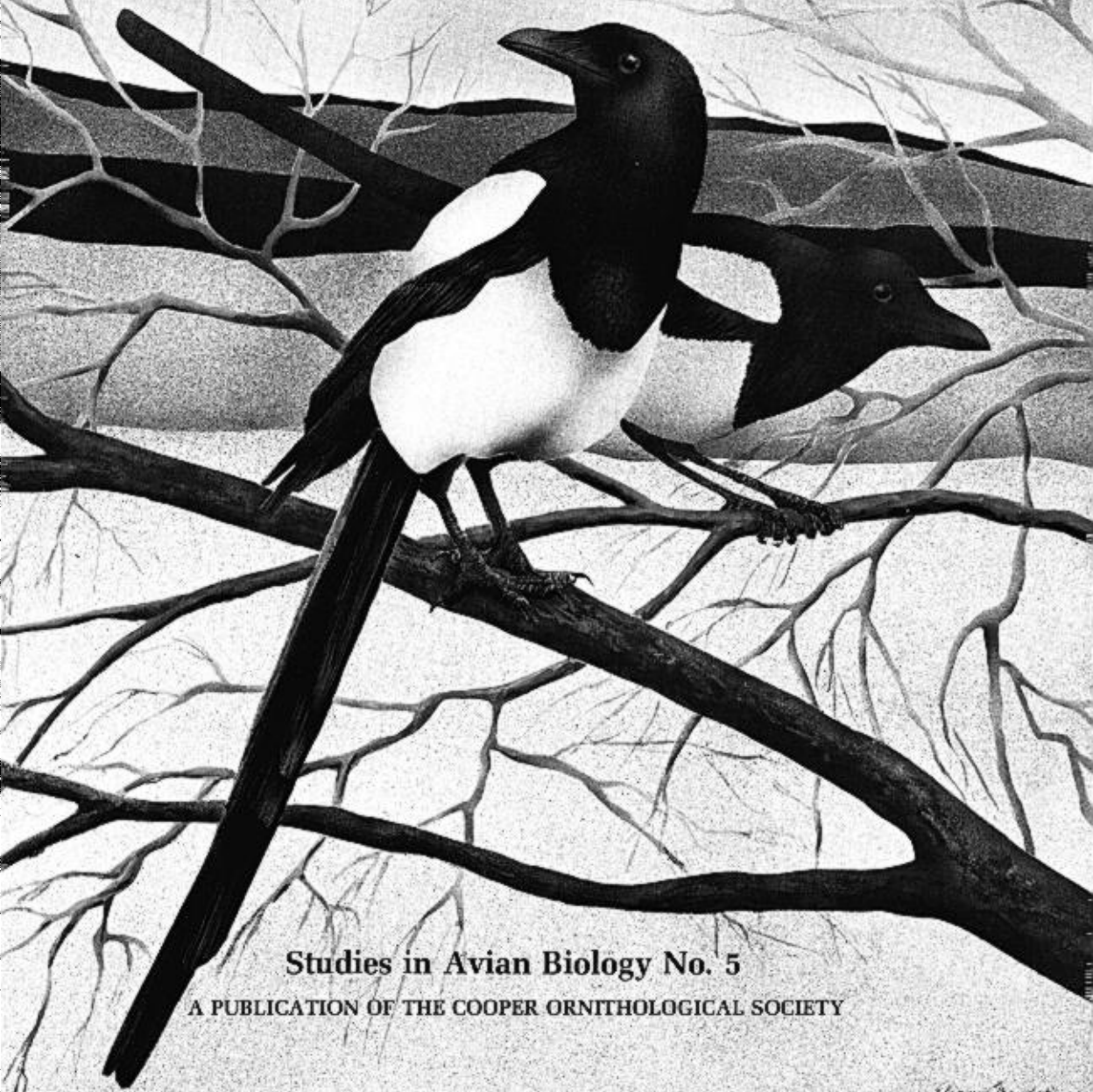


Annual Variation of Daily Energy Expenditure by the Black-billed Magpie:

A Study of Thermal and Behavioral Energetics

JOHN N. MUGAAS and JAMES R. KING



Studies in Avian Biology No. 5

A PUBLICATION OF THE COOPER ORNITHOLOGICAL SOCIETY

James R. King

Annual Variation of Daily Energy Expenditure by the Black-billed Magpie:

A Study of Thermal and Behavioral Energetics

JOHN N. MUGAAS and JAMES R. KING

DEPARTMENT OF ZOOLOGY
WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON

Studies in Avian Biology No. 5

A PUBLICATION OF THE COOPER ORNITHOLOGICAL SOCIETY

Cover Design: Black-billed Magpie by Eleanor McIntire, Department of Biomedical Communications, West Virginia School of Osteopathic Medicine.

STUDIES IN AVIAN BIOLOGY

Edited by

RALPH J. RAITT

with assistance of

JEAN P. THOMPSON and THOMAS G. MARR

at the

Department of Biology
New Mexico State University
Las Cruces, New Mexico 88003

EDITORIAL ADVISORY BOARD

Joseph R. Jehl, Jr.

Frank A. Pitelka

Dennis M. Power

Studies in Avian Biology, as successor to *Pacific Coast Avifauna*, is a series of works too long for *The Condor*, published at irregular intervals by the Cooper Ornithological Society. Manuscripts for consideration should be submitted to the Editor at the above address. Style and format should follow those of previous issues.

Price: \$8.00 including postage and handling. All orders cash in advance; make checks payable to Cooper Ornithological Society. Send orders to Allen Press, Inc., P.O. Box 368, Lawrence, Kansas 66044. For information on other publications of the Society, see recent issues of *The Condor*.

Current address of John N. Mugaas: Department of Physiology, West Virginia School of Osteopathic Medicine, Lewisburg, WV 24901.

Library of Congress Catalog Card Number 81-66956
Printed by the Allen Press, Inc., Lawrence, Kansas 66044
Issued May 6, 1981

Copyright by Cooper Ornithological Society, 1981