

# Into the Outdoors

## HAVEN FOR GAME BIRDS

Developed by: Rachel Konkle

### In This Activity ...

*Students will assume conservationist roles while researching, debating, and developing a diorama of a wildlife area for upland game birds. Their diorama will consider habitat management, wildlife biology, population dynamics, hunting strategies, and recreational activities that conserve wildlife and habitats across the country today.*

### Educational Partners



**GRADE LEVELS**

High School - Grades 9-12

**CONTENT AREA**Life Science, Habitat Management,  
Natural Resources Management,  
Wildlife Conservation**UNIT THEME**

Natural Resource Management

**TOPIC**Wildlife Areas, Wildlife Ecology,  
Habitat Management, Hunting,  
Regulations, Population Dynamics,  
Wildlife Conservation,  
Wildlife Management**TIME REQUIRED**

Three, 45-minute sessions

**OVERVIEW**

Hunting is an outdoor recreation that families and other members of the public have the privilege to enjoy. This sport offers families the chance to harvest wild resources from the environment while spending quality time with their family, peers, and nature. But most importantly, hunting participants serve a critical role in wildlife management. Hunter's payments for state hunting licenses, permits, and duck stamps fund the selection, restoration, and improvement of habitats and wildlife management across the country. Thanks to the Pittman Robertson Act, taxes on hunting equipment and ammunition all go toward conservation programs. And since the Act's passage in 1937, hunters have funded \$18 billion for wildlife conservation. These revenues may only be used for wildlife conservation. And according to the U.S. Fish and Wildlife, about two thirds of this money is used by state wildlife agencies for the development and maintenance wildlife management areas. These areas are the backbone to state wildlife agencies' wildlife conservation efforts because they protect habitats that have high potential for wildlife production and outdoor recreations, such as hunting, trapping, fishing, sometimes camping, and more.

All management of North American wildlife are based on sound science from wildlife biologists and conservationists. For example, habitat managers will arrange food plots and resources, water sources and cover in small blocks that are close together with enough space to support the wildlife populations in the area. Biologists may conduct population surveys, improve habitats, stock areas with wildlife, control and prevent the spread of wildlife diseases, and recommend hunting regulations that prevent overharvesting of wildlife. Most wildlife populations will grow slowly, then at a rapid rate, and then level off. This means the carrying capacity for a wildlife species has been reached. This kind of population growth looks like a logistic growth upon a graph. It is important biologists analyze the **biological carrying capacity** of the population because this determines the maximum number of individuals of a particular wildlife species that the habitat

and its resources can sustain indefinitely (without depleting those resources). When a species goes above its carrying capacity, there is a **surplus** of animals, meaning there are not enough resources for the population. This usually leads to population crashes. With sustainable hunting, hunters may harvest the wildlife in this surplus and prevent wildlife populations from crashing. But overharvesting can also be detrimental to wildlife populations. That is why it is important wildlife biologists calculate the **maximum sustained yield**, or the largest yield (harvest) that can be taken from a wildlife population over a period of time under constant environmental conditions. The maximum sustained yield is essentially when the population's growth is at its highest, or the inflection point in the graph. By knowing the carrying capacity and maximum sustained yield, biologists can begin to understand what kinds of limits or regulations to recommend for hunting.

**In this activity**, students will assume wildlife conservation roles while researching and discussing how to manage a wildlife area for upland game birds. The students will use their research to develop a diorama of a wildlife management area that considers habitats and wildlife managements that sustain wildlife populations and human recreation.

#### ENDURING UNDERSTANDING:

Students will understand the various wildlife management strategies used to conserve wildlife populations for present and future generations. Students will also understand the critical role hunters, habitat managers, and wildlife biologists play in wildlife conservation.

#### CONTENT OBJECTIVES:

Students will be able to evaluate habitat, wildlife, and human recreation methods that determine how to manage wildlife populations.

#### LEARNER OUTCOMES:

Students will use online research, video, and group discussions to decode modern wildlife and habitat management practices for upland game birds. They will develop a wildlife management area diorama for upland game birds that uses the North American Model of Wildlife Conservation.

#### PROCESS OBJECTIVES:

Students will work in small and large groups to process new information and use evidence to come to conclusions.

#### MATERIALS NEEDED: (for each group, for each student)

- Access to computer and the internet
- "Questing for Pheasants" video and background information at: <http://intotheoutdoors.org/topics/questing-for-pheasants/>
- Pre-lesson Student Worksheet with questions to fill in while watching the video
- Various student worksheets
- Cardboard sheet
- Art supplies: cardboard, construction paper, markers, paints, pipe cleaners, clay, and natural resources for diorama



## PROCEDURES

### Session 1:

Before watching the **Questing for Pheasants** classroom video or reading the website background information, ask students what they already know about wildlife conservation. Ask students to critically think and discuss about how hunting can be used as a wildlife management tool. Lead a short discussion on how the students would conserve wildlife and their habitats if they had the chance today.

Have students download, or print and distribute the **Pre-Lesson Student Worksheet** (copy contained on the web link). Instruct students to fill in the worksheet while watching the video. Go over the questions with the students before viewing so they know what to look and listen for.

**Next, divide the class into small groups of three:**

- Habitat Designer
- Upland Bird Biologist
- Hunter Mastermind

Have students download and print, or hand out to each student their respective student worksheet (copies contained on the web link). Ask them to review the details and assignments of the worksheet in preparation for Session 2.

### Session 2: Team Research and Wildlife Area Development

In their assigned groups, have students perform online research from links provided and from other sources they discover about wildlife management practices for their specific game bird species. The worksheets give instructions and research options that will guide students in their information gathering. Then, have the large groups discuss and create their wildlife area diorama. Encourage students to be creative with their dioramas and build habitats from construction paper, cardboard, clay, paints, or glue in natural resources such as grass for grassland, pebbles for boulders, sand for trails, branch clippings for trees, and more. Inform each team they must prepare to give a presentation of their diorama to the class with supporting research. Their presentation should be supported by research and some form of media (either video, poster, graphs, charts, images).





### Session 3: Diorama Presentations and Class Debate

Have each group present their **dioramas** with supporting research and logical reasoning for their plan. Limit each group to 5-minute presentations followed by 3 minutes of questions from other groups.

After all groups have presented, lead a group discussion on the conservation practices that groups used. Have the students debate on which wildlife areas will sustain their upland birds the best. Students should focus on habitats, wildlife management strategies, hunting methods, and recreational opportunities. Students may use their conservation knowledge and research to vigorously debate. Then have the class vote on which team designed the best wildlife area. Each student will be given two cutouts of their career role for the voting, and must consider their conservation roles' goals. The wildlife area with the most "people working" in their diorama wins the challenge!

**Conclude the discussion** by revisiting the students' initial ideas about wildlife conservation. Discuss what students think others should know about hunting and wildlife management practices. Then highlight that the students made a wildlife management area for one species. Ask the students to critically think about the science and management involved to create and manage multiple game species in wildlife areas. End discussion by encouraging students to speak with their local wildlife biologists and discover current wildlife management projects happening right now.

## ASSESSMENT

- Students will be informally assessed based on their participation within their groups and during class presentations and discussions.
- Teachers could collect the Pre-Lesson Student Worksheets and formally assess the discussion notes students took during the video to check for completion.
- Students can be assessed on meeting the formal learning objectives based on how thoroughly students completed their group worksheets and dioramas.
- Students can be evaluated on their presentations during Session 3.

## EXTENSION ACTIVITY

Encourage students to explore a wildlife management area near them. Have the students scout for wildlife and their habitats. Speak with staff on premises to learn about the wildlife populations, managements being done, and scientific studies that are happening in the area. Assign the students to assume the role of a wildlife biologist and write a report about the wildlife management area's wildlife and habitat, and what management practices you would recommend to restore and improve the area.



## RESOURCES FOR TEACHERS & STUDENT RESEARCH

- [https://www.hunter-ed.com/wildlife/upland\\_birds.htm](https://www.hunter-ed.com/wildlife/upland_birds.htm)
- <https://www.allaboutbirds.org/guide/>
- <https://plants.usda.gov/java/>
- [https://www.hunter-ed.com/national/studyGuide/Carrying-Capacity/201099\\_700192591/](https://www.hunter-ed.com/national/studyGuide/Carrying-Capacity/201099_700192591/)
- <https://ecosystems.psu.edu/research/projects/deer/news/2015/msy-2013-and-it2019s-not-the-big-easy>
- <https://www.fws.gov/refuges/hunting/>

## STANDARDS

The following **National Common Core Standards** can be met teaching:

### HAVEN FOR GAME BIRDS

#### Grades 9-10:

CCSS.ELA-LITERACY.RI.9-10.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
CCSS.ELA-LITERACY.RI.9-10.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
CCSS.ELA-LITERACY.RI.9-10.7	Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.

CCSS.ELA-LITERACY.W.9-10.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
CCSS.ELA-LITERACY.W.9-10.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
CCSS.ELA-LITERACY.W.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.W.9-10.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
CCSS.ELA-LITERACY.W.9-10.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
CCSS.ELA-LITERACY.W.9-10.7	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.
CCSS.ELA-LITERACY.W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
CCSS.ELA-LITERACY.W.9-10.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
CCSS.ELA-LITERACY.SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.9-10.2	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
CCSS.ELA-LITERACY.SL.9-10.3	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
CCSS.ELA-LITERACY.SL.9-10.4	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
CCSS.ELA-LITERACY.SL.9-10.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.
CCSS.ELA-LITERACY.L.9-10.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
CCSS.ELA-LITERACY.L.9-10.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
CCSS.ELA-LITERACY.L.9-10.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
CCSS.ELA-LITERACY.L.9-10.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies.
CCSS.ELA-LITERACY.L.9-10.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
CCSS.ELA-LITERACY.L.9-10.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.



CCSS.ELA-LITERACY.RST.9-10.1	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
CCSS.ELA-LITERACY.RST.9-10.2	Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
CCSS.ELA-LITERACY.RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.
CCSS.ELA-LITERACY.RST.9-10.9	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
CCSS.ELA-LITERACY.WHST.9-10.1	Write arguments focused on discipline-specific content.
CCSS.ELA-LITERACY.WHST.9-10.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
CCSS.ELA-LITERACY.WHST.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.WHST.9-10.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
CCSS.ELA-LITERACY.WHST.9-10.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
CCSS.ELA-LITERACY.WHST.9-10.7	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.
CCSS.ELA-LITERACY.WHST.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
CCSS.ELA-LITERACY.WHST.9-10.9	Draw evidence from informational texts to support analysis, reflection, and research.

### Grades 11-12:

CCSS.ELA-LITERACY.RI.11-12.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
CCSS.ELA-LITERACY.RI.11-12.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
CCSS.ELA-LITERACY.RI.11-12.7	Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.
CCSS.ELA-LITERACY.W.11-12.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
CCSS.ELA-LITERACY.W.11-12.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
CCSS.ELA-LITERACY.W.11-12.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.W.11-12.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.



CCSS.ELA-LITERACY.W.11-12.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
CCSS.ELA-LITERACY.W.11-12.7	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.
CCSS.ELA-LITERACY.W.11-12.8	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.
CCSS.ELA-LITERACY.W.11-12.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
CCSS.ELA-LITERACY.SL.11-12.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.11-12.2	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
CCSS.ELA-LITERACY.SL.11-12.3	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
CCSS.ELA-LITERACY.SL.11-12.4	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
CCSS.ELA-LITERACY.SL.11-12.6	Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.
CCSS.ELA-LITERACY.L.11-12.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
CCSS.ELA-LITERACY.L.11-12.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
CCSS.ELA-LITERACY.L.11-12.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
CCSS.ELA-LITERACY.L.11-12.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11-12 reading and content, choosing flexibly from a range of strategies.
CCSS.ELA-LITERACY.L.11-12.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
CCSS.ELA-LITERACY.L.11-12.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CCSS.ELA-LITERACY.RST.11-12.1	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.
CCSS.ELA-LITERACY.RST.11-12.2	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.
CCSS.ELA-LITERACY.RST.11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.



- CCSS.ELA-LITERACY.RST.11-12.6 Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
- CCSS.ELA-LITERACY.RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
- CCSS.ELA-LITERACY.RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.
- CCSS.ELA-LITERACY.WHST.11-12.1 Write arguments focused on discipline-specific content.
- CCSS.ELA-LITERACY.WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
- CCSS.ELA-LITERACY.WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- CCSS.ELA-LITERACY.WHST.11-12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
- CCSS.ELA-LITERACY.WHST.11-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
- CCSS.ELA-LITERACY.WHST.11-12.7 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.
- CCSS.ELA-LITERACY.WHST.11-12.8 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 specific 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.
- CCSS.ELA-LITERACY.WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.
- CCSS.ELA-LITERACY.WHST.11-12.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

## Next Generation Science Standards for ...

### HAVEN FOR GAME BIRDS

- HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. [Clarification Statement: Emphasis is on quantitative analysis and comparison of the relationships among interdependent factors including boundaries, resources, climate, and competition. Examples of mathematical comparisons could include graphs, charts, histograms, and population changes gathered from simulations or historical data sets.] [Assessment Boundary: Assessment does not include deriving mathematical equations to make comparisons.]
- HS-LS2-6. Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. [Clarification Statement: Examples of changes in ecosystem conditions could include modest biological or physical changes, such as moderate hunting or a seasonal flood; and extreme changes, such as volcanic eruption or sea level rise.]

- HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.\* [Clarification Statement: Examples of human activities can include urbanization, building dams, and dissemination of invasive species.]
- HS-LS2-8. Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce. [Clarification Statement: Emphasis is on: (1) distinguishing between group and individual behavior, (2) identifying evidence supporting the outcomes of group behavior, and (3) developing logical and reasonable arguments based on evidence. Examples of group behaviors could include flocking, schooling, herding, and cooperative behaviors such as hunting, migrating, and swarming.]
- HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. [Clarification Statement: Emphasis is on determining cause and effect relationships for how changes to the environment such as deforestation, fishing, application of fertilizers, drought, flood, and the rate of change of the environment affect distribution or disappearance of traits in species.]
- HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.\* [Clarification Statement: Emphasis is on testing solutions for a proposed problem related to threatened or endangered species, or to genetic variation of organisms for multiple species.]

