



Wildlife

Grades 10 - 12

Unit 1

Course/Subject: Wildlife	Grade: 10, 11, & 12	Suggested Timeline: 5 weeks
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Grade Level Summary	This course focuses on the observation and identification of various species of mammals, birds, reptiles, amphibians, and plants of Pennsylvania. Emphasis will be placed on conservation, habitat evaluation, environmental analysis, game management, and possible careers. Projects and laboratory exercises will be the major forms of assessment within the course including the monitoring of wildlife and wildlife habitats. Students will study whitetail deer, hunting regulations, tracking, and more!
Grade Level Units	Zoology and Ecology Basics, Zoology and Ecology of Mammals, Zoology and Ecology of Birds, Conservation and Management

Unit Title	Zoology and Ecology Basics
Unit Summary	This unit looks into the basics of zoology and ecology. It will look at the various biomes there are in North America and the wildlife that inhabits them. The unit will also look at the impact that agriculture has on wildlife. Wildlife is a resource that must be managed and the last part of this unit looks at endangered species and legislation that protects them.

Unit Essential Questions: What in your life time has mankind done to protect wildlife? What has mankind to destroy wildlife?	Key Understandings: - Principles of zoology - Principles of ecology - Relationship between wildlife and agriculture - Biomes of North America - Wildlife recourses
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Focus Standards Addressed in the Unit:	
Standard Number	Standard Description
NRS.01.01.01.b	Assess the characteristics of a natural resource to determine its classification.
NRS.01.01.02.a	Summarize the components that comprise all ecosystems.

Important Standards Addressed in the Unit:	
CC.3.5.11-12.J.	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.
CC.3.5.11-12.A.	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
CC.3.5.11-12.B.	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
CC.1.2.11–12.K	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.

CC.1.2.11–12.L	Read and comprehend literary nonfiction and informational text on grade level, reading independently and proficiently.
CC.1.4.11–12.A	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately.
CC.1.4.11–12.S	Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade-level reading standards for literature and literary nonfiction.
CC.1.4.11–12.V	Conduct short as well as more sustained research projects to answer a question (including a self generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
CC.1.4.11–12.W	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

Misconceptions:	Proper Conceptions:
- A species that goes extinct has no effect on an ecosystem. - Natural disasters kill off everything and leave areas worthless.	- When an animal goes extinct the balance of the ecosystem is changed and takes many years to offset the change. - Floods and fires actually redeposit nutrients back into the soil and promote new growth.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
- basic anatomy of animals - Functions of the animal body systems and system components. - renewable and non-renewable natural resources - Animal reproduction - Animal growth - Animal behavior and habits - laws of energy - food chain - impact of agriculture on the ecosystem - biological succession - biomes of north America - U.S. Endangered species act	- Identify the basic anatomy of animals - Classify animals - Explain the law of conservation of matter - Define the laws of energy - Distinguish among food chain, food webs, and food pyramids - Identify farming practices and their impact on the environment - Identify biomes of north America - Identify endangered species - Identify environmental factors that contribute to extinction of organisms	- Curiosity - Active learning

Academic Vocabulary:

- Biology - Botany - Zoology - Fauna - Taxonomy - Kingdom - Phylum - Class - Order - Family - Genus - Species	- chromatid - centromere - metaphase - centrioles - spindles - anaphase - telophase - gametes - meiosis - homologous chromosomes - homologue - ecology	- Population - Community - Ecosystem - Biosphere - Ecosphere - Ecologist - Habitat - Biological succession - Primary succession - Secondary succession - Pioneers - Climax community
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• Vertebrate • Vertebrata • Simple stomach • Ruminant • Rumen • Crop • Gizzard • Mitosis • Interphase • Prophase • Fossil fuel • Nitrogen fixation • Nitrogen-fixing bacteria • Denitrification • Nitrogen cycle • Water cycle • Transpiration • Food chain • Producer • Herbivore • Primary consumer • secondary consumer • carnivores • decomposer • food web • food pyramid • naturalist • stewardship • extinct • endangered species • threatened species • habitat • organism	• law of conservation of matter • industrial waste • surface water • aquatic species • pollutant • groundwater • solid waste • pesticide • insecticide • herbicide • rodenticide • hazardous materials • petroleum • energy • first law of energy • radiant energy • chemical energy • kinetic energy • thermal energy • electrical energy • second law of energy • elemental cycle • deciduous forest biome • strata • canopy • understory • shrub layer • herb layer • forest floor • temperate rain forest • coniferous forest biome • conifer • Organism	• Niche • Competitive advantage • Competitive exclusion • Principle • Range of tolerance • Biome • Freshwater biome • Plankton • Phytoplankton • Zooplankton • Turbid • Lotic habitat • Lentic habitat • Thermal stratification • Wetland • Marine biome • Salinity • Intertidal zone • Continental shelf • Neritic zone • Oceanic zone • Marine biologist • Limnologist • Estuary • Terrestrial biome • Desert biome • Tundra biome • Grassland biome • Alien species • Nonadaptive behavior • Biotic potential • biologist
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Assessments:

- Test
 - Quizzes
 - Projects
 - Homework
 - Classwork (worksheets, group work, lab work, etc)
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Differentiation:

- Book work
 - Lecture
 - Demonstrations
 - Video clips
 - Hands on learning
 - IEP accommodations
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Interdisciplinary Connections:

- This unit and all units in this course relate very closely to science, in particularly biology. Students will look at zoology and ecology of mammals and birds found in the environment.
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Additional Resources:

- Video clips
- Articles
- Personal Accounts
- Fish and Wildlife Principles of Zoology and Ecology 3rd edition
- Pa Hunting Digest rules and regulation book
- Pa Fishing Digest rules and regulations book

Created By:

Troy Summey



Wildlife

Grades 10 - 12

Unit 2

Course/Subject: Wildlife	Grade: 10, 11, & 12	Suggested Timeline: 4-5 weeks
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Grade Level Summary	This course focuses on the observation and identification of various species of mammals, birds, reptiles, amphibians, and plants of Pennsylvania. Emphasis will be placed on conservation, habitat evaluation, environmental analysis, game management, and possible careers. Projects and laboratory exercises will be the major forms of assessment within the course including the monitoring of wildlife and wildlife habitats. Students will study whitetail deer, hunting regulations, tracking, and more!
Grade Level Units	Zoology and Ecology Basics, Zoology and Ecology of Mammals, Zoology and Ecology of Birds, Conservation and Management

Unit Title	Zoology and Ecology of Mammals
Unit Summary	This unit breaks down mammals into sub categories to better understand them. Such categories of mammals will include gnawing, hoofed, predatory, marine, and unusual mammals. Each part will break down the mammals and give descriptive details to identify them. The type of biomes that these mammals can be found will also be provided in this section.

Unit Essential Questions: - How important is each mammal to the ecosystem? - What would happen if you removed just one mammal from the food chain?	Key Understandings: - Hoofed mammals - Gnawing mammals - Predatory mammals - Marine mammals - Other mammals
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Focus Standards Addressed in the Unit:	
Standard Number	Standard Description
NRS.01.02.03.b	Apply identification techniques to determine the species of wildlife or insect.
NRS.01.02.03.a	Research and examine the characteristics used to identify wildlife and insects.

Important Standards Addressed in the Unit:	
CC.3.5.11-12.J.	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.
CC.3.5.11-12.A.	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
CC.3.5.11-12.B.	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
CC.1.2.11–12.K	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.

CC.1.2.11–12.L	Read and comprehend literary nonfiction and informational text on grade level, reading independently and proficiently.
CC.1.4.11–12.A	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately.
CC.1.4.11–12.S	Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade-level reading standards for literature and literary nonfiction.
CC.1.4.11–12.V	Conduct short as well as more sustained research projects to answer a question (including a self generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
CC.1.4.11–12.W	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

Misconceptions:	Proper Conceptions:
- Antlers and horns are the same thing. - Mammals are only on land	- Antlers regrow each year where as horns continue to grow for the life of the animal. - There are several species of whales, dolphins and seals that give birth in or around water.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
- Characteristics of mammals - Food chain - Hoofed mammal identification - Gnawing mammal identification - Predatory mammal identification	- Recognize the importance of wildlife and forestry as it relates to natural resources management - Assess the impacts of invasive species on ecosystems - Identify physical characteristics that distinguish mammals from other animals - Identification of mammal from physical appearance - Classification of mammals	- Persistence - Curiosity

Academic Vocabulary:

- Mammal - Mammary gland - Vertebrate - Rodent - Primary consumer - Secondary consumer - Taxonomist - Nocturnal - Hibernate - Vole - Carrying capacity - Evolution - Estivation - Pika - Predator - Puma	- Cloven hoofed - Javelin - Ruminant - Rumen - Cud - Symbiosis - Pronghorn - Buck - Doe - Antler - Bull - Cow - Calf - Fawn - Rut - Velvet	- crustacean - mollusk - shellfish - white coat - manatee - oceanology - oceanologist - blowhole - cetacean - blubber - baleen whale - whalebone - toothed whale - krill - dolphin - cuttlefish
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● Ocelot ● Margay ● Jaguarondi ● Jaguar ● Dog ● Vixen ● Gestation ● Omnivore ● Carrion ● Delayed digestion ● Photoperiod ● Musk ● Ungulate	● Bison ● Ram ● Ewe ● Lamb ● Billy goat ● Nanny goat ● Kid ● Peccary ● Boar ● Sow ● Marine mammal ● Finfeet ● pinniped	● pod ● marsupial ● marsupium ● placenta ● uterus ● placental mammal ● prehensile ● insectivore ● metabolism ● prolific ● carapace
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Assessments:

- Test
 - Quizzes
 - Projects
 - Homework
 - Classwork (worksheets, group work, lab work, etc)
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Differentiation:

- Book work
 - Lecture
 - Demonstrations
 - Video clips
 - Hands on learning
 - IEP accommodations
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Interdisciplinary Connections:

- This unit and all units in this course relate very closely to science, in particularly biology. Students will look at zoology and ecology of mammals and birds found in the environment.
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Additional Resources:

- Video clips
 - Articles
 - Personal Accounts
 - Fish and Wildlife Principles of Zoology and Ecology 3rd edition
 - Pa Hunting Digest rules and regulation book
 - Pa Fishing Digest rules and regulations book
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Unit 3

Course/Subject: Wildlife	Grade: 10, 11, & 12	Suggested Timeline: 3-4 weeks
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Grade Level Summary	This course focuses on the observation and identification of various species of mammals, birds, reptiles, amphibians, and plants of Pennsylvania. Emphasis will be placed on conservation, habitat evaluation, environmental analysis, game management, and possible careers. Projects and laboratory exercises will be the major forms of assessment within the course including the monitoring of wildlife and wildlife habitats. Students will study whitetail deer, hunting regulations, tracking, and more!
Grade Level Units	Zoology and Ecology Basics, Zoology and Ecology of Mammals, Zoology and Ecology of Birds, Conservation and Management

Unit Title	Zoology and Ecology of Birds
Unit Summary	This unit looks at the zoology and ecology of birds in North America. Students will examine the physical appearance, diet, breeding, and distribution of birds through out North America.

Unit Essential Questions:	Key Understandings:
Without birds, what would the ecosystem look, sound and be like?	- Waterfowl - Game birds - Birds of prey - Songbirds

Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
NRS.01.02.03.b	Apply identification techniques to determine the species of wildlife or insect.
NRS.01.02.03.a	Research and examine the characteristics used to identify wildlife and insects.

Important Standards Addressed in the Unit:

CC.3.5.11-12.J.	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.
CC.3.5.11-12.A.	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
CC.3.5.11-12.B.	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
CC.1.2.11–12.K	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.2.11–12.L	Read and comprehend literary nonfiction and informational text on grade level, reading independently and proficiently.

CC.1.4.11–12.A	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately.
CC.1.4.11–12.S	Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade-level reading standards for literature and literary nonfiction.
CC.1.4.11–12.V	Conduct short as well as more sustained research projects to answer a question (including a self generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
CC.1.4.11–12.W	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

Misconceptions:		Proper Conceptions:
Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
• Characteristics of birds • Food chain • Game bird identification • Song bird identification • Predatory bird identification • Water fowl identification	• Recognize the importance of wildlife and forestry as it relates to natural resources management • Assess the impacts of invasive species on ecosystems • Identify physical characteristics that distinguish birds • Identification of birds from physical appearance • Classification of birds • Identify birds by their song/sound • Recognize the importance of water quality, air quality, and waste management within ecosystems	• Persistence • Curiosity

Academic Vocabulary:		
• Waterfowl • Avian • Oviparous • Incubation • Viviparous • Ornithology • Ornithologist • Down • Plumage • Lamellae • Duckling • Dabbling duck • Molt • Gosling • Grit • Gizzard • Cygnet • Frontal shield • Nightjar	• gallinaceous • clutch • polygamous • polygynous • monogamous • plume • covey • catkin • scrape • wattle • beard • crop • squab • pigeon milk • fledge • scavenger • auklet • solitary • lobe	• diurnal • eaglet • polyandry • aerie • color phase • kite • harrier • accipiter • kestrel • stoop • facial disk • pellet • territorial • conical bill • gregarious • tanager • dipper • shrike • Brood

• Terrestrial • Swift • Nestling • Torpor • Torpid • Creeper	• precocial • plover • phalarope • avocet • raptor • talons	• Parasitic bird • Promiscuous
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Assessments:

- Test
 - Quizzes
 - Projects
 - Homework
 - Classwork (worksheets, group work, lab work, etc)
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Differentiation:

- Book work
 - Lecture
 - Demonstrations
 - Video clips
 - Hands on learning
 - IEP accommodations
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Interdisciplinary Connections:

- This unit and all units in this course relate very closely to science, in particularly biology. Students will look at zoology and ecology of mammals and birds found in the environment.
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Additional Resources:

- Video clips
 - Articles
 - Personal Accounts
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Wildlife

Grades 10 - 12

Unit 4

Course/Subject: Wildlife	Grade: 10, 11, & 12	Suggested Timeline: 5-6 weeks
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Grade Level Summary	This course focuses on the observation and identification of various species of mammals, birds, reptiles, amphibians, and plants of Pennsylvania. Emphasis will be placed on conservation, habitat evaluation, environmental analysis, game management, and possible careers. Projects and laboratory exercises will be the major forms of assessment within the course including the monitoring of wildlife and wildlife habitats. Students will study whitetail deer, hunting regulations, tracking, and more!
Grade Level Units	Zoology and Ecology Basics, Zoology and Ecology of Mammals, Zoology and Ecology of Birds, Conservation and Management

Unit Title	Conservation and Management
Unit Summary	This unit looks at the conservation of natural resources in particular wildlife. In order for an ecosystem to support wildlife, there must be conservation of water, soil, and air. This unit will also look at the hunting rules and regulation in Pennsylvania and the management practices of the wildlife.

Unit Essential Questions: Why are the earth's natural resources a precious commodity? How do you/we need to conserve and manage them so future generations can enjoy them as well?	Key Understandings: - Responsible management of wildlife resources - Conservation of natural resources - Human connection to wildlife and natural resources v
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
NRS.02.01.01.b	Analyze the structure of laws associated with natural resource systems.
NRS.02.01.01.a	Distinguish between the types of laws associated with natural resource systems.
NRS.02.01.01.c	Evaluate the impact of laws associated with natural resource systems.
NRS..02.02.01.a	Summarize the relationship between natural resources, ecosystems and human activity.

Important Standards Addressed in the Unit:

NRS.02.01.02.c	Evaluate the impact and effectiveness of agencies associated with natural resources system.
NRS.02.02.01.c	Evaluate how the availability of natural resources can be improved through changes to human activity.
CC.3.5.11-12.J.	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.
CC.3.5.11-12.A.	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

CC.3.5.11-12.B.	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
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CC.1.4.11-12.V	Conduct short as well as more sustained research projects to answer a question (including a self generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
CC.1.4.11-12.W	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

Misconceptions:	Proper Conceptions:
The government controls every aspect of game management.	The state agency sets forth seasons and bag limits that are suggested by wildlife biologist. The federal government controls regulations regarding migratory bird management.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
- history of conservation in Pennsylvania. - renewable and non-renewable natural resources - wildlife and forestry as it relates to natural resources management - water quality, air quality, and waste management within ecosystems.	- Identify sources of point and non-point pollution - Explain the importance of management and planning of resources - Assess the impacts of invasive species on ecosystems - Compare and contrast different methods of sustainable agriculture - Compare and contrast the impact of conventional and alternative energy sources on the environment.	Ethical behavior and civic responsibility

Academic Vocabulary:		
- Erosion - Soil conservation - Toxic waste - Biodegradable - Overgrazing - Acid precipitation - Decomposer - Nonbiodegradable - Point source pollution - Nonpoint source pollution	- Conservation - Renewable resource - Nonrenewable resource - Silt - Alluvial fan - Nitrate - Phosphate - Algae - Adaptive behavior - Smog	- Electrostatic precipitator - Biota - Domestic - Transpiration - Watershed - Intrinsic value - Pristine - Steward - Ethics

• Multiple use • Oversight • Poaching • Riparian zone • Silt load	• Imprinting • Biotechnology • Genetic engineering • Catalytic converter • Wet scrubber	
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Assessments:

- Test
 - Quizzes
 - Projects
 - Homework
 - Classwork (worksheets, group work, lab work, etc)
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Differentiation:

- Book work
 - Lecture
 - Demonstrations
 - Video clips
 - Hands on learning
 - IEP accommodations
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Interdisciplinary Connections:

- This unit and all units in this course relate very closely to science, in particularly biology. Students will look at zoology and ecology of mammals and birds found in the environment.
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Additional Resources:

- Video clips
 - Articles
 - Personal Accounts
 - Fish and Wildlife Principles of Zoology and Ecology 3rd edition
 - Pa Hunting Digest rules and regulation book
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