

BIRD CONSERVATION

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SPRING BANDING BEGINS



Populations of the American Woodcock in southern New England are of conservation concern.

This March, BCR began its second year of investigations into spring migration through southern New England agricultural land. We are evaluating the hypothesis that our region is significant as a migratory stopover for midwestern prairie migrants.

In addition, we are investigating populations of locally-breeding American Woodcocks, which are of regional conservation concern. By capturing, measuring, weighing and banding members of this early spring-breeding species, we hope to gain

information about the health of individuals, the age structure of the population and what kind of turnover in individuals the population is experiencing. All these pieces of information are required to develop a view of population stability.

(Continued on page 2)

BANDING -CONTINUED

“Notably, hayfields and fallow fields are used by males for their early spring courtship rituals.”



A woodcock nest built at the edge of a hayfield in early spring.

Agricultural land is essential for our local population. Notably, hayfields as well as fallow fields are used by males for their early spring courtship rituals. Once mates are attracted, nests are built at the edge of these fields or in adjacent woodland borders. We will be seeking out these nests in order to locate and band the secretive females as well as their young.

During April, we also will be focusing on the numerous migrant

songbirds that move through our field station. We've already documented that Savannah Sparrows are an abundant spring and fall migrant even though none remain to breed. Bobolinks also move through in numbers, and in this case some do breed in the local area. At least one male attempted to establish a territory on the field station last summer

Other more exotic, typically midwestern species also have appeared at the field station, including Vesper

and Clay-colored Sparrows. In addition, the typically prairie-breeding Grasshopper Sparrow and Sedge Wren have appeared locally, with the latter even remaining to breed at the nearby Connecticut Audubon sanctuary. Sedge Wrens are an opportunistic nester and may appear locally in late summer when water levels in their wet meadow habitats declines to optimal levels. They are likely to enter our area via dispersal from the Midwest.

ENDANGERED SPECIES CONSERVATION COURSE DEBUTS

Genetics of Small Populations

- Genetic diversity provides the raw material for adaptation to environmental change. As environments change, natural selection favors individuals with adaptive traits.
- When a population becomes small and isolated, the Hardy-Weinberg equilibrium breaks down. **Gene flow** is limited and genetic diversity can drop by certain alleles becoming **fixed**. Moreover, genetic drift becomes more likely, exacerbating **genetic erosion**.
- Inbreeding increases, leading to greater homozygosity among traits, which can expose deleterious mutations. In plants that **outcross**, depression in rates of seed production follows from **selfing**.
- Hence, small populations are less well-suited to tolerate environmental change and **fitness** (contribution of genes to the next generation) typically drops.
- However, individual small populations have been found to contain different segments of a rare species' total genetic complement, so preservation of multiple small populations can be critical to a comprehensive conservation plan.



Founder Collared Kingfishers on the Pacific island of Rota possessed only a portion of the species' gene pool, and the blue crown trait became fixed in the population.

One of the topics covered in *Endangered Species Conservation* is that of conservation genetics.

Our upcoming course, *Endangered Species Conservation*, is oriented toward an upper level undergraduate and graduate student audience. We plan to offer it this July during summer session II at the College of Agriculture, Health and Natural Resources, University of Connecticut. All of the course lectures are presently available on the BCR web site (although we are still refining and adding to them, so stay tuned for updates).

It will focus on eleven major topics:

- The history of endangered species conservation.
- Determining endangered status
- Global vs. local issues in endangered conservation
- Conservation genetics
- Population viability analysis
- The role of exploitation in bringing about endangerment
- The role of disease
- The role of density-dependent and density-independent factors
- The role of habitat
- Population recovery
- Restoring populations

In addition, there will be nine written assignments that will coincide with class discussions of issues in endangered species conservation.

The course will meet twice per week for four weeks, with classes running four hours in length. In addition, there will be two four-hour labs on Saturdays that will involve learning to assess population size.

The course will be taught by BCR Director Craig, who has worked for decades in the field of endangered species conservation. In addition

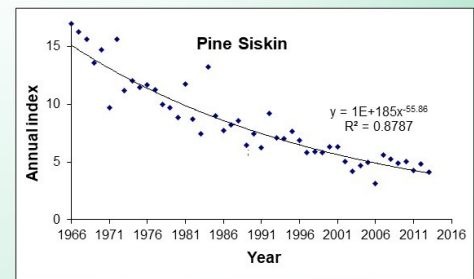
“Our upcoming course, Endangered Species Conservation, is oriented toward an upper level undergraduate and graduate student audience.”

ENDANGERED SPECIES— CONTINUED

“Different types of random environmental effects like fire or late spring freezes affect demographic parameters differently.”

Stochastic Effects

- Small populations are more prone to extinction due to genetic and **demographic stochasticity**.
- Furthermore, the greater a population trend's non-linearity, the greater the effect of random events on it.
- Different types of random environmental events like fire or late spring freezes affect demographic parameters differently. Some, for example, may affect birth rate, whereas others may affect juvenile mortality.
- Genetic effects may also act on demographic parameters differently.
- Incorporating this stochasticity into PVA models has proven difficult and no approach has proven superior.
- Modelling sources of population variance is complicated by the limited data available from most rare populations.



United States breeding populations show annual variation but time series decline that best follows a negative power function. Note that variance also declines with population size; i.e. they are **autocorrelated**.

Another of the topics investigated in Endangered Species Conservation is that of population viability analysis (PVA).

to his present work on the Eskimo Curlew, he has been involved in many other studies on endangered species.

These include translocating Guam Rails, bringing Rota White-eyes into captive breeding, conducting studies on Tinian Monarch behavior, conducting studies on Nightingale Reed-warbler habitats, searching for surviving Ivory-billed Woodpeckers, re-discovering populations of *Partula gibba*, Connecticut Black Rail and *Corallorhiza trifida*, and

conducting population surveys of the Mariana Crow, Mariana Fruit Bat, Sheath-tailed Bat, Palau Fruit Bat, Island Swiftlet, Micronesian Megapode, *Serianthes nelsonii* and *Meyrta*, undescribed species. Furthermore, he computed the winter energy budgets of Connecticut Bald Eagles before their delisting from endangered status.

Dr. Craig also was an author of the first two works on Connecticut endangered species—*Rare and Endangered Species of Connecticut*

and Their Habitats and *The Rare Vertebrates of Connecticut*. More recently, he has investigated global vs. local conservation issues in the paper *Endangered Species, Provincialism and a Continental Approach to Bird Conservation*. This work may be viewed on the BCR web site.

FIELD STATION UPDATE



The last of the exotic weeds covering our field borders were removed this winter with chainsaws, hand clippers and tractor brush hogs.

Winter is an important season for habitat management at the BCR field station. This year, we completed our multi-year effort at clearing exotic vegetation from our field borders. Multiflora Rose, Russian Olive, Asiatic Amelopsis, European Privet, Asiatic Bittersweet and Asiatic Barberry were some of the species that had invaded the field. They are being replaced by cool climate perennial

grasses, particularly Orchard Grass, Reed-canary Grass and Purple Redtop.

In remaining woody vegetation along stone walls, we are removing diseased ash trees as well as exotics and replacing them with native flowering and fruiting trees and shrubs. Last year, we added Sweet Pepper Bush, Spicebush, Striped Maple, Shadbush and Arrowwood to these

borders. This year, we will be planting native azaleas, Buttonball Bush and several additional *Viburnum* species. In addition, we will be planting newly developed blight-resistant varieties of American Chestnut—virtually gone from North American forest for over a century. All these are highly prized for their production of wildlife foods.

“Winter is an important season for habitat management at the BCR field station.”

The Newsletter of
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Bird Conservation Research, Inc.

Membership

- \$125 Species sponsor
- \$25 Regular member
- \$35 Family membership
- \$50 Sustaining member
- \$100 Contributor
- \$250 Patron
- \$500 Benefactor
- \$1,000 Grand benefactor

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Putting all our eggs in one basket.

MEMBERSHIP

Thanks to all those who have become BCR members for 2019. If you have not yet become a member, it is never too late. Memberships

remain one of our principal means of funding the projects that we conduct, so please consider joining us. Membership applications

and contribution options are available at www.birdconservation-research.org.