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LTET Cross-Site Stable Isotopes Initiative

Report to the LTER/CC by Drs. John Hobbie and Brian Fry, Arctic LTER, April 10, 1989

This project is designed to compare ecosystem processes across LTER sites by providing preliminary data on natural abundance of stable isotopes (signatures) from a few samples for all LTER sites, to encourage LTER scientists to use stable isotope signatures in studying ecosystem processes, and to evaluate long term nutrient cycling processes in more detail at a few sites.

This Initiative will focus on 2 studies. In the first study, we will use C and N stable isotopic signatures to study aquatic food webs. Carbon 13/12 measurements will be used to estimate the relative importance of allochthonous vs. autochthonous inputs to aquatic food webs. N15/14 measurements will indicate trophic levels in the aquatic animal community. The second study will evaluate the relative importance of nitrogen fixation as a source of N to plants by analyzing the N15/14 ratio for a variety of plants and soils in several ecosystems. A few samples will be analyzed from all sites, and more intensive sampling will be conducted at a few sites, in order to collect sufficient data to evaluate the hypotheses. Funding does not permit extensive sampling at all 17 LTER sites.

The 3-day workshop will be a combination lecture/demonstration and discussion of data from all sites. Brian Fry will mail a letter to all LTER PIs by early May, requesting the name of a representative from each site who would be interested in using stable isotopes, working with Brian Fry before the workshop, and attending the workshop. Several persons who are not associated with LTERs and who have expertise/interest in stable isotopic research will also be participants.

Project Time Schedule

Spring 1989	Fry's letter requesting one rep/site
Summer 1989	Fry interacts with reps, who collect a few samples & send samples to Fry for analyses
Summer 1989	Fry interacts more intensively with reps from a few sites for the intensive studies
Fall/Winter 1989	Fry & others at WoodsHole analyze samples for natural abundance ratios (C13/12, N15/14)
April 1990	Stable Isotope Workshop at Woods Hole
Summer 1990	Data analysis, manuscript preparation
Fall 1990	Report to LTER/Coordinating Committee

Questions? Please contact Brian Fry at The Ecosystems Center, Marine Biological Laboratory, Woods Hole MA 02543, phone 508-548-3705.