

The Centers of Learning

2. The Museum of Vertebrate Zoology, University of California, Berkeley

by *Ned K. Johnson*

Three individuals played crucial roles in the birth and development of ornithology at the University of California, Berkeley: Annie M. Alexander, founder and benefactor of the Museum of Vertebrate Zoology; Joseph Grinnell, Director of the Museum from its inception in 1908 until his death in 1939; and Alden H. Miller, Grinnell's student and, from 1940 to 1965, the second Director of the Museum.

Under Grinnell's aegis, important and extensive collections of vertebrate animals were assembled for critical study from diverse geographic regions, particularly the Pacific Coast from Alaska to Baja California, a section of the continent rich in examples of striking variation in birds over short geographic distances. Miller furthered the sound philosophy of vertebrate natural history and museum conscience practiced by Grinnell and introduced, in his own research and in that of his students, experimental lines of investigation which Grinnell had not pursued. By their tireless dedication to field and museum ornithology, abundant scholarly writings, and lineage of students, Grinnell and Miller set standards of professional attainment their successors have found difficult to equal.

The carefully annotated specimens, together with field notes as permanent records of the habitats and natural history of the forms encountered, represent the main resource of the Museum. The collection of birds, now numbering 160,000 specimens, is the finest from western North America north of Mexico, and in addition includes exceptional material from Mexico, northwestern South America, and many other foreign regions.

Several influences, some of them intangible, provided a proper setting for the evolution of the Museum of Vertebrate Zoology as a favorable center for ornithological research: (1) The devotion to ornithology and to high standards of scholarship of the Directors; (2) The

geographic location of the Museum in a region of great biotic diversity; (3) The mutually beneficial interaction of the Museum with a first-rate major Department of Zoology; (4) The broad training at Berkeley of Museum graduate students as general zoologists; (5) The stress on study of living vertebrates in the field as indispensable to the solution of problems in ecology and evolution; (6) The emphasis on collection and preservation of specimens for the documentation of phenomena in ecology, behavior, and speciation; (7) Strong concern, in research on vertebrate species, with concepts and problems of interest to general biologists.

In 1967, Oliver P. Pearson assumed the directorship and launched a vigorous new era at the Museum. His enthusiasm and support fostered a broadened base for intellectual interchange with biologists at large by increasing seminar meetings and visits by scholars, to the enlightenment of locals and visitors alike. He encouraged an expanded program in field zoology which included continued avifaunal exploration in western North America and, at tropical latitudes, in Costa Rica and Peru. Further, Pearson added modern equipment and facilities greatly to augment existing research capabilities. In the Museum the traditional weekly lunch meetings have passed from the quiet sessions of letter reading and chatting of yesteryear to informal, intellectually charged seminars which are presented by professors, occasionally from campus departments other than zoology, graduate students, and visitors. Here fresh scientific data and ideas are tested against the minds of 30 to 40 appreciative, but critical, biologists. Two other weekly noon seminars, sponsored by professors in ecology and wildlife biology, involve many of the same staff and students. Visiting scientists steadily flow through Berkeley and, in their seminars and discussions, keep Museum academic personnel apprised of new findings in vertebrate zoology at other campuses and research centers.

Current research topics of Museum staff and graduate students touch on most aspects of vertebrate biology and at least sixteen individuals specifically are investigating problems which engage birds as research animals. Although many studies are undertaken in the western United States, projects in foreign countries are not uncommon. In California, researchers often take advantage of the diverse biota and facilities of the Hastings Natural History Reservation, a Museum-administrated study center and tract of 1700 acres of un-

disturbed habitat in the upper Carmel Valley, Monterey County. Similarly, the Sagehen Creek Field Station operated by the School of Forestry and Conservation of the University of California provides a favorable site for field and laboratory research in the Sierra Nevada north of Truckee. The following general areas of research indicate some of the ongoing fields of interest and specific topics of study:

Ecology.—A number of individuals are investigating competition, the organization and structuring of communities, and adaptations in systems of exploitation, using birds as research animals. Included is the work of Nicolaas Verbeek with the Yellow-billed Magpie, Fernando Ortiz's analysis of foraging behavior in hummingbirds, Tom Balgooyen's study of the Sparrow Hawk, Laurence Ellison's research on the winter ecology of the Spruce Grouse in Alaska, Thomas Custer's investigation of the social organization and feeding ecology of Lapland Longspurs, Rey Stendell's program with the White-tailed Kite, Donald Beaver's work on species diversity of birds in Sierran forest successional communities, Jennifer White's study of the ecology of the Oregon Junco in different habitats, John Davis' investigation of the interaction in winter of juncos and crowned sparrows, Frank Pitelka's continuing program with the feeding ecology and behavior of Alaskan shorebirds, and Caroline Earhart and Ned Johnson's survey of sexual dimorphism in owls. Additional important topics, such as Starker Leopold's examination of the influence of fire on bird populations, and his continuing attack on the problem of the relation of habitat and nutrition to the cycling of populations of California Quail, have an applied ecologic slant. Similarly, Frank Gress' work with pesticide residues in marine birds is of considerable current interest.

Comparative Physiology.—Lynn Carpenter's research on the adaptations of hummingbirds to high elevations in the Peruvian Andes, and John Davis' extensive project on the control of annual cycles in the Rufous-collared Sparrow in Peru belong in this category. Oliver Pearson will soon launch an investigation of the bioenergetics of the Giant Hummingbird in Peru.

Ethology.—Although several recent investigations have had strong behavioral components, among ornithological researches only two recent projects are predominantly ethological: Robert Hamilton's detailed analysis of comparative behavior in avocets and stilts, and Genevieve Tvrdik's contrast of courtship and

hostile behavior in Brown Towhees of different racial groups. Workers requiring large numbers of captive birds for behavioral or physiological experiments often use the extensive aviary space at the University of California Animal Behavior Station which is under the administration of the Department of Psychology.

Systematics and Evolution.—To elucidate the speciation process, a variety of current studies assess the nature of morphologic and/or behavioral divergence of closely related forms of birds. Luis Baptista is completing a detailed examination of song dialects in coastal White-crowned Sparrows. Susan Kishler's work with the Rufous-sided Towhee also involves spectrographic analysis of vocalizations in an attempt to relate their geographic variation to the boundaries of demes, populations, and named subspecies. Richard Johnson's research on the relationships of taxa of rosy finches has involved the application of traditional field natural history techniques, a behavioral study of a large group of captives, and refined analysis with a spectrophotometer of color variation of museum specimens. I am currently examining problems of species relationships in the genera *Sphyrapicus*, *Empidonax*, and *Vireo*, using traditional and modern analytical techniques.

Zoogeography.—The proper documentation of vertebrate distribution, long a principal activity of the Museum of Vertebrate Zoology, continues to be pursued. Areas of present interest for avifaunal exploration center in Alaska, the western United States, Mexico, Costa Rica, and Peru, and involve a number of field researchers. Carl Koford in particular has been active in many of the foreign expeditions.

I wish to thank Seth B. Benson for his insight into the early period of ornithology at the Museum. Carla Johnson kindly read the manuscript and offered helpful criticism.—*Museum of Vertebrate Zoology and Department of Zoology, University of California, Berkeley, May 2, 1971.*

MARBLED MURRELET AWARD

In Audubon Field Notes, 24:654, an award of \$100 was offered for the first full account, with photographs, of a verified nesting of the Marbled Murrelet. Some interesting accounts, and a pair of possible photographs have been received, and it has been called to our attention that evidence of nesting has been observed in various sites as far back as 1931. But what we seek is a full account, for publication, including details of site, nest, eggs, and downy young.