2923

(305) QUANTIFICATION OF THE NITROGEN CYCLE IN A PRAIRIE STREAM: KONZA LINX. W.K. Dodds[1], M. Evans-White[1], N.M. Gerlanc[1], L. Gray[2], D. Gudder[1], M.J. Kemp[1], A. Lopez[1], D.M. Stagliano[3], E.A. Strauss[4], J.L. Tank[5], M. Whiles[3], and W.M. Wollheim[6]. [1]Div of Biol, Ackert Hall, Kansas State Univ, Manhattan, Kansas 66506, [2]Dept of Life Science, Utah Valley State College, 800 W. 1200 South, Orem Utah 84058, [3]Department of Entomology, Waters Hall, Kansas State Univ, Manhattan, Kansas 66506, [4]Dept of Biological Sciences, University of Notre Dame, Notre Dame, Indiana 46556, [5]Department of Natural Resources and Environmental Sciences, University of Illinois, Urbana, Illinois, [6]The Ecosystems Center, Marine Biological Laboratory, Woods Hole, Massachusetts 02543 wkdodds@ksu.edu

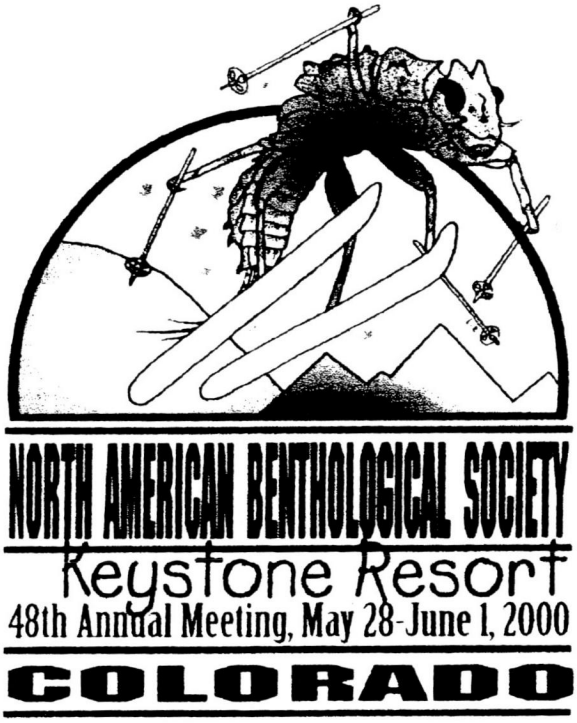
Nitrogen ($^{15}NH_4Cl$) was added for 35 days to Kings Creek on Konza Prairie, Kansas. Standing stocks of N and content of ^{15}N in different compartments (i.e., nutrients, detritus, organisms) were quantified and turnover and flux rates of N cycling through the food web, as well as nutrient transformation rates were calculated. Inorganic N pools turned over much more rapidly in the water column of this stream than in other aquatic systems where comparable measurements have been made. Nitrification was also a significant flux of N in the stream, with rates in the water column of about 10 % of the total ammonium uptake. Primary consumers assimilated 67 % of the inorganic N that entered benthic algae and microbes. Predators acquired 23 % of N that consumers obtained. Omnivorous crayfish (*Orconectes* spp.), invertebrate shredders, and collectors dominated the N flux associated with primary consumers. Mass balance calculations indicated that at least 23 % of the ^{15}N added was retained within the 200 m stream reach. Overall, the rates of turnover of N in organisms and organic substrata were significantly greater when C:N was low. C:N ratio may be a surrogate for biological activity with regard to N flux in streams.

(306) ESTIMATES OF NITROGEN LOADING TO STREAMS USING IN-STREAM PROCESSING RATES. W.M. Wollheim[1], B.J. Peterson[2], P.J. Mulholland[3], J.R. Webster[4], J.L. Tank[5], J.L. Meyer[6], N.B. Grimm[7], E. Marti[8], W.B. Bowden[9], J. Merriam[10], H.M. Valett[4], A.E. Hershey[11], W.H. McDowell[10], W.K. Dodds[12], S.K. Hamilton[13], S.L. Johnson[14], L.R. Ashkenas[14], and D.J. D'Angelo[15]. [1]Complex Systems Research Center, University of New Hampshire, Durham NH 03824, [2]Ecosystems Center, Marine Biological Lab. Woods Hole MA, 02543, [3]Environmental Science Division Oak Ridge National Laboratory, PO Box 2008, Oak Ridge, TN 37831-6036, [4]Department of Biology, Virginia Tech University, Blacksburg, VA 24061, [5]Dept. Natural Resources and Env. Sciences, N-411 Turner Hall, University of Illinois, 1102 S. Goodwin Ave., Urbana, IL 61801, [6]Institute of Ecology, University of Georgia, Athens GA, 30602-2602, [7]Department of Biology, Arizona State University, Tempe, AZ 85287-1501, [8]Centre d'Estudis Avangats de Blanes, Cami de Sta. Barbara s/n, Blanes (Girona) SPAIN , 17300, [9]Landcare Research, PO Box 69, Lincoln 8152, New Zealand, [10]Dept of Natural Resources, James Hall, Durham NH 03824, [11]Dept of Biology, University of North Carolina - Greensboro, Greensboro, NC 27402, [12]Ackert Hall, Division of Biology, Kansas St. University, Manhatten KS 66506, [13]Kellog Biological Station, 3700 E. Gull Cr. Dr., Hickory Corners, MI 49060, [14]Dept. of Fisheries and Wildlife, Oregon St. University, [15]The Proctor and Gamble Co. , Experimental Stream Facility, 1003 Route 50, Milford, Ohio 45150-0356 wil.wollheim@unh.edu

Estimates of nitrogen loading to streams are difficult to obtain because in-stream or riparian processes may confound estimates of land-water transfers. We created a spreadsheet model using information from the Lotic Intersite Nitrogen Experiment (LINX) to estimate the ammonium and nitrate concentrations in lateral water inputs necessary to maintain observed N concentrations and DIN dynamics in streams. The model includes rates of in-stream ammonium and nitrate uptake, nitrification, and net nitrogen regeneration obtained from $^{15}NH_4$ additions to the various LINX streams. Concentrations of ammonium and nitrate in lateral water inputs were then found that best fit observed DIN fluxes in channel water over distance downstream. Predicted nitrate concentrations in lateral inputs ranged from 44 ìg/l in Walker Branch, TN, to 129 ìg/l in E-1 outlet stream, AK, to 160 ìg/L in Mack Cr. OR. In Walker Br., our estimate compared favorably with estimates of loading concentrations obtained from detailed studies of groundwater flow paths (35 ìg/l). Model estimates of ammonium concentrations in lateral inputs were generally lower than nitrate concentrations. This recipient-ecosystem method of estimating DIN loading should be linked with land-based studies to determine factors controlling N export from watersheds.

(307) A COMPARISON OF NITROGEN PROCESSING IN THE P&G EXPERIMENTAL STREAM FACILITY WITH NATURAL STREAMS IN THE LINX STUDY USING STABLE ISOTOPES. D.J. D'Angelo[1], S.C. Christman[1], B.J. Peterson[2], P.J. Mulholland[3], C.S. Fellows[4], J.L. Tank[5], S.K. Hamilton[6], E. Marti[7], L.R. Ashkenas[8], W.B. Bowden[9], W.K. Dodds[10], W.B. McDowell[11], J.L. Meyer[12], and J.R. Webster[13]. [1]The Procter & Gamble Co, Experimental Stream Facility, Milford, OH 45150, [2]The Ecosystem Center, Marine Biological Laboratory, Woods Hole, MA 02543, [3]Environmental Sciences Division, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN, 378313, [4]Department of Biology, University of New Mexico, Albuquerque, NM 87131, [5]Department of Natural Resources and Environmental Sciences, University of Illinois, N-411 Turner Hall, Urbana, IL, 61801, [6]Kellogg Biological Station, Michigan State University, 3700 E Gull Creek Dr., Hickory Corners, MI, 49060, [7]Department of Zoology, Arizona State University, Tempe, AZ, 85287, [8]Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR, 97331, [9]Landcare Research, PO Box 69, Lincoln 8152, New Zealand, [10]Division of Biology, Kansas State University, 232 Ackert Hall, Manhattan, KS, 66506, [11]Department of Natural Resources, James Hall, University of New Hampshire, Durham, NH, 03824, [12]Institute of Ecology, University of Georgia, Athens, GA, 30602, [13]Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg, VA, 24061 dangelo.dj@pg.com

48th ANNUAL MEETING - Keystone Resort, Colorado



NABS 2000

May 28-June 1, 2000

Members of the North American Benthological Society and other interested persons are invited to the 48th Annual Society Meeting to held in Keystone Resort, Colorado, USA.

The NABS' annual meeting has established a reputation, not only for its camaraderie, but also for the high quality of its program and presentations.

In keeping with this tradition, the NABS 2000 Program Committee has assembled a record number of presentations for your science pleasure! So, get ready to pack your bags and head out to the high country!

♦ Taxonomy Faire

Given the success of the **Taxonomy Fair** in Duluth, led by **Dave Penrose**, the Technical Information Committee is sponsoring another Faire at Keystone during the poster session on Wednesday afternoon, May 31st. The "Faire" format consists of taxonomy stations, each manned by a recognized expert of a taxonomic group. Participants are free to bring their own specimens to these expert stations and are able to gain personal access to the gurus of aquatic invertebrate taxonomy. Bring your vials and slides!

♦ SPECIAL WORKSHOP ON NATIVE AMERICAN ISSUES

The NABS Human Resources Committee will be hosting a workshop Sunday, May 28th, at the 2000 Keystone meeting will feature issues related to water quality and monitoring on tribal lands. Please visit the NABS website or contact Judy Li for more information.