



HONORS THESES, RESEARCH INTERNSHIP, AND CAPSTONE RESEARCH REPORTS 2000 – 2016

Honors Theses

Banks, C. et al. 2001. The effects of land-use change on the biodiversity of the Highlands Plateau: A Carolina Environmental Program Report. Highlands, NC.

Banks, C. 2002. The effects of land use on water quality in the Highlands Plateau. Honor's thesis, UNC-Chapel Hill.

Clement, C. E. 2002. The ecological importance of understory herbaceous plants: Relationships between aboveground canopy productivity and understory removal. Honor's thesis, UNC-Chapel Hill.

Curtin, M. et al. 2002. Land use and biodiversity on the Highlands Plateau: A Carolina Environmental Program Report. Highlands, NC.

Eberle, L. 2002. Dam removal and the effects on the stream macroinvertebrate community in Scotsman Creek. Honor's thesis, UNC-Chapel Hill.

UNC IE-Highlands Field Site Internship and Capstone Research Reports

To download research volumes by year, please visit highlandsbiological.org/unc-ie/ and scroll down to *Student Research Archives*.

2004

BROWN, KATIE: Riparian zone structure and function in Southern Appalachian forested headwater catchments.

BROWN, JOSH: Impacts of Hemlock Woolly Adelgid on Canadian and Carolina hemlock forests.

CHMIELECKI, KATRINA: Land use planning for a cleaner watershed.

FRISCH, CARLA M.: Population trends on the Highlands Plateau: Assigning confidence limits to

Updated 02/14/2017

growth trajectories.

LORANG, AMY: Using GIS to predict plant distributions: A new approach.

MAILLOUX, MEGAN: Mowing and its Effect on the Wildflowers of Horse Cove Road on the Highlands Plateau.

NICHOLS, MICHAEL: Successional Dynamics of Dulany Bog.

ROE, ANDREW: An assessment of conservation priorities on the Highlands-Cashiers Plateau using geographical information systems.

ROGERS, SHELLEY: Effects of Adelgid-Induced decline in hemlock forests on terrestrial salamander populations of the southern Appalachians: A preliminary study.

WALGATE, EMILY: The Highlands Greenway: An examination and reintroduction into the community with recommendations for the future.

WEST, BRYAN C.: A re-evaluation of forest management in the Three Forks–Blue Valley areas of the Chattahoochee and Nantahala National Forests.

WORSHAM, LUKE: Southern Perimeter trail plan for Panthertown Valley.

2006

BOGGESS, LAURA: The correlation of pH indicator plant species with the geology of a rich mountain cove.

BOLAS, ELLEN: Disturbance impacts on high-elevation rock outcrop communities in the southern Appalachians.

CHESNUTT, LUCY PAGE: Satulah summit baseline study for the Highlands-Cashiers Land Trust of Highlands, North Carolina.

EITELBERG, DAVID: Panthertown bog mapping project.

HINES, KELLY: An annotated bibliography of current research on the hemlock woolly adelgid (*Adelges tsugae*) and its impact on eastern and Carolina hemlocks (*Tsuga canadensis* and *T. caroliniana*).

HOEKSTRA, BYNUM AND KIMMEL, GRANT: Mapping and analyzing undocumented streams in a municipal watershed.

MCCLEOD, KARLY: Analysis of three Highlands reservoirs.

MEINEKE, EMILY: Microhabitat selection and use by the eastern box turtle (*Terrapene c. carolina*) at Purchase Knob, Great Smoky Mountains National Park.

NAGLE, ANNEMARIE: Comparison of soil CO₂ efflux in deciduous and coniferous (white pine) watersheds in the Coweeta basin at different temporal and spatial scales.

PURVIS, BETH ANNE: Urbanization of a headwater stream and its impact on the abundance of aquatic salamanders.

Capstone:

LAURA M. BOGGESS, ELLEN C. BOLAS, LUCY PAGE CHESNUTT, DAVID A. EITELBERG, KELLY M. HINES, E. BYNUM HOEKSTRA, GRANT Y. KIMMEL, KARLY R. MCLEOD, EMILY K. MEINEKE, ANNEMARIE M. NAGLE, BETH ANNE PURVIS: A baseline study of the effects of hemlock loss in the Henry Wright Preserve and Kelsey Tract of the Highlands Plateau.

2007

BAKER, JASON: Response and restoration following a dam breach event.

BETZ, KATHERINE: Cherokee settlement and historical activity in the Yellow Creek valley of the Little Tennessee River basin, Graham County, North Carolina.

BURT, MELISSA: Discarded bottles as a source of small mammal distributional data along the southern Blue Ridge Escarpment.

HOUSEMAN, BRIAN: Jackson County hillside development ordinance and its implications for land conservation.

LEVO, BRIAN: Developing ordinances and mapping the inaugural segment of the Highlands Greenway System.

MARTIN, ANDREA AND SANDRA SKOLOCHENKO: Effects of eastern hemlock mortality on forest microclimate and species composition.

SUPLER, KATIE: A case study of the Boteler Peak Mountain Treasures Area in western North Carolina.

VANDENBERG, ANNA: Anaerobic digestion of municipal solid waste as a supplemental biogas source for the Jackson County Green Energy Park.

WHISLER, SALLY: Hybridization in the fern genus *Dryopteris*.

WHITEHEAD, MATTHEW: Perennial stream identification and mapping in the Big Creek watershed.

Capstone:

BAKER, JASON, KATHERINE BETZ, MELISSA BURT, BRIAN HOUSEMAN, BRIAN LEVO, ANDREA MARTIN, SANDRA SKOLOCHENKO, KATIE SUPLER, ANNA VANDENBERGH, SALL Y WHISLER, MATTHEW WHITEHEAD: Canopy dynamics and understory regeneration at tree fall sites: effects of hemlock loss in the Henry Wright Preserve.

2008

BOST, DAVID AND MAGGIE CASWELL: An examination of shrew species' distribution along the Blue Ridge escarpment using data from discarded bottles.

DAVIS, JOSEPH: Quantifying the decline in transpiration of *Tsuga canadensis* and predicting water budget implications of succession in southern Appalachian forests.

EARLY, HANNAH: River corridor restoration: Planning riparian buffer zone for the Cullasaja Club.

KOUKOPOULOS, BRYCE: Promoting a linked landscape in Highlands through the development of publications and subdivision ordinances for the Highlands Plateau Greenway.

KRUTULIS, ANDREA: Land trust conservation: GIS analysis for the delineation of non-encroachment areas of a floodplain ordinance.

READ, QUENTIN: Soil and tree ring chemistry changes in an oak forest.

TIFFANY, CHRIS: Quality-soil and farmland locations in Jackson and Macon counties, North Carolina, and their implications for land conservation.

ZIMMERMAN, GRAHAM: Montane cedar glades of Macon county, North Carolina: Red cedar ages and geographic boundaries at three sites.

Capstone:

BOST, DAVID, MAGGIE CASWELL, JOSEPH DAVIS, HANNAH EARLY, BRYCE KOUKOPOULOS, ANDREA KRUTULIS, QUENTIN READ, CHRIS TIFFANY, GRAHAM ZIMMERMAN: Crushed stone deposition: An analysis of sedimentation and stream health.

2009

BLALOCK, MARIANE: Informing the public on the water quality within the Little Tennessee River watershed.

CHIN, ANDREW: Changes in bird species in Highlands, North Carolina, 1884-2009.

DECKER, ANNA AND BRITTANY ROBINSON: Survey of *Eurycea longicauda longicauda* habitat in the Little Tennessee and Nantahala River drainages.

HOUSER, CAMERON: Revegetation designs for the Highlands Plateau Greenway.

SENSENEY, SARA-ELIZABETH: The Coweeta LTER schoolyard program study boxes: A model for hands-on science teaching resources.

Capstone:

BLALOCK, MARIANE, ANDREW CHIN, ANNA DECKER, BRITTANY ROBINSON, CAMERON HOUSER, SARA-ELIZABETH SENSENEY: Fishing for answers: An analysis of biomonitoring trends in seven different sub-watersheds of the Little Tennessee River basin.

2010

AHL, ERIK AND CAROLINE HAMPTON: A herpetological inventory at three sites in the southern Appalachians.

ANDERSON, KYLE: Implementation of a waste vegetable oil cleaning system for the production of biofuel.

COMBS, W. COLE: Applying a GIS-based approach to mapping potential cedar cliff habitats using traits of a *Juniperus virginiana* population at Cedar Cliff Mountain, North Carolina.

HENNINGER, TRUDIE: Community outreach in Highlands, North Carolina to protect 15 priority bird species.

HOBSON, GABRIEL AND MICHAEL HOUSER: Physical descriptions and associated ecological analyses of western North Carolina *Stewartia ovata* populations.

JERNIGAN, KENAN AND NIKKI LILES: An evaluation of the Stream Visual Assessment Protocol for the Little Tennessee River Watershed.

MURPHY, SEAN: Shedding light on energy conservation and sustainability at the Highlands Biological Station.

NASH, EMMA: Using phenology gardens to monitor climate change in the southern Appalachians.

RUIGROK, MICHELLE: Phylogenetic relationships of the flowering plant genus *Sabatia* (Gentianaceae) based on *ATPI-H* gene sequences: A combined analysis.

Capstone:

ERIK AHL, KYLE ANDERSON, W. COLE COMBS, CAROLINE HAMPTON, TRUDIE HENNINGER, GABRIEL HOBSON, MICHAEL HOUSER, KENAN JERNIGAN, NIKKI LILES, SEAN MURPHY, EMMA NASH & MICHELLE RUIGROK: Water quality monitoring of the Upper Cullasaja watershed, Highlands, North Carolina.

2011

ARCIERO, AUTUMN: Analysis of physiological variations to estimate leaf gas exchange in a mixed hardwood forest.

BETTCHER, MORGAN AND AUSTIN BROOKS: An assessment and mapping of whole-tree revetments and other bank erosion control methods along the Little Tennessee River.

EVANS, RYAN C. AND ALICE H. KIM: Overflow Wilderness Study Area: A case study of wilderness and the proposed Bob Zahner Wilderness.

JOHNSON, MARY NELL: Exploring energy efficiency and awareness at The Old Edwards Inn and Spa.

KRAG-ARNOLD, ALYSSA M. AND MALLORY G. NICKEL: Planning for agricultural sustainability at Rabun Gap – Nacoochee School.

MCCONNELL, JOSEPH A.: Tracking climate change in the southern Appalachians through phenological gardens.

MONAR, KELDER: An assessment of woody and invasive plant cover at restored sites in the Little Tennessee Watershed.

TRAN, TYLER: Using GPS technology to relate canopy cover and other ecological parameters of *Rhododendron maximum* L.

Capstone:

AUTUMN ARCIERO, MORGAN BETTCHER, AUSTIN BROOKS, RYAN C. EVANS, MARY NELL JOHNSON, ALICE H. KIM, ALYSSA M. KRAG-ARNOLD, JOSEPH A. MCCONNELL, KELDER MONAR, MALLORY G. NICKEL, AND TYLER TRAN: Water quality monitoring of the Upper Cullasaja Watershed, Highlands, North Carolina.

2012

BARGELT, LINDSEY: The mortality risk of discarded roadside bottles on southern Appalachian shrews.

BLENDER, KIRSTAN: A study of soil moisture content at which pine trees experience stress.

DEANS, SUSAN: Exploring the distribution and ecology of *Stewartia ovata* along the Chattooga River and its drainages.

DWIGANS, E.J.: Mapping the distribution of invasive species *Corbicula fluminea* in western North Carolina.

FREEMAN, AMANDA: A study of leaf litter interception across varying-aged hardwood forests.

HAYS, BRANDON: Habitat preference of small mammals in Panthertown Valley.

PURVIS, LINDSEY: Predictive modeling of *Stewartia ovata* populations in Rabun County, Georgia and Oconee County, South Carolina.

TIERNEY, JULIE: Creating a parcel-based conservation vision model for two Blue Ridge forever focus areas in the southern Blue Ridge Mountains.

WILL, ELYSE: The density of *Corbicula fluminea* in western North Carolina watersheds.

Capstone:

LINDSEY BARGELT, KIRSTAN BLENDER, SUSAN DEANS, EJ DWIGANS, AMANDA FREEMAN, 72 BRANDON HAYS, LINDSEY PURVIS, JULIE TIERNEY, ELYSE WILL, STEVE FOSTER, KAREN KANDL, TOM MARTIN, AND MICHELLE RUIGROK: Biological and physical differences of two Appalachian streams within the Tuckasegee watershed: A quantitative comparison of an impaired and a healthy stream.

2013

ALLAN, EMILY C.: The effects of a power-line right-of-way on habitat and microclimate in a southern Appalachian forest and the implications for salamanders.

DIMARTINO, ANNA: Creating a Geographic Information Systems model to map potential habitat sites for *Glyptemys muhlenbergii* bog turtle in Macon and Jackson Counties.

HILLMAN, ISABEL R.: Soil efflux in a southern Appalachian hardwood forest.

LE, NGUYEN HUYN AN MARKUS: Niche differentiation between *Magnolia acuminata*, *Magnolia fraseri*, and *Magnolia tripetala*.

LEEPER, SAM: Health assessment and formulation of management strategy for *Juniperus communis* var. *depressa* on Satulah Mountain.

ODOM, STEPHEN: The events leading to the actions prior to the Removal Act of 1830 within Cowee, NC: Preliminary research.

QUINLAN, ELLEN J.: Contribution of mid-canopy trees and shrubs to forest biomass, leaf area, and surface area in the southern Appalachian Mountains.

RICHTER, JENNIFER G.: The presence of thousand cankers disease in the Great Smoky Mountains National Park.

RUDISILL, WILL: Effectiveness of stream visual assessment protocol as a biological integrity proxy.

SILINSKI, MATTHEW C.: Salamander abundances in power-line right-of-ways.

THURMAN-IRONS, ELIZABETH A. GPS mapping and habitat analysis of *Stewartia ovata* in western North Carolina.

TONY, JORDAN M.: Lack of sunlight availability inhibits carnivory in *Sarracenia purpurea* var. *montana*.

Capstone:

EMILY ALLAN, ANA DIMARTINO, SAM LEEPER, ISABEL HILLMAN, MARKUS LE, STEPHEN 99 ODOM, ELLEN QUINLAN, JEN RICHTER, WILL RUDISILL, MATT SILINSKI, LIZZY THURMAN-IRONS, AND JORDAN TONY: An assessment of the ecology and stream health of Caney Fork, a tributary to the Tuckasegee River.

2014

ANGEL, WHITLEE AND LINDSEY EBAUGH: The effects of human activity on acidic cove forests and granitic outcrop communities in the Highlands Cashiers Plateau.

GOODMAN, MARIAH: An assessment of the hybridization of *Castanea dentata* as a method of resistance to *Cryphonectria parasitica*.

HESSLER, JORDAN: Flora habitat development in landslides and their role in the development of early successional forest.

MACKENZIE, ZACHARY: The habitat of *Sarracenia purpurea* var. *montana*, the mountain purple pitcher plant.

RUSSELL, KATIE AND ELLA WICKLIFF: Growing conditions and seed set in *Stewartia ovata*.

SITTERSON, JAN: An assessment on whole tree revetment condition in the Little Tennessee River Basin.

STEWART, ANDREA: Long-term changes in vegetation dynamics following partial harvest in the southern Appalachians.

WARD, JAKE: Distribution of *Cryphonectria parasitica* within plot plantings of Chinese, hybrid, and American chestnut.

YEARY-JOHNSON, KARL: The presence and distribution of red imported fire ants (*Solenopsis invicta*) on the Highlands-Cashiers Plateau: Climate change and the spread of an invasive species.

ZENG, ZHEXI: Comparison of stream temperature dynamics between north-facing and south-facing watersheds in the southern Appalachians.

Capstone:

WHITLEE ANGEL, LINDSEY EBAUGH, MARIAH GOODMAN, JORDAN HESSLER, ZACHARY MACKENZIE, KATIE RUSSELL, JAN SITTERSON, ANDREA STEWART, JAKE WARD, ELLA WICKLIFF, KARL YEARY-JOHNSON, AND ZHEXI ZENG : A comparative assessment of the stream health of Caney Fork, a tributary to the Tuckasegee River.

2015

ARNOLD, OLIVIA: Establishing the distribution of *Desmognathus folkertsi* in the North Carolina segment of the Chattooga River drainage.

BUHAY, COREY: Presence of *Desmognathus folkertsi* in the Chattooga River drainage of Western North Carolina.

CURTIS, ROBERT: Habitat and distribution of Fraser magnolia (*Magnolia fraseri*).

FUREY, KATIE: Exploring the correlation between *Castanea dentata* size (diameter and height) and the presence of *Cryphonectria parasitica*.

HOPSON, CHARLOTTE: Temporal and spatial soil moisture patterns on two southern Appalachian hillslopes.

MCMAHAN, ROBERT: Analyzing the distributions of two locust species, *Robinia hartwigii* and *R. hispida*, on Satulah Mountain and Laurel Knob (Macon and Jackson Counties, NC).

WATSON-COOK, EMILY: Vegetation and seed bank of Dulany Bog, a southern Appalachian fen.

WELLISH, SARAH: Distribution patterns of chestnut blight (*Cryphonectria parasitica*) in American chestnut populations.

Capstone:

OLIVIA ARNOLD, COREY BUHAY, ROBERT CURTIS, KATIE FUREY, KATHERINE HARRELL, CHARLOTTE HOPSON, ROBERT MCMAHAN, EMILY WATSON-COOK, AND SARAH WELLISH: Habitat quality assessment of the Horsepasture River in western North Carolina.

2016

CECIL, LAURENCE: Comparing community dynamics of old-hemlock forests in varying states of decline.

EVERAGE, LAREN: The effects of off-highway vehicles on stream sedimentation in the North Fork of the Broad River basin.

HAMILTON, WILLIAM AND JORDAN IDDINGS: Survey of green salamander (*Aneides aeneus*) populations in Macon County, NC.

KELLOGG, ALEXANDER: Distribution of chestnut blight (*Cryphonectria parasitica*) among American chestnut trees in the southern Appalachian mountains.

MULLIKIN, AMANDA: Evaluation of mountain camellia (*Stewartia ovata*) habitats in the Chattooga River drainage: Soil fertility and macroinvertebrate associations.

SMITH, BROOKE: Sapwood analysis of hardwood trees in response to eastern hemlock (*Tsuga canadensis*) mortality.

TRIBO, ALEXANDRA: Investigating the relationship between American chestnut (*Castanea dentata*) dimensions and the presence of chestnut blight fungus (*Cryphonectria parasitica*).

WHITENACK, LAUREN: Predicting golden-winged warbler (*Vermivora chrysoptera*) nesting habitat using geographic information systems modeling.

ZAMAN, TASMIA: Testing a nesting habitat model for golden-winged warbler (*Vermivora chrysoptera*) using a geographic information systems model.

Capstone:

LAURENCE CECIL, LAREN EVERAGE, WILL HAMILTON, JORDAN IDDINGS, ALEX KELLOGG, AMANDA MULLIKIN, BROOKE SMITH, ALEXANDRA TRIBO, LAUREN WHITENACK, AND TASMIA ZAMAN: An assessment of stream health of the Whitewater River.