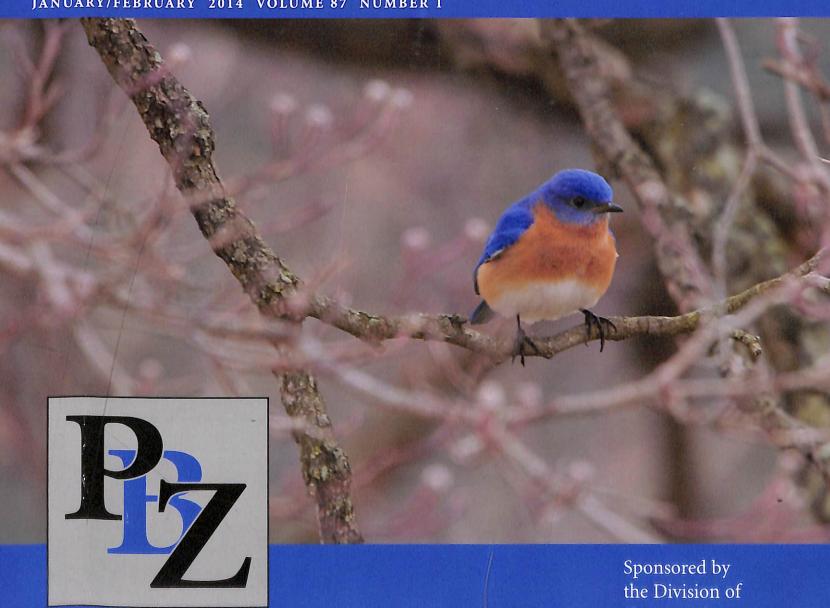
JANUARY/FEBRUARY 2014 VOLUME 87 NUMBER 1



Ecological and Evolutionary Approaches

Comparative Physiology and Biochemistry, Society for Integrative and Comparative Biology

January/February 2014 Volume 87 Number 1

On the Cover: This eastern bluebird *Sialia sialis* was photographed by Kitty Kono (http://www.kittykono.com) in Valley Forge National Park near Philadelphia, Pennsylvania.

Invited Perspective

1 Physiology, Behavior, and Conservation STEVEN J. COOKE, DANIEL T. BLUMSTEIN, RICHARD BUCHHOLZ, TIM CARO, ESTEBAN FERNÁNDEZ-JURICIC, CRAIG E. FRANKLIN, JULIAN METCALFE, CONSTANCE M. O'CONNOR, COLLEEN CASSADY ST. CLAIR, WILLIAM J. SUTHERLAND, AND MARTIN WIKELSKI

Focused Issue: Conservation Physiology

- 15 Intraspecific Variation in Thermal Tolerance and Acclimation Capacity in Brook Trout (Salvelinus fontinalis): Physiological Implications for Climate Change
 BRADLEY C. STITT, GARY BURNESS, KIRSTEN A. BURGOMASTER, SUZANNE CURRIE, JENNI L. MCDERMID, AND CHRIS C. WILSON
- 30 Are Tropical Small Mammals Physiologically Vulnerable to Arrhenius Effects and Climate Change?

 BARRY G. LOVEGROVE, CINDY CANALE, DANIELLE LEVESQUE, GERHARD FLUCH, MILADA ŘEHÁKOVÁ-PETRŮ, AND THOMAS RUF
- 46 Dehydration and Drinking Behavior of the Marine File Snake Acrochordus granulatus HARVEY B. LILLYWHITE, HAROLD HEATWOLE, AND COLEMAN M. SHEEHY III
- 56 Winter Energetics of Female Indiana Bats *Myotis sodalis* KATIE M. DAY AND THOMAS E. TOMASI
- 65 Does Feeding Behavior Facilitate Trophic Niche Partitioning in Two Sympatric Sucker Species from the American Southwest? MATTHEW W. O'NEILL AND ALICE C. GIBB
- 77 Digestive Efficiencies of Ex Situ and In Situ West Indian Manatees (*Trichechus manatus latirostris*)

 GRAHAM A. J. WORTHY AND TAMARA A. M. WORTHY
- 92 Physiological Variation among Invasive Populations of the Brown Anole (*Anolis sagrei*)

 JASON J. KOLBE, JOSEPH C. EHRENBERGER, HALEY A. MONIZ, AND MICHAEL J. ANGILLETTA JR.

(Continued on inside back cover)

1522-2152(201401/02)87:1;1-6

- 105 Physiological Vagility: Correlations with Dispersal and Population Genetic Structure of Amphibians STANLEY S. HILLMAN, ROBERT C. DREWES, MICHAEL S. HEDRICK, AND THOMAS V. HANCOCK
- Reach-Scale Land Use Drives the Stress Responses of a Resident Stream Fish
 ZACHARY W. BLEVINS, DAVID H. WAHL, AND CORY D. SUSKI
- Disentangling the Roles of Air Exposure, Gill Net Injury, and Facilitated Recovery on the Postcapture and Release Mortality and Behavior of Adult Migratory Sockeye Salmon (*Oncorhynchus nerka*) in Freshwater

 VIVIAN M. NGUYEN, EDUARDO G. MARTINS, DAVE ROBICHAUD,

 GRAHAM D. RABY, MICHAEL R. DONALDSON, ANDREW G. LOTTO,

 WILLIAM G. WILLMORE, DAVID A. PATTERSON, ANTHONY P. FARRELL,

 SCOTT G. HINCH, AND STEVEN J. COOKE
- Refuge-Seeking Impairments Mirror Metabolic Recovery Following Fisheries-Related Stressors in the Spanish Flag Snapper (*Lutjanus carponotatus*) on the Great Barrier Reef STEVEN J. COOKE, VANESSA MESSMER, ANDREW J. TOBIN, MORGAN S. PRATCHETT, AND TIMOTHY D. CLARK
- 148 Comparative Physiology and Relative Swimming Performance of Three Redhorse (*Moxostoma* spp.) Species: Associations with Fishway-Passage Success

 CHARLES HATRY, JASON D. THIEM, THOMAS R. BINDER, DANIEL HATIN, PIERRE DUMONT, KEITH M. STAMPLECOSKIE, JUAN M. MOLINA, KAREN E. SMOKOROWSKI, AND STEVEN J. COOKE
- 160 Effects of Body Concition on Buoyancy in Endangered North
 Atlantic Right Whales
 ANNA E. NOUSEK-MCGREGOR, CAROLYN A. MILLER, MICHAEL J. MOORE,
 AND DOUGLAS P. NOWACEK
- 172 Island Life Shapes the Physiology and Life History of Eastern Bluebirds (*Sialia sialis*)

 KEVIN D. MATSON, ROBERT A. MAUCK, SHARON E. LYNN, AND
 B. IRENE TIELEMAN
- 183 Physiological Evidence That Anthropogenic Woodlots Can Substitute for Native Riparian Woodlands as Stopover Habitat for Migrant Birds

MING LIU AND DAVID L. SWANSON

March/April Volume 87 Number 2

On the Cover: This tuatara (*Sphenodon punctatus*) was photographed by Ilse Corkery on Stephens/Takapourewa Island, New Zealand.

Research Papers

- 197 Field Hydration State Varies among Tropical Frog Species with Different Habitat Use Christopher R. Tracy, Thomas Tixier, Camille Le Nöene, and Keith A. Christian
- 203 Immobile and Mobile Life-History Stages Have Different Thermal Physiologies in a Lizard RORY S. TELEMECO
- 216 Investigating Kleptothermy: A Reptile-Seabird Association with Thermal Benefits
 ILSE CORKERY, BEN D. BELL, AND NICOLA J. NELSON
- 222 Countergradient Variation in Locomotor Performance of Two Sympatric Polynesian Skinks (*Emoia impar, Emoia cyanura*) MATTHEW T. MCELROY
- 231 Scallops Show That Muscle Metabolic Capacities Reflect Locomotor Style and Morphology
 ISABELLE TREMBLAY AND HELGA E. GUDERLEY
- 245 Seasonal Changes of Body Mass and Energy Budget in Striped Hamsters: The Role of Leptin ZHI-JUN ZHAO, QING-SHENG CHI, JING CAO, AND DE-HUA WANG
- 257 Infection with *Mycoplasma gallisepticum* Buffers the Effects of Acute Stress on Innate Immunity in House Finches

 MELANIE FRATTO, VANESSA O. EZENWA, AND ANDREW K. DAVIS
- 265 Linkages between Mitochondrial Lipids and Life History in Temperate and Tropical Birds
 ELISABETH A. CALHOON, ANA GABRIELA JIMENEZ, JAMES M. HARPER,
 MARIANNE S. JURKOWITZ, AND JOSEPH B. WILLIAMS
- 276 The Maternal Environment Affects Offspring Viability via an Indirect Effect of Yolk Investment on Offspring Size

 DANIEL A. WARNER AND MATTHEW B. LOVERN
- 288 Physiological and Behavioral Responses to an Acute-Phase Response in Zebra Finches: Immediate and Short-Term Effects SANDRA SKÖLD-CHIRIAC, ANDREAS NORD, JAN-ÅKE NILSSON, AND DENNIS HASSELQUIST

(Continued on inside back cover)

1522-2152(201403/04)87:2;1-Y

- 299 Regulation of Calcium Transport in the Early Life Stages of an Ancient Fish, *Acipenser fulvescens*JANET GENZ, LAUREN SHUTE, AND W. GARY ANDERSON
- 310 Without Gills: Localization of Osmoregulatory Function in the Copepod *Eurytemora affinis*KELSEY ELIZABETH JOHNSON, LUCILE PERREAU, GUY CHARMANTIER, MIREILLE CHARMANTIER-DAURES, AND CAROL EUNMI LEE
- 325 Divergent Hypoxia Tolerance in Adult Males and Females of the Plainfin Midshipman (*Porichthys notatus*)

 CHRISTOPHE M. R. LEMOINE, CAROL BUCKING, PAUL M. CRAIG, AND PATRICK J. WALSH
- 334 The Physiological Basis of the Migration Continuum in Brown Trout (Salmo trutta)

 MIKKEL BOEL, KIM AARESTRUP, HENRIK BAKTOFT, TORBEN LARSEN,

 STEFFEN SØNDERGAARD MADSEN, HANS MALTE, CHRISTIAN SKOV,

 JON C. SVENDSEN, AND ANDERS KOED
- 346 Oxidative Stress in Pacific Salmon (*Oncorhynchus* spp.) during Spawning Migration SAMANTHA M. WILSON, JESSICA J. TAYLOR, TRISHA A. MACKIE, DAVID A. PATTERSON, STEVEN J. COOKE, AND WILLIAM G. WILLMORE

Technical Comment

353 Covariation in Oxidative Stress Markers in the Blood of Nestling and Adult Birds

ANA ANGELA ROMERO-HARO AND CARLOS ALONSO-ALVAREZ



May/June 2014 Volume 87 Number 3

On the Cover: This common tern (Sterna hirundo) was photographed by Mark A. Chappell at the Medicine Lake National Wildlife Refuge in Montana.

363 Wet- and Dry-Season Steroid Hormone Profiles and Stress Reactivity of an Insular Dwarf Snake, the Hog Island Boa (Boa constrictor

MATTHEW L. HOLDING, JULIUS A. FRAZIER, SCOTT W. DORR, NICHOLAS B. POLLOCK, P. J. MUELLEMAN, AMBER BRANSKE, SLOANE N. HENNINGSEN, CAS EIKENAAR, CAMILO ESCALLÓN, CHAD E. MONTGOMERY, IGNACIO T. MOORE, AND EMILY N. TAYLOR

- 374 Pulmonary Compliance and Lung Volume Are Related to Terrestriality in Anuran Amphibians PHILIP C. WITHERS, MICHAEL S. HEDRICK, ROBERT C. DREWES, AND STANLEY S. HILLMAN
- 384 Individual (Co)variation in Standard Metabolic Rate, Feeding Rate, and Exploratory Behavior in Wild-Caught Semiaquatic Salamanders MATTHEW E. GIFFORD, TIMOTHY A. CLAY, AND VINCENT CAREAU
- 397 The Hormonal Regulation of Color Changes in the Sexually Dichromatic Frog Buergeria robusta ZIH-JING TANG, SHENG-I LUE, MAY-JYWAN TSAI, TENG-LANG YU, VARADHARAJAN THIYAGARAJAN, CHIA-HUN LEE, WEI-TUNG HUANG, AND CHING-FENG WENG
- 411 Reproductive Investment Compromises Maternal Health in Three Species of Freshwater Turtle ANTHONY R. RAFFERTY, T. FRANCISCUS SCHEELINGS, LAURA J. FOLEY, CHRISTOPHER P. JOHNSTONE, AND RICHARD D. REINA
- 420 Regulation of Breeding Behavior: Do Energy-Demanding Periods Induce a Change in Prolactin or Corticosterone Baseline Levels in the Common Tern (Sterna hirundo)? JULIANE RIECHERT, OLIVIER CHASTEL, AND PETER H. BECKER
- 432 Seasonal Phenotypic Flexibility of Body Mass, Organ Masses, and Tissue Oxidative Capacity and Their Relationship to Resting Metabolic Rate in Chinese Bulbuls WEI-HONG ZHENG, JIN-SONG LIU, AND DAVID L. SWANSON
- 445 Mistletoebirds and Xylose: Australian Frugivores Differ in Their Handling of Dietary Sugars KATHRYN R. NAPIER, PATRICIA A. FLEMING, AND TODD J. MCWHORTER (Continued on inside back cover)

1522-2152(201405/06)87:3;1-P

- 456 The Physiological Responses of Green Sturgeon (*Acipenser medirostris*) to Potential Global Climate Change Stressors
 BRIAN A. SARDELLA AND DIETMAR KÜLTZ
- 464 Control of Breathing in In Vitro Brain Stem Preparation from Goldfish (*Carassius auratus*; Linnaeus)
 ÉRIC CÔTÉ, JEAN-PHILIPPE ROUSSEAU, STÉPHANIE FOURNIER, AND RICHARD KINKEAD
- Partitioning of Evaporative Water Loss into Respiratory and Cutaneous Pathways in Wahlberg's Epauletted Fruit Bats (Epomophorus wahlbergi)
 INGRID A. MINNAAR, NIGEL C. BENNETT, CHRISTIAN T. CHIMIMBA, AND ANDREW E. MCKECHNIE
- 486 Metabolomic and Ecdysteroid Variations in Anopheles gambiae s.l. Mosquitoes Exposed to the Stressful Conditions of the Dry Season in Burkina Faso, West Africa W. MAMAI, K. MOULINE, C. BLAIS, V. LARVOR, K. R. DABIRÉ, G. A. OUEDRAOGO, F. SIMARD, AND D. RENAULT

Erratum

498 Digestive Efficiencies of Ex Situ and In Situ West Indian Manatees (*Trichechus manatus latirostris*)

GRAHAM A. J. WORTHY AND TAMARA A. M. WORTHY



July/August 2014 Volume 87 Number 4

On the Cover: This sundial marine snail (*Architectonica perspectiva*) was photographed by Nick Chapman from Chaloklum Diving, at Koh Phangan, in the Gulf of Thailand.

- 499 Cardiovascular Oxygen Transport Limitations to Thermal Niche Expansion and the Role of Environmental Po₂ in Antarctic Notothenioid Fishes

 BRADLEY A. BUCKLEY, MICHAEL S. HEDRICK, AND STANLEY S. HILLMAN
- 507 The Activity of Carp Muscle–Specific Creatine Kinase at Low Temperature Is Enhanced by Decreased Hydrophobicity of Residue 268
 CHIH-LU WU, BING-YI LI, JEN-LEIH WU, AND CHO-FAT HUI
- 517 Latitudinal Variation of Freeze Tolerance in Intertidal Marine Snails of the Genus *Melampus* (Gastropoda: Ellobiidae)

 A. B. DENNIS, S. H. LOOMIS, AND M. E. HELLBERG
- 527 The Effects of Dietary Cholesterol on Metabolism and Daily Torpor Patterns in Siberian Hamsters

 MAŁGORZATA JEFIMOW, MACIEJ OSTROWSKI, ANNA JAKUBOWSKA, AND MICHAŁ S. WOJCIECHOWSKI
- 539 How Does Flexibility in Body Composition Relate to Seasonal Changes in Metabolic Performance in a Small Passerine Wintering at Northern Latitude?

 MAGALI PETIT, AGNÈS LEWDEN, AND FRANÇOIS VÉZINA
- Body-Condition Indices Are Repeatable across Short, but Not Long,
 Time Periods in Crimson Finches Neochmia phaeton
 MILENKAYA, S. LEGGE, AND J. R. WALTERS
- 559 Introduced and Native Congeners Use Different Resource Allocation Strategies to Maintain Performance during Infection COURTNEY A. C. COON, AMBER J. BRACE, SCOTT R. MCWILLIAMS, MARSHALL D. MCCUE, AND LYNN B. MARTIN
- Loss of the Ability to Control Right-to-Left Shunt Does Not Influence the Metabolic Responses to Temperature Change or Long-Term Fasting in the South American Rattlesnake *Crotalus durissus* CLEO A. C. LEITE, TOBIAS WANG, EDWIN W. TAYLOR, AUGUSTO S. ABE, GABRIELLE S. P. C. LEITE, AND DENIS O. V. DE ANDRADE
- 576 Unique Biochemical and Mineral Composition of Whale Ear Bones sora L. Kim, J. G. M. Thewissen, Morgan M. Churchill, Robert S. Suydam, Darlene R. Ketten, and Mark T. Clementz

1522-2152(201407/08)87:4;1-G

September/October 2014 Volume 87 Number 5

On the Cover: These Antarctic fur seals (Arctocephalus gazella) were photographed by Birgitte I. McDonald, at Cape Shirreff, Livingston Island, Antarctica.

- 585 Editorial THEODORE GARLAND JR.
- 587 Burst Swimming in Areas of High Flow: Delayed Consequences of Anaerobiosis in Wild Adult Sockeye Salmon NICHOLAS J. BURNETT, SCOTT G. HINCH, DOUGLAS C. BRAUN, MATTHEW T. CASSELMAN, COLLIN T. MIDDLETON, SAMANTHA M. WILSON, AND STEVEN J. COOKE
- 599 Thermal Optima and Tolerance in the Eurythermic Goldfish (Carassius auratus): Relationships between Whole-Animal Aerobic Capacity and Maximum Heart Rate ELIZABETH O. FERREIRA, KATJA ANTTILA, AND ANTHONY P. FARRELL
- 612 Diet-Induced Fatty Acid Variation in Critical Tissues of a Spawning Estuarine Fish and Consequences for Larval Fitness JOSHUA T. PATTERSON AND CHRISTOPHER C. GREEN
- 623 Exposure to Acute Severe Hypoxia Leads to Increased Urea Loss and Disruptions in Acid-Base and Ionoregulatory Balance in Dogfish Sharks (Squalus acanthias) ALEX M. ZIMMER AND CHRIS M. WOOD
- 640 Group 3 Late Embryogenesis Abundant Proteins from Embryos of Artemia franciscana: Structural Properties and Protective Abilities during Desiccation LEAF C. BOSWELL, MICHAEL A. MENZE, AND STEVEN C. HAND
- 652 Coordination of Chemical (Trimethylamine Oxide) and Molecular (Heat Shock Protein 70) Chaperone Responses to Heat Stress in Elasmobranch Red Blood Cells ASHRA KOLHATKAR, CAYLEIH E. ROBERTSON, MARIA E. THISTLE, A. KURT GAMPERL, AND SUZANNE CURRIE
- 663 HSP70 Abundance and Antioxidant Capacity in Feeding and Fasting Gray Seal Pups: Suckling Is Associated with Higher Levels of Key Cellular Defenses KIMBERLEY ANN BENNETT, IAN SEAN MACMILLAN, MIKE HAMMILL, AND SUZANNE CURRIE
- 677 Maternal Thermal Environment Induces Plastic Responses in the Reproductive Life History of Oviparous Lizards LIANG MA, BAO-JUN SUN, SHU-RAN LI, WEI SHA, AND WEI-GUO DU (Continued on inside back cover)

1522-2152(201409/10)87:5;1-#

- 684 Aging, Life Span, and Energetics under Adult Dietary Restriction in Lepidoptera KRISTJAN NIITEPÕLD, ALEJANDRO PEREZ, AND CAROL L. BOGGS
- 695 Variation in Plasma Corticosterone in Migratory Songbirds: A Test of the Migration-Modulation Hypothesis

 DOMINIQUE N. WAGNER, DAVID J. GREEN, JOHN M. COOPER, OLIVER P. LOVE, AND TONY D. WILLIAMS
- 704 Seasonal Variation of Metabolic Thermogenesis in Eurasian Tree Sparrows (*Passer montanus*) over a Latitudinal Gradient WEI-HONG ZHENG, MING LI, JIN-SONG LIU, SHU-LI SHAO, AND XING-JUN XU
- 719 How Important Are Hemoparasites to Migratory Songbirds?
 Evaluating Physiological Measures and Infection Status in Three
 Neotropical Migrants during Stopover
 E. A. CORNELIUS, A. K. DAVIS, AND S. A. ALTIZER
- 729 No Evidence for Parasitism-Linked Changes in Immune Function or Oxidative Physiology over the Annual Cycle of an Avian Species PÉTER L. PAP, ALINA SESARMAN, CSONGOR I. VÁGÁSI, DEBORAH M. BUEHLER, LAURA PĂTRAȘ, MAAIKE A. VERSTEEGH, AND MANUELA BANCIU
- 740 Maternal Antibody Transfer Can Lead to Suppression of Humoral Immunity in Developing Zebra Finches (*Taeniopygia guttata*)

 LOREN MERRILL AND JENNIFER L. GRINDSTAFF
- 752 Differences in Muscle Fiber Size and Associated Energetic Costs in Phylogenetically Paired Tropical and Temperate Birds

 ANA GABRIELA JIMENEZ AND JOSEPH B. WILLIAMS

Technical Comment

762 Experimental Sources of Variation in Avian Energetics: Estimated Basal Metabolic Rate Decreases with Successive Measurements PAUL J. JACOBS AND ANDREW E. MCKECHNIE

November/December 2014 Volume 87 Number 6

On the Cover: These Pacific walruses (*Odobenus rosmarus divergens*) were photographed in the Chukchi Sea, Alaska. Photograph courtesy of the US Geological Survey.

- 771 Ecological, Physiological, and Morphological Correlates of Blood Hemoglobin Concentration in a Migratory Shorebird PIOTR MINIAS, RADOSŁAW WŁODARCZYK, ANNA PIASECKA, KRZYSZTOF KACZMAREK, AND TOMASZ JANISZEWSKI
- 782 The Impact of Humidity on Evaporative Cooling in Small Desert Birds Exposed to High Air Temperatures
 ALEXANDER R. GERSON, ERIC KRABBE SMITH, BEN SMIT, ANDREW E.
 MCKECHNIE, AND BLAIR O. WOLF
- The Effect of Thermal Variance on the Phenotype of Marine Turtle Offspring
 C. R. HORNE, W. J. FULLER, B. J. GODLEY, K. A. RHODES, R. SNAPE,
 K. L. STOKES, AND A. C. BRODERICK
- 805 Asymmetric Thermal Acclimation Responses Allow Sheepshead Minnow Cyprinodon variegatus to Cope with Rapidly Changing Temperatures
 NANN A. FANGUE, MARTIN A. WUNDERLY, THERESA F. DABRUZZI, AND WAYNE A. BENNETT
- 817 Electrical Excitation of the Heart in a Basal Vertebrate, the European River Lamprey (*Lampetra fluviatilis*)

 JAAKKO HAVERINEN, STUART EGGINTON, AND MATTI VORNANEN
- 829 The Energetic Cost of Foraging Explains Growth Anomalies in Tadpoles Exposed to Predators

 MICHAEL J. BARRY
- 837 Energy Demands for Maintenance, Growth, Pregnancy, and Lactation of Female Pacific Walruses (*Odobenus rosmarus divergens*)
 SHAWN R. NOREN, MARK S. UDEVITZ, AND CHADWICK V. JAY
- 855 Globin's Structure and Function in Vesicomyid Bivalves from the Gulf of Guinea Cold Seeps as an Adaptation to Life in Reduced Sediments C. DECKER, N. ZORN, N. POTIER, E. LEIZE-WAGNER, F. H. LALLIER, K. OLU, AND A. C. ANDERSEN
- 870 Hovering Flight in the Honeybee *Apis mellifera*: Kinematic Mechanisms for Varying Aerodynamic Forces

 JASON T. VANCE, DOUGLAS L. ALTSHULER, WILLIAM B. DICKSON,
 MICHAEL H. DICKINSON, AND STEPHEN P. ROBERTS

1522-2152(201411/12)87:6;1-Y

