The Centers of Learning

Rutgers University — The State University of New Jersey

by Charles F. Leck

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Rutgers University includes campuses in south (Camden), central (New Brunswick), and northern New Jersey (Newark). Most ornithological programs are centered at New Brunswick, with three general areas of emphasis: behavioral (Livingston College), ecological (Rutgers College), and applied environmental (Cook College). There is much flexibility within each college however, and graduate students are particularly encouraged to participate in the courses and programs of all three, located within a few miles of each other, with university transportation. (In addition, there is a program of avian neurophysiology-behavior at the university's Institute for Animal Behavior in Newark.)

Location — New Jersey is highly diversified with many natural areas, in spite of a high population density. Within a single day students are able to visit and study natural ecosystems in the marine and freshwater, or terrestrial parts of the coastal plain, piedmont, and Kittatinny Mountains. Research areas include National Wildlife Refuges, State Forests and Parks, "Green Acres" properties, and the University-owned Hutcheson Memorial Forest (65 acres of beech-oak climax).

The New Brunswick and Newark campuses provide easy access to the numerous cultural and scientific opportunities of the city, including the American Museum of Natural History (with 900,000+ bird specimens).

History — Bird study at Rutgers received an important impetus in the 1940s with the many publications of Professor Leon Augustus Hausman. His books included the *Fieldbook of Eastern Birds* (Putnam) and *Birds of Prey of Northeastern North America* (Rutgers). His popular writings introduced many to the birds of New Jersey, with agricultural conservation.

Ethololgical research on birds began here with the important work of Daniel Lehrman on Ring Dove reproduction at the Institute of Animal Behavior, Newark. This research center continues to involve students and faculty in physiological and behavioral studies of birds. (Colin Beer, for example, has a program of gull research.)

Jeff Swinebroad modernized the program with an expansion of ornithological holdings in the University library, initiation of avian field studies by graduate students, and formation of collections. He also directed a breeding bird study at Hutcheson Forest with annual bird-banding that began in 1959 (we still continue this study).

Staff — Recently the faculty has greatly expanded, with concomitant improvements in research equipment and facilities. The current staff members with ornithological interests are listed below in alphabetical order, with departmental identification. Most are associated with the graduate program in ecology, noted for its weekly seminar series. In addition, there are many other faculty who offer a wide variety of courses appropriate for ornithologically oriented students (e.g. community and ecosystem ecology, vertebrate physiology, statistical design, et cetera)

JAMES E. APPLEGATE (Horticulture and Forestry) teaches undergraduate courses in General Ecology and Bird Identification for nonmajors. His interests are in management aspects of wildlife populations and the ecology of avian diseases. Specific interests include studies on the manipulation of population densities and community structure to provide maximum benefit to public users. Disease studies concentrate on ecological aspects of avian malaria. Abstraction of ideas in the form of statistical models is an important part of these studies.

JOANNA BURGER (Biology) is a behaviorist who works primarily with birds. She teaches undergraduate courses in animal behavior, ecology and evolution, and graduate courses in behavior Her interests concern the behavioral and ecological adaptations of animals to their habitats Specific research interest with birds concern social organization, synchrony and social facilitation in colonies, inter- and intraspecific competition and the use of space, nest site, and colony site selection, seasonal and daily activity patterns, feeding ecology and convergent evolution Her ornithological studies have included intensive field studies in the United States, Argentina and England on the behavioral and ecological adaptations of gulls for breeding in marshes.

DONALD F. CACCAMISE (Entomology and Economic Zoology) is an ecologist whose interests and research efforts center around birds His teaching has included general biology, ecol-

ogy, and field ornithology. He is mainly a field biologist with research interests in areas such as competition, feeding ecology, and population dynamics. He also has strong interests in the problems and practices of wildlife managements and pursues an active research role in the field of vertebrate pest management.

CHARLES F. LECK (Zoology) teaches undergraduate courses in Ornithology and Ecology, and graduate courses in Natural History and Animal Behavior. Research interests include ecological descriptions of regional avifaunas, with the forthcoming *Birds of New Jersey* (Rutgers University Press), and studies of feeding strategies in birds. Recent New Jersey field work has included pelagic exploration and the "island effect" of small forests. In summer he teaches at the West Indies Laboratory, U.S. Virgin Islands, and researches in other areas of the neotropics (particularly in lower Central America and northern South America). He is curator of the ornithological teaching collections at the University.

JONATHAN D. MOULDING (Department of Entomology and Economic Zoology) is a research ecologist particularly interested in avian populations. He has taught undergraduate courses in Population and Environment, and Vertebrate Zoology, and a graduate course in Population Ecology. His research interests lie generally with the effects of stress on bird populations. Current areas of research involve the impact of insecticides on forest and saltmarsh bird populations, and the response of forest bird communities to heavy insect defoliation such as produced by the gypsy moth.

BERTRAM G. MURRAY, JR., (Science) teaches undergraduate courses in Introductory Biology, Ecosystem Ecology, Man-Ecosystem Interactions, and the Principles of Evolution. His primary research concerns understanding the relationship between ecology and behavior, emphasizing the development of generalizations. Publications include studies on migration and orientation, paleontology, dispersal, territoriality, and vocalizations. Other interests include the effects that different scientific philosophies have on research, the ecological interpretation of economic problems (not to be confused with the economic analysis of ecological problems), and the application of biological principles to human biology generally. He is review editor of *Bird-banding*.

EDMUND W. STILES (Zoology) teaches undergraduate courses in Ecology and Vertebrate Zoology and a graduate course in Population Ecology. His ornithological interests center around aspects of community structure and foraging behavior of birds. In addition to bird communities, his research interests include optimal foraging strategies in bees and wasps, various aspects of pollination ecology and other coevolved plant-animal interactions. His studies involve intensive field observation coupled with manipulation to answer evolutionary and practical questions with an emphasis on temperate-tropical comparisons.

WESLEY W. WEATHERS (Environmental Physiology) teaches an undergraduate course in Environmental Physiology and graduate courses in Vertebrate Adaptation and Environmental Physiology. His ornithological interests are primarily in the ecologically relevant physiological adaptations of birds to stressful environments. Of particular interest are adaptations to high altitude and other hypoxic situations. Recent studies have also dealt with various aspects of the metabolism, energetics and thermoregulation of birds. He is a member of the graduate programs in both Ecology and Physiology, and most of his publications have appeared in physiological journals.

Student Research — Recent thesis work includes a wide range of investigations, for example: bird species diversity in relation to secondary succession, Mute Swan breeding systems, the impact of insecticides on forest birds, physiology of Monk Parakeets, a comparison of bird censusing techniques, mathematical models for House Sparrow nesting, and aggression in wood warblers. We have also been proud of avian field studies by undergraduates in advanced study programs.