

## A global database of nitrogen and phosphorus excretion rates of aquatic animals

MICHAEL J. VANNI,<sup>1</sup> PETER B. MCINTYRE, DENNIS ALLEN, DIANE L. ARNOTT, JONATHAN P. BENSTEAD, DAVID J. BERG, ÅGE BRABRAND, SÉBASTIEN BROSSE, PAUL A. BUKAVECKAS, ADRIANO CALIMAN, KRISTA A. CAPPS, LUCIANA S. CARNEIRO, NANETTE E. CHADWICK, ALAN D. CHRISTIAN, ANDREW CLARKE, JOSEPH D. CONROY, WYATT F. CROSS, DAVID A. CULVER, CHRISTOPHER M. DALTON, JENNIFER A. DEVINE, LEAH M. DOMINE, MICHELLE A. EVANS-WHITE, BJØRN A. FAAFENG, ALEXANDER S. FLECKER, KEITH B. GIDO, CLAIRE GODINOT, RAFAEL D. GUARIENTO, SUSANNE HAERTEL-BORER, ROBERT O. HALL, RAOUL HENRY, BRIAN R. HERWIG, BRENDAN J. HICKS, KAREN A. HIGGINS, JAMES M. HOOD, MATTHEW E. HOPTON, TSUTOMU IKEDA, WILLIAM F. JAMES, HENRICE M. JANSEN, CODY R. JOHNSON, BENJAMIN J. KOCH, GARY A. LAMBERTI, STEPHANIE LESSARD-PILON, JOHN C. MAERZ, MARTHA E. MATHER, RYAN A. MCMANAMAY, JOSEPH R. MILANOVICH, DAI K. J. MORGAN, JENNIFER M. MOSLEMI, RAHMAT NADDAFI, JENS PETTER NILSSEN, MARC PAGANO, ALBERTO PILATI, DAVID M. POST, MODI ROOPIN, AMANDA T. RUGENSKI, MAYNARD H. SCHAUS, JOSEPH SHOSTELL, GASTON E. SMALL, CHRISTOPHER T. SOLOMON, SEAN C. STERRETT, ØIVIND STRAND, MARJO TARVAINEN, JASON M. TAYLOR, LISETTE E. TORRES-GERALD, CAROLINE B. TURNER, JOTARO URABE, SHIN-ICHI UYE, ANNE-MARI VENTELÄ, SÉBASTIEN VILLEGER, MATT R. WHILES, FRANK M. WILHELM, HENRY F. WILSON, MARGUERITE A. XENOPOULOS, AND KYLE D. ZIMMER

*Abstract.* Animals can be important in modulating ecosystem-level nutrient cycling, although their importance varies greatly among species and ecosystems. Nutrient cycling rates of individual animals represent valuable data for testing the predictions of important frameworks such as the Metabolic Theory of Ecology (MTE) and ecological stoichiometry (ES). They also represent an important set of functional traits that may reflect both environmental and phylogenetic influences. Over the past two decades, studies of animal-mediated nutrient cycling have increased dramatically, especially in aquatic ecosystems. Here we present a global compilation of aquatic animal nutrient excretion rates. The dataset includes 10,534 observations from freshwater and marine animals of N and/or P excretion rates. These observations represent 491 species, including most aquatic phyla. Coverage varies greatly among phyla and other taxonomic levels. The dataset includes information on animal body size, ambient temperature, taxonomic affiliations, and animal body N:P. This data set was used to test predictions of MTE and ES, as described in Vanni and McIntyre (2016; *Ecology* DOI: 10.1002/ecy.1582).

*Key words:* body size; ecological stoichiometry; freshwater and marine ecosystems (lakes, rivers and oceans); invertebrates; metabolic ecology; nitrogen excretion; nutrient cycling; phosphorus excretion; temperature; vertebrates.

The complete data sets corresponding to abstracts published in the Data Papers section of the journal are published electronically as Supporting Information in the online version of this article at <http://onlinelibrary.wiley.com/doi/10.1002/ecy.1792/supinfo>

Manuscript received 27 November 2016; revised 30 January 2017; accepted 7 February 2017. Corresponding Editor: William K. Michener.

<sup>1</sup>Corresponding author: Department of Biology, Miami University, Oxford, Ohio 45056, USA. E-mail: [vannimj@miamioh.edu](mailto:vannimj@miamioh.edu)