest (preferred by chickadees and titmice). Box pairs will be erected along the ecotone between meadow and forest. Each box pair will consist of one Schwegler "woodcrete" box with a 1.5" hole (appropriate for all 3 species) and another identical box with a 1.25" hole (appropriate for chickadees and titmice). The two boxes in each pair will be erected 10m apart (anecdotal data suggests that bluebirds and these smaller species tolerate one another nesting 10 m away). All 3 species are known to scout out and even defend nest sites during the winter.

From early March through early May I will check all boxes weekly for nesting activity. Because chickadees and titmice tend to initiate nesting earlier than bluebirds, the first nest encountered at each box pair will typically be that of a chickadee or titmouse. Once nest-building is detected at a box pair, I will provide that box with a 1.5" hole (and the unused box with a 1.25" hole). If the more common bluebirds are dominant to chickadees and titmice, we will expect to bluebirds usurp the 1.5" box and force the smaller species to renest in the box with the 1.25" entrance hole.

If our studies show that smaller species are losing out to bluebirds in the competition for nest sites, it would not only be a very publishable result in the community ecology and/or ornithological literature, it would also provide valuable management guidelines. Although nestboxes are often promoted as a cure-all for habitat enhancement, it's quite possible that subordinate species benefit little from such programs if they simply increase the population density of dominant species. However, if providing a variety of hole sizes helps to ensure the viability of the subordinate members of the cavity nesting guild, it would be an easy means to a positive end.

As mentioned earlier, the other benefit of this project is that it promotes "citizen science". The Town of Davidson has requested that we produce an informational poster about cavity nesters in general and our experiment in particular for the new kiosk being built in the park. Dr. Stanback and I will also provide interested citizens/school groups with an opportunity to come into the field with us as we monitor boxes and band and measure baby birds.

The costs of providing this opportunity stem mainly from the expense of buying initial materials. The costs of the nest boxes and poles have already been covered by another funding source, but the predator guards remain largely unfunded. These stove-pipe style predator baffles are extremely effective at preventing predation by rat snakes, raccoons, etc – reducing such losses from 30% to 2% (MT Stanback unpubl data). The manufacturer (ERVA) ships predator guards in pallets of 60, which will cost approximately $1052 ($14.48 x 60 = $868.80 + $182.67 for shipping). The Town of Davidson has provided us with a $200 grant to aid in the purchase of predator guards. Consequently, we are requesting $852 from ACS. While Fisher Farm Park can only hold 20 pairs of boxes (with a total of 40 predator guards), the Town of Davidson will be expanding the Park in 2006 via the purchase of an adjacent property. This will allow us to erect an additional 10 pairs of boxes (for a total of 60 boxes with predator guards). Once our project is underway, it can continue for many years to come. My project can thus be seen as a long term investment in the educational and recreational quality of Fisher Farm Park and the long term partnership between the Davidson College Biology department and the community.

Evaluation and Dissemination:

In addition to our public demonstrations in April, I will be attending the annual meeting of the Association of Southeastern Biologists in Gatlinburg, TN and presenting a poster of our results to date. Dr. Stanback and I will publish the results of this study following the replication of the experiment in 2007. It will be published in either an ecological or ornithological journal.

In early May 2006, I will perform an evaluation of the project and the community response to it to date. Discussions with Park managers and community members will elucidate the effectiveness of the project and provide suggestions as to how to enhance the educational opportunities for 2007. A description of the project and its evaluation will be written and made available to the ACS for use as a possible model.

Institutional Approval:

The Davidson College IACUC has approved this project.