

**Laboratory Methods: Archaeobotany
Anthropology 413 and 413L
Fall 2016**

**Dr. C. Margaret Scarry
Offices: 202 Alumni Building
Office Hours: T 11-12, W 1-2 or by appointment
Email: scarry@email.unc.edu**

COURSE DESCRIPTION: This class introduces you to the aims, methods, and applications of archaeobotany and gives you experience working with archaeological plant remains. We will begin with a brief examination of the history and scope of archaeobotany. From there, we will move to considerations of the nature of archaeobotanical data and of field and laboratory methods appropriate for recovering, identifying, and analyzing plant remains. Then we will shift our focus to issues of interpretation. We will examine how we can use archaeological data to investigate questions about: 1) peoples' relationships with/impact on the environments in which they live, 2) the origins and spread of domesticated plants, 3) peoples' subsistence strategies and diets and 4) peoples' use of food for negotiating and symbolizing social and political relations.

As a participant in this class you will also get hands-on research experience with analyzing archaeological plant remains and presenting the results of your analysis in a written report. I will introduce you to basic procedures for sorting and identifying plant remains. Then we will analyze archaeobotanical samples from an American Indian village, in North Carolina. Besides sorting the samples, we will analyze the data and prepare and discuss interpretive reports on the results of our analyses.

OBJECTIVES: By the end of the semester I expect that you will:

- Be familiar with the goals and practices of archaeobotany.
- Understand how archaeobotanical data contribute to our understanding of the environments and foodways of people who lived in other times and places.
- Develop a working knowledge of and hands-on experience with the methods used to recover, analyze and interpret archaeological plant remains.
- Gain experience with the steps involved in preparing a research report that presents and interprets original data.

This is a combined seminar and lab course. On Tuesdays, we will meet from 2-3:15. On Thursdays, we will meet from 2:00 to 4:45 with a 15 minute break in the middle: this longer session will give us extra time for lab work. Some sessions will be devoted to discussions of assigned readings, some will combine discussions of readings with lab exercises, and some will be devoted primarily to working on sorting and identifying plant remains from archaeological samples. (The schedule of discussion topics, lab exercises, and lab days is given below.) The success of this class will depend on our mutual commitment to thoughtful, informed discussions; careful, diligent lab work; and collaborative creative thinking. **Regular attendance and diligent work during the lab sessions will count for 50% of your lab grade (ANTH 413L).**

RESEARCH PROJECT: The best way to gain an appreciation for the procedures, problems and potentials of archaeobotanical analyses is to work with actual samples. As a class, we will undertake the analysis of plant remains from the Wall site, an American Indian village (ca. A.D. 1400-1600), located near Hillsboro, North Carolina. Excavations by UNC's Research Labs of Archaeology have revealed multiple houses surrounded by a stockade. The plant samples we will analyze come from a rich refuse deposit that was excavated by UNC field school students in 2015 and 2016. Each of you will have responsibility for sorting and identifying the plant remains from at least one sample (more if there is time) of plant remains from the Wall site. Besides the actual lab work, each of you will write a research report based on the plant data from Wall. Over the course of the semester, we will discuss the basic elements of a research report and assemble the information necessary to write a report on the Wall plant assemblage. Towards the end of the semester when the samples have been sorted, we will collate the data, discuss how to analyze them and generate ideas about how to interpret the results. While much of this work will be done as a class or in groups, each of you will write a separate research report (complete with figures, tables and citations). You will prepare sections as we go along, get feedback from me and incorporate your revisions into a complete research report that is due at the time the final is scheduled. Your final product should include all the elements of a research report (background information, research questions, recovery procedures, lab methods, presentation of data/results and discussion of how the results relate to your research questions). The length of a report is difficult to specify, but is probably in the range of 10 to 20 pages—including tables, figures and citations. During the exam period, we will meet to turn in the papers and discuss and compare your research questions and interpretations of the assemblage. For this session, I expect you to prepare one or two powerpoint slides that present your key findings/interpretations. **Your research report and powerpoint slide(s) will count for 45% of your final grade in ANTH 413.**

READING ASSIGNMENTS AND WRITING RESPONSES: There is no text book for this course. There are, however, required reading assignments in the form of book chapters and journal articles that I will make available to you on SAKAI. I expect you to read the material before the class for which it is assigned. For classes that have assigned readings, I often will begin class by posing a question (related to the readings and/or our class project) and giving you time to respond in writing. The questions will be designed to stimulate discussion about the articles and/or apply insights from the readings to our research project. Your responses will be graded as follows: 0 points if you do not turn in a response, 0.8 points for turning in a response, and 1 point for turning in a thoughtful effort. Unless you have notified me in advance that you are sick or have a legitimate reason to be absent, if you miss class and turn in your response late, you will receive 0.5 points. You will need to bring your laptops to class on Tuesdays so that you can write your responses and post them to SAKAI. **Together the written responses will count for 10% of your grade.**

LAB EXERCISES: Over the course of the semester, there will be six lab exercises designed to introduce you to lab skills pertinent to archaeobotanical analyses and interpretation. These exercises will be conducted during lab sessions and will include written notes that you turn in at the end of the session. The exercises will be graded as follows: 0 points if you do not turn in a lab exercise, 0.8 points for turning in a lab exercise, and 1 point for turning in a thorough effort. Unless you have notified me in advance that you are sick or have a legitimate reason to be

absent, if you miss class and turn in your lab exercise late, you will receive 0.5 points. **Together the lab exercises will count for 50% of your lab grade (ANTH 413L).**

SHORT ASSIGNMENTS: To conduct archaeobotanical research you must know something about plant taxonomy, some basic plant anatomy, how to find ecological and nutritional information about individual taxa, and how to find archaeological and ethnohistoric information to aid in interpreting a plant assemblage. There will be three short assignments designed both to show you how to pursue such information and to generate and revise sections that you will include in your research report. **Each of the short assignments is worth 15 points. Together the short assignments will count for 45% of your ANTH 413 grade.**

- Each of you will be assigned one of the plants that we expect to find in the archaeological assemblage we are analyzing. You will track down information about its abundance, seasonality, ecological characteristics, nutritional content, etc. I will provide guidelines that specify what information you are to gather and point you towards sources where you can find such information. Once you have gathered the information, you are to put together a digital show for presentation to the class. Your presentation should be planned to take 10-15 minutes. **The presentations will be given on Oct. 13.** You are to submit a copy of your digital file to me for posting on SAKAI before class meets on the 13th. After your presentation, I will give you feedback on how to make the content, visual and oral aspects of your presentation more effective.
- We will gather comparative and background material for your final reports by reading articles on late pre-Columbian American Indian culture, southeastern archaeology and pertinent archaeobotanical studies. You will use this to draft an introduction for your research report that includes background information and research questions. I will give you suggestions for revisions that you can make in preparing the final report. **Your draft introduction is due on Tues. Nov. 22.**
- Preparing tables for inclusion in your research report. We will compile a quantified list of the plants that we find in the archaeobotanical samples. Using the information from the presentations generated by the class, you are to create tables or figures that present information that is relevant for interpreting the assemblage from our site. You will then use the tables to derive observations for interpreting the assemblage. (Again I will give you instructions about how to proceed.) I will review your tables and make suggestions for revisions to be incorporated in your final research paper. **Your tables and observations are due on Tuesday Nov. 29.**

FINAL: There will not be a “traditional” final exam for this class. Instead, you will write a research report on the archaeobotanical assemblage (see description above) and turn it in at the time scheduled for the final. We will then spend the exam period, discussing your research questions and interpretations of the results. To facilitate this discussion, you will prepare one or two powerpoint slides that present your key findings. (We have received permission to use this “non-traditional” final instead of a formal exam.)

GRADES: Active, conscientious participation is the key to doing well in this class. Given the small size and nature of the class, I anticipate that all of you will do well, provided that you actively participate. Grades will be calculated as follows:

- For Anth 413: 10% written responses; 15% for each of the three short assignments (45% total), and 45 % for the final research report.
- For Anth 413L: 50% attendance and diligent participation/performance in the lab (measured by dedication rather than accuracy); 50% notes from the lab exercises.

GRADUATE RESEARCH CONSULTANT: In this research-exposure course, you will be working with a Graduate Research Consultant, Gabrielle Purcell. Gabby will work with me to teach you how to sort and identify plant remains and will also be available to help answer questions as you prepare the sections of your report. The GRC Program is sponsored by the Office for Undergraduate Research (www.unc.edu/depts/our), and you may be able to use this research-exposure course to meet a requirement of the Carolina Research Scholars Program (http://www.unc.edu/depts/our/students/students_crsp.html). I encourage you to visit the OUR website to learn about how you might engage in research, scholarship and creative performance while you are at Carolina.

Gabby Purcell is a PhD student in Anthropology whose dissertation focuses on contact-era Cherokee foodways in western North Carolina. She has experience working on plant remains from American Indian sites in Georgia, North Carolina and Tennessee. Gabby will help supervise the lab sessions when we work on the Wall site samples. She will also be available to help as we collect background information, develop research questions, and interpret the Wall site plant data.

We SUPPORT THE HONOR CODE AND EXPECT YOU TO ABIDE BY ITS GUIDELINES. <http://studentconduct.unc.edu/>

COURSE SCHEDULE: This is a tentative schedule. We may modify it or change some of the readings as our project develops and we find areas that need further investigation or ones that can be eliminated in the interest of spending more time on lab work or relevant research. The overall workload will not be increased by any adjustments to the schedule or readings that we make.

Tuesday, Aug. 23 – Introduction to Class and Research Project

Thursday, Aug. 25 – Archaeobotanical Research Questions and Nature of Plant Data

Watson, Patty Jo (1997) The Shaping of Modern Paleoethnobotany. In *People, Plants and Landscapes*, edited by K. Gremillion, pp. 13-22. University of Alabama Press, Tuscaloosa.

Marston, John M., Christina Warinner, and Jade D’Alpoim Guedes (2014) Paleoethnobotanical Method and Theory in the 21st Century. In *Method and Theory in Paleoethnobotany*, edited by J. Marston, J. D’Alpoim Guedes and C. Warinner, pp. 1-18. University of Colorado Press.

Tuesday, Aug. 30 – Introduction to Wall Site - Guest Presentation by Dr. Steve Davis

Davis, R. P. Stephen (2009) The Hillsborough Archaeological District: The Piedmont, North Carolina Native American Villages Before and During European Contact. In *Archaeology in America, An Encyclopedia: volume 1, Northeast and Southeast*, edited by Francis P. McManamon, pp. 333-338. Greenwood Press, Westport, CT.

- Ward, H. Trawick and R. P. Stephen Davis (1999) Introduction. *Time Before History*, pp. 1-23. University of North Carolina Press,
- Ward, H. Trawick and R. P. Stephen Davis (1999) Late Woodland Period in the Piedmont, Late Woodland Period (A.D. 800-1600). *Time Before History*, pp. 98-118. University of North Carolina Press.
- Ward, H. Trawick and R. P. Stephen Davis (1999) The Contact Period: Tribes, Traders, and Turmoil, The Contact Period in the Central Piedmont (A.D. 1600-1710). *Time Before History*, pp. 229-246. University of North Carolina Press.

Recommended: If you are unfamiliar with archaeological methods and/or with North Carolina Archaeology, you might find it useful to explore [Excavating Occaneechi Town](#). This is an interactive excavation based on RLA work at the Fredericks site (ca. 1680-1710), which like the Wall site is located in the Hillsboro Archaeological District.

Thursday, Sept. 1 – Taphonomy, Biases, and Discussion of How these Impact Archaeological Assemblages from Eastern North America (w/ lab exercise)

Gallagher, Daphne E. (2014) Formation Processes of the Macrobotanical Record. In *Method and Theory in Paleoethnobotany*, edited by J. Marston, J. D'Alpoim Guedes and C. Warinner, pp. 19-34. University of Colorado Press.

Tuesday, Sept. 6 – Background to Project: American Indian History and Subsistence Practices in the Southeast

- Gremillion, Kristen J. (2003) Eastern Woodlands Overview. In *People and Plants in Ancient Eastern North America*, edited by P. Minnis, pp. 17-49. Smithsonian Institution Press.
- Scarry, C. Margaret (2003) Patterns of Wild Plant Utilization in the Prehistoric Eastern Woodlands. In *People and Plants in Ancient Eastern North America*, edited by P. Minnis, pp. 50-104. Smithsonian Institution Press.
- Smith, Bruce D. and C. Wesley Cowan (2003) Domesticated Crop Plants and the Evolution of Food Production Economies in Eastern North America. In *People and Plants in Ancient Eastern North America*, edited by P. Minnis, pp. 105-125. Smithsonian Institution Press.

Thursday, Sept. 8 – Field Methods: Sampling Strategies, and Recovery Procedures (distribute samples and prepare for sorting and identification)

- Pearsall, Deborah (2003) Techniques for Recovering Macroremains. In *Paleoethnobotany: A Handbook of Procedures*. Academic Press. (read pp. 11-28, skim 29-65, read 66-97)
- Fritz, Gayle J. (2005) Paleoethnobotanical Methods and Applications. In *Handbook of Archaeological Methods*, edited by H.D.G. Maschner and C. Chippindale, pp. 773-834. Alta Mira Press, Lanham, Maryland. (read pp. 773-788)

Tuesday, Sept. 13 – Background to Project: Discuss Research Questions for Plant Assemblage

- Lawson, John (1967) *A New Voyage to Carolina*, pp. 14-67. University of North Carolina Press.
- Hammett, Julia E. (2000) Ethnohistory of Aboriginal Landscapes in the Southeastern United States. In *Biodiversity and Native America*, edited by P. Minnis and W. Elisens, pp. 248-299. University of Oklahoma Press, Norman.

Thursday, Sept. 15 – Lab

Tuesday, Sept. 20 – Lab Methods: Sample Sorting and Identification (w/ lab exercise on describing seeds)

- Pearsall, Deborah (2003) Identification and Interpretation of Macroremains. In *Paleoethnobotany: A Handbook of Procedures*. Academic Press. (pp. 99-144, **skim pp. 111-132**)
- Gayle J. Fritz and Mark Nesbitt (2014) Laboratory Analysis and Identification of Plant Macroremains. In *Method and Theory in Paleoethnobotany*, edited by J. Marston, J. D'Alpoim Guedes and C. Warinner, pp. 115-146. University of Colorado Press.

Thursday, Sept. 22 – Introduce Plant Exercise and Assign Taxa Lab

Tuesday, Sept. 27 – Ecology, Seasonality and Use

- Fowler, Catherine S. (1997) *Historical Perspectives on Timbisha Shoshone Land Management Practices, Death Valley, California*. In *Case Studies in Environmental Archaeology*, edited by E. Reitz, L. Newsom, and S. Scudder, pp 87-101. Plenum Press.
- C. Margaret Scarry and Kandace D. Hollenbach (2012) What Can Plants Tell Us About Seasonality? In *Seasonality and Human Mobility along the Georgia Bight*, edited by E. Reitz, I. Quitmeyer, and D. Thomas, pp. 187-198. Anthropological Papers of the American Museum of Natural History, New York.
- Fritz, Gayle J., Virginia Drywater Whitekiller, and James W. McIntosh (2001) Ethnobotany of Ku-nu-che: Cherokee Hickory Nut Soup. *Journal of Ethnobiology* 21(2):1-27.
- Ashley A. Peles and C. Margaret Scarry (2014) Plant Remains from the Ashe Ferry Site (38Yk533), A Multi-Component Site In York County, South Carolina. In *Archaeology at Ashe Ferry: The Late Woodland Period In The Lower Catawba River Valley*, by Brett H. Riggs and R. P. Stephen Davis, Jr., pp. 7-2 to 7-23. Research Report No. 36, Research Laboratories of Archaeology, The University of North Carolina at Chapel Hill.
- Briggs, Rachel (2014) The Hominy Foodway of the Historic Native Eastern Woodlands. *Native South* 8:112-146.

Thursday, Sept. 29 – Lab

Tuesday, Oct. 4 – Identification and Interpretation of Wood Remains

- Newsom, Lee A. (1993) Plants and People: Cultural, Biological, and Ecological Responses to Wood Exploitation. In *Foraging and Farming in the Eastern Woodlands*, edited by C. Scarry, pp. 115-137. University Press of Florida.
- Hoadley, R. Bruce (1990) The Structure of Woody Plants: Gross Anatomical Features (Chapter 2), The Structure of Woody Plants: Softwoods (Chapter 3) and The Structure of Woody Plants: Hardwoods (Chapter 4). In *Identifying Wood*, pp. 7-45. Taunton Press. (each chapter is posted as a separate file)

Thursday, Oct. 6 – Wood Identification (w/ lab exercise on basic wood identification features) Lab

Tuesday, Oct. 11 – Pollen, Phytoliths, Starch Grains, and Residues

- Foster, H. Thomas, II, and Arthur D. Cohen (2007) Palynological Evidence of the Effects of the Deerskin Trade on Forest Fires during the Eighteenth Century in Southeastern North America. *American Antiquity* 72(1):35-52.
- Hart, John P., Hetty Jo Brumbach, and Robert Lusteck (2007) Extending the Phytolith Evidence for Early Maize (*Zea mays spp. mays*) and Squash (*Cucurbita* sp.) in Central New York. *American Antiquity* 72(3):563-584.
- Chandler-Ezell, Karol, Deborah M. Pearsall, and James A. Zeidler (2006) Root and Tuber Phytoliths and Starch Grains Document Manioc (*Manihot esculenta*), Arrowroot (*Maranta arundinacea*), and Llerén (*Calathea* sp.) at the Real Alto Site, Ecuador. *Economic Botany* 60(2):103-120.
- Rafferty, Sean (2006) Evidence of Early Tobacco in Northeastern North America. *Journal of Archaeological Science* 33:453-458.
- Crown, Patricia L., Thomas E. Emerson, Jiyan Gu, W. Jeffrey Hurst, Timothy R. Pauketat, and Timothy Ward (2012) Ritual Black Drink Consumption at Cahokia. *PNAS* 109(35):13944-13949.

Thursday, Oct. 13 – Student Taxon Presentations

Tuesday, Oct. 18 – Lab

Thursday, Oct. 20 (fall break)

Tuesday, Oct. 25 – Lab

Thursday, Oct. 27 – Lab

Tuesday, Nov. 1 – Subsistence Strategies: Foraging and Farming Practices

- Hollenbach, Kandace (2010) Modeling Resource Procurement of Late-Paleoindian Hunter-Gatherers: A View from Northwest Alabama. In *Exploring Variability in Early Holocene Hunter-Gatherer Lifestyles*, edited by S. Hurst and J. L. Hoffman, pp. 13-26. University of Kansas Publications in Anthropology,
- Weiss, Ehud, Mordechai Kisilef, Orit Simchoni, Dani Nadel, Hartmut Tschauer (2008) Plant-Food Preparation Area on an Upper Paleolithic Brush Hut Floor at Ohalo II, Israel. *Journal of Archaeological Science* 35:2400-2414.
- Bogard, Amy (2005) ‘Garden Agriculture’ and the Nature of Early Farming in Europe and the Near East. *World Archaeology* 37(2): 177-196.
- Scarry, C. Margaret (2008) Crop Husbandry Practices in North America’s Eastern Woodlands. In *Case Studies in Environmental Archaeology*, second edition, edited by E. Reitz, C. Scarry, and S. Scudder, pp. 391-404. Springer.

Thursday, Nov. 3 – Cereal Grain Identification w/ lab exercise, Lab

Tuesday, Nov. 8 – Domestication

- Price, Douglas and Omar Bar-Yosef (2011) The Origins of Agriculture: New Data, New Ideas. *Current Anthropology* 52(S4):163-174.

- Weiss, Ehud and Daniel Zohary (2011) The Neolithic Southwest Asian Founder Crops: Their Biology and Archaeobotany. *Current Anthropology* 52(S4):237-254.
- Zeder, Melinda (2011) The Origins of Agriculture in the Near East. *Current Anthropology* 52(S4):221-235.
- Piperno, Dolores R. (2011) The Origins of Plant Cultivation and Domestication in the New World Tropics: Patterns, Process, and New Developments. *Current Anthropology* 52(S4):453-470
- Smith, Bruce D. (2011) Cultural Context of Plant Domestication in Eastern North America. *Current Anthropology* 52(S4):471-484.

Thursday, Nov. 10 - SEM Demonstration with Lab Exercise

- Smith, Bruce D. (1985) The Role of *Chenopodium* as a Domesticated in Pre-maize Garden Systems of the Eastern United States. *Southeastern Archaeology* 4:51-72.
- Smith, Bruce D. (1985) *Chenopodium berlandieri* ssp. *jonesianum*: Evidence for a Hopewellian Domesticated from Ash Cave, Ohio. *Southeastern Archaeology* 4:107-133.

Tuesday, Nov. 15 – Social Uses of Food

- Wright, Katherine I. (2000) The Social Origins of Cooking and Dining in Early Villages of Western Asia. *Proceedings of the Prehistoric Society* 66:89-121.
- Jackson, Thomas L. (1991) Pounding Acorn: Women's Production as Social and Economic Focus. In *Engendering Archaeology: Women and Prehistory*, ed. by J. Gero and M. Conkey, pp. 301-325. Basil Blackwell, Oxford.
- Johannessen, Sissel (1993) Food, Dishes, and Society in the Mississippi Valley. In *Foraging and Farming in the Eastern Woodlands*, edited by C. Scarry, pp. 182-205. University Press of Florida, Gainesville.
- van der Veen, Marijke (2003) When is Food a Luxury? *World Archaeology* 43(3): 408-427

Thursday, Nov. 17 – Final Lab

Tuesday, Nov. 22 – Drafts of Research Report Introductions are Due, Compile the Data; Instructions for Creating Tables

Thursday, Nov. 24 (TG)

Tuesday, Nov. 29 – Quantitative Analyses of Macroremains

Pearsall, Deborah (2000) Presenting and Interpreting Results and Issues and Directions in Macroremain Analysis. *Paleoethnobotany*, pp. 188-248.

Miller, Naomi F. (1988) Ratios in Paleoethnobotanical Analysis. *Current Paleoethnobotany*. (pp. 72-85)

VanDerwarker, Amber M (2010) Simple Measures for Integrating Plant and Animal Evidence. In *Integrating Zooarchaeology and Paleoethnobotany: a Consideration of Issues, Methods, and Cases*, edited by A. VanDerwarker and T. Peres, pp. 65-74. Springer, New York.

VanDerwarker, Amber M., C. Margaret Scarry, and Jane M. Eastman (2007) Menus for Families and Feasts: Household and Community Consumption of Plants at Upper Saratow, North Carolina. In *The Archaeology of Food and Identity*, edited by K. Twiss, pp. 16-49.

Center for Archaeological Investigations SIU, Carbondale.

Wagner, Gayle (2008) What Seasonal Diet at a Fort Ancient Community Reveals About Coping Mechanisms. In *Case Studies In Environmental Archaeology*, second edition, edited by E. Reitz, C. Scarry, and S. Scudder, pp. 277-291. Springer.

Thursday, Dec. 1 – Draft Data Tables are Due, Data Analysis Workshop

Tuesday, Dec. 6 – Report Writing Workshop

Sat. Dec. 10 Noon – Final Research Reports are Due (Meet in Lab during exam period to turn in papers and discuss interpretations)