



FROM LEFT, COLIN LANG '14, LILLIAN FAYERWEATHER '13, MILAN SAUNDERS '13 AND MICHAEL LEDUC '14 SURVEY THE BOLLESWOOD NATURAL AREA VEGETATION IN SUMMER 2012 WITH PROFESSOR CHAD JONES

THE SEVENTH DECADAL Bolleswood Natural Area vegetation survey was begun in June 2012 under the supervision of Professor Jones. Lily Fayerweather '13, Colin Lang '14, Michael Leduc '14 and Milan Saunders '13 spent the summer recording the types of plants and their size along four 20-foot-wide transects approximately 1,000 feet in length. This research program was begun by Professors Richard Goodwin and William Niering in 1952, and is supported by an endowment that Professor Goodwin established to generate just enough income for the summer wages every 10 years. One of the longest-running vegetation studies in the world, it has generated invaluable information about changes in unmanaged forests over more than half a century.



The Arboretum initiated a meadow restoration project on the Matthies Tract in 2004. After initially clearing woody vegetation, staff seeded a five-acre area with a mixture of native grasses and wildflowers in 2006. Professor Chad Jones, Nels Barrett '78 and Arboretum Director Glenn Dreyer did detailed plant census work in seeded and unseeded locations in the project area in 2008 and 2010. An article about the project and the resulting meadow vegetation was accepted this spring for publication in the *Natural Areas Journal*. Although many early successional habitat restoration projects have been done in New England, this is the first published documentation in the professional literature. We expect this paper to be helpful to land trusts and other organizations that undertake such projects.

Professor Robert Askins worked with Mary Buchanan '14, Clara Chaisson '12 and Diane Hitchcock '75 this summer on the long-term breeding bird population study in the Bolleswood Natural Area. This research was also initiated by Professors Niering and Goodwin in the early 1950s and has been continued by Professor Askins since the early 1980s. The data from this study has helped to document variations in bird populations associated with changes in the Bolleswood vegetation and the regional environment. Professor Askins and his research assistants also did spot mapping of birds in both the meadow restoration area on the Matthies Tract and the reclaimed meadows around the Samuel Bolles farm site north of Gallows Lane. They reported that bluebirds were nesting in boxes erected in both of the restored meadows. This is the first Arboretum nesting record of this species in 60 years of observations, and indicates that the restorations are meeting the goal of providing early successional habitat for uncommon species. Monitoring of chimney swifts on campus was also part of the summer bird research agenda.

For the past several years Professor Jones has been testing mathematical models that attempt to predict the spread of invasive species using historical data collected from the Bolleswood vegetation surveys. He has found that these models, which are commonly used around the world, work in the short term but perform poorly over time. A manuscript based on this research has been accepted for publication in the journal *Forest Ecology and Management*.

Professor Jones, George & Carol Milne Associate Professor of Biology Anne Bernhard, and Jean C. Tempel '65 Professor of Biology Steve Loomis began a research project studying the effects of climate warming on salt marsh vegetation, invertebrates and microbes. They are particularly interested in how warming will affect interactions among these groups of organisms. During the past year they conducted pilot studies at Mamacoke marsh to test methods of experimentally warming temperatures.

Director Glenn Dreyer continued to lead a committee that compiled a new checklist of the native and naturalized vascular plants of Connecticut. The list is in the proofread-

ing stages and should be published in the coming year by the Connecticut Botanical Society. Professor Jones is developing a database to make the list searchable online.

The Arboretum continues to cosponsor the Connecticut Notable Trees Project. New volunteers have added much enthusiasm and productivity to the effort to document the state's big and historic trees. This year 14 national champion trees, the largest of their kind in the country, were documented in the state; in previous years fewer than half that number of Connecticut trees ever made the national list. The project's website (search keywords: notable trees) contains data on more than 3,000 trees statewide.

The next Arboretum publication will be produced in collaboration with the Connecticut Department of Energy and Environmental Protection. Glenn Dreyer is editing a manuscript titled "Trap Rock Ridges of Connecticut, Natural History and Land Use." The authors are Penni Sharp, an environmental consultant and naturalist; Ralph Lewis, former state geologist and a visiting instructor at the College; and David Wagner, an entomology professor at UConn. The new bulletin should be complete by early 2013.

Each year numerous College classes make use of the Arboretum and greenhouse for teaching and research. This year they were:

- Bot 115 – Introduction to Botany: walking tours highlighted New England forest history; used samples of many plants for weekly identification study.
- Bio 105 – Organisms: collected mosses from the Arboretum; grew "fast plants" in greenhouse.
- ES 111 – Environmental Studies as a Social Science: walking tour in the Native Plant Collection emphasized biodiversity initiatives.
- ES 120 – Introduction to Environmental Geology: mapped geological hazards on Mamacoke.
- Bio 204 – Ornithology: four field trips in the Arboretum.
- Bot 205 – Plants, Protists and Fungi: field labs to collect fungi, mosses and grasses (for hay infusions to grow protists); collected mycorrhizae and observed gymnosperms; used ferns from the greenhouse.
- Bio 207 – Ecology: four field labs; one multi-week experiment in the greenhouse; collected plankton from the Arboretum pond.
- ES 312 – Introduction to Vector-Based GIS: three students did vegetation mapping projects in the Arboretum.
- ES 316 – Coastal Dynamics of Southern New England: field trip to Mamacoke.
- Bio 431 – Comparative Physiology: studied invertebrate populations during the transition from fall to winter, looking at cold adaptation.

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FROM LEFT, MARY BUCHANAN '14,
CLARA CHAISSON '12 AND PROFESSOR
BOB ASKINS MONITOR BLUEBIRD
NEST BOXES AT THE SAMUEL BOLLES
FARM SITE