

# A Telemetry Receiver Designed with The Researcher in Mind

*What you've been waiting for!*

Finally, a highly sensitive 999 channel synthesized telemetry receiver that weighs less than 13 ounces, is completely user programmable and offers variable scan rates over all frequencies. For each animal being tracked, the large LCD display provides not only the frequency (to 100Hz) and channel number, but also a 7 character alphanumeric comment field and a digital signal strength meter. Stop carrying receivers that are the size of a lunch box or cost over \$1500. The features and performance of the new R-1000 pocket sized telemetry receiver will impress you, and the price will convince you.

#### **Other Features Include:**

- Factory tuned to any 4MHz wide segment in the 148-174MHz Band
- Very high sensitivity of -148dBm to -150dBm
- Illuminated display and keypad for use in low light or darkness
- User selectable scan rates from 1-30 seconds in 1 second steps
- Rechargeable batteries operate the receiver for 12 hours and can be replaced with standard AA Alkaline batteries in the field. Both 12vdc and 110vac chargers are included.

- 6.1" (15.5cm) high, 2.6" (6.6cm) wide, 1.5" (3.8cm) deep.

- 3 year warranty
- 1 day delivery

**\$695.00**

Please specify desired 4MHz wide segment in the 148-174MHz band

Visit our website for complete specifications, operating manual and information on the R-1000 or call our toll-free number to order your receiver now.

**Try the  
New R-1000  
and You'll Be  
Impressed!**



**COMMUNICATIONS SPECIALISTS, INC.**

426 West Taft Avenue • Orange, CA 92865-4296 • 1-714-998-3021 • Fax 1-714-974-3420  
Entire U.S.A. (800) 854-0547 • Fax (800) 850-0547 • <http://www.com-spec.com>



## 2001 ANNUAL MEETING

The Raptor Research Foundation, Inc. 2001 annual meeting will be held on 25–30 October in Winnipeg, Manitoba, Canada. For information about the meeting contact Jim Duncan, Biodiversity program, Wildlife Branch, Manitoba Natural Resources, Box 24, 200 Saulteaux Crescent, Winnipeg, MB R3J 3W3 Canada. Email [jduncan@nr.gov.mb.ca](mailto:jduncan@nr.gov.mb.ca).

\*\*\*\*\*

Persons interested in predatory birds are invited to join The Raptor Research Foundation, Inc. Send requests for information concerning membership, subscriptions, special publications, or change of address to OSNA, P.O. Box 1897, Lawrence, KS 66044-8897, U.S.A.

*The Journal of Raptor Research* (ISSN 0892-1016) is published quarterly and available to individuals for \$33.00 per year and to libraries and institutions for \$50.00 per year from The Raptor Research Foundation, Inc., 14377 117th Street South, Hastings, Minnesota 55033, U.S.A. (Add \$3 for destinations outside of the continental United States.) Periodicals postage paid at Hastings, Minnesota, and additional mailing offices. POSTMASTER: Send address changes to *The Journal of Raptor Research*, OSNA, P.O. Box 1897, Lawrence, KS 66044-8897, U.S.A.

Printed by Allen Press, Inc., Lawrence, Kansas, U.S.A.

Copyright 2001 by The Raptor Research Foundation, Inc. Printed in U.S.A.

☺ This paper meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

### RAPTOR RESEARCH FOUNDATION, INC., AWARDS

#### Recognition for Significant Contributions<sup>1</sup>

The **Dean Amadon Award** recognizes an individual who has made significant contributions in the field of systematics or distribution of raptors. Contact: **Dr. Clayton White, 161 WIDB, Department of Zoology, Brigham Young University, Provo, UT 84602 U.S.A.** Deadline August 15.

The **Tom Cade Award** recognizes an individual who has made significant advances in the area of captive propagation and reintroduction of raptors. Contact: **Dr. Brian Walton, Predatory Bird Research Group, Lower Quarry, University of California, Santa Cruz, CA 95064 U.S.A.** Deadline: August 15.

The **Fran and Frederick Hamerstrom Award** recognizes an individual who has contributed significantly to the understanding of raptor ecology and natural history. Contact: **Dr. David E. Andersen, Department of Fisheries and Wildlife, 200 Hodson Hall, 1980 Folwell Avenue, University of Minnesota, St. Paul, MN 55108 U.S.A.** Deadline: August 15.

#### Recognition and Travel Assistance

The **James R. Koplín Travel Award** is given to a student who is the senior author of the paper to be presented at the meeting for which travel funds are requested. Contact: **Patricia A. Hall, 5937 E. Abbey Road, Flagstaff, AZ 86004 U.S.A.**

The **William C. Andersen Memorial Award** is given to the student who presents the best paper at the annual Raptor Research Foundation Meeting. Contact: **Ms. Laurie Goodrich, Hawk Mountain Sanctuary, Rural Route 2, Box 191, Kempton, PA 19529-9449 U.S.A.** Deadline: Deadline established for meeting paper abstracts.

#### Grants<sup>2</sup>

The **Stephen R. Tully Memorial Grant** for \$500 is given to support research, management and conservation of raptors, especially to students and amateurs with limited access to alternative funding. Contact: **Dr. Kimberly Titus, Alaska Division of Wildlife Conservation, P.O. Box 20, Douglas, AK 99824 U.S.A.** Deadline: September 10.

The **Leslie Brown Memorial Grant** for \$500–\$1,000 is given to support research and/or the dissemination of information on raptors, especially to individuals carrying out work in Africa. Contact: **Dr. Jeffrey L. Lincer, 1220 Rosecrans St. #315, San Diego, CA 92106 U.S.A.** Deadline: September 15.

<sup>1</sup>Nominations should include: (1) the name, title and address of both nominee and nominator, (2) the names of three persons qualified to evaluate the nominee's scientific contribution, (3) a brief (one page) summary of the scientific contribution of the nominee.

<sup>2</sup>Send 5 copies of a proposal (≤5 pages) describing the applicant's background, study goals and methods, anticipated budget, and other funding.

# CONTENTS

LONG-TERM CHANGES OF RAPTOR POPULATIONS IN NORTHERN CAMEROON. Jean-Marc Thiollay .....	173
SEXING BONELLI'S EAGLE NESTLINGS: MORPHOMETRICS VERSUS MOLECULAR TECHNIQUES. Luís Palma, Sara Mira, Pedro Cardia, Pedro Beja, Thomas Guillemaud, Nuno Ferrand, M. Leonor Cancela, and Luís Cancela da Fonseca .....	187
EMBRYONIC DEVELOPMENT OF THE AMERICAN KESTREL ( <i>FALCO SPARVERIUS</i> ): EXTERNAL CRITERIA FOR STAGING. J.M. Pisenti, G.M. Santolo, J.T. Yamamoto, and A.A. Morzenti .....	194
ANALYSIS OF BALD EAGLE SPATIAL USE OF LINEAR HABITAT. Alan R. Harmata and George J. Montopoli .....	207
HABITAT USE, POPULATION DENSITY, AND HOME RANGE OF ELF OWLS ( <i>MICRATHENE WHITNEYI</i> ) AT SANTA ANA NATIONAL WILDLIFE REFUGE, TEXAS. Christopher M. Gamel and Timothy Brush .....	214
DIETS OF NORTHERN BARRED OWLS AND NORTHERN SPOTTED OWLS IN AN AREA OF SYMPATRY. Thomas E. Hamer, David L. Hays, Clyde M. Senger, and Eric D. Forsman .....	221
FACTORS INFLUENCING LENGTH OF THE POST-FLEDGING PERIOD AND TIMING OF DISPERSAL IN BONELLI'S EAGLE ( <i>HIERAAETUS FASCIATUS</i> ) IN SOUTHWESTERN SPAIN. Eduardo Mínguez, Elena Angulo, and Vivian Siebering .....	228
DISPERSION, HABITAT USE, HUNTING BEHAVIOR, VOCALIZATIONS, AND CONSERVATION STATUS OF THE NEW GUINEA HARPY EAGLE ( <i>HARPYOPSIS NOVAEGUINEAE</i> ). Mark Watson and Smith Asoyama .....	235
SEASONAL AND GEOGRAPHIC DIFFERENCES IN THE DIET OF THE BARN OWL IN AN AGRO-ECOSYSTEM IN NORTHERN ITALY. Michela Bosè and Franca Guidali .....	240
POTENTIAL NEGATIVE EFFECTS OF COLLISIONS WITH TRANSMISSION LINES ON A BONELLI'S EAGLE POPULATION. Santi Mañosa and Joan Real .....	247
SHORT COMMUNICATIONS	
AGONISTIC BEHAVIOR OF COOPER'S HAWKS. Clint W. Boal .....	253
GROUND-NESTING OSPREYS IN UTAH. Clark S. Monson .....	257
DIET AND BREEDING SUCCESS OF EAGLE OWL IN SOUTHEASTERN SPAIN: EFFECT OF RABBIT HAEMORRHAGIC DISEASE. José E. Martínez and José F. Calvo .....	259
LETTER	
FIRST RECORD OF TANDEM FLYING IN THE KING VULTURE ( <i>SARCORAMPHUS PAPA</i> ). Marsha A. Schlee .....	263
BOOK REVIEWS. Edited by Jeffrey S. Marks .....	265