



Rockbridge Master Naturalist Training Course

February-June 2011

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About the Rockbridge Master Naturalist Program

Introduction

Rockbridge Master Naturalists are a chapter of the Virginia Master Naturalist Program sponsored locally by the [Rockbridge Cooperative Extension](#) and the [Virginia Department of Forestry/Western Region](#). The mission of the RMN is to form a corps of well-informed volunteers who participate in education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within our area.

Rockbridge County is geographically unique. Wedged between the Allegheny on the west and the Blue Ridge on the east, ours is the only county east of the Mississippi with a virtually self-contained watershed—the Maury River. The Maury is also a headwater of the Chesapeake Bay Watershed, so our local environmental knowledge and practices have significant impact throughout the region.

Our Rockbridge chapter offers opportunities for local citizens to:

- Increase their general understanding of the natural world
- Become more knowledgeable about Virginia's biogeography and most specifically, the ecology of the Maury River Watershed
- Learn naturalist skills that will enable them to be effective stewards of local lands and natural resources.

2011 Training Course Requirements and RMN Certification

To begin certification as a Rockbridge Master Naturalist, trainees must attend the RMN basic training course including classroom and field experiences. To successfully complete the training course and graduate in June of 2011, the following requirements must be met:

1. Miss no more than two classes (there are two each Wednesday session and a total of thirteen Wednesday night meetings.)
Misses may be made up with approved alternative activities/classes
2. Miss no more than one of the six field trips. *Misses may be made up with approved alternative activities/field trips*
3. Turn in field trip assessments and maintain a minimum grade of 70 out of 100 on the three quizzes.
4. Present one 5-10 minute class presentation on a Naturalist topic.
5. Bi-weekly maintain a Naturalist Journal, recording observations or reflections about the natural world.

To finish RMN Certification, trainees must attend eight hours of Advanced Training Programs and fulfill a minimum of 40 hours of volunteer service on chapter-approved environmental projects within a year of graduating. The designation of Certified Rockbridge Master Naturalist Volunteer is awarded upon successful completion of the course, service and educational hours.

Certification is maintained by completing an additional 8 hours of Advanced Training and 40 service hours annually.

Rockbridge Master Naturalist Training Course

The second annual RMN training course will take place in Munger Lodge at [Boxerwood Nature Center](#) in Lexington beginning on Wednesday, February 16, 2011. The weekly meetings are scheduled from 5:45-8:30pm and will include light appetizers and desserts provided by the members of the Rockbridge MN Curriculum committee and volunteer sign-up. Feel free to arrive early to eat and help with set-up. Also, there are six, guided Saturday field studies scheduled during the course at natural sites around the county. Classes will culminate with graduation on June 4, 2011.

The RMN Course is organized into three sections of Naturalist classes separated by week-long breaks. Within each section, there are several weekly Wednesday evening meetings and either one or two Saturday field excursions that coordinate with topics covered during that section's lectures. One final additional class meeting will offer a review of RMN Projects by coordinators and class presentations by trainees and a final Field Trip in conjunction with current RMN volunteers will culminate in graduation and a luncheon at Boxerwood.

Section	Topics	Dates
1	Intro to MN Program, Biogeography, The American Naturalist, Climate, Aquatic Ecosystems, Geology	Feb 16 – Mar 12
2	Ecology, Sustainability, Herpetology, Botany, Dendrology and Forest Ecosystems	Mar 23 – April 16
3	Citizen Science, Mammals, Hydrology, Ichthyology, Ornithology, Entomology, Decomposers	Apr 27 – May 21
	Review of RMN Projects and Trainee Class Presentations	June 1
	Final Field Trip and Graduation Luncheon	June 4

After each section, take home, open book quizzes will be distributed. On the day the quizzes are handed out, the Naturalist Field Journals will be collected and reviewed by Curriculum Committee members during the class and returned the same evening. Quizzes need to be completed in one week and will be collected at the beginning of the next class. In addition, there will be hands-on, observational components to be finished and turned in at the conclusion of each field trip. On June 1st, each trainee will present a five to ten minute talk on a naturalist subject of their choosing.

The course sequence for each section is outlined in the following pages. Each section includes the *course schedule* of classes and presenters (subject to modification), and the *Master Naturalist objectives, concepts and skills*.

2011 RMN Training Schedule and Course Requirements

Section 1

Date	Topic	Presenter	Affiliation
Feb 16 Wed	Intro to MN	Michelle Prysby Bernadette Bowen Faith Vosburgh, Keith Maurer	VA MN Coordinator RMN President RMN Curriculum Committee
	Biogeography of Virginia	Phil Coulling	Director, Nature Camp
Feb 23 Wed	Journaling and Presentations	Curriculum Committee	
	American Naturalist	Bruce Bytnar	US Park Service, retired
Mar 2 Wed	Weather and Climate	Dr. Bill Ruddiman	Retired Climatologist, UVa
	Aquatic Ecosystems and Watershed	Dr. Robert Humston	W & L University
Mar 9 Wed Quiz #1 handed out ; Journal Collection	Geology and Soil Science	Lars Nelson	Rockbridge HS
Mar 12 Sat Field Trip Rain Date 3/19 8 am to Noon	Geology Field Trip	David Harbor, Lars Nelson, Phil Coulling, Bruce Bytnar	

Introduction to the Virginia Master Naturalist Program

Objectives

- Describe what a Master Naturalist is
- Identify the mission and goals of the Master Naturalist Program
- Identify the requirements and responsibilities of a Virginia Master Naturalist
- Be familiar with expected standards of conduct, applicable laws, and ethical issues relating to Master Naturalists
- Understand the role of learning as a lifelong pursuit
- Understand the scope of available volunteer opportunities

Key Concepts

- Naturalists interact with the natural world – and respond to it
- Naturalists read the natural world as a whole, attentive to the relationships within

Key Skills

- Make and record observations/reflections about the natural world
- Demonstrate basic understanding of the Virginia Master Naturalist Program by identifying examples of activities compatible with the goals of the organization

Biogeography of Virginia

Objectives

- Trace the geologic history of Virginia
- Identify and differentiate the features of Virginia's physiographic provinces
- Identify common and unique ecological communities and species occurring in each province
- Explain the factors creating the great ecological diversity occurring in Virginia
- Describe the paleontology and fossil records of Virginia

Key Concepts

- Virginia's biogeography is diverse because of its longitudinal breadth, size, climate, geology, and topography
- In Rockbridge, our varied soils and temperate climate support a diverse and fairly robust biotic community
- In Rockbridge, our ridge/valley terrain also makes our area prone to flooding, soil erosion, and the threats to biodiversity that implies

Key Skills

- Access visual information about our physical landscape using Google Earth
- Read and interpret topographical and geologic maps

The American Naturalist

Objectives

- Understand the history and current status of natural history as a discipline
- Identify significant naturalists throughout American history and discuss their accomplishments
- Describe the roles and contributions of early naturalists in Virginia
- Be familiar with local naturalists and their accomplishments
- Describe the basic skills of a naturalist (e.g. observation, field journaling, species identification, sharing knowledge) and how to apply them in “real life” situations

Key Concepts

- How naturalists contributed to their society has varied across time and culture
- Naturalist inquiries and observations make important contributions to scientific understanding of our local/regional ecosystem (Citizen Science).
- Naturalist interpretations and reflections can be meaningful to self and others (Education)
- Naturalist actions, based on accurate “readings” of a local ecosystem can contribute positively to its well-being (Stewardship)
- The Virginia Master Naturalist Program provides opportunities for its members to make all of these type of contributions

Key Skills

- Make and record observations/reflections about the natural world
- Demonstrate basic understanding of the Virginia Master Naturalist Program by identifying examples of Citizen-Science, Education, and Stewardship activities compatible with the goals of this organization

Weather and Climate

Objectives

- Describe the primary factors affecting climate
- Describe how Virginia’s climate has changed over time
- Understand human effects on weather, climate, and air quality
- Describe the relationship between climate, weather, and phenology
- Discuss the main processes driving weather
- Describe a typical year of weather in Virginia/Rockbridge area

Key Concepts

- Our regions climate – and related weather phenomenon – changes over time, as a result of abiotic and biotic factors, including human factors
- Weather and climate affect ecosystems and changes in weather and climate result in changes in ecosystems
- Seasonal change in temperate climates affect the characteristics of local ecosystems

Key Skills

- Understand the human contributions to climate change
- Recognize changes in local ecosystems caused/contributed to by weather an/or climate change
- Understand weather forecasting and the basic weather measurements (temperature, humidity, barometric pressure, wind speed and direction, cloud formation)

Aquatic Ecosystems & Watersheds

Objectives

- Understand the distribution and diversity of aquatic systems in Virginia
- Describe the characteristics of the major types of freshwater aquatic systems (streams, rivers, ponds, lakes, and reservoirs) in Virginia
- Describe the flora and fauna of aquatic systems in Virginia
- Understand how aquatic systems function and the factors affecting this functioning
- Understand threats and/or issues relating to aquatic systems in Virginia
- Understand principles, tools, and methods for management of aquatic systems in Virginia

Key Concepts

- Biotic factors, including humans, have a significant impact – positively and negatively – upon aquatic systems
- Water quality affects both aquatic and terrestrial ecosystems – and vice-versa
- In the local context:
 - The health of the Chesapeake Bay starts here, in the headwaters
 - Karst geology makes this region vulnerable to groundwater contamination

Key Skills

- Delineate a watershed on a local topographical map
- Interpret a local aquatic ecosystem, on-site, by identifying likely vulnerabilities and related strengths
- Assess the health of a stream using abiotic and biotic measures
- Identify common aquatic organisms, including micro-invertebrates and fish, using a key

Geology

Objectives

- Understand basic geologic processes such as faulting, folding, volcanism, metamorphism, weathering, erosion, deposition, sedimentation, and plate tectonics
- Understand the rock cycle as it relates to the origin and transformation of rock types
- Describe the physical and chemical properties and components of soil
- Describe the processes of soil formation and erosion – and methods for preventing erosion
- Describe the diversity and distribution of soil types in Virginia
- Describe the significance of karst and caves in Virginia

Key Concepts

- Our physical landscape is the result of geological history modified by weather/climate and most recently by human land-use
- The character of the living (biotic) landscape reflects in part the physical (abiotic) substrate
- Our landscape is in flux, both abiotically and biotically

Key Skills

- Interpret local geological phenomena in the context of larger geologic concepts and principles
- Identify common Rockbridge-area rocks and minerals using keys

2011 RMN Training Schedule and Course Requirements

Section 2

Date	Topic	Presenter	Affiliation
Mar 23 Wed Quiz #1 due	Ecological Concepts Sustainability and Resource Mgmt.	Dr. Laura Henry Stone	Environmental Studies, W&L University
Mar 30 Wed	Herpetology (Reptiles) Herpetology (Amphibians)	Dr. Gavin Lawson	Bridgewater College
April 2 Sat Field Trip Rain Date 4/9 8 am to Noon	Vernal Pools, Wetlands, and Ecology Field Trip; Farm near South River	Dr. Gavin Lawson Dr. Laura Henry Stone Elise Sheffield	Bridgewater W & L Boxerwood
Apr 6 Wed	Boxerwood Walkabout Botany	Phillip Coulling	Director, Nature Camp
Apr 13 Wed Quiz #2 handed out; Journals collected	Boxerwood Walkabout Dendrology & Forest Systems	Karen Stanley	VA Dept of Forestry RMN Chapter Advisor
April 16 Sat Field Trip Rain Date 4/23 8 am- Noon	FIELD TRIP –Wildflower/Forest W&L Back campus and Chessie Trail	Phillip Coulling Peggy Dyson-Cobb Karen Stanley	Nature Camp Native Plant Society VA DOF

Ecological Concepts, Sustainability, and Resource Management

Objectives

- Describe the levels of organization in ecology: organisms, populations, communities, and ecosystems
- Recognize the factors affecting population growth and dynamics
- Describe the major types of interactions between species
- Understand the succession process and the dynamic nature of ecosystems and communities
- Understand how abiotic and biotic factors determine the nature of different ecosystems

Key Concepts

- Life requires – and seeks – continual regeneration (sustainable perpetuation)
- Individuals and species interact with one-another in a variety of relationships, both positive and negative
- The population of species reflects a dynamic balance between births and deaths, immigration and emigration in context of local habitats
- Supportive habitats are necessary for individual survival and species perpetuation
- Habitats change over time due to numerous biotic and abiotic factors including climate change, land/resource use, and ecosystem dynamics
- Changes in habitat can affect a local species ability to survive, positively or negatively

Key Skills

- Interpret, on-site, specific physical and behavioral adaptations that enable a local species to survive in its habitat
- Identify likely preferred habitats for common flora and fauna using knowledge of our region's terrain, climate, and land-use patterns
- Identify the qualities of a good habitat for a given species and recognize potential threats
- Identify and interpret the effect of seasonal (vernal) change on population and community dynamics within a given habitat

Herpetology (Reptiles & Amphibians)

Objectives

- Describe the taxonomy of reptiles and amphibians
- Describe the natural history and basic biology of reptiles and amphibians
- Describe the diversity and distribution of reptiles and amphibians in Virginia
- Describe the role of reptiles and amphibians in Virginia ecosystems
- Describe the adaptations of reptiles and amphibians and how these relate to environmental factors

Key Skills

- Use appropriate technique, methods, and resources for studying reptiles and amphibians
- Identify some common reptiles and amphibians occurring in the local ecosystem

Dendrology (Trees)

Objectives

- Describe the taxonomy of trees
- Describe the natural history and basic biology of trees
- Describe the diversity and distribution of trees in Virginia
- Describe the role of trees in Virginia ecosystems
- Describe the adaptations of trees and how these relate to environmental factors

Key Skills

- Use appropriate techniques, methods, and resources for studying trees
- Identify some common trees occurring in the local ecosystem

Botany (Shrubs & Wildflowers)

Objectives

- Describe the taxonomy of plants
- Describe the natural history and basic biology of plants
- Describe the diversity and distribution of plants in Virginia
- Describe the role of plants in Virginia ecosystems
- Describe the adaptations of plants and how these relate to environmental factors

Key Skills

- Use appropriate techniques, methods, and resources for studying plants
- Identify some common plants occurring in the local ecosystem

2011 RMN Training Schedule and Course Requirements

Section 3

Date	Topic	Presenter	Affiliation
April 27 Wed Quiz #2 due	Citizen Science Mammals	Michelle Prysby Dr. Mike Pelton	VMN Statewide Coordinator University of Tennessee- retired
May 4 Wed	Hydrology Ichthyology	Dr. David Harbor Paul Bugas	W & L University VDGIF Biologist
May 7 Sat Field Trip Rain Date 5/14 8 am- noon	Water Quality and Macro- invertebrates Field Trip	Wendy Richards Steve Richards Elise Sheffield	VA Save Our Streams VA Save Our Streams Boxerwood
May 11 Wed	Ornithology,Boxerwood WalkAbout, Bird Watching	Dr. Paul Cabe	W & L University
May 18 Wed Quiz #3 handed out; Journals collected	Entomology Decomposers & Nutrient Cycle	Michael Lachance Dr. William Hamilton	Neson County MN W & L University
May 21 Sat Field Trip Rain Date 5/28 8 am to Noon	Entomology and Ornithology Field Trip	Dr. Paul Cabe Mike Lachance Bruce Bytnar	W & L Nelson County MN NPS, Retired

Citizen Science

Objectives

- Understand the process of science and how it informs natural resource management
- Understand the concepts of replication, randomness, and bias
- Describe the types of field studies (inventory, monitoring, and scientific research) that may be used to investigate population, communities, and ecosystems, and understand why these types of studies are used

Key Concepts

- There are many opportunities for citizen science in the U.S. and Virginia, such as Wildlife Mapping, Virginia Amphibian Monitoring, Christmas Bird Count, etc.

Key Skills

- Demonstrate basic field study skills, including observing, field journaling, following protocols, data recording, and interpreting graphs

Mammalogy (Mammals)

Objectives

- Describe the taxonomy of mammals
- Describe the natural history and basic biology of mammals
- Describe the diversity and distribution of mammals in Virginia
- Describe the role of mammals in Virginia ecosystems
- Describe the adaptations of mammals and how these relate to environmental factors

Key Skills

- Use appropriate techniques, methods, and resources for studying mammals
- Identify some common mammals occurring in the local ecosystem

Hydrology

Objectives

- Understand how watershed systems function and the factors affecting this functioning
- Understand threats and/or issues relating to watershed systems in Virginia
- Understand principles, tools, and methods for management of watershed systems in Virginia
- Understand the roles of citizens in the stewardship of watershed systems in Virginia

Key Concepts

- The finite amount of water on earth is continually recycled via the water cycle
- Water quality frequently reflects the history of land use: “a river is a record of all that has happened upstream.”

Key Skills

- Delineate a watershed on a local topographical map
- Interpret the health of a local watershed system by identifying vulnerabilities and strengths and/or remediation

Ichthyology (Fish)

Objectives

- Describe the taxonomy of fish
- Describe the natural history and basic biology of fish
- Describe the diversity and distribution of fish in Virginia
- Describe the role of fish in Virginia ecosystems
- Describe the adaptations of fish and how these relate to environmental factors

Key Skills

- Use appropriate techniques, methods, and resources for studying fish
- Identify some common fish occurring in the local ecosystem

Ornithology (Birds)

Objectives

- Describe the taxonomy of birds
- Describe the natural history and basic biology of birds
- Describe the diversity and distribution of birds in Virginia
- Describe the role of birds in Virginia ecosystems
- Describe the adaptations of birds and how these relate to environmental factors

Key Skills

- Use appropriate techniques, methods, and resources for studying birds
- Identify some common birds occurring in the local ecosystem

Entomology (Insects)

Objectives

- Describe the taxonomy of insects
- Describe the natural history and basic biology of insects
- Describe the diversity and distribution of insects in Virginia
- Describe the role of insects in Virginia ecosystems
- Describe the adaptations of insects and how these relate to environmental factors

Key Skills

- Use appropriate techniques, methods, and resources for studying insects
- Identify some common insects occurring in the local ecosystem

Decomposers and Nutrient Cycle and Mycology (Fungi)

Objectives

- Describe the taxonomy of fungi
- Describe the natural history and basic biology of fungi
- Describe the diversity and distribution of fungi in Virginia
- Describe the role of fungi in Virginia ecosystems
- Describe the adaptations of fungi and how these relate to environmental factors

Key Skills

- Use appropriate techniques, methods, and resources for studying fungi
- Identify some common fungi occurring in the local ecosystem

Final Classes

Date	Topic	Presenter	Affiliation
June 1 Wed Quiz #3 due	Review of Rockbridge Master Naturalist Programs Trainee Presentations	Various RMN Volunteers Trainees	
June 4 Sat Field Trip 8 am – Noon	Wrap-up Field Trip	Phil Coulling, Bruce Bytnar, Lars Nelson, Robert Humston, Karen Stanley	
June 7 Tues 5:30 – 8:30 PM	Graduation, Chapter Meeting, Advanced Training		