
Publications of the AOU

Check-list of North American birds. Fifth ed. 1957 (reprinted 1975). Clothbound, 691 pages, \$15.00 (includes 32nd Supplement, 1973, and 33rd Supplement, 1976).

Thirty-second supplement to the American Ornithologists' Union check-list of North American birds (1973, Auk 90: 411-419) and **Corrections and additions to the "Thirty-second supplement to the check-list of North American birds"** (1973, Auk 90: 887). \$1.50 each.

Thirty-third supplement to the American Ornithologists' Union check-list of North American Birds (1976, Auk 93: 875). \$1.50 each.

Proceedings of the 13th International Ornithological Congress, 1963. Two volumes, 1250 pages, clothbound, \$10.00 per two-volume set.

Ten-year indexes to The Auk. 1901-1910, paperbound \$4.00. 1921-1930, paperbound \$4.00. 1931-1940, paperbound \$4.00, clothbound \$5.00. 1941-1950, paperbound \$8.00, clothbound \$10.00. 1951-1960, paperbound \$10.00, clothbound \$12.50. 1961-1970, paperbound \$10.00, clothbound \$12.50.

The American Ornithologists' Union, membership list, 1974. \$1.50 each.

Career opportunities in ornithology (1974, American Birds 28: 741-746). Single copies free from the Secretary of the AOU—include stamped, addressed envelope. Order multiple copies from Assistant to the Treasurer AOU—5 copies \$1.00, 30 copies \$5.00, 75 copies \$10.00.

ORNITHOLOGICAL MONOGRAPHS

No. 1. ***A Distributional Study of the Birds of British Honduras***, by Stephen M. Russell. 195 pp., 2 color plates. 1964. Price \$7.00 (\$5.50 to AOU members).

No. 2. ***A Comparative Study of Some Social Communications Patterns in the Pelecaniformes***, by Gerard Frederick van Tets. 88 pp., 49 text figures. 1965. Price \$3.50 (\$2.50 to AOU members).

No. 3. ***The Birds of Kentucky***, by Robert M. Mengel. Clothbound, 581 pp., 4 color plates plus text figures and vignettes. 1965. Price \$15.00 (\$12.50 to AOU members).

No. 4. ***Evolution of Some Arctic Gulls (Larus): an Experimental Study of Isolating Mechanisms***, by Neal Griffith Smith. 99 pp., 62 text figures. 1966. **Out of print.**

No. 5. ***A Comparative Life-history Study of Four Species of Woodpeckers***, by Louise de Kiriline Lawrence, 156 pp., 33 text figures. 1967. Price \$6.00 (\$4.50 to AOU members).

No. 6. ***Adaptations for Locomotion and Feeding in the Anhinga and the Double-crested Cormorant***, by Oscar T. Owre. 138 pp., 56 text figures. 1967. Price \$6.00 (\$4.50 to AOU members).

No. 7. ***A Distributional Survey of the Birds of Honduras***, by Burt L. Monroe, Jr. 458 pp., 2 color plates, 28 text figures. 1968. Price \$14.00 (\$11.00 to AOU members).

No. 8. ***An Approach to the Study of Ecological Relationships of Grassland Birds***, by John A. Wiens. 93 pp., 30 text figures. 1969. **Out of print.**

No. 9. ***Mating Systems, Sexual Dimorphism, and the Role of Male North American Passerine Birds in the Nesting Cycle***, by Jared Verner and Mary F. Willson. 76 pp. 1969. Price \$4.00 (\$3.00 to AOU members).

No. 10. ***The Behavior of Spotted Antbirds***, by Edwin O. Willis. vi + 162 pp., 3 color plates, 27 text figures. 1972. Price \$9.00 (\$7.50 to AOU members).

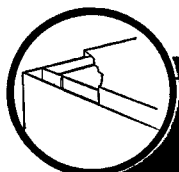
No. 11. ***Behavior, Mimetic Songs and Song Dialects, and Relationships of the Parasitic Indigobirds (Vidua) of Africa***, by Robert B. Payne. vi + 333 pp., 2 color plates, 50 text figures, 40 audiospectographs. 1973. Price \$12.50 (\$10.00 to AOU members).

-
-
- No. 12. *Intra-island Variation in the Mascarene White-eye Zosterops borbonica*, by Frank B. Gill. vi + 66 pp., 1 color plate, 31 text figures. 1973. Price \$3.50 (\$2.50 to AOU members).
- No. 13. *Evolutionary Trends in the Neotropical Ovenbirds and Woodhewers*, by Alan Feduccia. iv + 69 pp., 20 text figures. 1973. Price \$3.50 (\$2.50 to AOU members).
- No. 14. *A Symposium on the House Sparrow (Passer domesticus) and European Tree Sparrow (P. montanus) in North America*, S. Charles Kendeigh, chairman. vi + 121 pp., 25 text figures. 1973. Price \$6.00 (\$4.50 to AOU members).
- No. 15. *Functional Anatomy and Adaptive Evolution of the Feeding Apparatus in the Hawaiian Honeycreeper Genus Loxops (Drepanididae)*, by Lawrence P. Richards and Walter J. Bock. vii + 173 pp., 14 text figures + 26 plates. 1973. Price \$9.00 (\$7.50 to AOU members).
- No. 16. *The Red-tailed Tropicbird on Kure Atoll*, by Robert R. Fleet. vi + 64 pp., 34 text figures, 5 tables. 1974. Price \$5.50 (\$4.50 to AOU members).
- No. 17. *Comparative Behavior of the American Avocet and the Black-necked Stilt (Recurvirostridae)*, by Robert Bruce Hamilton. vi + 98 pp., 18 text figures, 19 tables. 1975. Price \$7.50 (\$6.00 to AOU members).
- No. 18. *Breeding Biology and Behavior of the Oldsquaw (Clangula hyemalis L.)*, by Robert M. Alison. v + 52 pp., 13 text figures. 1975. Price \$3.50 (\$2.50 to AOU members).
- No. 19. *Bird Populations of Aspen Forests in Western North America*, by J. A. Douglas Flack, viii + 97 pp., frontis., 56 text figures, appendix. 1976. Price \$7.50 (\$6.00 to AOU members).
- No. 20. *Sexual Size Dimorphism in Hawks and Owls of North America*, by Noel F. R. Snyder and James W. Wiley, vi + 95 pp., frontis., 14 text figures, appendix. 1976. Price \$7.50 (\$6.00 to AOU members).
- No. 21. *Social Organization and Behavior of the Acorn Woodpecker in Central Coastal California*, by Michael H. MacRoberts and Barbara R. MacRoberts, viii + 115 pp., 23 text figures, 2 appendices. 1976. Price \$7.50 (\$6.00 to AOU members).
- No. 22. *Maintenance Behavior and Communication in the Brown Pelican*, by Ralph W. Schreiber, viii + 78 pp., 38 text figures. 1977. Price \$6.50 (\$5.00 to AOU members).
- No. 23. *Species Relationships in the Avian Genus Aimophila*, by Larry L. Wolf, viii + 220 pp., 16 text figures, 12-inch record. 1977. Price \$12.00 (\$10.50 to AOU members).

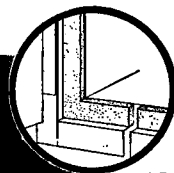
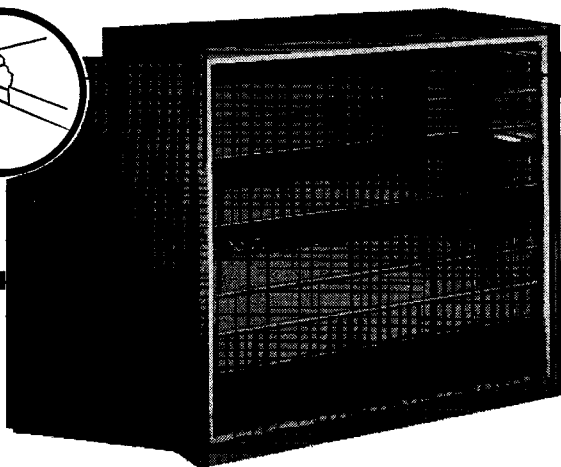
Order from Glen E. Woolfenden, Assistant to the Treasurer AOU, Department of Biology, University of South Florida, Tampa, Florida 33620. Make checks payable to "AOU." All orders must be prepaid and include a \$0.50 handling charge.

How many years would it take to replace your collection?
 Safe-guard your valuable specimens
PERMANENT SPECIMEN PRESERVATION

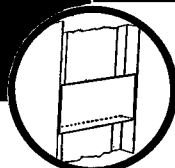
with *Lane* **ZOOLOGY AND ORNITHOLOGY
 SPECIMEN CABINETS**



Double Wall Construction



Pest-Proof and Air Tight Seal



Fumigant Compartment

- Double Wall Construction
- Pest-Proof and Air Tight Seal
- Double Panel Door
 - Lift-Off Safe Type Hinge
 - Fumigant Compartment
 - 3-Point Locking Mechanism
 - Front and Back Air Tight Seals
 - Specimen Trays of Aluminum and Masonite. Lightweight, sturdy and easy to handle.

Skin Case #201 (illustrated)
 Holds large trays for larger specimens.

Skin Case # 202 (not illustrated)
 Divided for half-size trays for smaller specimens.

FOR ILLUSTRATED BROCHURE, WRITE

Lane

SCIENCE EQUIPMENT CO.
 105 Chambers Street New York 7, N. Y.

Lane Science Equipment Co. Dept. D
 105 Chambers Street, New York 7, N. Y.

Please send complete details on Lane Zoology and Ornithology Specimen Cabinets to:

Name _____ Title _____

Institution _____

Address _____

City _____ Zone _____ State _____



For bird
enthusiasts.

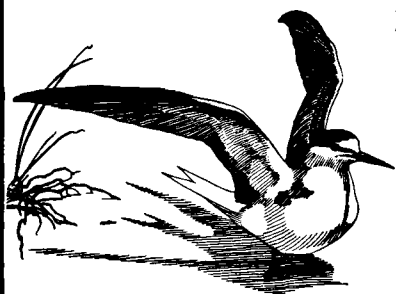
"No Baedeker for ornithologists is likely to prove more useful" said *Audubon Magazine* of this classic guide to where and when one can find which birds. Updated after twenty-five years, it takes account of changes in the environment, noting where habitats have disappeared and where others have remained publicly owned and secure. It also provides useful data on how to reach such spots in 26 states, and what seasonal species to expect. With 85 drawings. \$15.95



A Guide to Bird Finding East of the Mississippi

OLIN SEWALL PETTINGILL, Jr.

Illustrations by George Miksch Sutton



**OXFORD
UNIVERSITY
PRESS**

200 Madison Avenue
New York, N.Y. 10016



THE EMU

The quarterly journal of the Royal Australasian Ornithologists Union and the leading journal in Australia devoted to original research and observation on the birds of the Australasian region. Of importance to all ornithologists and institutions because the avifauna is highly endemic with peculiarities of behaviour and breeding not usual elsewhere.

Dues: membership \$A15.00 p.a. (\$A17.00 1st year); institutions \$A25.00 p.a. (\$A27 1st year). All members and institutions subscribing receive THE EMU and the RAOU NEWSLETTER quarterly. The Union has recently published needed revisions of its 1926 Checklist of Australian Birds: *Checklist, Part I, Non-passerines* (\$A11.10) and an *Interim List* of passerines (\$A3.00).

Enquiries to the Secretary, RAOU, 119 Dryburgh St., North Melbourne, Vic. 3051.

Behavior of Communicating

An Ethological Approach

W. John Smith

W. John Smith shows here that virtually all subhuman animal displays may be interpreted as transmitting messages about the communicator—not the environment—and that messages indicate the kinds of behavior the displaying animal may choose to perform. After developing the concept of messages and discussing their forms, Smith examines the evolution of display behavior, revising the traditional ethological concept of displays. A final chapter develops the further concept of formalized interactions such as human nonverbal communication. \$20.00

HARVARD UNIVERSITY PRESS

CAMBRIDGE, MA 02138

THE AUK

A Quarterly Journal of Ornithology

ORGAN OF THE AMERICAN ORNITHOLOGISTS' UNION

THE AUK is edited at the Florida State Museum, University of Florida, Gainesville, Florida 32611, by the following staff:

Editor, OLIVER L. AUSTIN, JR.; *Assistant Editor*, JUNE B. GABALDON

Associate Editors, WALTER BOCK (Reviews), HERBERT W. KALE, II (Periodical Literature), and JUDITH W. MCINTYRE (Index).

THE AUK welcomes original reports dealing with the biology of birds, and emphasizing the documentation, analysis, and interpretation of laboratory and field studies. Contributions dealing with theoretical or methodological developments also are encouraged, as are occasional reviews of existing information or ideas. Contributions are welcomed from throughout the world, but must be written in English.

Submit all contributions for Vol. 95 to the Editor-Elect, John A. Wiens, Department of Zoology, Oregon State University, Corvallis, Oregon 97331 USA.

SUGGESTIONS TO CONTRIBUTORS. Submit the typewritten original and two copies of the text, tables, illustrations, and all other material. *All typewritten material must be double-spaced* on one side of numbered 8½ × 11 inch (21½ × 28 cm) good quality bond paper, with at least 1 inch (2½ cm) margins. Originals typed on erasable, light weight, or mimeo bond will not be considered, but copies may be clear Xerox or carbon reproductions. Number pages through the Literature Cited; include tables and legends for figures on separate unnumbered pages. Avoid footnotes.

The style of manuscripts should conform to general usage in recent issues. A cover page should contain the full title, a shortened version of the title (not to exceed 35 characters in length) for use as a running head, and your address at the time the research was conducted, followed by your present address, if different. The title of the paper should be concise and informative. The cover page should also include the name and full address of the individual to whom proof is to be sent.

Each Article should be preceded by an Abstract not exceeding 5% of the length of the paper. The Abstract should recapitulate the findings of the paper, not describe the work done. Acknowledgments should follow the text and precede the Literature Cited. Scientific and (if any) English names of birds always should be given where first mentioned in the text, and should follow the A.O.U. Check-list of North American Birds (Fifth ed., 1957; 32nd Supplement, Auk 90:411-419; 33rd Supplement, Auk 93:875-879) or the appropriate equivalent unless departures are explained and defended. Metric units should be used in all measurements. In general, abbreviations of statistical terms and mensural units should conform with the Council of Biology Editors (CBE) Style Manual (Third ed., 1972. American Institute of Biological Sciences, 1401 Wilson Blvd., Arlington, Virginia 22209). Use the 24-hour clock (0800 and 2030) and "continental" dating (1 July 1971). In other matters of style the CBE Style Manual, the GPO Style Manual, and recent issues of The Auk will be helpful.

Tables, which must not duplicate material in either the text or illustrations, are typewritten (**double-spaced throughout!**) separately from the text. Each table should contain a short but complete heading, and must not contain vertical rulings.

Illustrations (including labels of coordinates) should be on 8½ × 11 inch (21½ × 28 cm) sheets, and must be mailed flat. Copies accompanying the original for use of reviewers should be good quality reproductions of the original illustrations. The name of the author and the figure number should be penciled on the *back* of each figure. Legends should be typed consecutively (double-spaced) on a separate page.

Drawings should be drafted with undiluted india ink, and be large enough to permit ½ to ½ reduction to the size that they will appear in print. Graphs may be drafted on coordinate paper ruled with light *blue* lines; do *not* use coordinate paper ruled with *green* lines. Use mechanical lettering, pressure transfer letters, or calligraphy; typewritten lettering is not acceptable. Lettering should be large enough to be easily readable after 50% reduction of the figure, but not overly large. Lettering style should be uniform among all figures for a manuscript, as should the size of lettering following reduction. Avoid bold, heavy, or ornate letters. Photographs should be glossy prints of good contrast and sharpness, and should be approximately the same size as they will appear in print. Letters and arrows on photographs are best applied by pressure-sensitive materials.

In articles containing more than five references, the citations are listed (double-spaced!) in a Literature Cited section following the text and Acknowledgments. For five or fewer references, cite them in the text following these examples: Sauer (1972, Auk 39: 717), or (Sauer 1972, Auk 39: 717). Text citations should include author and year (e.g. Darwin 1858), or, if more than two authors are involved, the first author and year (Jones et al. 1947). If critical matter is cited or quoted directly from longer works, indicate the pertinent pages (e.g. MacArthur 1972: 204-207). Citations of two or more works on the same topic should be cited in chronological order (e.g. Meanley 1971, Dyer 1975). For abbreviations and forms of titles of serial publications, follow the BIOSIS List of Serials (1974, BioSciences Information Service of Biological Abstracts). Consult recent issues of The Auk and The CBE Style Manual for additional details. A more detailed set of instructions for contributors appeared in The Auk, Vol. 94, No. 1 (January 1977), copies of which are available upon request from the Editor-Elect.

CONTENTS

A NEW GENUS AND SPECIES OF OWL (AVES: STRIGIDAE) FROM PERU. <i>John P. O'Neill and Gary R. Graves</i>	409
THE SKUAS OF THE NORTH AMERICAN PACIFIC COAST. <i>Pierre Devillers</i>	417
IN MEMORIAM: MARGARET MORSE NICE. <i>Milton B. Trautman</i>	430
CHLORINATED HYDROCARBON POLLUTANTS IN ALASKAN GYRFALCONS AND THEIR PREY. <i>Wayman Walker</i>	442
A TEST OF THE ADAPTIVENESS OF INTERSPECIFIC TERRITORIALITY IN THE BLUE-THROATED HUMMINGBIRD. <i>David L. Lyon, James Crandall, and Mark McKone</i>	448
ESTIMATING BREEDING SEASON BIRD DENSITIES FROM TRANSECT COUNTS. <i>John T. Emlen</i>	455
COLONY SELECTION AND COLONY SITE TENACITY IN RING-BILLED GULLS AT A STABLE COLONY. <i>William E. Southern</i>	469
THE GROUPING OF NOCTURNAL PASSERINE MIGRANTS. <i>Richard Balcomb</i>	479
WOODCOCK NESTING HABITAT IN NORTHERN WISCONSIN. <i>Larry E. Gregg and James B. Hale</i>	489
ROOSTING BEHAVIOR OF THE PIÑON JAY IN AUTUMN AND WINTER. <i>Russell P. Balda, Michael L. Morrison, and Thomas R. Bement</i>	494
DEMOGRAPHIC FEATURES OF A LAPLAND LONGSPUR POPULATION NEAR BARROW, ALASKA. <i>Thomas W. Custer and Frank A. Pitelka</i>	505
FOOD HABITS AND NICHE OVERLAP OF SEABIRDS WINTERING ON MONTEREY BAY, CALIFORNIA. <i>D. M. Baltz and G. Victor Morejohn</i>	526
SEASONAL THYROID GLAND HISTOPHYSIOLOGY AND WEIGHT IN WHITE-TAILED PTARMIGAN. <i>E. Otto Höhn and Clait E. Braun</i>	544
A QUANTITATIVE ANALYSIS OF THE INCUBATION BEHAVIOR OF THE ADÉLIE PENGUIN. <i>Dirk V. Derksen</i>	552
TWO-VOICE PHENOMENON IN BIRDS: FURTHER EVIDENCE. <i>David B. Miller</i>	567
AVIAN PLAY. <i>Millicent S. Ficken</i>	573
GENERAL NOTES	
Predation in a salt marsh Laughing Gull colony. <i>William A. Montevocchi</i>	583
Red-shouldered Hawks in juvenile plumage nest successfully. <i>Victor Apanius</i>	585
Uncommon natural injuries in hawks. <i>David L. Evans</i>	585
Jackass Penguins sunning at sea. <i>J. Cooper</i>	586
Chemical residues in Arizona Harris' Hawk eggs. <i>William J. Mader</i>	587
Winter observations of Brown Pelicans in Veracruz, Mexico. <i>Robert M. Zink</i>	588
An unusual interaction between Blue-winged and Golden-winged Warblers in Virginia. <i>Curtis S. Adkisson and Scott S. Campbell</i>	588
Adaptive significance of cowbird egg distribution. <i>Phillip F. Elliott</i>	590
Cannibalism in adult nesting Red-tailed Hawks. <i>James F. Steffen</i>	593
Defense of feeding sites by Orioles and Hepatic Tanagers in Mexico. <i>Robert William Cruden and Sharon Marie Hermann-Parker</i>	594
Helpers at the nest in Barn Swallows. <i>Gerald R. Myers and David W. Waller</i>	596
Leapfrog feeding in the Great Egret. <i>Douglas Gladstone</i>	596
Nest appropriation and mate replacement in the Bushtit. <i>Stephen Ervin</i>	598
The breeding status of the Long-billed Curlew in Colorado. <i>D. Archibald McCallum, Walter D. Graul, and Ronald Zaccagnini</i>	599
Hoopoe, a first record for North America. <i>Christian P. Dau and Jack Paniyak</i>	601
Color selection of nesting material by Killdeer. <i>Robert C. Kull, Jr.</i>	602
Gray-rumped Tattlers catching fish. <i>David Melville</i>	604
The Azure-rumped Tanager in Mexico with comparative remarks on the Gray-and-gold Tanager. <i>Steven L. Hilty and David Simon</i>	605
A simple technique for analyzing bird transect counts. <i>Martha Hatch Balph, L. Charles Stoddart, and David F. Balph</i>	606
Eleven-day incubation by an American Robin. <i>Hervey Brackbill</i>	607
Morphological and behavioral development of the Mandarin Duck. <i>Richard L. Bruggers and William B. Jackson</i>	608
Willow Ptarmigan remove broken eggs from the nest. <i>H. M. Allen and H. Parker</i>	612
Altruism in nesting Yellow-bellied Sapsucker. <i>Lawrence Kilham</i>	613
CORRECTIONS	614
REVIEWS. <i>Edited by Walter Bock</i>	615
NOTES AND NEWS	621