Herpetological Review

Volume 48, Number 1 - March 2017

HERPETOLOGICAL REVIEW

THE QUARTERLY BULLETIN OF THE SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES

Editor ROBERT W. HANSEN 16333 Deer Path Lane Clovis, California 93619-9735 USA HerpReview@gmail.com

Associate Editors MICHAEL F. BENARD Case Western Reserve University, USA

JESSE L. BRUNNER Washington State University, USA

FÉLIX B. CRUZ INIBIOMA, Río Negro, Argentina

RAUL DIAZ La Sierra University, California, USA

ROBERT E. ESPINOZA California State University, Northridge, USA

CHRISTOPHER SCHALK Sam Houston State University, USA

GUNTHER KÖHLER Forschungsinstitut und Naturmuseum Senckenberg, Germany

PETER V. LINDEMAN Edinboro University, USA

DEANNA H. OLSON USDA Forestry Science Lab, Corvallis, Oregon, USA

DANIEL SAENZ USDA Forest Service, Nacogdoches, Texas, USA

MATTHEW C. ALLENDER University of Illinois, USA

SCOTT M. BOBACK Dickinson College, Pennsylvania, USA

Index Editor RUTHE SMITH

Section Editors Book Reviews KENNETH DODD Gainesville, Florida, USA terrapene600@gmail.com Conservation JENNIFER STABILE Field Projects International jens@fieldprojects.org

Current Research CHAVA WEITZMAN University of Nevada, Reno, USA clweitzman@unr.edu

BEN LOWE University of Minnesota, USA lowe0160@umn.edu

Geographic Distribution INDRANEIL DAS Universiti Malaysia Sarawak, Malaysia idas@ibec.unimas.my

JERRY D. JOHNSON The University of Texas at El Paso, USA *jjohnson@utep.edu*

GUSTAVO J. SCROCCHI Fundación Miguel Lillo, Argentina soniak@webmail.unt.edu.ar

DAVID C. BLACKBURN Florida Museum of Natural History, University of Florida, USA david.c.blackburn@gmail.com

TRAVIS TAGGART Fort Hays State University, USA ttaggart@fhsu.edu

Glimpses of the Past WILLIAM LAMAR University of Texas, Tyler, USA wlamar@uttyler.edu

Herpetoculture ROBERT HILL Zoo Atlanta, USA rhill@zooatlanta.org

ROBERT W. MENDYK Jacksonville Zoo and Gardens, USA *MendykR@si.edu*

Natural History Notes JAMES H. HARDING Michigan State University, USA hardingj@msu.edu SEAN P. GRAHAM Sul Ross State University, Texas, USA grahasp@tigermail.auburn.edu

J. SEAN DOODY Southeastern Louisiana University, USA herprev.ltc.nhn@gmail.com

JOHN D. WILLSON University of Arkansas, Fayetteville, USA hr.snake.nhn@gmail.com

CRYSTAL KELEHEAR GRAHAM Smithsonian Tropical Research Institute, Panama, Republic of Panama *crystal.kelehear@hotmail.com*

ANDREW M. DURSO Utah State University, Logan, USA amdurso@gmail.com

Nomenclature JAY M. SAVAGE San Diego State University, California, USA savy1@cox.net

Zoo View JAMES B. MURPHY National Museum of Natural History, Smithsonian Institution, USA jbmurphy222@gmail.com

Copy Editors DREW R. DAVIS University of South Dakota, USA

NASSIMA BOUZID University of Washington, Seattle, USA

CHAN KIN ONN University of Kansas, USA

RUTHE SMITH Santa Cruz, California, USA

PETER MILLER Woodland Park Zoo, Seattle, USA

Herpetological Art & Illustration Coordinator JACKSON D. SHEDD Nevada Department of Conservation and Natural Resources, USA jackson_shedd@sbcglobal.net

SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES

www.ssarherps.org

The Society for the Study of Amphibians and Reptiles, the largest international herpetological society, is a not-for-profit organization established to advance research, conservation, and education concerning amphibians and reptiles. Founded in 1958, SSAR is widely recognized today as having the most diverse society-sponsored program of services

and publications for herpetologists. Membership is open to anyone with an interest in herpetology—professionals and serious amateurs alike—who wish to join with us to advance the goals of the Society.

All members of the SSAR are entitled to vote by mail ballot for Society officers, which allows overseas members

Future Annual Meetings

2017 — Austin, Texas, USA 12-16 July (JMIH with ASIH and HL)

ties; also, many international members attend the annual meetings and serve on editorial boards and committees. All members and institutions receive the Soci-

All members and institutions receive the Society's primary technical publication, the *Journal of Herpetology*, and its bulletin, *Herpetological Review*;

to participate in determining the Society's activi-

both are published four times per year. Members also receive pre-publication discounts on other Society publications, which are advertised in *Herpetological Review*.

To join SSAR or to renew your membership, please visit the secure online SSAR membership website via this link: https://ssar.wildapricot.org/

SSAR OFFICERS (2017)

President RICK SHINE University of Sydney rick.shine@sydney.edu.au

President-elect MARTHA CRUMP Utah State University marty.crump@usu.edu

Secretary MARION R. PREEST The Claremont Colleges mpreest@jsd.claremont.edu

Treasurer KIM LOVICH San Diego Zoo Global klovich@sandiegozoo.org

Publications Secretary CARI-ANN M. HICKERSON John Carroll University chickerson@jcu.edu

Immediate Past President AARON M. BAUER Villanova University

aaron.bauer@villanova.edu Directors ROBIN ANDREWS (2018)

Virginia Polytechnic and State University, USA EMILY TAYLOR (2018) California Polytechnic State University, USA

TONY GAMBLE (2018) University of Minnesota, USA

LEE FITZGERALD (2020) Texas A&M University, USA

JACQUELINE LITZGUS (2020) Laurentian University, Canada

ANN PATERSON (2020) Williams Baptist College, USA

MELISSA PILGRIM (2020) University of South Carolina Upstate, USA

GREGORY WATKINS-COLWELL (2020) Yale Peabody Mus. of Nat. Hist., USA

Trustee GEORGE R. PISANI University of Kansas

SSAR EDITORS

Journal of Herpetology TIFFANY M. DOAN, Co-Editor New College of Florida

PAUL E. BARTELT, Co-Editor Waldorf College

Contributions to Herpetology KRAIG ADLER, Editor Cornell University

Facsimile Reprints in Herpetology AARON M. BAUER, Editor Villanova University

Herpetological Circulars JOHN J. MORIARTY, Editor Plymouth, Minnesota

Catalogue of American Amphibians and Reptiles

TRAVIS LADUC, Co-Editor University of Texas at Austin

CHRISTOPHER J. BELL, Co-Editor University of Texas at Austin

Herpetological Conservation JOSEPH C. MITCHELL, Editor Mitchell Ecological Research Services





FIG. 1. Male-male combat in *Micrurus lemniscatus carvalhoi*, São Manuel municipality, São Paulo, Brazil. Males were found with the bodies intertwined, maintaining their heads side by side in the horizontal position (A), and possibly trying to raise above the head of opponent (B).

1B). The witnessed behavior is similar to that recorded for wild M. altirostris, where two males were aligned horizontally with bodies and tails intertwined, and heads slightly moving forward and trying to hover over their opponent (Almeida-Santos et al., op. cit.). The behavior continued for approximately 15 min and biting was not observed. A sample of the M. l. carvalhoi population shows that females are larger than males (t = 2.983; df = 54; P < 0.0001; N = 41 and N = 16), with a sexual dimorphism index of 0.29. These data differ from previous published data (Marques et al., op. cit.) suggesting that SSD was negative or close to zero for all BRT species. Thus, this is the first record of male-male combat in a Micrurus species with female-biased sexual size dimorphism. Our observation occurred during the early winter, reinforcing that this is the mating season for M. l. carvalhoi (Marques et al. 2006. South Am. J. Herpetol. 1:99-105; Marques et al. 2013, op. cit.).

We thank Carolina T. Zacho for photos and Amber Galbreath for English review.

ALEXANDRE F. R. MISSASSI, Departamento de Zoologia, Museu Paraense Emílio Goeldi, Avenida Perimetral, 1901, 66077-830, Belém, Pará, Brazil (e-mail: alexandre.missassi@gmail.com); RAFAELA Z. COETI, Faculdade de Medicina Veterinária e Zootecnia, Universidade de São Paulo, Departamento de Cirurgia, Av. Orlando Marques de Paiva, Cidade Universitária,8705508-000, São Paulo, SP, Brazil (e-mail: coeti_rafaela@usp.br); VAL-DIR J. GERMANO (e-mail:valdir.germano@butantan.gov.br); SELMA M. ALMEIDA-SANTOS, Instituto Butantan, Avenida Vital Brazil, 1500, 05503-900, São Paulo, São Paulo, Brazil (e-mail: selma.santos@butantan.gov.br).

NATRIX NATRIX (Grass Snake). MAXIMUM ELEVATION. *Natrix natrix* is widespread throughout most of Europe, Anatolia, Transcaucasia, Cyprus, Levant, Central Asia, and Siberia (to the Baikal Lake), northern Nei Mongol, China, south to Aral and Balkash Lakes and northern Iran (Kreiner 2007. The Snakes of Europe. Edition Chimaira, Frankfurt am Main, Germany. 317 pp.). In Armenia, is it also widespread with an elevational range from 550 to 2084 m (Lake Sevan area; Arakelyan et al. 2011. Herpetofauna of Armenia and Nagorno-Karabakh. Society for the Study of Amphibians and Reptiles, Salt Lake City, Utah. 149 pp.).

On 22 July 2015, we observed four *N. natrix* of both sexes in the Nshkhark region (Vardenyats Pass, Vardenis Mts.), ca. 17 km S of Geghhovit village in central Armenia. The elevation of the locality is 2289 m, representing the highest altitudinal record for the species in Armenia. The habitat of the locality was mountain meadows with shallow streams. Other species recorded on the locality were *Rana macrocnemis* and *Vipera eriwanensis*. *Natrix natrix* inhabits an array of habitats at elevations from sea level to high mountains (Kabisch 1999. *In* W. Böhme [ed.], Handbuch der Reptilien und Amphibien Europas, Band 3, Schlangen II, pp. 513–580. Akademische Verlagsgesellschaft, Wiesbaden, Germany). For instance, in central Europe it is known from 2322 m (Austria; Cabela and Tiedeman. 1985. Atlas der Amphibien und Reptilien Österreichs. Verlag Ferdinand Berger & Söhne, Wien-Horn, Austria. 80 pp.). In the southern parts of its range this species may even occur at elevations of 2500 m (Kabisch 1999, *op. cit.*). As Armenia is a very mountainous country with suitable habitats at high elevations, we cannot exclude further records of the species from higher altitudes.

DANIEL JABLONSKI, Department of Zoology, Comenius University in Bratislava, Mlynská dolina B-1, 842 15, Bratislava, Slovakia (e-mail: daniel.jablonski@balcanica.cz); DAVID HEGNER, Mšenská 3938/26, 466 04 Jablonec nad Nisou, Czech Republic; RADOVAN SMOLINSKÝ, Institute of Vertebrate Biology of the Academy of Sciences of the Czech Republic, v.v.i., Květná 8, 603 65 Brno, Czech Republic.

NATRIX TESSELLATA (Dice Snake). DIET. *Natrix tessellata* is widely distributed from southern Europe to northwestern China. The main component of its diet consists of live fish (Bannikov et al. 1977. Guide to Amphibians and Reptiles of the USSR Fauna. Moscow, Prosveshchenie. 414 pp. [in Russian]). Bakiev et al. (2009. Snakes of the Samara region. Cassandra Publishing House, Tolyatti. 170 pp. [in Russian]) recorded *N. tessellata* scavenging dead fish from the shore in the territory of Samara Bend, Samara region, Russia.

On 27 May 2016, on the banks of the Volga River, in the village of Tsagan Aman, Kalmykia, Russia (47.56638°N 46.72555°E, WGS 84; -13 m elev.), we observed an adult *N. tessellata* eating offal of *Alosa kessleri* (Caspian Anadromous Shad) that had been discarded by fishermen (Fig. 1). This observation demonstrates the broad foraging habits of this species.



FIG. 1. Natrix tessellata (melanistic) eating offal of Alosa kessleri (Caspian Anadromous Shad), Tsagan Aman, Russia.

ROMAN V. ZUEV, Zoological Museum of North Caucasian Federal University, Stavropol 355029, Russia (e-mail: romus00@yandex.ru); **IGOR V. DORONIN**, Department of Herpetology, Zoological institute of Russian Academy of Sciences, St. Petersburg 199034, Russia (e-mail: ivdoronin@ mail.ru).

NERODIA ERYTHROGASTER (Plain-bellied Watersnake). **DIET.** *Nerodia erythrogaster* has a diet comprised mostly of amphibians but it also eats a variety of fishes (Gibbons and Dorcas 2004. North American Watersnakes: a Natural History. University of Oklahoma Press, Norman. 438 pp.). Here we report two new fish species in its diet. Data were recorded from a watersnake foraging study investigating snake gut contents using palpation and regurgitation. All snakes containing new diet items were sampled using aquatic funnel traps. Snakes were sampled in 2014 at