

**NC STATE**

**EXTENSION  
MASTER GARDENER  
COLLEGE**

**20  
22**



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**GARDENING IN A CHANGING CLIMATE:  
LEARN, GROW, SHARE**

**October 27-29, 2022**

**James B. Hunt Library**

**North Carolina State University**

# Schedule at a Glance

Thursday October 27	Friday October 28	Saturday October 29
Breakfast on your own	Breakfast on your own	Breakfast on your own
<b>9:30 - 11:30 am</b> Preconference Sessions	<b>9:30 - 10:30 am</b> Concurrent Session 1	<b>10:00 - 11:15 am</b> Panel Discussion
	<b>10:30 - 11:00 am</b> Break	<b>11:15 - 11:30 am</b> Break
	<b>11:00 am - 12:00 pm</b> Concurrent Session 2	<b>11:30 am - 12:00 pm</b> Extension Gardener Update
<b>12:00 - 12:15 pm</b> Welcome	<b>12:00 - 12:30 pm</b> Break	<b>12:00 - 12:30 pm</b> Plant Toolbox
<b>12:15 - 1:15 pm</b> Opening Lunch	<b>12:30 - 1:30 pm</b> Lunch and Extension Update	<b>12:30 - 1:30 pm</b> Closing Lunch
<b>1:15 - 2:00 pm</b> Opening Keynote	<b>1:30 - 1:45 pm</b> Break	<b>1:00 - 2:00 pm</b> Closing Keynote
<b>2:00 - 2:30 pm</b> Break	<b>1:45 - 2:00 pm</b> Board buses for tours	 <p>Visit <a href="http://go.ncsu.edu/emg-college-updates">go.ncsu.edu/emg-college-updates</a> for schedule updates and announcements</p>
<b>2:30 - 4:45 pm</b> Landscape Design Workshop	<b>2:00 - 5:00 pm</b> Tours and Workshops	
<b>5:00 - 6:00 pm</b> Reception		
Dinner on your own	Dinner on your own	

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# Welcome to EMG College 2022!



Thank you for joining us at NC State University for Extension Master Gardener (EMG) College 2022! We hope this continuing education conference provides you an opportunity to learn new strategies for gardening in a changing climate, grow your connections with friends both new and old, and share ideas with Master Gardener volunteers from across North Carolina. We wish you a meaningful, educational, and fun experience at EMG College 2022!

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## EMG College 2022 Planning Team

**Matt Jones**, Chair  
Horticulture Agent, N.C. Cooperative Extension  
(NCCE), Chatham County

**Minda Daughtry**, Horticulture Agent,  
NCCE, Jackson & Swain Counties

**Debbie Dillion**, Horticulture Agent,  
NCCE, Union County

**Julie Flowers**, Horticulture Agent,  
NCCE, Gaston & Cleveland Counties

**Gene Fox**, Horticulture Agent, NCCE,  
Washington, Tyrrell & Hyde Counties

**Charlotte Glen**, State Coordinator,  
NC State EMG Program

**Floy Hamilton**, Master Gardener Volunteer,  
Harnett County

**Regina Kaiser**, Program Assistant,  
NC State EMG Program

**Selena McKoy**, Horticulture Agent,  
NCCE, Harnett County

**Caroline Richardson**, Program Assistant,  
NC State EMG Program

**Katy Shook**, Horticulture Agent, NCCE,  
Chowan, Gates & Perquimans Counties

**Ashley Troth**, Horticulture Agent,  
NCCE, Durham County

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# Keynote Speakers

Opening Keynote: Thursday, October 27, 1:15 - 2:00 pm

## Our Changing Climate



**Rebecca Ward,**  
Assistant State Climatologist,  
State Climate Office of North Carolina

Rebecca's work at the NC State Climate Office centers around delivering climate education to a variety of audiences and working with various sectors in the state to provide climate data and information to support decision making. She enjoys researching all aspects of North Carolina's climate and connecting with North Carolinians on climate education. She is also currently a PhD candidate in Science Education at NC State University, where she is researching climate change communication in North Carolina.

Closing Keynote: Saturday, October 29, 1:00 - 2:00 pm

## Protecting Pollinators, Greenspace, and Agriculture in a Changing Climate



**Dr. Danesha Seth Carley,**  
Director, NSF Center for Integrated Pest Management  
and Associate Professor,  
NC State Department of Horticultural Science

As an Urban Ecosystem Ecologist, Danesha's area of expertise is sustainable managed urban landscapes. Recent research programs include pollen quality in commonly planted wildflowers, pollinator ecology along roadsides in NC, and native plant conservation and pollinator habitat establishment at historic Pinehurst No. 2 and No. 4 Golf Courses. In addition to grant writing and research, Dr. Carley frequently lectures at Beekeeper Association meetings, Extension Master Gardener volunteer meetings, and other events where community members are interested in learning more about pollinator habitat conservation and protection.

# Thursday, October 27

## 9:30 – 11:30 am, Preconference Sessions

Session & Location	Description
<b>Nature Photography,</b> Bryce Lane  <i>Hall DE</i>	Whether you are new to photography or a seasoned camera bug, this workshop will help you improve your nature and garden photography skills, especially using your phone. We will cover basic outdoor photography principles, popular apps to use, and have an opportunity to practice outdoors.
<b>Invasive Plant Field ID,</b> Alexander Krings  <i>Lake Raleigh Recreation Area</i>	Invasive plants are exotic species that compete with native vegetation and can harm the function of local ecosystems. This walking tour around Lake Raleigh will explore common invasive plant species. You will learn the characteristics helpful for identification in the field, including how to use plant morphology and botanical terminology to correctly describe and identify plants.

## 12:00 – 6:00 pm, General Sessions - Duke Energy Hall ABCD

Time	Description
12:00 – 12:15 pm	<b>Welcome and Opening Announcements</b> Charlotte Glen & Matt Jones
12:15 – 1:15 pm	<b>Opening Lunch</b>
1:15 – 2:00 pm Opening Keynote	<b>Our Changing Climate,</b> Rebecca Ward What do we know about the changing climate and what's in store over the next 5, 10, 20+ years? What are the implications of these changes for plants and gardening, and what actions are available to all of us to adapt to and mitigate climate change.
2:00 - 2:30 pm	<b>Break with refreshments</b>
2:30 – 4:45 pm	<b>Sustainable Landscape Design Workshop,</b> Anne Spafford During this engaging session, you will learn key lessons in landscape design and participate in a small design project. Topics covered include the benefits of sustainable landscape design, aspects of high performing landscapes, sustainable landscape design process, and approaches to plant composition.
4:45 - 5:00	<b>Break</b>
5:00 – 6:00 pm	<b>Reception</b> Join us for hors d'oeuvres and fellowship!

# Friday, October 28

## 9:30 – 10:30 am, Concurrent Session 1

Session & Location	Description
<b>Agroecology</b> Michelle Schroeder-Moreno  <i>Hall A</i>	<i>Principles and Practices for Community Garden Design</i> This session will provide an overview of agroecology principles and practices for climate change resilience, community garden design, and education.
<b>Bee Hotels</b> Elsa Youngsteadt  <i>Hall D</i>	<i>Opportunities to Create Habitat and Observe Bees</i> Bee hotels are popular habitat enhancements that provide nesting resources for certain bees and wasps, but if designed or managed poorly they may do more harm than good. In this session, you will learn about which bees are (and are not) supported by bee hotels, key elements of bee hotel design, and best management practices to keep them healthy.
<b>Climate &amp; Plants</b> Barb Fair  <i>Hall BC</i>	<i>What Can We Do to Make Plants More Resilient in a Warming World?</i> This session will discuss the use of native and non-native plants in urban and suburban landscapes. We will explore the questions, “Are native plants the only right choice?” and “Are all non-native species invasive and problematic?”
<b>Getting the Most Out of the Extension Gardener Plant Toolbox</b> Kathleen Moore  <i>Room 4101</i>	The Extension Gardener Plant Toolbox and its "Find A Plant", "Identify a Plant", and "Garden Gallery" features are designed to help you easily find environmentally responsible, IPM focused answers for many plant problems. During this hands-on session, you will: <ul style="list-style-type: none"> <li>• Learn how to best access and view the Plant Toolbox.</li> <li>• Review the three main components of the Plant Toolbox and when to use them.</li> <li>• Using the wide range of filters to get a meaningful list of plants.</li> <li>• Learn strategies for sharing information with clients.</li> <li>• Practice answering some common questions using the Plant Toolbox.</li> </ul>

## 10:30 - 11:00 am

<b>Break</b>	Refreshments available in Duke Energy Hall
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**NC STATE**

Extension Master Gardener

Connecting people with plants through science-based education and outreach.

# Friday, October 28

## 11:00 am – 12:00 pm, Concurrent Session 2

Session & Location	Description
<b>Climate &amp; Plants</b> Barb Fair  <i>Hall BC</i>	What Can We Do to Make Plants More Resilient in a Warming World? This session will discuss the use of native and non-native plants in urban and suburban landscapes. We will explore the questions, “Are native plants the only right choice?” and “Are all non-native species invasive and problematic?”
<b>Firewise Landscaping</b> Hannah Thompson-Welch  <i>Hall A</i>	We will evaluate the need for fire-resistant landscaping throughout NC and learn how wildfire can impact homes, communities, and landscapes. You will learn how to infuse fire-resistant landscaping techniques into your yard and create a plan to mitigate the risks. In addition, you will receive access to the “Preparing for Wildfire with Firescaping” training and a copy of “Fire-Resistant Landscaping in NC.”
<b>Getting the Most Out of the Extension Gardener Plant Toolbox</b> Kathleen Moore  <i>Room 4101</i>	The Extension Gardener Plant Toolbox and its "Find A Plant", "Identify a Plant", and "Garden Gallery" features are designed to help you easily find environmentally responsible, IPM focused answers for many plant problems. During this hands-on session, you will: <ul style="list-style-type: none"> <li>• Learn how to best access and view the Plant Toolbox.</li> <li>• Review the three main components of the Plant Toolbox and when to use them.</li> <li>• Use the wide range of filters to get a meaningful list of plants.</li> <li>• Learn strategies for sharing information with clients.</li> <li>• Practice answering some common questions using the Plant Toolbox.</li> </ul>
<b>Urban Heat Islands Increase Tree Pests</b> Steve Frank  <i>Hall D</i>	We will discuss how rising temperatures due to urban heat islands and climate change affect tree health and tree pests, particularly scale insects. The presentation will include information on how to select tree planting sites and put the right tree in the right place.

## 12:00 – 2:00 pm, Lunch Session - Duke Energy Hall ABCD

Time	Description
12:00 - 12:30	<b>Break</b>
12:30 - 1:30	<b>Lunch and Extension Update from Dr. Rich Bonanno</b>
1:30 - 1:45 1:45 - 2:00	<b>Break</b> Board buses if participating in a tour

# Friday, October 28

2:00 – 5:00 pm, Tours

Session & Location	Description
<p><b>JC Raulston Arboretum</b></p> <p><i>Board buses outside Hunt Library</i></p>	<p>Established in 1976, the JC Raulston Arboretum is dedicated to the collection, evaluation, and introduction of superior plants for use in the southeastern United States. A stroll through the gardens in any season is a rich experience, inspiring new ideas that can be directly used in your home gardens and landscapes.</p>
<p><b>Landscapes that Protect Water Quality</b> Mitch Woodward</p> <p><i>Board buses outside Hunt Library</i></p>	<p>Stormwater runoff from urban areas is the top pollution source in NC. Through a tour of NCSU &amp; Raleigh case studies, participants will learn about cost-effective, small-scale solutions that can be employed in the landscape to improve property values and protect water quality.</p>
<p><b>NC State Agroecology Education Farm</b> Alison Reeves</p> <p><i>Board buses outside Hunt Library</i></p>	<p>During this tour of the NC State Agroecology Education Farm you will learn about agroecological principles in practice. See how we incorporate education into our farming practices and produce for NC State Dining and the food pantry.</p>
<p><b>NC State Compost Learning Lab</b> Rhonda Sherman</p> <p><i>Board buses outside Hunt Library</i></p>	<p>Learn about composting and vermicomposting while examining 14 types of compost bins and 12 kinds of worm bins at the NC State Compost Learning Lab. Small-to-mid-scale composting and vermicomposting will be covered.</p>
<p><b>Tree Health Assessment</b> Barb Fair</p> <p><i>Hall D</i></p>	<p>We will have a brief indoor introduction to woody plant health then head outside to inspect some trees. Are they the right plant for the site? Were they installed correctly? Are they healthy? Are there safety concerns that need attention? After this tour, you will have the basic skills to assess woody plant health and potential risk.</p>



Learn. Grow. Share.

# Friday, October 28

## 2:00 – 5:00 pm, Workshops

Session	Description
<p><b>Advancing Biological Controls with IPM</b> Ryan Adams</p> <p><i>Room 4101</i></p>	<p>This workshop will explore the principles and theory behind integrated pest management (IPM) with a focus on biological control. You will learn about the biology and identification of beneficial insects, including predators, parasitoids, and some pollinators and gain tools and recommendations to protect, conserve, and promote beneficial insects.</p>
<p><b>Create a Pollinator Paradise!</b> Debbie Roos</p> <p><i>Hall BC</i></p>	<p>This workshop will focus on designing habitat that provides resources for diverse pollinators, with an emphasis on native plants. We will talk about design principles, the best pollinator plants for each season, garden installation, and maintenance. You will be given the tools to create a basic pollinator garden design that can be planted on your property.</p>
<p><b>Sharpen Your Plant ID Skills</b> Laura Barth</p> <p><i>JC Raulston Arboretum, Board buses outside Hunt Library</i></p>	<p>In this workshop, participants will get hands-on experience practicing the fundamentals of plant identification through a study of samples and live specimens in the JC Raulston Arboretum. Topics covered will include a brief overview of taxonomy and classification, basic morphological characters such as form, leaf arrangement, and leaf shape, along with their corresponding vocabulary terms, as well as an overview of the science of fall color.</p>

# Saturday, October 29

Panel Discussion, 10:00 - 11:15 am:

## Right Plant, Right Place: the Role of Native Plants in a Changing Environment



**Dr. Barbara Fair,**  
Associate Professor &  
Extension Specialist,  
NC State Horticultural Science



**Mark Weathington**  
Director, JC Raulston  
Arboretum,  
NC State Horticultural  
Science



**Dr. Johnny Randall**  
Director of Conservation  
Programs,  
North Carolina Botanical  
Garden



**Dr. Elsa Youngsteadt**  
Assistant Professor,  
NC State Applied  
Ecology

# Saturday, October 29

10:00 am – 2:15 pm, General Sessions - Duke Energy Hall ABCD

Time	Description
10:00 – 11:15 am Panel Discussion	<b>Right Plant, Right Place: the Role of Native Plants in a Changing Environment</b> Join us for a lively discussion as our panel of experts discuss how to incorporate natives into the landscape, how climate change is impacting our understanding of “native,” and when to consider alternatives for your landscape.
11:15 - 11:30 am	<b>Break</b>
11:30 – 12:00 pm	<b>Extension Gardener Update, Lucy Bradley</b> Extension Gardener (EG) is the brand name for the NC State Extension Consumer and Community Horticulture program. Outreach efforts include the EG Handbook, website, online classes, plant toolbox, and more. Learn about future plans and how you can be part of these efforts!
12:00 – 12:30 pm	<b>Climate Change and the Extension Gardener Plant Toolbox, Kathleen Moore</b> The Extension Gardener Plant Toolbox is a powerful database that can help address climate change concerns, including many of the topics covered during EMG College workshops. This seminar will help you understand the breadth of the Plant Toolbox features and how they can be harnessed to help in your work as Extension Master Gardener volunteers.
12:30 – 2:00 pm Lunch and Closing Keynote	<b>Protecting Pollinators, Greenspace, and Agriculture in a Changing Climate, Danesha Seth Carley</b> Danesha will discuss how climate change is impacting IPM, pollinators, and our communities, as well as what NC State is doing to meet these challenges.

## Thank you to . . .

**Our organizational partners,** N.C. Cooperative Extension, NC State College of Agriculture and Life Sciences, NC State Extension, NC State Horticultural Science, and the JC Raulston Arboretum.

**Groups offering scholarships for volunteers in their county to attend EMG College 2022:** Extension Master Gardener Program, Beaufort County, Extension Master Gardener Program, Durham County, and the Extension Master Gardener Volunteer Association of Moore County.

**Tonie Turner,** EMG volunteer, Cleveland County who shared the beautiful cover photo of a black swallowtail butterfly nectaring on Mexican sunflowers (*Tithonia rotundifolia*).

**Everyone who attended EMG College 2022!** We hope you had a wonderful time!

# A Special Thanks to Our Speakers!

**Ryan Adams**

Extension Associate, Center for Integrated Pest Management, NC State University

**Laura Barth**

Extension Assistant, NC State Horticultural Science

**Dr. Rich Bonanno**

Director, NC State Extension and Associate Dean, College of Agriculture and Life Sciences, NC State University

**Dr. Lucy Bradley**

Professor and Extension Specialist, Consumer & Community Horticulture, NC State Horticultural Science

**Dr. Danesha Seth Carley**

Director, NSF Center for Integrated Pest Management and Associate Professor, NC State Horticultural Science

**Dr. Barbara Fair**

Associate Professor and Extension Specialist, Landscaping, Arboriculture, & Urban Greening, NC State Horticultural Science

**Dr. Steve Frank**

Professor and Extension Specialist, NC State Entomology & Plant Pathology

**Dr. Alexander Krings**

Director, NC State Vascular Plant Herbarium and Associate Professor, NC State Plant & Microbial Biology

**Bryce Lane**

Alumnus Distinguished Undergraduate Professor Emeritus, NC State Horticultural Science

**Kathleen Moore**

Extension Program Assistant, NC State Horticultural Science

**Dr. Johnny Randall**

Director of Conservation Programs, North Carolina Botanical Garden

**Alison Reeves**

Farm Manager, NC State Agroecology Education Farm

**Debbie Roos**

Extension Agent, Sustainable Agriculture, N.C. Cooperative Extension

**Dr. Michelle Schroeder-Moreno**

Interim Director, Center for Environmental Farming Systems and Professor, NC State Crop & Soil Sciences

**Rhonda Sherman**

Extension Specialist, Solid Waste, NC State Horticultural Science

**Anne Spafford**

Professor, NC State Horticultural Science

**Hannah Thompson-Welch**

Wildfire Mitigation Specialists, North Carolina Forest Service

**Rebecca Ward**

Assistant State Climatologist, State Climate Office of North Carolina

**Mark Weathington**

Director, JC Raulston Arboretum, NC State Horticultural Science

**Mitch Woodward**

Area Specialized Agent, Watersheds and Water Quality, N.C. Cooperative Extension

**Dr. Elsa Youngsteadt**

Assistant Professor, NC State Applied Ecology

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