

# The Texas Master Naturalist™ Statewide Curriculum

*The statewide curriculum will come packaged and assembled ready to insert into a three-ring binder. Chapters to the curriculum are tabbed and labeled, but not numbered to allow individual Master Naturalist chapters to assemble the curriculum in an order that best fits their training agenda. Chapter goals, listed below, are goals that may be accomplished after the volunteer has read each curriculum chapter. This will allow you to give your presenters an idea of the base knowledge volunteers should have from reading the curriculum chapter prior to attending class. Ideally, the presenter may teach above and beyond that presented by the curriculum chapter and customize their presentation to the very specific issues of the local area. Volunteers can add additional materials obtained in class to the respective section of the state curriculum.*

## **Chapter: Intro to the Texas Master Naturalist™ program**

- Describe what a Master Naturalist™ is
- Identify and communicate the mission and goals of the Master Naturalist program
- Identify and communicate the requirements and responsibilities of a Texas Master Naturalist

## **Chapter: Texas Naturalists prior to World War II**

- Discuss the history of naturalists in Texas and their accomplishments
- Identify the first naturalists of Texas
- Understand the importance of expeditions and surveys in the natural history of Texas
- Identify four main “old time” naturalists and their accomplishments
- Identify the historically prominent Texas naturalists and their accomplishments in the fields of geology, botany, malacology, entomology, ichthyology, herpetology, ornithology, and mammalogy
- Identify the first individuals to write literature to a wider audience in the subject of nature

## **Chapter: Ecological Concepts**

- Explain the ecological principles that apply to individual organisms, populations, communities, and ecosystems
- Explain the balances that exist between ecosystems and what factors are necessary to keeping ecosystems in balance
- Explain how different ecosystems are determined largely by different environmental factors
- Describe the hydrologic cycle, the nitrogen cycle, and the carbon cycle
- Explain what is meant by succession and climax and list the factors responsible for each
- Illustrate a food web and explain the importance of trophic relationships
- Define biodiversity and understand the importance of managing for biodiversity
- Identify ecological factors that are relevant to a threatened species
- Understand the laws and procedures necessary for protecting species

### **Chapter: Ecological Regions of Texas**

- Identify and differentiate the features of Texas' ecological regions and subregions
- Understand and communicate the need for different maps denoting various ecological regions of Texas
- Explain the factors creating the great ecological diversity occurring in Texas

### **Chapter: Ecosystem Management**

- Understand and discuss the seven principles of ecology
- Describe management, ecosystems, and ecosystem management
- Identify the five ecological principles that can help assure the Earth's ecosystems

### **Chapter: Geology and Soils of Texas**

- Trace the geologic history of Texas
- Describe the various landform regions of Texas
- Discuss the hydrologic cycle and describe all possible sources of water
- Describe the physical and chemical properties of soil
- Discuss ways to prevent soil erosion

### **Chapter: Weather and Climate**

- Discuss what processes affect the temperature
- Become familiar with the main processes driving weather and climate
- Become familiar with cloud formations and the weather and climate they can predict or represent
- Describe Texas climate and factors affecting rainfall
- Describe a typical year of weather in Texas

### **Chapter: Nature of Naming**

- Demonstrate their ability to classify
- Discuss the uses and importance of the classification system
- Identify main parts of a scientific name
- Understand why the binomial classification system is important
- Discuss the pitfalls of using common names

### **Chapter: Plants**

- Explain why it is important to be familiar with plant names and some cases where knowing plant names can help
- Describe the classes of plants
- Become familiar with and describe the parts of a plant
- Compare and contrast the four classes of plants
- Become familiar with leaf and flower, types, placement, and arrangements to identify plants
- Explain what an invasive plant is and give some examples

### **Chapter: Ornithology**

- Understand the causes for bird diversity
- Understand and discuss the habit of bird migration
- Explain bird behavioral characteristics and their adaptations to environments and environmental changes
- Develop an awareness of how birds populations are monitored and managed
- Identify and communicate how birds function within ecosystems
- Become aware of and communicate conservation concerns for birds

### **Chapter: Entomology**

- Demonstrate an appreciation for insects and an interest in entomology
- Discuss why insects are so biologically diverse, why this diversity is threatened, and why the conservation of insect biodiversity is important
- Demonstrate familiarity with the insect fauna of Texas
- Discuss basic principles of insect behavior and ecology and relate these to environmental adaptations
- Understand the systematic relationships among various insect groups
- Demonstrate knowledge about the general characteristics of the major groups of insects
- Understand the role that insects play in local ecosystems and various other ecosystems in Texas
- Discuss the habitat needs of various groups of insects
- Demonstrate knowledge of methods for collecting insects
- Recognize rare or special species that indicate habitat qualities

### **Chapter: Ichthyology (Fishes)**

- Demonstrate an appreciation for fishes and an interest in ichthyology
- Discuss the diversity of fishes in Texas and demonstrate familiarity with the different groups of fishes
- Understand the relationship among various groups of fishes
- Demonstrate knowledge about the general characteristics of the major groups of fishes
- Discuss basic principles of fish behavior, physiology, and ecology and relates these principles to environmental adaptations
- Discuss the habitat needs of various groups of fishes

### **Chapter: Herpetology**

- Become familiar with and be able to explain the herpetological conservation topics relevant to Texas
- Become familiar with and recognize and explain the principle causes of biodiversity loss
- Become familiar with and recognize the common characteristics of amphibians and reptiles and how they differ from other vertebrates
- Become familiar with the natural history and diversity of amphibians and reptiles in Texas
- Outline and communicate the issues affecting the conservation of Texas herpetofauna

### **Chapter: Mammalogy**

- Demonstrate an appreciation for mammals and an interest in mammalogy
- Discuss the diversity and distribution of mammals in Texas and demonstrate familiarity with the different groups of mammals
- Understand the systematic relationships among various groups of mammals
- Demonstrate knowledge about the general characteristics of the major groups of mammals
- Discuss basic principles of mammal behavior, physiology, and ecology and relate these principles to environmental adaptations
- Discuss the habitat needs of various groups of mammals
- Understand the role that mammals play in local ecosystems and various other ecosystems in Texas
- Demonstrate knowledge of estimating/measuring mammal populations
- Demonstrate knowledge of methods for trapping, marking, monitoring, and observing mammal populations
- Understand and communicate the 11 major characteristics of mammals
- Become familiar with the three major taxonomic groups of mammals and what characteristics make

### **Chapter: Archeology**

- Describe and define what archeology is and what it is the study of
- Define culture
- Become familiar with the archeological regions of Texas
- Become familiar with the antiquities law

### **Chapter: Forest Ecology and Management**

- Explain major forested regions of Texas
- Compare/contrast the major factors affecting forest ecology
- Understand and describe five stages of succession in forested ecosystems
- Understand and describe the differences and meanings of preservation and conservation in forest ecology and management
- Describe methods or tools of forest management
- List and discuss the benefits of urban forests and their management

### **Chapter: Wetlands Ecology and Management**

- Explain what a wetland is
- Become knowledgeable of types of wetlands
- Become familiar with wetlands of Texas
- Describe the wetland types of Texas
- Become aware of an familiar with the state and federal regulations affecting and governing wetland conservation in Texas

### **Chapter: Rangeland Ecology and Management**

- Define and describe rangeland
- Define rangeland management
- Describe why range management is different from agricultural vocations
- List the basic component categories of range management
- List and describe the four founding principles of grazing management
- Understand and be able to communicate the importance of land management goals
- Describe how native grasses grow
- Describe, compare and contrast rangeland management tools.
- Develop and awareness of grazing, brush and weed issues and management of Texas rangelands

### **Chapter: Aquatic Ecology and Management**

- Describe the characteristics of water
- Communicate the characteristics and properties of aquatic systems
- Understand and communicate how aquatic systems function
- Become familiar with management techniques for aquatic systems
- Understand and communicate threats to aquatic systems

### **Chapter: Urban Systems**

- Understand urban system characteristics
- Understand and explain the practices and effects of urbanization in natural systems
- Describe the three broad plant categories in urban systems and the threats to them as a result of urbanization
- Describe the fauna of urban systems and the effects of urbanization on these species
- Become familiar with the Best Management practices (BMP's) for urban areas

### **Chapter: Volunteers as Teachers**

- Discuss what interpretation is
- Discuss types of interpretation
- Identify and understand components of an interpretative experience
- Demonstrate audience management techniques
- Develop/outline an interpretive program or experience
- Understand the differences between a topic and a theme and the importance/functions each serves