



MASSACHUSETTS
ENVIROTHON

**Massachusetts Envirothon
Fall 2017 Coach & Team Workshop
University of Massachusetts Amherst
Campus Center
Wednesday, November 15, 2017**

AGENDA

**8:30 Registration Opens Coffee and refreshments
Meet UMass students and enjoy apples from Cold Spring Orchard!**

9:00-9:30 Welcome and introduction to the day (Auditorium)

8:30-9:30 Coaches Welcome and breakfast Room 163c

Concurrent Sessions (☀ = Current Issue presentation)

▼ Room	9:40-10:30	10:40-11:30		12:20-1:10	1:25-2:15	
904	1. Field guide Fundamentals	1. Field guide Fundamentals	LUNCH*	2. Wildlife Overview		
917	3. Water Overview	3. Water Overview		4. Water Quality Parameters		
168-172	5. Soils Overview	5. Soils Overview		6. Soils: Participant Application of Concepts	6. Soils: Participant Application of Concepts	
Auditorium	7. Tree ID	7. Tree ID		9. Dams, Urbanization, CC, and Fish ☀	9. Dams, Urbanization, CC, and Fish ☀	
163c	10. Forests -The Living Filter ☀	11. The Role of Conservation Commissions ☀		12. Freshwater Wetlands ☀	11. The Role of Conservation Commissions☀	
162-175	13. Dam it?! ☀	14. Effective Community Advocacy 101 ☀		15. Maximizing Ecosystem Services ☀	16. Cleansing and Managing Stormwater ☀	
165-169	17. Citizen watershed groups ☀	17. Citizen watershed groups ☀		18. Natural Remedies for Pollution ☀	19. Managing runoff and water quality ☀	
174-176	20. Climate Change and Land Use ☀	21. Climate change, flooding and Riversmart communities ☀		13. Dam it?! ☀	20. Climate Change and Land Use ☀	
Meet at Registration		22. Forest patches in a developing landscape ☀		LUNCH*	8. Tree Measurement	8. Tree Measurement
Meet and Walk		23. Morrill Courtyard Tour ☀			24. Green Roof Tour ☀	24. Green Roof Tour ☀
Meet and walk			25. Design Building Tour <u>double session</u> ☀			

***Lunch Options at the UMass Campus Center**

The **New Bluewall** (all sorts of different options), The **Peoples Organic** (coffee and pastries), & **Harvest Market** (grab and go food). Or try **People's Market** or **Earth Foods** in the Student Union right next door or the food trucks outside. We hope you enjoy your **50 minute lunch break**.

Thank you to our partners!

Massachusetts Envirothon wishes to thank the University of Massachusetts Amherst for the support that has made this event possible. In particular, we are grateful for the funding, time, and expertise provided by:

UMass College of Natural Sciences (CNS) (<http://www.cns.umass.edu/>)

UMass School of Earth and Sustainability (<https://www.umass.edu/ses/>), particularly

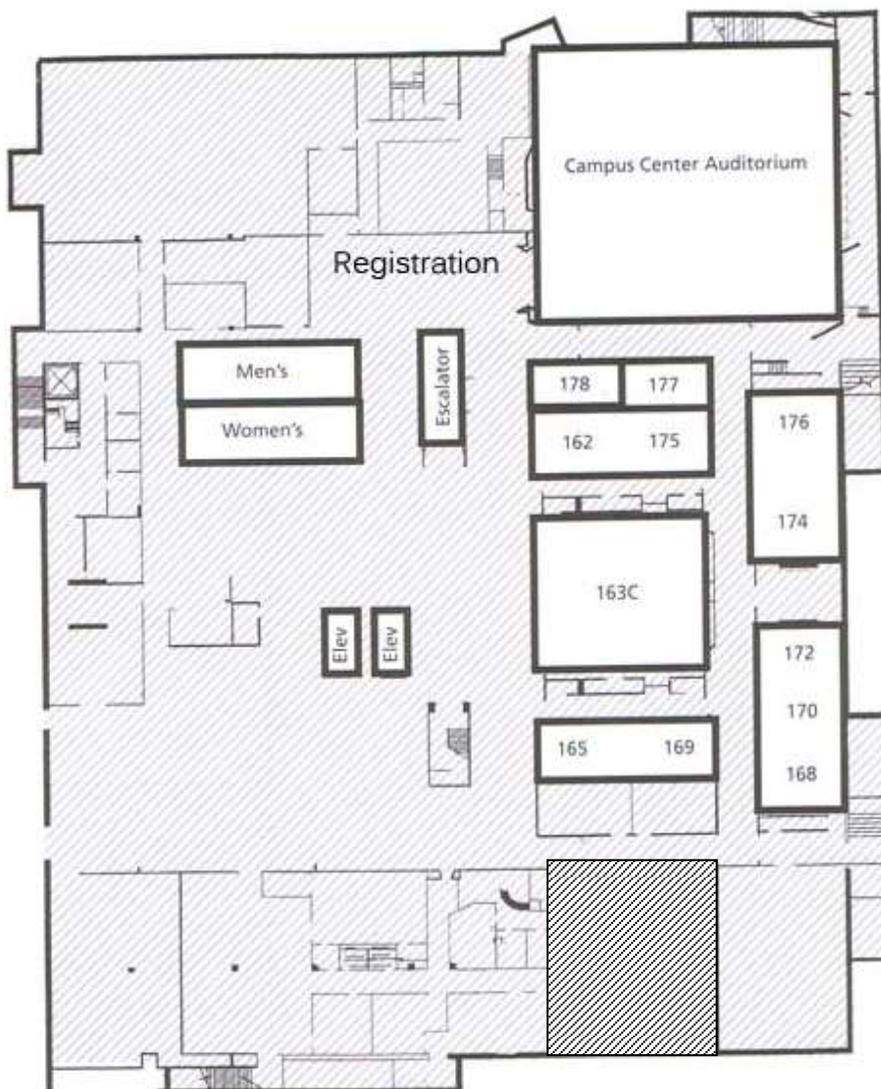
- Department of Environmental Conservation
- Department of Landscape Architecture and Regional Planning
- Department of Geosciences
- Environmental Science Program

UMass Extension/Center for Agriculture, Food, and Environment (<http://ag.umass.edu/extension-outreach>)

- 4-H Youth Development Program

FINDING YOUR WAY:

Rooms 904 and 917: Take the elevators to the 9th floor and follow the signs
CAMPUS CENTER 1st Floor



Workshop Descriptions

- 1 Field Guide Fundamentals** **Limit: 30 Rm 904 9:40 & 10:40**

The ability to use field guides and other applicable resources is essential for the Envirothon. In this hands-on workshop students will work in small groups as they rotate through a series of stations to answer questions based on wildlife artifacts. You will hone your identification skills during this workshop and become more familiar with the use of field guides and other applicable resource materials.

Pam Landry, Education Coordinator, Division of Fisheries & Wildlife (MassWildlife)
- 2 Massachusetts Wildlife Overview** **Rm 904 12:20**

Through the use of PowerPoint this workshop will provide an overview of the wildlife key points, as established by the North American Envirothon, required to master the wildlife portion of the MA Envirothon. You will become familiar with the diversity of MA Wildlife species, habitat, wildlife management issues, & endangered species as they relate to the wildlife key points. Reference study material from MassWildlife will be available to view. This workshop is designed for new Envirothon coaches and team members or those who would like a refresher.

Pam Landry, Education Coordinator, Division of Fisheries & Wildlife (MassWildlife)
- 3 Water Overview Workshop** **Rm 917 9:40 & 10:40**

Participants in this workshop will receive an overview of water in the environment in preparation for the water eco-station at this year's Massachusetts Envirothon. Through the use of PowerPoint and discussion they will become familiar with the properties of water and water's role in nature. Also, some emphasis will be placed on wetlands, water quality and thought provoking current water pollution topics.

Kelley Freda, DCR – Water Supply Protection
- 4 Water Quality Parameters** **Rm 917 12:20**

This workshop offers students the opportunity to understand important water quality parameters, relationships between them and what causes them to change. Students will learn about what water quality parameters are actually telling us, what kind of pollution sources will affect them, and sampling techniques. There will be a hands on portion of this workshop.

Kelley Freda, DCR – Water Supply Protection
- 5 Soils Overview Workshop** **Rm 168-172 9:40 & 10:40**

This workshop offers an understanding of how our soils came to be and why they are so variable. Presentation objective is to convey concepts of soil formation and behavior that will be applied to the Soils Hands-on Workshop and the Envirothon soils station. Group participation will be encouraged.

Al Averill, State Soil Scientist, USDA Natural Resources Conservation Service
- 6 Soils: Participant Application of Concepts** **Limit: 25 Rm 168-172 12:20 & 1:25**

Effectiveness of this workshop requires participant knowledge of concepts presented in the Soils Overview Workshop and contained in the soils section of the Envirothon manual. Participants are expected to have a basic knowledge of soil properties, formation, and morphology. Small groups will rotate through 4 stations, and complete exercises by interpreting what they see and feel. It entails identifying and describing soil characteristics including parent material, texture, color, drainage class, and horizonation. Exercises will include applying knowledge of soil characteristics to resource management issues. You will get your hands dirty.

Al Averill, State Soil Scientist, USDA Natural Resources Conservation Service
- 7 Tree Identification Workshop** **Auditorium 9:40 & 10:40**

Learn how to identify a variety of native Massachusetts trees. The group will go outdoors to meet a variety of trees up close. Joe will introduce you to some simple learning techniques such as the acronym called MADCAPHORSE and other techniques. You will learn how to use the tree's bark, overall shape, branching pattern, buds, leaves, acorn, nuts and even the smell of the tree as identifiers. You will be sure to recognize these trees when you apply these methods throughout the year and see them again on the day of the Massachusetts Envirothon.

Joe Perry, Forester, Mass. Department of Conservation and Recreation
- 8 Tree Measurement Workshop** **Meet at Registration 12:20 & 1:25**

Go outside on the University of Massachusetts campus and try out your hand at measuring trees. The instructor will review procedures for using a variety of tree measuring tools. You will learn how to measure height, diameter and determine board foot volume. These techniques will be tested on the day of the Massachusetts Envirothon.

Joe Perry, Forester, Mass. Department of Conservation and Recreation

Current Issue Workshops

- 9 Dams, Urbanization, Climate Change, and Fish** Auditorium 12:20 & 1:25
In this session we'll discuss how climate change and land use (dams and urbanization in particular) interact to change rivers and fishes, including anadromous species such as American shad and sturgeon.
Rebecca Quiñones, Ph.D., MassWildlife Rivers and Streams Project Leader
- 10 Forests -The Living Filter** Rm 163C 9:40
Forests are solar-powered living filters that purify air and water. They have an essential role in sustaining life on Earth yet, all too often, are damaged or replaced by human activities. If more people knew the ecological, economic, and social values of trees and forests they would be clamoring to protect them and be healthier, wealthier, and wiser in consequence. As our population and the consumption of "natural resources" grows, the forests of Massachusetts are more important to human and ecological health than ever—even though the "illusion of preservation" limits our day to day awareness and concern. Come and learn about how you can lead forest conservation efforts.
Prof. Paul K. Barten, Department of Environmental Conservation, UMass Amherst
- 11 Thinking Globally and Acting Locally: The Role of Conservation Commissions in Protecting Wetlands, Open Space and Water Resources** Rm 163c 10:40 & 1:25
"Think globally, act locally" urges people to consider the health of the entire planet and to take action in their own communities and cities. One way to do this: High school students can help protect water resources by getting active with the work of the Conservation Commission in their home communities. This presentation will briefly outline the work that Conservation Commissions do to protect wetlands and open space, how this protects your drinking water, your streams, and river water quality, and how high school students might help. We will provide an overview of wetland resource areas, the importance of managing stormwater, erosion and sedimentation control. We will also outline some local projects for students to consider, partnering with nature in their watersheds.
Dorothy A. McGlincy, Executive Director & Michèle A. Girard, Associate Director and Education Coordinator, Massachusetts Association of Conservation Commissions
- 12 Freshwater Wetlands in the Landscape: Their Characteristics and Functions.** Rm 163 12:20
Wetlands occur in a wide variety of landscape settings, but some basic features are common to all wetlands. We will explore these similarities and differences and examine the ecosystem services they provide. For example, wetlands have been called the "kidneys of the landscape". We will look at why this is so, along with other important wetland functions.
Prof. Deborah Henson, Environmental Science Program Manager, UMass Amherst
- 13 Dam It?! The Pros and Cons of Dams** Rm 162-175 9:40
Rm 174-176 12:20
Small and large dams have been constructed all across New England, for many purposes, for many years. Are there dams in your community? What are the pros and cons of these forms of infrastructure today? Should we build more? Should we take them all down? This workshop will explore the benefits and complications of dams in Massachusetts communities.
Santoshi Nadimpalli, Mary Richards, Jill Banach, Emily Hespeler, Mary Richards, Misha Damsky, Aaron Banville & Rebecca Howard, students, Department of GeoSciences, UMass Amherst
- 14 Effective Community Advocacy 101** Rm 162-175 10:40
Who are the local movers and shakers to decide the actions that shape the future of our communities? What's a planning board anyway and what do they do? What does being an advocate even mean? This workshop will answer these questions and more, including key tips on how to be an effective advocate, understanding local government, and how to engage with local planning and conservation with a focus on improving climate resilience.
Stefanie Covino, Coordinator of Shaping the Future of Your Community Program, Mass Audubon

- 15 Maximizing Ecosystem Services: Watershed Scale Conservation** **Rm 162-175 12:20**
 Learn the who, what, why, how, and where of conservation. This workshop will use an example of the Taunton watershed in SE Massachusetts to discuss how a diverse group of nonprofits, government agencies, universities, and planners worked together to improve climate resilience through watershed-wide education and advocacy. Attendees will learn the benefits of natural “Green infrastructure” and how to maximize ecosystem service values. *Stefanie Covino, Coordinator of Shaping the Future of Your Community Program, Mass Audubon*
- 16 Green Infrastructure: Cleansing and Managing Stormwater** **Rm 162-175 1:25**
 Because our communities are so consumed by impervious surfaces - roads, buildings and parking lots - new strategies must be developed to deal with the resulting stormwater runoff. This session will discuss stormwater and the innovative management strategies for dealing with this runoff that are referred to as Green Infrastructure. Landscape architects have used many of these approaches for over 100 years beginning with Olmsted's visionary design for the Back Bay Fens in the 1890's. Climate change and expanding urban development make it imperative that we begin to manage stormwater. *Prof. Mark Lindhult, Department of Landscape Architecture and Regional Planning, UMass Amherst*
- 17 Citizen Watershed Groups** **Rm 165-169 9:40 & 10:40**
 Local citizen groups are actively protecting Massachusetts watersheds and conserving water resources. Hear some stories of successes and challenges from the Connecticut River watershed, and get practical, general information about how to find and approach a local group in your own watershed. *Jennifer Bowman, Connecticut River Conservancy*
- 18 Natural Remedies for Pollution in Massachusetts Watersheds** **Rm 165-169 12:20**
 This session will cover watershed processes in general, and bring into the discussion “natural” remedies for addressing transport such as riparian zones, photo remediation, and for groundwater, natural attenuation. *Paula Rees, College of Engineering, UMass Amherst*
- 19 Managing Runoff and Water Quality with a Green-Infrastructure, Landscape Approach** **Rm 165-169 1:25**
 Stormwater runoff is a major cause of urban flooding and water quality impacts. Green infrastructure represents a progressive, landscape-based approach to reduce total runoff, increase infiltration, improve water quality using a natural-systems approach – one that also provides co-lateral benefits including: wildlife habitat, enhancing biodiversity, aesthetics and environmental education. *Prof. Jack Ahern, Department of Landscape Architecture and Regional Planning, UMass Amherst*
- 20 Partners in Watershed Resilience: Changing Climate and Shifting Land Use** **Rm 174-176 9:40 & 1:25**
 Land use, land cover and climate change (CC) can significantly influence the hydrologic balance and biogeochemical processes of watershed systems. Understanding dynamic change in watershed systems is critical for mitigation and adaptation options. This workshop presents a research study that used computer modeling to evaluate the combined effect of land use change and CC over coming decades on the SuAsCo watershed in eastern Massachusetts. Based on their findings, the researchers proposed restoration strategies that can increase the resilience of watershed systems. *Prof. Timothy Randhir, Department of Environmental Conservation, UMass Amherst*
- 21 Climate change, flooding and Riversmart Communities** **Rm 174-176 10:40**
 Where do droughts and floods come from? Why do they happen? Do they happen in New England? Often? Regional scale climate models for the northeastern United States predict changes in precipitation patterns, quantities, and intensity in the coming decades. Massachusetts infrastructure for managing stormwater was designed based on weather patterns over the last 100 years or more. This workshop will present an overview of climate science today, predictions for our changing local climate with specific attention to the extremes. We will discuss the effects climate change may have on water resources and infrastructure. Enacting the solutions is up to you. *Prof. Christine E. Hatch, Water Resources and Climate Change, Dept of Geosciences, UMass Amherst*

22 Forest patches in a developing landscape: structure, function, importance... **Limit: 25** **Meet at Reg 10:40**

Head outside for a walk to the forests on the UMass campus. These remnant patches of forest in a developed landscape are important for lots of reasons. Can you think of some? What important roles do patches of forests play in a landscape with a significant human footprint? Do these forests influence the movement of water, plants, wildlife? Find out the answers to these questions and more outside!

Lena Fletcher, Lecturer, Department of Environmental Conservation, UMass Amherst

23 Study tour of Morrill Courtyard **Limit: 25** **Meet at Reg 10:40**

How do you undertake an asbestos abatement and utilities upgrade project and replace an ugly, crumbling, unsafe set of 1970s concrete steps with inviting outdoor seating areas and innovative stormwater management infrastructure? The project manager will lead an in-depth study tour and discussion on the site to help you appreciate the process (including the cost, complexity, and inevitable challenges). Much of what you see could be adapted to schools, public buildings, and urban neighborhoods throughout Massachusetts.

C. Kim Jaworski-Bruschi, Project Manager, UMass Facilities

24 Green Roof Tour of Integrated Learning Center **Limit: 20** **Meet at Reg 12:20 & 1:25**

A green roof is designed, constructed, and carefully maintained to control stormwater at one of the primary sources. The harsh environment of and weight limits for roofs means the design of the “soil” and the selection of plants must be carefully considered. Otherwise, the investment in this “new” technology (inspired by the ingenious adaptation of indigenous people in many parts of the world) will not perform as expected and as needed over the long term.

Lauren Healey, student, Natural Resources Conservation, Department of Environmental Conservation, UMass Amherst

25 Study Tour of the UMass John W. Olver Design Building – Stormwater Management Infrastructure **Limit: 25** **12:20- 2:10**
Meet at Registration **DOUBLE SESSION**

This state-of-the-art/state-of-the-science building for the Architecture, Building and Construction Technology, and Landscape Architecture and Regional Planning programs at UMass is a “living laboratory” to inspire and train new generations of green building professionals. Peggi Clouston will provide an overview of the engineered wood products used to replace conventional concrete and steel construction. Sara Lawler, Rachel Guilfoil, and Paul Barten will lead a study tour of the beautiful and innovative rain and roof gardens (designed and installed by Stephen Stimson Associates) that control and treat stormwater from the roof and surrounding landscape. We will gather around the design drawings together so that you can fully appreciate the structure and function of the site. This *IS* the future of green building.

- *Prof. Paul Barten, Forestry, Hydrology, and Watershed Management, Dept. of Environ. Conservation*
- *Sara Lawler, graduate student, Department of Landscape Architecture and Regional Planning*
- *Rachel Guilfoil, BSLA Class of 2018, LARP and Commonwealth Honors College*
- *Prof. Peggi Clouston, Structural Wood Design and Engineering, Dept. of Environmental Conservation*

