UNIVERSITY of NEW HAMPSHIRE

April 2, 2014
Request for loans

Dear Dr. Cook,

I am a fungal ecologist at the University of New Hampshire who has become interested as a result of my work at Toolik LTER in assessing fungivory in Arctic ground squirrels. I had a Masters student a few years ago who started this work, and I am following up on her initial findings. I will be using some direct techniques such as spore counts in scat on current specimens, but am also using isotopic techniques on older specimens (my expertise is in the applications of C and N isotopes in terrestrial ecosystems). I have already analyzed some samples from the Harvard Museum of Comparative Zoology but their samples are all pre-1955, and so not suitable for radiocarbon analysis using the 'bomb spike' signal. I will be requesting some samples from the UAM, and the curator there (Link Olson) suggested that I also look at your collections. In your collection of Arctic ground squirrels, I am seeking hair samples of about 3 milligrams from 20 different individuals going back to 1954 (1 mg for stable isotope analysis and 2 mg for radiocarbon analysis, since ~1 mg of C is desirable for 14C). Archived specimens are necessary because I am using radiocarbon during the 14C 'bomb spike' era to assess fungivory. In brief, the data would be used to answer two questions:

1. Is there a consistent relationship between δ13C and δ15N which reflects AGS diet? The strong relationship between these 2 parameters I've seen in my initial data from field (Toolik and Atigun) and museum specimens (Harvard MCZ) presumably reflect variable proportions of dicots, graminoids, and (probably) fungi in the diet. The large-scale patterns across Alaska of AGS isotopes would be interesting to compare against what we know about vegetation patterns and meteorologic conditions.

2. What is the extent of fungivory in AGS, and can we infer the underlying age distribution of the organic nitrogen assimilated by AGS from these fungi? To do this, we will compare the radiocarbon patterns from 1951 to 2012 in AGS and in atmospheric CO2. This would have a lot of implications for showing the importance of organic nitrogen cycling in Arctic/subarctic systems.

A current NSF-funded project in the Arctic is the funding source (ARC1108074). Hair samples can be sent as is, there is no need for freezing. Please bill Fedex Account # 1411-7943-8. The list of samples requested is given here. All samples are from Alaska.

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GUID	SCIENTIFIC NAME	DATE	SPEC LOCALITY	
191518	Spermophilus parryii osgoodi	5-Aug-54	Old John Lake	
191519	Spermophilus parryii osgoodi	13-Aug-54	Old John Lake	
191520	Spermophilus parryii osgoodi	13-Aug-54	Old John Lake	
191521	Spermophilus parryii osgoodi	14-Aug-54	Old John Lake	
25903	Spermophilus parryii kennicotti	7-Aug-67	Cache Lake, Anaktuvuk Pass	
25902	Spermophilus parryii kennicotti	7-Aug-67	Cache Lake, Anaktuvuk Pass	
25901	Spermophilus parryii kennicotti	7-Aug-67	Cache Lake, Anaktuvuk Pass	
25710	Spermophilus parryii kennicotti	20-Aug-67	Summit Anaktuvuk Pass	
25709	Spermophilus parryii kennicotti	25-Aug-67	Summit Anaktuvuk Pass	
25708	Spermophilus parryii kennicotti	25-Aug-67	Summit Anaktuvuk Pass	
191535	Spermophilus parryii plesius	29-Aug-80	Donnelly's Dome, 18 mi S,	
191536	Spermophilus parryii plesius	29-Aug-80	18 mi S, 2 mi W Delta Junction	
191534	Spermophilus parryii plesius	29-Aug-80	2 mi W Delta Junction	
196853	Spermophilus parryii	30-May-02	Cold Bay A-3	IF 8014
196942	Spermophilus parryii	30-May-02	Cold Bay A-3	IF 8003
196893	Spermophilus parryii	30-May-02	Cold Bay A-3	IF 8019
196931	Spermophilus parryii	30-May-02	Cold Bay A-3	IF 8027
196887	Spermophilus parryii	24-Jun-02	Chirikof D-5	IF 8001
196941	Spermophilus parryii	24-Jun-02	Chirikof D-5	IF 8018
196855	Spermophilus parryii	24-Jul-02	Chirikof D-5	IF 8030

Sincerely,

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