

Published by the  
Cooper  
Ornithological Society



Volume 102  
No. 3  
August 2000

# THE CONDOR

An International Journal of Avian Biology



## COOPER ORNITHOLOGICAL SOCIETY

*President:* GLENN E. WALSBURG, Department of Biology, Arizona State University, Tempe, AZ 85287-1501, 480-965-3543, 480-965-2519 fax, walsberg@asu.edu

*President-elect:* TERRELL D. RICH, Bureau of Land Management, 1387 S. Vinnell Way, Boise, ID 83709, 208-373-4043, 208-373-4050 fax, terry\_rich@id.blm.gov

*Secretary:* EILEEN M. KIRSCH, Biological Resources Division of the U.S. Geological Survey, PO Box 818, La Crosse, WI 54602, 608-783-6451, 608-783-6066 fax, eileen\_kirsch@usgs.gov

*Assistant Secretary:* PETER STETTENHEIM, 168 Croydon Turnpike, Plainfield, NH 03781-5403, 603-448-4655, peter.stettenheim@valley.net

*Treasurer:* BONNIE S. BOWEN, Department of Animal Ecology, 124 Science Hall II, Iowa State University, Ames, IA 50011, 515-294-6391, 515-294-7874 fax, bsbowen@iastate.edu

*Assistant Treasurer:* JAMES J. DINSMORE, Department of Animal Ecology, Iowa State University, Ames, IA 50011, 515-294-7669, 515-294-7874 fax, oldcoot@iastate.edu

*Editor of THE CONDOR:* WALTER D. KOENIG, Hastings Natural History Reservation, 38601 E. Carmel Valley Road, Carmel Valley, CA 93924, 831-659-5981, 831-659-3649 fax, wicker@uclink4.berkeley.edu

*Managing Editor of THE CONDOR:* DAVID J. GUBERNICK, Condor Editorial Office, Hastings Natural History Reservation, 38601 E. Carmel Valley Road, Carmel Valley, CA 93924, 831-659-1369, condor@socrates.berkeley.edu

*Editor of STUDIES IN AVIAN BIOLOGY:* JOHN ROTENBERRY, Department of Biology, University of California, Riverside, CA 92521, 909-787-3953, 909-787-4286 fax, rote@ucr.ac1.ucr.edu

### BOARD OF DIRECTORS

1997-2000

BETTE A. LOISELLE  
ROBERT E. RICKLEFS  
DIANA F. TOMBACK

1998-2001

WILLIAM R. DAWSON  
NADAV NUR  
DONALD POWERS

1999-2002

PATRICIA KENNEDY  
LLOYD F. KIFF  
TERRELL D. RICH

**STANDING COMMITTEES.** BYLAWS: N. Nur,\* S. Russell. CONSERVATION-RESOLUTIONS: M. Sogge,\* C. Beardmore, M. Bechard, E. Kirsch, T. Root. FINANCE: D. Tomback,\* B. Bowen, T. Bucher, E. Campbell, B. Loisel. HISTORY: L. F. Kiff,\* H. Cogswell, R. J. Quigley. HONORARY MEMBERSHIP: R. Balda.\* MEMBERSHIP: B. Loisel,\* B. Mila, J. M. Scott, J. Blake. MEWALDT-KING AWARD: J. R. Faaborg,\* T. C. Grubb Jr., B. L. Woodworth. MILLER AWARD: R. Ricklefs,\* W. R. Dawson, V. Nolan Jr., D. F. Tomback, J. Verner. NOMINATING FOR DIRECTORS: D. Powers,\* S. Jones, D. Swanson. PAINTON AWARD: C. Vleck,\* J. Bates, M. Ficken. PUBLICATIONS: B. O. Wolf,\* W. D. Koenig, J. Rotenberry. 2000 ANNUAL MEETING, LOCAL COMMITTEE: J. Rotenberry,\* T. A. Scott,\* D. Cooper, W. Kristan, B. Kus, M. Patten, W. Wehjte. 2000 ANNUAL MEETING, SCIENTIFIC PROGRAM: T. A. Scott,\* J. Rotenberry,\* C. Collins, K. Garrett, M. Martin, O. Rider, S. Zack.

**AD HOC COMMITTEES.** STUDENT AWARDS: B. Kus,\* M. Colwell, A. Powell, M. Whitfield. STUDENT PARTICIPATION: T. L. George,\* R. Dixon, S. Hejl, S. Jones, R. R. Koford, K. Sullivan. MEMBERSHIP IN DEVELOPING COUNTRIES: B. Loisel.\* HOME PAGE: K. G. Smith.\* (\*Chair or Co-chair.)

**REPRESENTATIVES.** AAAS: E. Saiff. AMERICAN BIRD CONSERVANCY: E. Schreiber, L. Kiff. NORTH AMERICAN BANDING COUNCIL: S. Russell, C. Collins (alternate). ORNITHOLOGICAL COUNCIL: S. L. L. Gaunt, L. Kiff.

### MEMBERSHIP AND SUBSCRIPTIONS

Any person interested in avian biology may become a member of the Cooper Ornithological Society. All members receive *THE CONDOR*. North American members also receive the bimonthly *ORNITHOLOGICAL NEWSLETTER*. Membership rates are \$35 per year for regular members in the United States, Canada, Australia, Belgium, Denmark, Finland, France, Germany, Iceland, Israel, Japan, Luxembourg, The Netherlands, New Zealand, Norway, Sweden, and the United Kingdom. Regular membership rates are \$20 per year for members in all other countries. Rates are \$20 for student and emeritus members, and \$40 for families. Institutional subscriptions are \$90. Send check or money order in U.S. funds with complete name and address to: Ornithological Societies of North America (O.S.N.A.), P.O. Box 1897, Lawrence, KS 66044-8897. If applying for student rates, include a brief, signed statement from an academic advisor certifying student status.

### PUBLICATIONS

*THE CONDOR* (ISSN 0010-5422) is a quarterly journal devoted to the biology of wild species of birds. It publishes research reports and occasional review articles. *Contributors should follow instructions on the preparation and submission of articles given in the February issue.*

**Manuscripts, announcements, and advertising:** to Walter D. Koenig, address above.

**Books for review:** to Barbara Kus, Department of Biology, San Diego State University, San Diego, CA 92182.

**Changes of address and queries about missing issues for subscriptions:** to O.S.N.A., address above.

**Purchases of back issues:** to Cooper Ornithological Society, % Western Foundation of Vertebrate Zoology, 439 Calle San Pablo, Camarillo, CA 93012-8506, USA.

*STUDIES IN AVIAN BIOLOGY*, a series of works too long for the journal, is published at irregular intervals.

**Manuscripts:** to John Rotenberry, Editor, address above.

**Purchase of issues:** Cooper Ornithological Society, % Western Foundation of Vertebrate Zoology, 439 Calle San Pablo, Camarillo, CA 93012-8506, USA, wfvz@wfvz.org

POSTMASTER: Send address changes to *THE CONDOR*, O.S.N.A., P.O. Box 1897, Lawrence, KS 66044-8897. Periodicals postage paid at Lawrence, KS 66044, U.S.A., and additional mailing offices. Printed quarterly at Lawrence, Kansas, U.S.A. by Allen Press, Inc. and is published by the Cooper Ornithological Society, 810 East 10th Street, Lawrence, Kansas 66044-8897. © The Cooper Ornithological Society 2000.



## CONTENTS

### SPECIAL SECTION: DISPERSAL BEHAVIOR

- Dispersal Behavior: An Ornithological Frontier  
JEFFREY R. WALTERS . . . . . 479
- Inbreeding Depression and Its Effects on Natal Dispersal in Red-cockaded Woodpeckers  
SUSAN J. DANIELS AND JEFFREY R. WALTERS . . . . . 482
- Natal Dispersal in the Cooperatively Breeding Acorn Woodpecker  
WALTER D. KOENIG, PHILIP N. HOOGE, MARK T. STANBACK AND JOSEPH HAYDOCK . . . . . 492
- Recruitment, Dispersal, and Demographic Rescue in Spatially-Structured White-tailed Ptarmigan Populations  
KATHY MARTIN, PETER B. STACEY AND CLAIT E. BRAUN . . . . . 503
- Seasonal Migration and Genetic Population Structure in House Wrens  
NIDIA ARGUEDAS AND PATRICIA G. PARKER . . . . . 517

### FEATURES

- Use of Arboreal Termitaria by Nesting Birds in the Peruvian Amazon  
DONALD J. BRIGHTSMITH . . . . . 529
- Use of Two Song Categories by Golden-cheeked Warblers  
JEFFREY S. BOLSINGER . . . . . 539
- Does Beak Size Affect Acoustic Frequencies in Woodcreepers?  
MARIA G. PALACIOS AND PABLO L. TUBARO . . . . . 553
- Numerical and Functional Responses of Migrant Bald Eagles Exploiting a Seasonally Concentrated Food Source  
MARCO RESTANI, ALAN R. HARMATA AND ELIZABETH M. MADDEN . . . . . 561
- The Diet of the Magnificent Frigatebird During Chick Rearing  
ITZIA CALIXTO-ALBARRÁN AND JOSÉ-LUIS OSORNO . . . . . 569
- Nocturnal and Diurnal Foraging Activity of Hawaiian Albatrosses Detected with a New Immersion Monitor  
PATRICIA FERNÁNDEZ AND DAVID J. ANDERSON . . . . . 577
- Effects of Forest Fragment Size and Successional Stage on Mixed-Species Bird Flocks in Southeastern Brazil  
MARCOS MALDONADO-COELHO AND MIGUEL Â. MARINI . . . . . 585
- The Spatial Response of Male Hooded Warblers to Edges in Isolated Fragments  
D. RYAN NORRIS, BRIDGET J. M. STUTCHBURY AND TREVOR E. PITCHER . . . . . 595
- Demography of a Declining Population of Warbling Vireos in Coastal California  
THOMAS GARDALI, GRANT BALLARD, NADAV NUR AND GEOFFREY R. GEUPEL . . . . . 601
- Molt of the Gray Vireo  
GARY VOELKER . . . . . 610
- Nesting Effort of Northern Pintails in Alberta  
KARLA L. GUYN AND ROBERT G. CLARK . . . . . 619
- Interactive Effects of Vegetation and Predators on the Success of Natural and Simulated Nests of Grassland Songbirds  
NANCY DION, KEITH A. HOBSON AND SERGE LARIVIÈRE . . . . . 629
- Seasonal Energetics of Mountain Chickadees and Juniper Titmice  
SHELDON J. COOPER . . . . . 635
- Water Balance During Real and Simulated Long-distance Migratory Flight in the Bar-tailed Godwit  
MÉTA M. LANDYS, THEUNIS PIERSMA, G. HENK VISSER, JOOP JUKEMA AND ARNOLD WIJKER . . . . . 645

(Continued on inside back cover)