Course:	Wildlife		
Credits:	0.5		
Prerequisites:	None, Biology Recommended		
Description:	This course focuses on 4 "F's": fish, fowl, forestry and fur in addition to other topics related to the world of wildlife. Study will include natural resources, water quality, ecosystems, wildlife management, taxidermy, hunting ethics, fish, tree identification, trapping, and more. School forest projects will also be included. Learn about careers, economic benefits and social influences. FFA projects will be incorporated.		
Academic Standards:	https://dpi.wi.gov/ag/standards		
Unit Name:	**Unit Length:**	**Unit Standards:**	**Unit Outcomes:**
Ecosystems	Length: 14 days	**NR1 4C3 CD1 IMT1**	Apply knowledge of natural resource components to the management of natural resource systems. Classify natural resources. Use cartographic skills to aid in developing, implementing and evaluating natural resource management plans, measure and survey for natural resource status in developing related plans with interpretation of laws related to natural resource management and protection. Apply ecological concepts and principles to natural resource systems. Work collaboratively with others.
Forestry	Length: 9 days	**NR1 NR3 4C3 4C3.a**	Learn about the world of forestry and the interdependence with society as well as essential vocabulary within the unit. Tree Identification and resources that come from trees. Exploration of careers and products in forestry.
Fish	Length: 18 days	**NR1 NR3.a.16.h NR1.b.4.e NR1.b.9.m**	Describe the similarities and differences in the appearance and behaviors of types of fish, understand the purpose of external and internal fish parts.
Turkeys	Length: 12 days	**NR1 NR2 NR3 NR5**	Name 6 kinds of game birds. Evaluate the role of game birds in their environment. Describe coloration and habits of game birds.
Fur and Resources	Length: 7 days	**NRS.01 CS.09**	Students will learn about fericulture and the fur bearing industry, including terminology and techniques. Additionally, research will be conducted on usage of natural resources.
History & Careers	Length: 11 days	**NR1 NR2 NR5 CD1 CD2 CD3 CD4**	Students will learn the history of wildlife managment in this unit and apply scientific principles to natural resource situations. The key individuals and laws in the history of natural resources will be identified.
Conservation	Length: 11 days	**NR3 NR4 ESS1**	Students will learn about aquatic resources and pollutants in our environment as well as methods of stweardship.

Unit Name: Turkeys	Length: 12 days
Standards: **NR1:** Students will explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. **NR2:** Students will apply scientific principles to natural resource management activities. **NR3:** Students will apply knowledge of natural resources to production and processing industries. **NR5:** Students will use effective methods and venues to communicate natural resource processes to the public.	Outcomes: Name 6 kinds of game birds, Evaluate the role of game birds in their environment, Describe coloration and habits of game birds.
Essential Questions: What affect does imprinting have on animals and humans? What is the current status of the turkey population and hunting in Wisconsin?	Learning Targets: Techniques of hunting and harvesting game birds. Comparison of coloration of game birds.
Topic 1: Turkeys	Length: 7 days
Standards: NR1, NR2, NR3	Academic Vocabulary: Gizzard, Carnacucles, Snood, Spur, Diaphram
Lesson Frame: Parts of a Turkey	We will: learn the parts of a turkey and anatomical purpose.
	I will: label a turkey with 8 major parts.
Lesson Frame: Life of a Turkey	We will: watch documentary "My Life as a Turkey".
	I will: write a summary/reaction of the movie.
Lesson Frame: Turkey Calls	We will: research ways turkeys can be called.
	I will: demonstrate a slate turkey call.
Lesson Frame: Laws Related to Turkeys	We will: research hunting techniques and laws.
	I will: write a summary/reaction.
Performance Tasks: summary/reaction, compare and contrast, labeling parts, make a turkey call	Notes:
Topic 2: Other Game Birds	Length: 2 days
Standard: NR1, NR2, NR3	Academic Vocabulary: clutches, gamebirds, preen, nomenclature
Lesson Frame: Other Game Birds	We will: identify 5 other major game birds.
	I will: list major game birds.
Lesson Frame: Population of Gamebirds	We will: assess similariities and differences of gamebirds.
	I will: compare and contrast gamebirds.
Lesson Frame: Reproduction	We will: discuss reproduction of gamebirds.
	I will: speculate on why gamebirds produce large clutches of eggs.
Lesson Frame: Mating Rituals	We will: describe the importance of mating rituals among game birds.
	I will:
Performance Tasks: compare and contrast, reading analysis, create an infographic	Notes:
Topic 3: Birds of Prey	Length: 3 days
Standard: NR1, NR2, NR3, NR5	Academic Vocabulary: predator, prey, raptor
Lesson Frame: Six families of raptors in the US	We will: list differences betweens birds of prey and other birds.
	I will: complete exit ticket.

Lesson Frame: Role of Raptors	We will: evaluate the role of raptors in ecosystems.
	I will: list the role of raptors.
Performance Tasks: research raptors, create a raptor battle	Notes:

Unit: Ecosystems	Length: 14 days
Standards: **NR1:** Students will explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. **4C3:** Students will communicate and collaborate with others to accomplish tasks and develop solutions to problems and opportunities. **CD1:** Students will consider, analyze and apply an awareness of self, identity and culture to identify skills and talents. **IMT1:** Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.	Outcomes: Apply knowledge of natural resource components to the management of natural resource systems. Classify natural resources. Use cartographic skills to aid in developing, implementing and evaluating natural resource management plans, measure and survey for natural resource status in developing related plans with interpretation of laws related to natural resource management and protection. Apply ecological concepts and principles to natural resource systems.Work collaboratively with others.
Essential Questions: How are species interdependent upon each other within different ecosystems? Explain what responsibility you believe humans have to keep ecosystems in balance and what factors influence ecosystem relationships. What responsibilities do you have as a group member and how do you influence group dynamics?	**Learning Targets: Students will...** Identify natural resources. Compare and contrast different ecosystems. Define ecosystem and related terms. Compare and contrast the interdependence of organisms within an ecosystem. Match names to plants, wildlife/aquatic species, and morphological characteristics. Differentiate different types of maps. Describe the value of resource inventories and population studies. Explain population ecology, population density and population dispersion. Complete an assignment as part of a group.
Topic 1: Types of Biomes and Ecosystems	Length: 2 classes
Standard(s): NR1 and 4C3	Academic Vocabulary: Decomposer, Ecosystem, Herbivore, Omnivore, Population
Lesson Frame: Ecoregions http://www.biology-pages.info/B/Biomes.html	We will: identify types of biomes in the world.
	I will: compare and contrast two biomes found in the United States.
Lesson Frame: What Makes it a Biome?	We will: learn characteristics for biomes.
	I will: complete an exit ticket about a biome to research further.
Lesson Frame: Biome Research	We will: explore animal and plant relationships.
	I will: exit ticket on predator/prey.
Lesson Frame: Mapping biomes	We will: map biome distribution.
	I will: color code main categories.
Performance Tasks: categorization of biome traits, correlation of adaptations for plants and animals	Notes:
Topic 2: Animal Relationships	Length: 2 days
Standard(s): NR1 and CD1	Academic Vocabulary: Mutualism, Parasitism, Predator, Prey, Symbiosis
Lesson Frame: Types of Animal Relationships	We will: explore animal relationships.
	I will: sketch animal dependents.
Lesson Frame: Plant/Animal Interdependencies	We will: review essential vocabulary.
	I will: create a word web.
Performance Tasks: create poster of animal relationships (predation, mutualism, commensalism, etc), quiz on terminology, compare and contrast relationship terms, draw conclusions on relationships	Notes:

Topic 3: Essential Cartography & Map Skills	Length: 2 days
Standard(s): NR1 and CD1	Academic Vocabulary:
Lesson Frame: Types of Animal Relationships	We will: explore animal relationships.
	I will: sketch animal dependents.
Lesson Frame: Plant/Animal Interdependencies	We will: review essential vocabulary.
	I will: create a word web.
Performance Tasks: create base map of 10 animals and 5 plants before creating diorama.	Notes:
Topic 4: Ecosystem Dioramas and Essential Vocabulary	Length: 8 days
Standard(s): NR1, NR2, 4C3, CD1, and IMT1	Academic Vocabulary: Annua, Arboreal, Carrying capacity, Benthic, Conifer, Conservation tillage, Den tree, Edge, Flora, Fragmented habitat, Habitat, Halophyte, Hydrologic cycle, Interspersion, Litter, Perennial, Riparian, Snag, Wilderness
Lesson Frame: Animal and Plant Relationships and Correlation of Essential Vocabulary	We will: explore animal relationships.
	I will: define relationship of plants and animals.
Lesson Frame: Plant/Animal Interdependencies	We will: review essential vocabulary.
	I will: incorporate 10 assigned words into diorama.
Performance Tasks: create a diorama and complete vocabulary tasks	Notes:

Unit Name: Forestry	Length: 9 days
Standards: **NR1:** Students will explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. **NR3:** Students will apply knowledge of natural resources to production and processing industries. **4C3:** Students will communicate and collaborate with others to accomplish tasks and develop solutions to problems and opportunities. **4C3.a:** Communicate thoughts and feelings with others using verbal and non-verbal language.	Outcomes: Learn about the world of forestry and the interdependence with society as well as essential vocabulary within the unit. Tree Identification and resources that come from trees. Exploration of careers and products in forestry.
Essential Questions: What responsibility do humans have to trees and what do trees give to people? How are natural resources modified to help humans and other animals? Why are certain plants used for landscaping, for papermaking, and for other uses? What factors influence the species composition of the deciduous forest in our area?	Learning Targets: Distinguish among conifer, deciduous and tropical rain forest with regard to climatic limiting factors. Define harvesting related to tree products. List ways to enjoy natural resources. List and describe uses of trees species and determine when to harvest forest products. Define essential vocabulary in this unit. Explore careers related to forestry.
Topic 1: Tree Identificaton	Length: 6 days
Standards: NR1	Academic Vocabulary: conifer, crown, deciduous, defects, evergreens, hardwoods, softwood
Lesson frame: What morphological differences are there in trees and how can you identify them?	We will: review edges and margins of leaves.
	I will: explain the difference between an edge and a margin.
Lesson Frame: What processes do trees need to thrive?	We will: learn the requirements of trees.
	I will: sketch out the needs of trees.
Lesson Frame: Why do leaves change colors?	We will: learn about pigments in tree leaves.
	I will: explain why leaves turn colors.
Lesson Frame: Identification of Trees	We will: learn about coniferous and deciduous trees.
	I will: identify 8 major trees found in Wisconsin.
Performance Tasks: word wall, LeafSnap ID, powerpoint of tree ID	Notes:
Topic 2: Forestry Production and Processing	Length: 3 days
Standard: NR3	Academic Vocabulary: caliper, canopy, cord, girdling, growth rings, increment borer, pruning, skidder, snag, skidder
Lesson Frame: What trees are used in landscaping?	We will: discuss trees used in landscaping.
	I will: identify shapes used in landscaping trees.
Lesson Frame: What products come from silviculture?	We will: define silviculture.
	I will: brainstorm products from trees.
Lesson Frame: How can natural resources be enjoyed?	We will: learn about an overview of natural resources.
	I will: write critically about natural resources.
Lesson Frame: How does forestry relate to the career pathways?	We will: identify career pathways related to forestry.
	I will: research a career of interest related to forestry.
Performance Tasks: identification of trees by margin and edge, silviculture career research	Notes:

Unit Name: Fish Unit	Length: 18 days
Standards: **NR1:** Students will explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. **NR3.a.16.h:** Describe techniques used in the harvesting of wildlife and aquatic species. **NR3.a.17.h:** Explain and use techniques to process wildlife and aquatic species. **NR1.b.4.e:** Match names to aquatic species. **NR1.b.9.m:** Compare and contrast aquatic species. **NR3.a.9.m:** Identify wildlife and aquatic species that can be commercially and or sustainably harvested for commercial and recreational purposes.	Outcomes: Describe the similarities and differences in the appearance and behaviors of types of fish, understand the purpose of external and internal fish parts.
Essential Questions: What adaptations do fish have that will help them survive? What are the main factors that affect the aquaculture industry?	Learning Targets: Identify internal and external fish parts, learn about fish adaptations, and other aspects of the aquaculture industry.
Topic 1: External Parts of Fish and Morphology	Length: 14 days
Standards: NR3.a.16.h: Describe techniques used in the harvesting of wildlife and aquatic species. NR3.a.17.h: Explain and use techniques to process wildlife and aquatic species. NR1.b.4.e: Match names to aquatic species. NR1.b.9.m: Compare and contrast aquatic species. NR3.a.9.m: Identify wildlife and aquatic species that can be commercially and or sustainably harvested for commercial and recreational purposes.	Academic Vocabulary: Advertising Pattern, Anatomy, Camouflage, Fusiform, Mimicry, Morphology, Truncate, Internal & External Parts of Fish plus identification terms
Lesson Frame: Describe characteristics and morphology of freshwater fish and identify common Wisconsin fish.	We will: speculate about factors influences body shape/morphology of fish.
	I will: be able to compare and contrast differences in fish.
Lesson Frame: Label the external parts of a fish.	We will: study enternal parts of fish.
	I will: sketch and label exernal fish parts.
Lesson Frame: Learn about types of fishing lures used to harvest aquatic species.	We will: carve a fishing lure into one of the selected shapes.
	I will: sketch five common shapes (e.g. diver, minnow, etc).
Lesson Frame: Identify habitats of common fish.	We will: research habitat needs of common fish.
	I will: select a fish to research
Performance Tasks: Build a model of external fish parts, carve a fishing lure.	Notes:
Topic 2: Fish Management Techniques	Length: 4 days
Standard: NR1: Students will explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments.	Academic Vocabulary: varied lure shapes and morphology
Lesson Frame: What relationship exists between natural resources important to aquatic life and humans?	We will: read about natural resource relationships.
	I will: make a flow chart of relationship needs.
Lesson Frame: What management techniques are used for freshwater and saltwater fishing?	We will: explore management techniques.
	I will: compare and contrast management techniques.
Lesson Frame: Characteristics of aquatic biomes.	We will: explore the differences in aquatic biomes.
	I will: list characteristics of biomes.
Performance Tasks: create a powerpoint comparing techniques, research aquatic systems	Notes:

Unit Name: Fericulture & Natural Resources	Length: 7 days
Standards: **NRS.01.** Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. **CS.09.** Technical Skills: Compare and contrast issues affecting the AFNR industry.	Outcomes: Students will learn about fericulture and the fur bearing industry, including terminology and techniques. Additionally, research will be conducted on usage of natural resources.
Essential Questions: How does the fericulture industry impact society? What attitudes exist for the fur bearing industry?	Learning Targets: Students will learn about techniques and care of fur bearing animals commons in Wisconsin as well as the interrelationships of natural resources and humans.
Topic 1: Renewable and non-renewable resources	Length: 3 days
Standards: NRS.01 CS.09	Academic Vocabulary: Ecology
Lesson Frame: Differentiate between renewable and nonrenewable natural resources.	We will: learn about renewable and non-renewable resources.
	I will: compare and contrast renewable and nonrenewable resources.
Lesson Frame: Compare and contrast natural resources used for recreational purposes.	We will: identify recreational purposes related to wild animals.
	I will: list recreational uses of animals.
Performance Tasks: Identification of tracks, scat and morphology.	Notes:
Topic 2: Commercial and recreational usage	Length: 2 days
Standard: NR3.a.9.m	Academic Vocabulary aquatic, recreational, commercial, asthetic
Lesson Frame: Identify wildlife and aquatic species that can be commercially and or sustainably harvested for commercial and recreational purposes.	We will: identify wildlife species that are harvested for commercial and recreational reasons.
	I will:compare and contrast wildlife species.
Performance Tasks: research economic impact of fur bearing animals, identification of species	Notes:
Topic 3: Fur Bearing Species	Length: 2 days
Standard: NR1.b.3.e	Academic Vocabulary: Alphas, Beta, Dominant, Scavenger, Omega, Pelage, Pelt, Poaching, Scat
Lesson Frame: Match names to wildlife species.	We will: research fur bearing wild animals.
	I will: write a summary of a selected fur bearing animal.
Lesson Frame: Identify methods of trapping fur bearing animals.	We will: examine methods of trapping.
	I will:
Performance Tasks: Presentation on types of fur-bearing animals,	Notes:

Unit Name: History of Wildlife Management & Careers	Length: 11 days
Standards: **NR1:** Students will explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. **NR2:** Students will apply scientific principles to natural resource management activities. **NR5:** Students will use effective methods and venues to communicate natural resource processes to the public. **CD1:** Students will consider, analyze and apply an awareness of self, identity and culture to identify skills and talents. **CD2:** Students will identify the connection between educational achievement and work opportunities in order to reach personal and career goals. **CD3:** Students will create and manage a flexible and responsive individualized learning plan to meet their career goals. **CD4:** Students will identify and apply employability skills.	Outcomes: Students will learn the history of wildlife managment in this unit and apply scientific principles to natural resource situations. The key individuals and laws in the history of natural resources will be identified.
Essential Questions: Describe the development of wildlife managment in the United States. What actions have led to modern wildlife management? Describe the era of exploitation in wildlife management. What career opportunities are available in wildlife and natural resource careers? What strengths and weaknesses do you possess? What transferable skills correlate with this course?	Learning Targets: Historical perspective of wildlife, proper terminology for wildlife management, and changes in conservation throughout history.
Topic 1: Evolution of Wildlife Management	Length: 3 days
Standards: NR1 NR2 NR5	Academic Vocabulary: Aesthetic value, Commercial value, Ecological value, Endangered Species Act, Exploitation, Game value, Scientific Value
Lesson Frame: Describe the development of wildlife management in America.	We will: explore a timeline of wildlife management in America.
	I will: select an era to study in depth.
Lesson Frame: List specific actions that led to modern wildlife management.	We will: brainstorm purpose and ramifications of wildlife management
	I will: create a flow chart of one management technique.
Lesson Frame: Explore the era of exploitation of America's wildlife.	We will: research exploitation of wildlife.
	I will: compare American exploitation to that of other countries.
Performance Tasks: Create a timeline and read/research about wildlife management throughout the years.	Notes:
Topic 2: Influential People in Wildlife Laws/History	Length: 2 days
Standard: NR2 NR5	Academic Vocabulary Endangered Species Act, Lacey Act, Morrill Act, Pittman-Robertson Act
Lesson Frame: Protected, Threatened and Extinct Species	We will: discuss factors in protection of species and ways to prevent overharvesting
	I will: write critically about laws that protect natural resources
Lesson Frame: Role of Aldo Leopold in Game Management	We will: research Aldo Leopold and other influential contributors
	I will: define the term "wildife management"
Lesson Frame: Goals of Wildlife Management	We will: discuss management of wildlife.
	I will: formulate an opinion and defend.
Lesson Frame: Active Management Strategies	We will: compare species richness vs. featured species approaches

	I will: create a Venn diagram
Performance Tasks: create a Venn diagram of species, identify influential people and laws in history, inquiry based lesson	Notes: Kohn
Topic 3: Carrying Capacity and Population Monitoring	3 days
Standard: NR2:	Academic Vocabulary: carrying capacity, mark-recapture
Lesson Frame: Methods of determining population of ecosystems	We will: identify methods of determining populations
	I will: submit results of the mark-recapture method
Lesson Frame: Factors of Carrying Capacity	We will: explore factors that influence carrying capacity
	I will: summarize results of the bear carrying capacity activity
Lesson Frame: Habitat Management	We will: explore presentation of managing habitat
	I will: select a management technique to further explore
Performance Tasks: complete sample estimation projects, demonstrate carrying capacity through Project Wild activity, research management techniques	Notes: Kohn PP

Unit Name: Conservation of Natural Resources	Length: 11 days
Standards: **NR3:** Students will apply knowledge of natural resources to production and processing industries. **NR4:** Students will demonstrate techniques used to protect natural resources. **ESS1**: Students will use analytical procedures to plan and evaluate environmental service systems while assessing the impact of policies and regulations on environmental service systems.	Outcomes: Students will learn about aquatic resources and pollutants in our environment as well as methods of stweardship.
Essential Questions: How are surface water systems essential in ecoystems? How do aquatic systems function? How can you tell if a body of water is healthy?	Learning Targets: signs of a healthy body of water, point source and non-point source pollution, oigotrophic vs eutrophic
Topic 1: Water Pollution	Length: 4 days
Standards: **NR3:** Students will apply knowledge of natural resources to production and processing industries. **NR4:** Students will demonstrate techniques used to protect natural resources. **ESS1:** Students will use analytical procedures to plan and evaluate environmental service systems while assessing the impact of policies and regulations on environmental service systems. **NR2.d.14.m:** Define invasive species along with pollution descriptions and delineation between point and nonpoint source pollutions with descriptions of climatic factors that influence natural resources.	Academic Vocabulary: Point Source Pollution, Non-point Source Pollution, Biomagnification, Eutrophication
Lesson Frame: Surface water systems	We will: explore connection to watersheds and water pollution
	I will: label factors of a watershed
Lesson Frame: Aquatic systems	We will: learn components of aquatic systems
	I will: label parts of aquatic systems
Lesson Frame: Health of waterways	We will: explore components affecting the quality of water
	I will: list ways to tell the quality of waterways
Lesson Frame: Non point and point source pollution	We will: investigate pollution
	I will: contrast non point and point source pollution
Performance Tasks: Complete Kohn water quality project, research sources of non-point and point source pollution, investigate water quality systems	Notes:
Topic 2: Air Quality	Length: 2 days
Standard: **NR4:** Students will demonstrate techniques used to protect natural resources. **ESS1**: Students will use analytical procedures to plan and evaluate environmental service systems while assessing the impact of policies and regulations on environmental service systems.	Academic vocabulary: renewable, nonrewable
Lesson Frame: Distinguish between renewable and non-renewable resources	We will: distinguish between renewable and non-renewable resources.
	I will: trace the path of production for a non-renewable resource.
Lesson Frame: Effects of air pollution on wildlife.	We will: research the effect of pollution on wildlife.
	I will: list effects in an exit ticket.
Lesson Frame: Ways air pollution can be reduced.	We will: research ways to reduce air pollution.
	I will: make a flow chart of air pollution.
Performance Tasks: Renewable and non-renewable showdown, air quality powerpoint and Kohn activity	Notes:

Topic 3: Elk and Game Animals	Length: 5 days
Standard: **NR4**: Students will demonstrate techniques used to protect natural resources. **ESS1:** Students will use analytical procedures to plan and evaluate environmental service systems while assessing the impact of policies and regulations on environmental service systems.	Academic vocabulary: prediction, hypothesis, legend
Lesson Frame: Big Game Animal Care and Management	We will: research big game animals.
	I will: select an animal to research.
Lesson Frame: Population Analysis and Scenario Study	We will: predict population factors.
	I will: read graphs to make predictions.
Performance Tasks: Kohn scenario research, population predictions, create a brochure	Notes: