Annual Report for Period: 11/2005 - 10/2006
Submitted on: 10/28/2006
Principal Investigator: Gragson, Theodore L.
Award ID: 0218001
Organization: U of Georgia Res Fdn Inc
Title:
LTER: Consequences of Land Use Change in the Southern Appalachian Mountains

Project Participants

Senior Personnel

Name: Gragson, Theodore
Worked for more than 160 Hours: Yes
Contribution to Project:
11/05-10/06: LPI of the Coweeta LTER, responsible for project management and administration as well as liaison with UGA sponsored program administration. Research on historical ecology of Native American and Euroamerican settlement in collaboration with P. Bolstad, and development of forecast framework of the effects of land use with J. Clark and others. Partial support from Coweeta LTER research funds. Partial support for activities from Coweeta LTER.

Name: Vose, James
Worked for more than 160 Hours: Yes
Contribution to Project:
11/05-10/06: Co-principal investigator of the Coweeta LTER and Research Leader of the USFS Coweeta Hydrologic Laboratory. Directs all research activities of cooperating USFS scientists at Coweeta and is the liaison with USFS Southern Research Station. Research on ecosystem function and water quantity/quality. Partial support from Coweeta LTER through subcontract to Coweeta Hydrologic Laboratory.

Name: Kloeppel, Brian
Worked for more than 160 Hours: Yes
Contribution to Project:
11/05-10/06: Co-Principal Investigator and LTER Site Director. Supervises on-site technicians, oversees management of dormitory facilities, and coordinates use and maintenance of on-site equipment. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. Receives 10 months/year salary plus a research budget from Coweeta LTER project.

Name: Benfield, Fred
Worked for more than 160 Hours: No
Contribution to Project:
11/05-10/06: Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. Partial support from Coweeta LTER.

Name: Bolstad, Paul
Worked for more than 160 Hours: No
Contribution to Project:
11/05-10/06: Research on carbon and water cycles, human land use change, and the interaction of these at a range of scales in Southern Appalachia. Partial support for activities from Coweeta LTER.

Name: Clark, James
Worked for more than 160 Hours: No
Contribution to Project:
11/05-10/06: Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. Partial support for activities from Coweeta LTER.

Name: Clinton, Barton
Worked for more than 160 Hours: No
Contribution to Project:

11/05-10/06: Characterizing changes in the riparian zone structure and function resulting from the loss of eastern hemlock. No direct support for these activites from Coweeta LTER.

Name: Elliott, Katherine

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Dendrochronology study to characterize stand dynamics and disturbance history along topographic or compositional gradients in the Coweeta Basin and two old-growth stands in Joyce Kilmer National Forest in order to determine stand similarities and differences, and the cause of the variation. No direct support for these activities from the Coweeta LTER.

Name: Grossman, Gary

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. Partial support for activities from Coweeta LTER.

Name: Hendrick, Ron

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on the role of ecto- and ericoid mycorrhizae and soil/litter chemistry in regulating nutrient pools and acquisition in Rhododendron maximum-Hardwood forests. Partial support for these activities from Coweeta LTER.

Name: Knoepp, Jennifer

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: USFS research scientist at Coweeta Hydrologic Laboratory characterizing terrestrial C pools in vegetation types across the gradient in the Coweeta basin from examination of soil, forest floor and coarse woody debris. No direct support from the Coweeta LTER research funds. No direct support for this activity from Coweeta LTER.

Name: Leigh, David

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Project geomorphologist determining sedimentation history of streams in the study region and the measurable extent of human-impact on stream morphology, sedimentology, floods, and water quality. Partial support from Coweeta LTER research funds.

Name: Pearson, Scott

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on the effects of land use history on terrestrial biological diversity and community composition in forest ecosystems testing hypotheses related to the mechanisms that might explain land use effects including the role of anthropogenic alterations to soil chemistry (for plants) and habitat quality (for animals). Partial support for activities from Coweeta LTER.

Name: Pringle, Catherine

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on the relationship between species diversity and leaf litter breakdown in terrestrial and aquatic settings to predict the effects of land-use change of this process. Partial support for activities from Coweeta LTER.

Name: Pulliam, Ron

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on the demography and distribution of six forest-understory herb species in the lower Piedmont of Georgia through the Blue Ridge to develop a rigorous method of delineating suitable habitat then test hypotheses about how habitat suitability, demography, and dispersal interact to influence species distributions. Partial support from Coweeta LTER research funds.

Name: Reynolds, Barbara

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Effects of various disturbance on abundance of soil microarthropod taxa common in forest soils and important in the decomposition process in southern Appalachia. Partial support for activities from Coweeta LTER.

Name: Riedel, Mark

Worked for more than 160 Hours: No

Contribution to Project:

11/05-6/06: USFS research scientists at Coweeta Hydrologic Laboratory with activities focused on fine-scale hydrologic modeling based on collecting and collating information from on-site weirs. No direct support from the Coweeta LTER research funds.

Name: Turner, Monica

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on how current and past landscape patterns, abiotic conditions, and the native plant community influence the occurrence and abundance of invasive plants in forests of the Southern Blue Ridge province, and the factors that best explain the distribution of invasive plants as well as what locations are most vulnerable to invasion. Partial support for activities from Coweeta LTER.

Name: Wallace, Bruce

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Long-term follow up study on the effects of clear-cut logging on WS 7 at Coweeta on benthic fauna and organic matter standing crop. Nominal support for these activities from a research budget from Coweeta LTER.

Name: Webster, Jack

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Scott, Mark

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Coordinated Stream Hazard Site sampling cycle for water chemistry, channel geomorphology, and community structure of algae, macroinvertebrates, and fishes. No direct support for these activities from Coweeta LTER.

Name: Bradford, Mark

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Characterizing how disease agents that cause mortality of dominant canopy & sub-canopy tree species affect soil organic carbon (SOC) cycling & the related microorganisms through impacts on edaphic climate and detrital resource quality and quantity. Partial support for activities from Coweeta LTER.

Name: Dehring, Carolyn

Worked for more than 160 Hours: No

Contribution to Project:

1/06-10/06: Spatially-explicit research on property markets in the Buncombe County, NC, based on transaction data, and the effect of land use regulations on house prices and land markets. Partial support for activities from Coweeta LTER.

Post-doc

Name: Jong, Kwang Seuk

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Collaborator with G. Grossman. Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. No direct support for these activities from Coweeta LTER.

Name: Buchanan, Nathan

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with J. Clark. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: McMahon, Sean

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with J. Clark. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: Ford, Chelcy

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Vose. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Chamblee, John

Worked for more than 160 Hours: No

Contribution to Project:

8/06-10/06: Spatially-explicit research on property markets in the Buncombe County, NC, based on transaction data, and the effect of land use regulations on house prices and land markets. Working with Ted Gragson. Partial support for activities from Coweeta LTER.

Graduate Student

Name: Burcher, Chris

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with F. Benfield at VA Tech. Stream-response to disturbance at multiple scales based on physical and biotic measurement. Partial support for activities from Coweeta LTER.

Name: Kirk, Ryan

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with P. Bolstad at U of Minnesota. Research on carbon and water cycles, human land use change, and the interaction of these at a range of scales in Southern Appalachia. Partial support for activities from Coweeta LTER.

Name: Dietze, Michael

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-8/06: PhD student working with J. Clark at Duke University. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. Partial support for activities from Coweeta LTER.

Name: Ibanez, Ines

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with J. Clark at Duke University. Data collection and modeling to understand the factors

affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. Partial support for activities from Coweeta LTER.

Name: Wolosin, Michael

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with J. Clark at Duke University. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: Butler, Sarah

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-6/06: MSc student working with K. Elliot and A. White (University of Maine). Dendrochronology study to characterize stand dynamics and disturbance history along topographic or compositional gradients in the Coweeta Basin and two old-growth stands in Joyce Kilmer National Forest in order to determine stand similarities and differences, and the cause of the variation. No direct support for these activities from Coweeta LTER.

Name: Fly, Jessie

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with T. Gragson at University of Georgia. Assist with Buncombe County land records study. Partial support for activities from Coweeta LTER.

Name: Devine, Meredith

Worked for more than 160 Hours: No

Contribution to Project:

1/06-5/06: PhD student working with T. Gragson at University of Georgia. Assist with French collaboration. Graduate research assistantship from Coweeta LTER.

Name: Ball, Becky

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with M. Bradford at the University of Georgia. Research on the relationship between species diversity and leaf litter breakdown in terrestrial and aquatic settings to predict the effects of land-use change of this process. Full support from Coweeta LTER funds.

Name: Price, Katie

Worked for more than 160 Hours: No

Contribution to Project:

8/06-10/06: PhD student with Rhett Jackson and David Leigh on stream sedimentology. Partial support from Coweeta LTER.

Name: Kominoski, John

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with C. Pringle at University of Georgia. Research on the relationship between species diversity and leaf litter breakdown in terrestrial and aquatic settings to predict the effects of land-use change of this process. Full support from Coweeta LTER funds.

Name: Warren, Robert

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with R. Pulliam at the University of Georgia. Research on the demography and distribution of six forest-understory herb species in the lower Piedmont of Georgia through the Blue Ridge to develop a rigorous method of delineating suitable habitat then test hypotheses about how habitat suitability, demography, and dispersal interact to influence species distributions. Partial support for activities from Coweeta LTER.

Name: Diez, Jeff

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with R. Pulliam at the University of Georgia. Research on the demography and distribution of six forest-understory herb species in the lower Piedmont of Georgia through the Blue Ridge to develop a rigorous method of delineating suitable habitat then test hypotheses about how habitat suitability, demography, and dispersal interact to influence species distributions. Partial support for activities from Coweeta LTER.

Name: Hagen, Elizabeth

Worked for more than 160 Hours: Yes

Contribution to Project:

11/02-5/04: MSc student working with J. Webster at VA Tech. Graduates May 2004 with a thesis entitle: Influence of agricultural land use on allochthonous input and leaf breakdown in southern Appalachian streams.

Name: Wojculewski, Christy

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with J. Webster at VA Tech. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Sokol, Eric

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with F. Benfield at VA Tech. Stream-response to disturbance at multiple scales based on physical and biotic measurement. Partial support for activities from Coweeta LTER.

Name: Jeremiah, Nick

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with F. Benfield at VA Tech. Stream-response to disturbance at multiple scales based on physical and biotic measurement. Partial support for activities from Coweeta LTER.

Name: Powers, Matthew

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with F. Benfield at VA Tech. Stream-response to disturbance at multiple scales based on physical and biotic measurement. Partial support for activities from Coweeta LTER.

Name: Gray, Travis

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: Brookshire, Jack

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with J. Webster at VA Tech. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Rogers, James

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with D. Leigh at University of Georgia. Human impact to stream morphology, sedimentology, and water quality. Partial support for activities from Coweeta LTER.

Name: Suther, Bradley

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with D. Leigh at University of Georgia. Human impact to stream morphology, sedimentology, and water quality. Partial support for activities from Coweeta LTER.

Name: Luebke, Michelle

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MSc student working with D. Leigh at University of Georgia. Human impact to stream morphology, sedimentology, and water quality. Partial support for these activities from Coweeta LTER.

Name: Hazelton, Peter

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with G. Grossman at U of Georgia. Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. Partial support for activities from Coweeta LTER.

Name: Wurzburger, Nina

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with R. Hendrick at U of Georgia. Research on the role of ecto- and ericoid mycorrhizae and soil/litter chemistry in regulating nutrient pools and acquisition in Rhododendron maximum-Hardwood forests. Partial support for activities from Coweeta LTER.

Name: Zamor, Rich

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with G. Grossman at U of Georgia. Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. Partial support for activities from Coweeta LTER.

Name: Welch, Nathan

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with J. Clark at Duke University. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: Gananapathy, Narayanaraj

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with P. Bolstad at U of Minnesota on terrain mapping and land surface morphology.

Name: Dunbar, Kate

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-6/06: PhD student working with T. Gragson at University of Georgia. Assist with Buncombe County land records study. Partial support for activities from Coweeta LTER.

Name: DeRocher, Julien

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: MA student working with T. Gragson and B. Collins at University of Georgia. Information management support for the Coweeta LTER and development of COGENT - the Coweeta Geographic data server. Graduate research assistant support from Coweeta LTER.

Name: Fievet, Charles

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-6/06: MA student working with T. Gragson and B. Collins at University of Georgia. Develop the Coweeta LTER land cover intertemporal classification. Graduate research assistantship from Coweeta LTER.

Name: McBride, Allen

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with J. Clark. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: Oakley, Clint

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with J. Clark. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: O'Keefe, Joy

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with B. Clinton. Characterizing changes in the riparian zone structure and function resulting from the loss of eastern hemlock. No direct support for these activites from Coweeta LTER.

Name: Cladis, Sheila

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Meadows, Jason

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with D. Leigh. Human impact to stream morphology, sedimentology, and water quality. Partial support for activities from Coweeta LTER.

Name: Albright, Thomas

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with M. Turner. Research on how current and past landscape patterns, abiotic conditions, and the native plant community influence the occurrence and abundance of invasive plants in forests of the Southern Blue Ridge province, and the factors that best explain the distribution of invasive plants as well as what locations are most vulnerable to invasion. Partial support for activities from Coweeta LTER.

Name: Anderson, Dean

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with M. Turner. Research on how current and past landscape patterns, abiotic conditions, and the native plant community influence the occurrence and abundance of invasive plants in forests of the Southern Blue Ridge province, and the factors that best explain the distribution of invasive plants as well as what locations are most vulnerable to invasion. Partial support for activities from Coweeta LTER.

Name: Kuhman, Timothy

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with M. Turner. Research on how current and past landscape patterns, abiotic conditions, and the native plant community influence the occurrence and abundance of invasive plants in forests of the Southern Blue Ridge province, and the factors that best explain the distribution of invasive plants as well as what locations are most vulnerable to invasion. Partial support for activities from Coweeta LTER.

Name: Ely, Damon

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Morkeskie, Kate

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: McManamay, Ryan

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: Taylor, Phil

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: Windfeldt, Katherine

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Research on carbon and water cycles, human land use change, and the interaction of these at a range of scales in Southern Appalachia. Working with Paul Bolstad. Partial support for activities from Coweeta LTER.

Undergraduate Student

Name: Minter, Zach

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Undergraduate student working with J. Webster at VA Tech. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: Kaminski, Cynthia

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Undergraduate student working with K. Reynolds at UNC Asheville. Effects of various disturbance on abundance of soil microarthropod taxa common in forest soils and important in the decomposition process in southern Appalachia. Partial support for these activities from Coweeta LTER.

Name: Flores, Diana

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Undergraduate student working with S. Pearson at Mars Hill College. Research on the effects of land use history on terrestrial biological diversity and community composition in forest ecosystems testing hypotheses related to the mechanisms that might explain land use effects including the role of anthropogenic alterations to soil chemistry (for plants) and habitat quality (for animals). Partial support for activities from Coweeta LTER.

Name: Srivistava, Jaya

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Undergraduate student working with M. Bradford at U of Georgia. Characterizing how disease agents that cause mortality of dominant canopy & sub-canopy tree species affect soil organic carbon (SOC) cycling & the related microorganisms through impacts on edaphic climate and detrital resource quality and quantity. Partial support for activities from Coweeta LTER.

Name: Rosamilia, Nichole

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Undergraduate student working with T. Gragson and B. Collins at University of Georgia. Information management support for the Coweeta LTER and development of TRENDS socioeconomic dataset. Partial support for activities from Coweeta LTER.

Name: Greene, Jason

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with G. Grossman at University of Georgia. Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. Partial support for activities from Coweeta LTER.

Name: Jander, Yorke

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. Partial support for these activities from Coweeta LTER.

Name: Grancos, Tara

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with M. Bradford. Characterizing how disease agents that cause mortality of dominant canopy & sub-canopy tree species affect soil organic carbon (SOC) cycling & the related microorganisms through impacts on edaphic climate and detrital resource quality and quantity. Partial support for activities from Coweeta LTER.

Name: Bell, Dave

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with J. Clark. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: Styons, Jason

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with J. Clark. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: Livingston, Grace

Worked for more than 160 Hours: No

Contribution to Project:

5/06-8/06: Working with K. Elliott. Dendrochronology study to characterize stand dynamics and disturbance history along

topographic or compositional gradients in the Coweeta Basin and two old-growth stands in Joyce Kilmer National Forest in order to determine stand similarities and differences, and the cause of the variation. No direct support for these activities from Coweeta LTER.

Name: Riddle, Jess

Worked for more than 160 Hours: No

Contribution to Project:

5/06-8/06: Working with K. Elliott. Dendrochronology study to characterize stand dynamics and disturbance history along topographic or compositional gradients in the Coweeta Basin and two old-growth stands in Joyce Kilmer National Forest in order to determine stand similarities and differences, and the cause of the variation. No direct support for these activities from Coweeta LTER.

Name: Bahkta, Jagruti

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with T. Gragson. Assist with Buncombe County land records study. Partial support for activities from Coweeta LTER.

Name: Carter, Lee Ellen

Worked for more than 160 Hours: No

Contribution to Project:

9/05-10/06: Working with T. Gragson. Assist with Buncombe County land records study. Partial support for activities from Coweeta LTER.

Name: Cote, Angela

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with G. Grossman. Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. Partial support for activities from Coweeta LTER.

Name: Slafkowsky, Matt

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with G. Grossman. Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. Partial support for activities from Coweeta LTER.

Name: Walters, Jennifer

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with G. Grossman. Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. Partial support for activities from Coweeta LTER.

Name: Martin, Briahn

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Vose, Aaron

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Camp, Thomas

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Assist J. Knoepp with characterizing terrestrial C pools in vegetation types across the gradient in the Coweeta basin from examination of soil, forest floor and coarse woody debris. No direct support from Coweeta LTER. No direct support for these activities from Coweeta LTER.

Name: Brunton, Chris

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with S. Pearson. Research on the effects of land use history on terrestrial biological diversity and community composition in forest ecosystems testing hypotheses related to the mechanisms that might explain land use effects including the role of anthropogenic alterations to soil chemistry (for plants) and habitat quality (for animals). Partial support for activities from Coweeta LTER.

Name: Nix, Jared

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with S. Pearson. Research on the effects of land use history on terrestrial biological diversity and community composition in forest ecosystems testing hypotheses related to the mechanisms that might explain land use effects including the role of anthropogenic alterations to soil chemistry (for plants) and habitat quality (for animals). Partial support for activities from Coweeta LTER.

Name: Geffen, Rachel

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with R. Pulliam. Research on the demography and distribution of six forest-understory herb species in the lower Piedmont of Georgia through the Blue Ridge to develop a rigorous method of delineating suitable habitat then test hypotheses about how habitat suitability, demography, and dispersal interact to influence species distributions. Partial support for activities from Coweeta LTER.

Name: Mordecai, Erin

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with R. Pulliam. Research on the demography and distribution of six forest-understory herb species in the lower Piedmont of Georgia through the Blue Ridge to develop a rigorous method of delineating suitable habitat then test hypotheses about how habitat suitability, demography, and dispersal interact to influence species distributions. Partial support for activities from Coweeta LTER.

Name: McKenzie, Clifford

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with B. Reynolds. Effects of various disturbance on abundance of soil microarthropod taxa common in forest soils and important in the decomposition process in southern Appalachia. Partial support for activities from Coweeta LTER.

Name: Frank, Julie

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Whitfield, Anne

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock

adelgid. No direct support for these activities from Coweeta LTER.

Name: Blackmon, Jimmy

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Research on the relationship between species diversity and leaf litter breakdown in terrestrial and aquatic settings to predict the effects of land-use change of this process. Working with Cathy Pringle. Full support from Coweeta LTER funds.

Name: Becknell, Justin

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Research on carbon and water cycles, human land use change, and the interaction of these at a range of scales in Southern Appalachia in support of the activities of Paul Bolstad. Partial support for activities from Coweeta LTER.

Name: Burns, Steven

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on carbon and water cycles, human land use change, and the interaction of these at a range of scales in Southern Appalachia in support of the activities of Paul Bolstad. Partial support for activities from Coweeta LTER.

Name: Brass, Timothy

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on carbon and water cycles, human land use change, and the interaction of these at a range of scales in Southern Appalachia in support of the activities of Paul Bolstad. Partial support for activities from Coweeta LTER.

Name: Laurson, Zachary

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on carbon and water cycles, human land use change, and the interaction of these at a range of scales in Southern Appalachia in support of the activities of Paul Bolstad. Partial support for activities from Coweeta LTER.

Name: Maxa, Melissa

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Research on carbon and water cycles, human land use change, and the interaction of these at a range of scales in Southern Appalachia in support of the activities of Paul Bolstad. Partial support for activities from Coweeta LTER.

Technician, Programmer

Name: Collins, Barrie

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Coweeta LTER data manager, supervising staff and activities (working with T. Gragson). All salary and benefits provided by Coweeta LTER.

Name: Steiner, Susan

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-2/06: Field technician and Coweeta Schoolyard LTER coordinator. Full salary and benefits provided by Coweeta LTER.

Name: Deal, James

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Coweeta Analytical Laboratory technician (working with B. Kloeppel). Full salary and benefits provided by Coweeta LTER.

Name: Harper, Carol

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Coweeta Analytical Laboratory technician working with B. Kloeppel. Full salary and benefits provided by Coweeta LTER. Full salary and benefits provided by Coweeta LTER.

Name: Ratajczak, Robert

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Full-time research professional working with G. Grossman at University of Georgia. Effects of suspended sediment of dominant water-column fish predatory efficiency and diversity. No direct support for these activities from Coweeta LTER.

Name: Eustis, Scott

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: PhD student working with R. Pulliam at the University of Georgia. Research on the demography and distribution of six forest-understory herb species in the lower Piedmont of Georgia through the Blue Ridge to develop a rigorous method of delineating suitable habitat then test hypotheses about how habitat suitability, demography, and dispersal interact to influence species distributions. Partial support for activities from Coweeta LTER.

Name: Baughens, Renee

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Office manager for the Coweeta LTER project working with T. Gragson. Support from UGA cost-share.

Name: Ogden, Lee

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Research technician working with R. Hendrick at University of Georgia. Research on the role of ecto- and ericoid mycorrhizae and soil/litter chemistry in regulating nutrient pools and acquisition in Rhododendron maximum-Hardwood forests. No direct support for these activities from Coweeta LTER.

Name: Porterfield, Dale

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Research technician working with R. Hendrick at University of Georgia. Research on the role of ecto- and ericoid mycorrhizae and soil/litter chemistry in regulating nutrient pools and acquisition in Rhododendron maximum-Hardwood forests. No direct support for these activities from Coweeta LTER.

Name: Kitzner, James

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-4/06: Coweeta Analytical Laboratory technician working with B. Kloeppel. Partial salary and benefits provided by Coweeta LTER.

Name: Fowler, Randy

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: USFS Technology Transfer specialist at Coweeta Hydrologic Laboratory working with J. Vose. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Gruhala, Jim

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with B. Clinton. Characterizing changes in the riparian zone structure and function resulting from the loss of

eastern hemlock. No direct support for these activites from Coweeta LTER.

Name: Clinton, Patsy

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Working with K. Elliott. Dendrochronology study to characterize stand dynamics and disturbance history along topographic or compositional gradients in the Coweeta Basin and two old-growth stands in Joyce Kilmer National Forest in order to determine stand similarities and differences, and the cause of the variation. No direct support for these activities from Coweeta LTER.

Name: Zausen, Greg

Worked for more than 160 Hours: Yes

Contribution to Project:

4/06-10/06: Working with B. Kloeppel. Coweeta Analytical Laboratory technician. Full salary and benefits provided by Coweeta LTER. Full salary and benefits provided by Coweeta LTER.

Name: Sobek, Christine

Worked for more than 160 Hours: Yes

Contribution to Project:

11/05-10/06: Assist J. Knoepp with characterizing terrestrial C pools in vegetation types across the gradient in the Coweeta basin from examination of soil, forest floor and coarse woody debris. No direct support from Coweeta LTER. No direct support for these activities from Coweeta LTER.

Name: Niederlehner, B

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: Parrish, Michael

Worked for more than 160 Hours: No

Contribution to Project:

11/05-8/06: Assist Mark Bradford in characterizing how disease agents that cause mortality of dominant canopy & sub-canopy tree species affect soil organic carbon (SOC) cycling & the related microorganisms through impacts on edaphic climate and detrital resource quality and quantity. Partial support for activities from Coweeta LTER.

Other Participant

Name: Fratterrigo, Jen

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: PhD student working with M. Turner at University of Wisconsin Madison. Research on how current and past landscape patterns, abiotic conditions, and the native plant community influence the occurrence and abundance of invasive plants in forests of the Southern Blue Ridge province, and the factors that best explain the distribution of invasive plants as well as what locations are most vulnerable to invasion. Partial support for activities from Coweeta LTER.

Name: Bixby, Becky

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Collaborates with C. Pringle. Evaluate the response of stream chemistry and algal primary producers to hemlock death from infestations of hemlock woolly adelgids. No direct support from Coweeta LTER.

Name: Ashkenas, Linda

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and

wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support from Coweeta LTER funds.

Name: Dahm, Cliff

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Dodds, Walter

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Findlay, Stuart

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Gregory, Stan

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Johnson, Sherry

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: McDowell, Bill

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Peterson, Bruce

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Poole, Geoff

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock

adelgid. Partial support for activities from Coweeta LTER.

Name: Tank, Jennifer

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. Partial support for activities from Coweeta LTER.

Name: Grimm, Nancy

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: Hall, Bob

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: Hamilton, Steve

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: Mulholland, Pat

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with J. Webster. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid. No direct support for these activities from Coweeta LTER.

Name: White, Alan

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with K. Elliott. Dendrochronology study to characterize stand dynamics and disturbance history along topographic or compositional gradients in the Coweeta Basin and two old-growth stands in Joyce Kilmer National Forest in order to determine stand similarities and differences, and the cause of the variation. No direct support for these activities from Coweeta LTER.

Name: Hodder, Jan

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with B. Kloeppel, OBFS collaborator. No direct support for these activities from Coweeta LTER.

Name: McKee, Art

Worked for more than 160 Hours: No

Contribution to Project:

11/05-10/06: Working with B. Kloeppel, OBFS collaborator. No direct support for these activities from Coweeta LTER.

Name: Shapiro, Sedra

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with B. Kloeppel, OBFS collaborator. No direct support for these activities from Coweeta LTER.

Name: Weider, Larry

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with B. Kloeppel, OBFS collaborator. No direct support for these activities from Coweeta LTER.

Name: Agarwal, Pankaj

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with J. Clark. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition. No direct support for these activities from Coweeta LTER.

Name: Coombs, Sheryl

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with G. Grossman. ended sediment of dominant water-column fish predatory efficiency and diversity. Partial support for activities from Coweeta LTER.

Name: Costa, Jim

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Ellison, Aaron

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Hubbard, Rob

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Jaffe, Rudolf

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Oleksyn, Jacek

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with B. Kloeppel. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases. No direct support for these activities from Coweeta LTER.

Name: Knox, James

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with D. Leigh. Human impact to stream morphology, sedimentology, and water quality. Partial support for activities from Coweeta LTER.

Name: Walters, David

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with D. Leigh. Human impact to stream morphology, sedimentology, and water quality. Partial support for activities from Coweeta LTER.

Name: Madson, Stephanie

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with B. Reynolds. Effects of various disturbance on abundance of soil microarthropod taxa common in forest soils and important in the decomposition process in southern Appalachia. No direct support for these activities from Coweeta LTER.

Name: McNab, Henry

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with M. Turner. Research on how current and past landscape patterns, abiotic conditions, and the native plant community influence the occurrence and abundance of invasive plants in forests of the Southern Blue Ridge province, and the factors that best explain the distribution of invasive plants as well as what locations are most vulnerable to invasion. No direct support for these activities from Coweeta LTER.

Name: Peet, Robert

Worked for more than 160 Hours: No

Contribution to Project:
11/05-10/06: Working with M. Turner. Research on how current and past landscape patterns, abiotic conditions, and the native plant community influence the occurrence and abundance of invasive plants in forests of the Southern Blue Ridge province, and the factors that best explain the distribution of invasive plants as well as what locations are most vulnerable to invasion. No direct support for these activities from Coweeta LTER.

Research Experience for Undergraduates

Name: McQuade, Sarah

Worked for more than 160 Hours: Yes

Contribution to Project:
5/06-8/06: Working with T. Gragson. REU focused on repeat photography. Partial support for activities from Coweeta LTER.

Years of schooling completed: Junior

Home Institution: Other than Research Site

Home Institution if Other: University of Georgia

Home Institution Highest Degree Granted(in fields supported by NSF): Doctoral Degree

Fiscal year(s) REU Participant supported: 2006

REU Funding: REU supplement

Name: Rosamilia, Nichole

Worked for more than 160 Hours: Yes

Contribution to Project:
5/06-8/06: Working with T. Gragson. REU focused on development of TRENDS socio-economic dataset. Partial support for activities from Coweeta LTER.

Years of schooling completed: Junior

Home Institution: Other than Research Site

Home Institution if Other: University of Georgia
Home Institution Highest Degree Granted(in fields supported by NSF): Doctoral Degree
Fiscal year(s) REU Participant supported: 2006
REU Funding: REU supplement

Organizational Partners

Virginia Polytechnic Institute and State University

Provides laboratory and office facilities for J. Webster and students associated with his Coweeta LTER research. Provides partial salary and benefits for J. Webster, although a significant portion of his total EFT is dedicated to Coweeta LTER research and support activities. Provides institutional accounting and management services on sub-contract award.

Duke University

Provides laboratory and office facilities for J. Clark and graduate students associated with his work at Coweeta. Provides partial salary and benefits to J. Clark, although a significant portion of his total EFT is dedicated to research or support activities on the Coweeta LTER. Provides institutional accounting and management services on sub-contract award.

UNIVERSITY OF MINNESOTA

Provides laboratory and office facilities for P. Bolstad and graduate students associated with his work on the Coweeta LTER. Provides partial salary and benefits for P. Bolstad, although a significant portion of his total EFT is dedicated to Coweeta LTER research and support activities. Provides institutional accounting and management services on sub-contract award.

Mars Hill College

Provides laboratory and office facilities for S. Pearson and undergraduate students in support of his Coweeta LTER research. Provides partial salary and benefits for S. Pearson, although a significant portion of his total EFT is dedicated to Coweeta LTER research or support activities. Provides institutional accounting and management services on sub-contract award.

University of North Carolina at Asheville

Provides laboratory and office facilities in support of K. Reynolds and undergraduate students in support of her Coweeta LTER research. Provides partial salary and benefits for K. Reynolds, although a significant portion of her total EFT is dedicated to Coweeta LTER research and support activities. Provides institutional accounting and management services on sub-contract award.

University of Wisconsin-Madison

Provides laboratory and office facilities for Monica Turner and her students on Coweeta LTER research.

USDA Forest Service

Long-term cooperative agreement with USDA Forest Service, Southern Research Station, Coweeta Hydrologic Laboratory. Cooperation involves shared facilities (analytical labotory, researcher dormitory, conference center); personnel exchanges (technical staff supported by Coweeta LTER providing analytical services to Forest Service activities). Direct funding to Coweeta LTER activities is provided through numerous and varied cooperative agreements; purchasing and procurement of analytical supplies; salaries and benefits for all collaborating USFS research scientists and varied facilities support staff; direct maintenance expenses on all facilities and infrastructure including roads and weirs.

University of Georgia

Provides office and laboratory facilities for all UGA-affiliated researchers, students and staff. Covers 100% of salary and benefits for administrative associate (Renee Baughens). Provides partial salaries and benefits for several UGA researchers, and tuition waivers for all UGA graduate students supported on Coweeta LTER project. Provides personnel exchanges so that Coweeta Site Manager (B. Kloeppel), analytical lab staff (J. Deal and C. Harper), and field technician (S. Steiner) employed by UGA are stationed at Coweeta Hydrologic Laboratory.

Universite de Pau

Provides laboratory and office space for all collaborating researchers and their students, and visiting Coweeta researchers. Provides in-kind support in the form of lodging, consumption, and transportation expenses for visiting researchers. Provides transportation costs from Europe to US for collaborating French researchers.

South Carolina Department of Natural Resources
Provides salary and benefits for M. Scott and the flexibility to collaborate on the project.

Other Collaborators or Contacts

01/05-10/06: Katherine Elliot: Collaborating with Dr. Al White, College of Forest Resources, Dept of Ecosystem Science, University of Maine, on dendrochronology study at Coweeta to characterize stand dynamics and disturbance history of the Basin.

11/05-10/06: Ted Gragson: collaboration with Dolores de Bortoli and other researchers of the Site Atelier AnthroposystÞmes et HydrosystÞmes PyrÚnÚens Atlantiques of the Zone Atelier Adour Garonne based at the University of Pau, France. There has been a regular exchange of researchers between the two sites, participation in scheduled meetings both in Europe and the United states, and publication of one collaborative article. Objective is to promote and enhance understanding of long-term phenomena across regional, national and oceanic boundaries through social and ecological sciences approaches.

11/05-10/06: Jim Clark: modeling to understand forest responses to global change has expanded to include Howard Shultz, Computer Science, University of Massachussetts.

11/05-10/06: Gary Grossman: collaboration with Sheryl Coombs, Parmly Hearing Institute at Loyola University of Chicago, on a study examining the prey orienting and rheotactic behaviors of mottled sculpin from populations in a fluvial system (Coweeta Creek) and a lacustrine population (Lake Michigan).

11/05-10/06: Brian Kloeppel: partnering with faculty at Western Carolina University, Southwestern Community College, Rabun Gap Nacoochee College Preparatory School, and Macon Middle School on Schoolyard LTER activities.

11/05-10/06: Jack Webster: collaboration on The Lotic Intersite Nitrogen eXperiment (NSF) study of nitrogen cycling in streams involving simulation modeling, field tracer (15N) additions, and intersite comparison. Collaborators are based at U of Tennessee, Oak Ridge National Laboratory, Arizona State U, Institute of Ecosystems Studies, Kansas State U, Marine Biological Laboratory, Michigan State U, U of Notre Dame, Oregon State U, U of Georgia, U of New Hampshire, U of New Mexico, U of Wyoming, and Eco-Metrics, Inc. They include: Pat Mulholland, Jennifer Tank, Robert Hall, Steve Hamilton, Bruce Peterson, Geoff Poole, Stuart Findlay, Water Dodds, Maury Valett, Nancy Grimm, Cliff Dahm, Stan Gregory, Sherri Johnson, and Bill McDowell.

11/05-10/06: Ted Gragson: Agrarian Landscapes in Transition (NSF) is an interdisciplinary project tracing the effects of the introduction, spread, and abandonment of agriculture at six U.S. LTER sites, with cross comparisons in Mexico and France. Principal contact is Charles Redman of Arizona State University. Additional collaborators include David Foster at Harvard University; Myron Gutmann at the University of Michigan; Craig Harris at Michigan State; Gerad Middendorf at Kansas State University; and Peter Kareiva at The Nature Conservancy. Full information on this research collaboration is available at http://ces.asu.edu/agtrans/.

11/05-10/06: Scott Pearson: continued collaboration with John Gerwin (NC Museum of Natural History), Alan Smith (Mars Hill College) and Curtis Smalling (National Audubon Society) on inventory of bird species found on Blue Ridge Parkway and Carl Sandburg National Historic Site (funding from National Park Service), and the taxonomy, geographic distribution, and habitat requirements of the Appalachian yellow-bellied sapsucker (funding from US Fish & Wildlife Service).

11/05-10/06: Jim Vose: A collaboration with Dr. Larry Band, University of North Carolina-Chapel Hill and the Baltimore Ecosystem LTER, is directed at a cross-site comparison of streamflow and water quality. The research will use large scale models to examine contemporary and future impacts of land use change (i.e., development) on water resources. It will also examine scaling issues to determine how fine-scale disturbances (i.e., subwatershed level development or forest harvesting) integrate to influence large scale hydrologic responses.

11/05-10/06: Brian Kloeppel: Collaborations with Dr. Jacek Oleksyn, Poland Academy of Sciences at the Institute of Dendrology in Kornik, Poland and Dr. Adolf Korczyk, of the Poland Academy of Sciences at the Forest Research Institute in the Białowieża National Park in Białowieża, Poland to conduct international LTER studies in Poland (NSF). The studies use the natural 13C isotope signals in wood to determine the impact of historic (>300 years to present) changing CO2 regimes on water use efficiency. A related study compares the foliar natural 13C ratio of 12 populations of Norway spruce (Picea abies) along its native elevational gradient in the Tatra Mountains as well as in a 12-year-old common garden site from the same seed source to determine if water-use efficiency depends more on genetic or microsite factors.

11/05-10/06: Kitti Reynolds: collaborating with Dr. Stephanie Madson, Warnell School of Forest Resources, UGA, on the soil microarthropod project in experimental gap plots at Coweeta Hydrologic Laboratory.

Activities and Findings

Research and Education Activities:

RESEARCH AND EDUCATION ACTIVITIES - 11/01/05 THROUGH 10/31/06

Activities this year depended in their entirety on the current Coweeta LTER award (DEB-0218001) or that leveraged on Coweeta LTER funding from NSF, National Park Service, NASA, US Natural Resource Conservation Service, EPA, DOE, US Forest Service, or US Fish and Wildlife Service. It also includes support from McIntire-Stennis formula funding to the U of Georgia Warnell School of Forest Resources. Activities this year include:

1. Characterization of changes in the riparian zone structure and function from the loss of eastern hemlock

2. Improved scaling of carbon, water, and nutrient cycling in forest ecosystems in natural and altered systems as impacted by exotic and native insects and diseases.

3. Data collection and modeling to understand the factors affecting forest biodiversity focusing on how variation in the environment, including changes in climate and disturbance, affect species composition.

4. Effects of various disturbance on abundance of soil microarthropod taxa common in forest soils and important in the decomposition process in southern Appalachia.

5. Spatially-explicit research on property markets in the Buncombe County, NC, based on transaction data, and the effect of land use regulations on house prices and land markets.

6. Research on the relationship between species diversity and leaf litter breakdown in terrestrial and aquatic settings to predict the effects of land-use change of this process.

7. Research on the effects of nutrient loading on the biotic integrity of streams focusing on different algae consumer assemblages in southern Appalachia streams within urban and agricultural environments.

8. Evaluate the response of stream chemistry and algal primary producers to hemlock death from infestations of hemlock woolly adelgids.

9. Cause-and-effect relationships between centennial and decadal human use of the land and downstream effects on the fluvial system based on field-based research that compares and contrasts different levels of human impact to stream morphology, sedimentology, and water quality.

10. Longterm studies of responses of organic matter processing in Coweeta streams to logging based on measurement of litter breakdown rates in streams draining a clear-cut watershed and draining a long-term reference site at 5-year intervals.

11. Responses of southern Appalachian region streams to disturbance (e.g., logging, agriculture, urban, and urbanization) at multiple scales in the landscape from north Georgia to central Virginia in the Blue Ridge Physiographic Province by measuring macroinvertebrate and fish, litter breakdown rates, standing stocks of BOM, whole-stream metabolism, stream geomorphology, and land cover.

12. Long- and short-term changes in channel morphology and sedimentology: Correlations between land-use and sediment yield; Nonlinear dynamic responses of the fluvial system to pulsed and pressed disturbances; Development of forecasting models for stream habitat and sediment yield conditions.

13. Functional response of streams including organic matter dynamics, litter inputs, leaf and wood decomposition, and nitrogen and phosphorous dynamics based on disturbances such as logging, agriculture, and hemlock adelgid.

14. Research on how current and past landscape patterns, abiotic conditions, and the native plant community influence the occurrence and abundance of invasive plants in forests of the Southern Blue Ridge province, and the factors that best explain the distribution of invasive plants

as well as what locations are most vulnerable to invasion.

15. Research on the effects of land use history on terrestrial biological diversity and community composition in forest ecosystems testing hypotheses related to the mechanisms that might explain land use effects including the role of anthropogenic alterations to soil chemistry (for plants) and habitat quality (for animals).

16. Research on the role of ecto- and ericoid mycorrhizae and soil/litter chemistry in regulating nutrient pools and acquisition in Rhododendron maximum-Hardwood forests.

17. Research on the demography and distribution of six forest-understory herb species in the lower Piedmont of Georgia through the Blue Ridge to develop a rigorous method of delineating suitable habitat then test hypotheses about how habitat suitability, demography, and dispersal interact to influence species distributions.

18. Relationship between drought and biodiversity in southern Appalachia streams based on long-term assemblage structure data coupled with longitudinal surveys of fish diversity and experiments on critical velocities of the dominant water-column fishes.

19. Density-habitat relationship of Cottus bairdi, Oncorhynchus mykiss, and Rhinichthys cataractae along a gradient based on depth, average velocity and the substratum composition.

20. Estimating decadal land cover changes for a nested set of study sites, from small watersheds to the entire southern Appalachians, and testing alternative models on the importance of factors driving these land use changes. This is based on collecting data from archival sources including maps, aerial photographs, and tabular information, and worked at converting these data to spatial databases suitable for analyses.

21. Model development to predict land use impacts on sediment generation in study watersheds by improving the accuracy of models that predict sediment generation and transport to southern Appalachian streams. This has involved developing and applying USLE modeling methods, sensitivity analyses, and scenario generation.

22. Effects of suspended sediment (i.e., turbidity) on reactive distance and prey capture success at spring/autumn (12?C) and summer (18?C) temperatures for rosyside dace, Clinostomus funduloides, in an artificial stream.

23. Effects of suspended sediment on the foraging behavior of a native (Clinostomus funduloides) and invasive (Notropis lutipinnis) minnows.

24. Completed a high-resolution, high-categorical classification of satellite imagery for the entire study region for the period 1985-2000 at 5-year increments.

Institutional Affiliations & Collaborators
Coweeta LTER research by senior personnel and graduate students was carried out in part or in whole through diverse collaborations. Their primary affiliation is with one of the following institutions and organizations:
1. Arizona State University
2. Blue Ridge Parkway National Park
3. Buncomb County City Government
4. Cherokee Indian Reservation
5. Clemson University
6. Duke University
7. Eco-Metrics, Inc.
8. Ecosystems Center at Woods Hole
9. Florida International University
10. George Washington/Thomas Jefferson National Forest
11. Harvard University and Harvard Forest
12. Institute of Dendrology - Kornik, Poland
13. Institute of Ecosystem Studies (New York)
14. Iowa State Univ
15. Kansas State University
16. Macon Middle School
17. Michigan State University
18. Nantahala National Forest
19. North Carolina Department of Natural Resources

20. North Carolina Geologic Survey
21. North Carolina Vegation Survey
22. Oak Ridge National Laboratory
23. Oregon State University
24. Organization of Biological Field Stations
25. Parmly Hearing Institute, Loyola University of Chicago
26. Pisga National Forest
27. Shenandoah National Park
28. Sigman Xi Society
29. Smokey Mountain National Park
30. Southern Appalachian Information Node (SAIN)
31. Southwestern Community College
32. University of Georgia
33. University of Maine
34. University of New Hampshire
35. University of New Mexico
36. University of North Carolina at Asheville
37. University of Notre Dame
38. University of Washington
39. University of Wisonsin
40. University of Wyoming
41. US Environmental Protection Agency û Athens office; Cincinnati office
42. USDA Forest Service û Southern Research Station; Fisheries Unit; Bent Creek Exp. Forest
43. USGS Center for Earth Resources Observation and Science
44. Virginia Academy of Science
45. Virginia Department of Game and Inland Fisheries
46. Virginia Department of Agriculture
47. Virginia Department of Environmental Quality
48. Virginia Tech Graduate School
49. Western Carolina University

Presentations
Coweeta LTER senior personnel and their students delivered one or more presentations on their research at the following venues:
ò Conference on Forest and Water in a Changing Environment. September, 2006. Beijing, China
ò Annual Meeting of the North American Benthological Society. June 2006. Anchorage, Alaska.
ò 2nd International Research Workshop of Evolutionary Demography. September, 2006. Rostock, Germany.
ò 1st Annual Ecosystem Informatics Symposium. Keynote Speaker (JClark), 2006. Oregon State University, Corvallis, OR
ò Neural Information Processing Systems (NIPS) Conference. Plenary Speaker (JClark), 2006. Vancouver, Washingon.
ò Uncertainty in Ecological Analysis. Keynote Address (JClark), 2006. Mathematical Biosciences Inst, Columbus
ò 4th Annual Undergraduate Research and Prospective Graduate Student Conference, 18 April 2006. Virginia Tech, Blacksburg, Virginia.
ò Soil Science Society of America Annual Meeting, 2006. Salt Lake City, UT.
ò 15th Central Hardwood Forest Conference. Feb 27- Mar 1, 2006. University of Tennessee, Knoxville
ò LTER Mini-symposium, March 2006. NSF Headquarters, Arlington, VA.
ò Association of Southeastern Biologist Conference, April 2006. Gatlinburg, TN.
ò Virginia Academy of Science, 24-26 May 2006. Blacksburg, Virginia.
ò LTER All Scientists Meeting. September, 2006. Estes Park, CO.
ò 91st Annual Meeting, Ecological Society of America. August 6-11, 2006. Memphis, TN

Educational & Other Outreach
Coweeta Schoolyard LTER activities involved seven researchers, four teachers, and a total of 41 students at three grade levels: sixth grade at Macon County Middle School (Franklin, NC), high school at Rabun Gap Nacoochee College Preparatory School (Rabun Gap, GA), and college at Southwestern Community College (Sylva, NC). Conducting projects across multiple grade levels and settings allows us to assess the potential success of our project with respect to teachers, students, and facilities. Projects undertaken included: for Grade School: riparian zone vegetation study, gradient leaf litter collection and sorting, weather overview, water quality, carbon flux & GPS, stream macroinvertebrate survey, and fish inventory; for High School: stream sample collections, riparian restoration research, and tree growth study; and for College: forest carbon cycling. Materials including a list of participants, summaries of project experiences, online data sets, photographs of some of the field days, and evaluations from teachers and students are available at http://coweeta.ecology.uga.edu/education/schoolyardlter.htm.

Findings: (See PDF version submitted by PI at the end of the report)

NARRATIVE FINDINGS - 11/01/05 THROUGH 10/31/06
(Also see attached 'CWT Research Vignettes' file)

Research on carbon, water, and nutrient cycling has led to refined techniques for measuring species-specific density and biomass, and the scaling of water flux from the tree to the watershed scale in diverse southern Appalachian forests. These findings allow ecologists to measure the changes in forest composition and water flux due to exotic and native insects and diseases on our forest ecosystems. A particular application is the ability to quantify forest changes due to the hemlock woolly adelgid and the potential impact of sudden oak death.

Research on how disturbance affects soil microarthropod communities has identified significant seasonal differences in abundance (samples collected soon after gap formation yielded significantly lower numbers during the summer). However, no difference was measured in the decomposition rate between gaps vs. control areas. One interpretation is that canopy closure occurred soon after gap formation and thus mitigated temperature and moisture extremes. Sampling at upper elevation sites in north Buncombe County did not reveal significant differences in soil microarthropod numbers between old logging sites and old growth forest. One possible explanation are top-down effects in the old growth area from salamander predation, numerous in the area.

Non-resident real estate transactions in urban areas of southern Appalachia are the result of two general trends: the rise of second home ownership and the influx of coastal residents fleeing hurricanes and higher insurance rates. Evidence is beginning to accumulate for a restructured real estate market in which property is differentially valued based on price vs. ecosystem services depending on its defined use (e.g., production vs. conservation). This has recently led to asking how species diversity, leaf litter breakdown and land-use relate to decomposition û a fundamental ecological process influencing nutrient cycling and energy flow in ecosystems. In forested Appalachian streams, our research points to the importance of allochthonous organic matter as a primary food resource and how the structure and dynamics of southern Appalachian streams are directly linked to the availability and quality of leaf litter inputs. Leaves with decreased lignin, lower phenolics, and lower C:N:P typically exhibit faster rates of decay and are more bioaccessible to consumers. Since different leaves have different decay rates, the temporal and spatial bioavailability of different leaf species as food sources to aquatic micro- and macroconsumers is variable. Changes in land-use often cause reductions in species diversity of native plants and result in the addition of exotic species.

The effect of nutrient loading on the biotic integrity of streams is of great concern given increased anthropogenic inputs common in agricultural and urban environments. However, few studies have addressed the potential of top-down forces to regulate the increase in primary production that often results. Mottled sculpin (Cottus bairdi), central stoneroller (Campostoma anomalum) and crayfishes (Cambarus spp.) dominate the macroconsumer community in many southern Appalachian streams, and the invertebrate community is dominated by snails (Elimia proxima) and insects. Coweeta experiment research is now examining nutrient effects in situ by using clay saucers enriched with nitrogen- and phosphorus-releasing fertilizer pellets simultaneous with the examination of top-down control of algal growth by excluding macroconsumers (fish and crayfish). Findings indicate that snails have a regulatory effect on algal biomass, preventing increased algal standing crop accrual when nutrients were added. Macroconsumers had less of a direct effect on algal biomass, suggesting that algivorous and omnivorous species are not significant grazers, compared to snails.

Several field-based projects have centered on comparing and contrasting different levels of human impact to stream morphology, sedimentology and water quality from centennial and decadal human use of the land. The overarching effects of human impact on the fluvial system of the upper Tennessee River basin as revealed by this research are: 1) Prehistoric to modern transformations of stream channels primarily involve enlargement of channel capacities in response to larger floods and vertical growth of channel banks resulting from overbank sedimentation. 2) Greater levels of human impact generally correlate with larger amounts of nutrient and sediment yield to streams, as well as greater siltation of stream beds. Recent decades (1960's to present) register some of the most pronounced changes in historical sedimentation rates on floodplains, suggesting that this period of housing development is one of the most erosive during historical time. 3) Turbidity of streamfow and the fine fraction of sediment in stream beds show promise with respect to forecasting the impacts of future development on stream ecosystems.

Research on the longterm responses of organic matter processing in streams to disturbance of various kinds (e.g., logging, agriculture, urban, and urbanization) at multiple scales has brought increased understanding of the legacy effects of disturbing forest stands and their associated streams. Identifying stream degradation has rested on documentating short and long-term macroinvertebrate and fish biodiversity, stream habitat disturbance from sedimentation and flashy flows, and the disturbance to stream processes including decompositon, metabolism, and primary production. In general, results indicate that mountain streams in the southern Appalachia have been historically degraded by poor forest management practices especially during the first episode of commercial forestry in the late 1880's through about 1920. Poor agricultural practices further contributed to the general degredation of streams, while conversion of land from agriculture to sub-urban and urban development appears to be a rising threat to streams in the region.

Quantifying space-use behaviors of juvenile and adult mottled sculpin indicates behaviors consistent with those of a strongly territorial organism. Adult sculpin exhibited non-random movements with restricted home ranges and extremely low levels of spatial overlap with neighboring residents (< 10% overlap). Sculpin territories were established in erosional microhabitats that were significantly more stable (as measured by seasonal shifts in dominant substrate composition) than randomly selected microhabitats in the study site. In contrast to adults, juvenile sculpin did not exhibit evidence of territoriality and instead occupied overlapping home ranges (16 û 36% overlap) in less stable, depositional microhabitats along the stream margin. Sculpin home range size, home range overlap, and territory abandonment rates were related to the density of large adults rather than flow variability or microhabitat stability. Results indicate that adult territoriality is favored in relatively stable areas, despite highly variable stream flows, whereas juvenile 'floating' behaviors are favored in less stable areas of the stream. Adult territoriality and juvenile floating provide behavioral mechanisms capable of producing strong regulation of sculpin populations in this system.

An individual-based model has been developed to successfully used to describe and analyze spatially explicit, local population dynamics of the mottled sculpin. The model simulated daily growth, mortality, movement and spawning of individuals within a reach of stream. Sensitivity and correlation analysis of the calibrated model suggest that this population was regulated by overwinter density-dependence among juveniles and adults. Evolving Neural Network (ENN) algorithms were further shown to produce highly predictive habitat-abundance relationships for three common stream fishes, and that the importance of depth and velocity in these relationships varies based on changes in substratum composition.

Research has detected a negative relationship between turbidity and reactive distance for the rosyside dace, Clinostomus funduloides at both spring/autumn (12?C) (r?=0.96) and summer (18?C) (r?=0.90) temperatures. Turbidity also had a strong negative effect on capture success at both spring/autumn (r? = 0.88) and summer temperatures (r? =0.70). Median effective concentrations (EC50 û concentration required to elicit a response equal to 50% of the maximum response observed) for reactive distance regressions were spring/autumn û 9.9 NTUs and summer û 9.2 NTUs. Data from moderately impacted streams in the region possess turbidities that exceed EC50s approximately 50% of the time. These results suggest that turbidity negatively affects foraging behavior of rosyside dace at even low to intermediate levels (>9 NTUs) and that these effects may vary seasonally.

Fluvial (Coweeta Creek) and lacustrine (Lake Michigan) populations of mottled sculpin exhibit unconditioned, mechanosensory based rheotaxis to low velocity flows. Whereas Lake Michigan sculpin generally showed increasing levels of positive rheotaxis to increasing velocities, Coweeta Creek sculpin show varying levels of positive rheotaxis at low to intermediate velocities and often reduced positive rheotaxis or even negative rheotaxis at the highest velocities (12 cm/s). Lake Michigan, but not Coweeta Creek mottled sculpin exhibited an orienting response to a small (3mm diameter) artificial prey (50 Hz vibrating sphere). In conclusion, the two populations differed in the strength and polarity of the rheotactic response at higher velocities and in their responsiveness to mechanosensory cues from epibenthic prey sources. These behavioral differences have most likely arisen from different learning experiences in different habitats and from the greater importance of visual cues to the Coweeta Creek mottled sculpin and mechanosensory cues to Lake Michigan mottled sculpin in the sensory guidance of orienting behaviors.

Disturbance chronologies were developed for seven forest stands in the Coweeta Basin and two stands in the Joyce Kilmer Memorial Forest, western North Carolina yielded the following results: On average, 2.2% of the oaks showed major releases (100% increase in average ring width for one 10-year period relative to the average for the preceding 10 years) per decade; another 4.5% of the oaks showed moderate releases (60%-99% growth increase) per decade, and 11.1% showed minor releases (25%-59% growth increase) per decade. These results show major releases occurring as far back as the 1700s; however, they were not evenly distributed throughout the decades. The percent of trees released per decade ranged from 2.3% to 25%. Forty percent of the oaks experienced moderate or major releases in the 1920s and 1930s, which coincides with a time of known logging and the spread of the chestnut blight. These analyses were extended to the other oak-dominated stands to determine if the patterns of disturbance are consistent across topographical and compositional gradients within and outside the Coweeta Basin.

Research on the slow-cycle effects of foliar herbivores on soil decomposer population structure and functioning has demonstrated that herbivory in the previous growing season affects leaf quality in the subsequent growing season. The leaf quality effects are inferred based on an observed reduction in Collembola populations growing on herbivore-treated leaves. Herbivory in the previous growing season also altered nitrogen acquisition by the Collembola, shifting it from leaves towards the soil, relative to non-herbivore treated leaves. These results demonstrate that aboveground-belowground interactions in one growing season may be dependent on phenomena in previous growing seasons.

Several field-based projects have examined how past and present landscape patterns, including historical land use, influence the presence and distribution of a variety of plant species. Key conclusions to date are that historical land use has had a long-lasting legacy on the vegetation and soils of the Southern Appalachian forests. Cove hardwood forest communities (found on sheltered slopes at mid-elevations) are particularly vulnerable to effects of increased development. There is also an effect of the current landscape (patch sizeùespecially for abundance of weedy species), but land-use legacies were particularly important. Although there are some differences in mean size of nutrient pools with land-use history, there were striking differences in the variance of soil nutrients with land-use history. In previously farmed sites total variance was less; most variance was found among plots rather than within plots. Total variance was greater in reference sites, and most variance was within and plots (thus at finer scales) not among plots. Soil microbial communities were also distinct among land-use histories û previously farmed sites

have less fungi, more Gm- bacteria, whereas reference sites have more fungi. These differences are present even though total microbial biomass doesn't differ, and there is little difference in litterfall. Finally, herbaceous plants allocate biomass differently in the reference vs. previously used sites with more allocation to stems and less to leaves in reference (where total herb cover is higher). Conversely, there is more allocation to leaves, and less to stems in previously farmed (where total herb cover is lower and soil phosphorus is higher).

Preliminary analysis has been carried out on the factors that influence the presence of the invasive plant species oriental bittersweet (Celastrus orbiculatus) in the southern Blue Ridge Mountains. Results indicated that the probability of presence of bittersweet has a hump-backed polynomial relationship with the axis representing a gradient from highly developed areas with high coverage of impervious surfaces to high coverage of forests, far from roads. This suggests that probability is low in both highly forested areas as well as in highly developed areas. Probability is highest away from urban areas but close to roads. Probability of presence has a linear relationship with the axis representing a gradient from low elevation forest openings due to agriculture or timber harvest to high elevation areas with steep topography. This indicates that bittersweet is more likely found in low elevation open areas than in high elevation areas with steep topography. The model results further indicate that there is high variability in these relationships among sites, which suggests that the distribution of bittersweet is still expanding in the region.

Ecto-, ericoid and arbuscular mucorrhizal fungi (the three types dominant at Coweeta) are differentially distributed throughout soil horizons. ERM fungi occurred predominately in O horizons and AM fungi occurred mainly in B horizons. The majority of ECM fungi were located within the B horizon but were found in the O and B as well. ERM fungi were correlated with high concentrations of inorganic N and organic N and P. AM fungi were negatively correlated with inorganic and organic N, while ECM occurred throughout the N and P fraction distribution. It is hypothesized that this fungal distribution relates to the capacity of each fungal type to utilize various soil substrates as nutrient sources. PCR and sequencing allowed identification of different mycorrhizae occurring on roots of each of the three host species. Using scanned images of each root fragment it was possible to determine several topological parameters including altitude, magnitude, and total exterior path-length; the topology of roots could then been related to their colonization by different mycorrhizae. Results indicate that different ECM groups do not have a noticeable effect on the parameters measured.

The influence of Rhododendron maximum on litter inputs and quality, N cycling and soil extracellular enzymes was examined. Results indicate that standing organic biomass and N, leaf litter and fine root biomass were significantly greater in forests with R. maximum compared to those without. Tannin extracts from R. maximum foliage, and leaf litter and fine roots collected under R. maximum had a high capacity to precipitate protein compared to those from forest trees. Across the growing season, soil inorganic N availability was generally lower under R. maximum, mostly due to reduced nitrate availability. Our data suggest that R. maximum litter alters N cycling through the formation of recalcitrant polyphenol-organic N complexes. Soil extracellular enzymes indicate the processing potential of organic substrates. Protease activity did not differ between forest types, but activity was greatest on R. maximum leaf litter. Polyphenol oxidase activity was greatest in R. maximum O horizons, and when leaf litter treatments were placed under R. maximum, suggesting that the local microbial community can better degrade and access protein-tannin-complex-N. The presence of ericoid mycorrhizal fungi under R. maximum may contribute to the observed local differences in polyphenol oxidase activity. Since the ecto- and arbuscular mycorrhizal fungi of hardwood trees may not be as proficient at enzymatic degradation as are ericoid mycorrhizal fungi, a relationship between R. maximum litter and ericoid mycorrhizal fungi may be one mechanism behind the expansion of R. maximum in southern Appalachian forests.

Research has tested hypotheses about the mechanisms that might explain land use effects, such as the role of anthropogenic alterations to soil chemistry (for plants) and habitat quality (for animals). Results indicate that effects of land use history vary with respect to the life history and habitat requirements of different forest-dwelling taxa. For plants and animals, dispersal ability and habitat specialization have strong influences on the ability to colonize new habitats. Species with limited dispersal ability are often absent in isolated, small patches of forest after anthropogenic disturbance while generalist, well-dispersed species are little affected by land use history and habitat fragmentation. Recovery from past land use depends on the type and intensity of the disturbance. Moreover, land-use history and characteristics of the landscape (i.e., landscape context) may affect a site's vulnerability to invasion by exotic plant species.

Field sampling and modeling have been used to increase understanding of the edaphic factors and the role of land use patterns in the spread and establishment of invasive plant species. Landscape change affects the abundance and quality of habitats for native species. However, this change is occurring simultaneously with variation in demography driven by climatic variability. Modeled results suggest that native species are less able to tolerate demographic stochasticity in fragmented landscapes.

Results of the effects of leaf litter species diversity on decomposition across the terrestrial-aquatic interface show that there are no effects of species richness on any factor related to terrestrial decomposition. There are, however, compositional effects, both additively and non-additively, on decay rate and chemical properties of the litter. Alternately, there is evidence for richness effects in the aquatic system, especially for microbial biomass, leading to the potential for very interesting comparisons.
For the terrestrial system, there is also evidence that composition can have an impact on nutrient dynamics, specifically through non-additive effects on phosphorus and nitrogen accumulation and release from the litter.

Results from estimated decadal land cover changes for a nested set of study sites reveal substantial inter-regional differences in the timing and extent of pasture abandonment and development over time within the southern Appalachian mountains. Early post-contact Indian populations were likely not limited by agricultural, building sites, fuelwood, or mast resources and may have been limited by deer resources. Non-paved roads are the most likely sediment generation sources in much of the current landscape, and current methods for determining stream location and initiation are highly erroneous.

Research on the breeding ecology and biogeography of the Appalachian Yellow-bellied Sapsucker seeks to document the geographic distribution and breeding ecology of this endemic subspecies. Results have documented the geographic distribution of this species across these mountains and has revealed how site-specific habitat characteristics, elevation, topography, landscape context, and regional biogeography interact to determine the local composition of breeding bird species.

Training and Development:

TRAINING & DEVELOPMENT - 11/01/05 THROUGH 10/31/06

Approximately 100 students from middle school to community college level were reached through various Coweeta LTER Schoolyard activities.

Undergraduate and graduate student skills and experience in science were enhanced through classes in ecology, geography, forestry, anthropology. Senior Coweeta LTER personnel in the context of Coweeta LTER research and allied projects worked directly with: 2 High School Students, 36 Undergraduate Students, 42 Graduate Students, and 5 Post-Doctoral Researchers.

J. Clark organized and held the Second NSF Institute on Statistical Computation for Ecological Inference and Prediction in which graduate students in ecology are trained in Hierarchical Bayesian modeling of ecological data.

Two REU students and six undergraduate interns were mentored in field research, data analysis and scientific communication.

For research partners that are exclusively or nearly exclusively undergraduate institutions such as University of North Carolina-Asheville and Mars Hill College, the Coweeta LTER provides unique opportunities for undergrads to work side-by-side with graduate students. Likewise the data resulting from this research is used in undergraduate classroom and laboratories settings.

Coweeta LTER material is being incorporated into the K-5 classroom environmental science curriculum in Western North Carolina, and used in K-12 teacher education programs.

S. Pearson serves as the Program Coordinator of the Regional Studies Program at Mars Hill College, which is an interdisciplinary endeavor that includes studies in the humanities, social sciences, and natural sciences.

Nine PhDs and two MSc degrees were awarded during this award year to students directly involved in Coweeta LTER research, and graduate and undergraduate students presented at nine professional venues.

Outreach Activities:

OUTREACH ACTIVITIES - 11/01/05 THROUGH 10/31/06

Through the end of 2005 (results tallied by calendar year), Coweeta LTER senior personnel participated or led a total of 61 groups and 1,027 individuals on tours of the Coweeta Basin. This represents over 700 contact hours with groups ranging from 1st û 5th grade through visiting scientists.

The public's understanding of science and technology has been enhanced by results of the research being conveyed to nonprofit watershed conservation organizations, such as the Little Tennessee Watershed organization.

Coweeta LTER researchers have given lectures on their Coweeta research to local civic organizations, led educational hikes for public programs, and, interacted with K-5 teachers on incorporating environmental science into their classroom activities.

Coweeta LTER investigators have been involved in a variety of land use change issues; i.e., steep slope development, flood plain planning and regulation. Some have also organized lecture series for public participation on subjects related to local landuse planning issues such as flooding and landslides, as well as serving as members of local councils.

Journal Publications

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Web/Internet Site

URL(s):

http://coweeta.ecology.uga.edu

Description:

The Coweeta LTER program subscribes to the philosophy that the future of scientific research is tied to the free and efficient exchange of research and ideas in the scientific community. We have accordingly invested heavily in supporting emerging worldwide standards for research and GIS data and metadata, and the Coweeta LTER website was completely overhauled during Year 1 to reflect this approach. All information holdings were inventoried to determine that relevant parts (i.e., data, metadata, GPS, coverages, etc.) were complete; the missing information was either collected or key-coded. EML-compliant metadata was then developed for our tabular data legacy to provide machine-readable information for data harvesters. We simultaneously developed Coweeta Data Set Summaries to provide human-friendly metadata. The Coweeta Data Summaries incorporate the information contained in the EML-compliant metadata, but also provide access to geographic coordinates as well as data.

The single most important accomplishment of the overhaul of the Coweeta LTER website was the move to Open Source Software to develop a relational database management system. This provides complete access to the entire Coweeta data legacy in a recursive fashion from anywhere in our website. The architecture is based on MySQL and PHP. MySQL is a powerful, flexible and efficient database management system, while PHP is a CGI program with a built-in scripting language that dynamically accesses MySQL and outputs to an HTML browser. In contrast to a Google search that is static and only as good as the meta-tagging on individual web-pages, the Coweeta GLOBAL Data Search gives access to all holdings of any kind anywhere in the archives from anywhere on the site. First access to this search engine is available in the ?Data & Research? section of the Coweeta LTER homepage.

Other Specific Products

Product Type:

Data or databases

Product Description:

The foremost reason for developing the Coweeta MySQL-PHP relational data management system was to give us complete control over our data legacy. The tabular data legacy now consists of nearly 200 data sets fully described and accessible according to the NSF LTER Type I and Type II criteria as implemented at Coweeta. Following are the most significant online resources available from the "Data & Research" section of the Coweeta LTER homepage:

>>Publications - 1219 citations dating from 1928, 1104 PDF publications available online.

>>Thesis/Dissertations - 225 theses and dissertations online, dating from 1937.

>>Researcher's Biographical Sketches - formatted biographies of all 27 PIs.

>>Sample Archives - 93 collections featuring 17,000+ archived samples.

>>Species Lists I, GMNH Mammal/Amphibian Collection - 20,000+ vouchered specimens for southern Appalachia from 1905 onward held at the Georgia Museum of Natural History.

>>Species Lists II - Observed and collected species at Coweeta Hydrologic Laboratory.

>>Digital Elevation Model (DEM) Catalog - raster contour maps for the southern Appalachian study region.

>>Digital Raster Graphic (DRG) Catalog - DRGs for the southern Appalachian study region.

>>Digital Orthophoto Quadrangle (DOQ) Catalog - DOQs for the greater Coweeta area.

>>Demographics - US Census block-level data for the southern Appalachian study region.

>>Monthly Climate Data (NOAA/NCDC) - Geo- and temporally-referenced records for 123 stations in the southern Appalachian study region. (Daily climate data will soon also be available.)

Sharing Information:

The relational data structure allows us to assemble, manage and dynamically deliver via the Coweeta website many types of information including species lists, biographical sketches, and a comprehensive bibliography of publications, theses, and dissertations that we are in the process of converting to downloadable PDFs.

Product Type:

Audio or video products

Product Description:

This video cassette program focuses on one important stage in the flow pattern of a river or stream: the bankfull stage. This video demonstrates how to consistently identify bankfull stage for a variety of stream types located in five physiographic provinces of the eastern United States. The program focuses primarily on streams located in forested areas and provides a systematic, reproducible procedure for determining and verifying that bankfull stage has been properly identified.

Sharing Information:

This video (published in 2003) is distributed by the USDA Forest Service, Rocky Mountain Research Station. [VHS Closed Caption, 46-min.] It is a public-accessible product and is available via government and university libraries.

Contributions

Contributions within Discipline:

Contributions Within Discipline 11/05 to 10/06
Coweeta LTER research this past year:

ò Provided evidence that soil microbial communities exhibit a legacy of historical land use from the early 20th century.
ò Demonstrated that the spatial heterogeneity of soil nutrients still shows effects of historical land use that ceased decades ago.
ò That plants in forests were used for agriculture historically show different biomass allocation patterns compared to plants in undisturbed forests.
ò Research on Rhododendron maximum has demonstrated that its suppressive effects on the forest understory may be related to its ability to shift soil nitrogen pools to a form relatively unavailable to its competitors, but readily available to itself.

While terrestrial and aquatic systems have traditionally been studied separately, several Coweeta LTER publications this year (e.g., Burcher & Benfield 2006; Burcher et al. 2006; Hagen et al. 2006; Leigh & Webb 2006; Price & Leigh 2006) show how research on fundamental ecosystem processes in both systems allows us to explore the effects of changing species diversity on the watershed as a whole.

Coweeta LTER use of full factorial diversity experiments is making it possible to separate the diversity effects of species richness and species composition in order to clarify the 'idiosyncratic' effect that is so often found in litter diversity experiments measuring decomposition.

Contributions to Other Disciplines:

Contributions To Other Disciplines 11/05 to 10/06
Our geomorphological research contributes to the realm of human impact on the environment, and particularly the interrelationships of different components of water and soil systems, and various aspects of aquatic environmental systems.

Several components of Coweeta LTER research are provided information that will assist natural resource managers in making decisions / predictions on the impacts of disturbances to the environment (e.g., Bolstad et al. 2006; Clinton & Vose 2006; Elliott & Knoepp 2005; Grossman et al. 2006). For example, sedimentation impacts on aquatic ecosystems, as well prioritize the effects due to differences in species responses and environment changes such as temperatures.
A cross-site collaboration published in Frontiers synthesizes current understanding of how exotic insect and disease species impact foundation species and the consequences of these changes on the structure and dynamics of forested ecosystems.

Contributions to Human Resource Development:

Contributions to Human Resource Development 11/05 to 10/06
J. Clark organized and held the Second NSF Institute on Statistical Computation for Ecological Inference and Prediction in which graduate students in ecology are trained in Hierarchical Bayesian modeling of ecological data.

The Coweeta LTER in partnership with USFS Coweeta Hydrological Laboratory has also created numerous opportunities for students to participate in and gain knowledge from the research through summer internships, e.g., Furman College.

An undergraduate student involved in Coweeta LTER research, Cynthia Kaminski, presented her research and was inducted into Sigma Xi. A graduate student involved in Coweeta LTER research, Ryan Kirk, presented a paper at the University Consortium for Geographic Information and Analysis Summer Assembly (June, 2006) titled 'Land use impacts on southern Appalachian carbon cycling' and was awarded 'Best Student Paper.'

Most of the Coweeta LTER senior personnel are directly involved in undergraduate and graduate education at their home institutions where they teach laboratory and field-skill courses. In addition, their research provides work opportunities for undergraduates and graduate students in the field of ecology, forestry, earth science, anthropology as it relates to nature-and-society thus advancing the future job prospects of these students in many fields. This year, senior personnel in the context of Coweeta LTER research and allied projects worked directly with: 2 High School Students, 36 Undergraduate Students, 42 Graduate Students, and 5 Post-Doctoral Researchers.

Contributions to Resources for Research and Education:

Contributions to Resources for Research and Education 11/05 to 10/06
Our geomorphological research is using cutting-edge technology, specifically Cs-137 dating of sediments, that is rather new to geography. This has involved a significant upgrade of the Geomorphology Laboratory facilities at the University of Georgia.

We are developing and testing new statistical methods that permit data that vary in type and quality to be incorporated in the same model.

My involvement in regional scale research in ecology qualified me to serve as Program Coordinator of the Regional Studies Program at my institution for 5 years and as a lead faculty member in the last two years. This program is an interdisciplinary endeavor that includes studies in the humanities, social sciences, and natural sciences.

Continued investments by USDS-FS in the Coweeta Conference Center ensure it serves as an enjoyable and productive facility for research,

education, and outreach activities.

Joint-funding from NSF, University of Georgia and the USDA Forest Service has provided three large pieces of laboratory equipment: an ion chromatograph, a carbon-nitrogen analyzer, and an auto-analyzer.

Coweeta LTER in partnership with USDA-FS Coweeta Hydrologic Laboratory hosted the 2005 annual meeting of the Organization of Biological Field Stations, an international organization of more than 150 biological stations providing research and education opportunities in a field setting.

Contributions Beyond Science and Engineering:

Contributions Beyond Science and Engineering 11/05 to 10/06
Coweeta LTER investigators have been involved in a variety of land use change issues; i.e., steep slope development, flood plain planning and regulation. Some have also organized lecture series for public participation on subjects related to local landuse planning issues such as flooding and landslides, as well as serving as members of local councils.

Special Requirements

Special reporting requirements: None

Change in Objectives or Scope: None

Unobligated funds: less than 20 percent of current funds

Animal, Human Subjects, Biohazards: None

Categories for which nothing is reported: