



Discussion Guide

MANAGING BLACK BEARS

In This Activity...

Students will research and debate the differences between the biological carrying capacity and cultural carrying capacity of a bear population. They will also develop a black bear management plan for their community that considers the long-term health of both the bear and human populations.

GRADE LEVELS

Middle School - Grades 6-8

CONTENT AREAS

Natural Resource Science, Ecology, Social Studies

UNIT THEME

Natural Resource Evaluation and Management

TOPICS

Resource Management, Wildlife Ecology, Public Safety

TIME REQUIRED

Three 45-minute Sessions

**OVERVIEW**

Because of professionally managed, modern conservation programs, many states today are reporting black bears inhabiting areas they haven't been seen in for almost 100 years. Although black bears haven't reclaimed all of their original range across America, they have rebounded to populations of an estimated 800,000 bears in 37 states and all Canadian Provinces. In New Jersey for example, they have both the nation's highest bear and human population densities combined. And when you combine that many people with that many bears in a limited landscape, bear managers are faced with dynamic and often conflicting challenges.

The number of bears that can live in the same area without detrimental effects on the bears or the environment is called the **biological carrying capacity**. A high quality habitat has a higher carrying capacity than a low quality habitat. The biological carrying capacity is affected by the limiting factors in a habitat. For black bears, the most critical limiting factors are those that affect the availability of food, that can vary both seasonally and annually.

In habitats near humans, the biological carrying capacity can sometimes support more black bears than humans in the area are willing to tolerate as neighbors. This number, which is often less than the biological carrying capacity, is called the **cultural carrying capacity**. Wildlife management personnel use a variety of strategies to mediate potential conflicts between bears and humans.

In this lesson, students with different stakeholder views will research and debate how to manage an expanding bear population in their community. They will also learn how to develop a bear management plan that considers ecosystem biodiversity, the health of the overall bear population, and public safety.

MANAGING BLACK BEARS

CONCEPT Natural Resource Management

ENDURING UNDERSTANDING:

Students will understand the differences between the biological and cultural carrying capacities of different species of wildlife populations.

CONTENT OBJECTIVES:

Students will be able to evaluate the factors that determine the biological and cultural carrying capacity of a black bear population in a geographic area. They will also be able to research, debate and develop a black bear management plan for the health of bears and the public.

LEARNER OBJECTIVES:

Students will use online research to determine a healthy balance between bear and human populations, and what strategies wildlife managers use to achieve that balance. Students will use other online research and group discussions to develop a logistical bear management plan that uses the model of modern wildlife management.

PROCESS OBJECTIVES:

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

MATERIALS NEEDED (each group, each student):

1. Access to computers and Internet
2. Video, background information, (all available for free download, including HD video) <http://intotheoutdoors.org/topics/managing-black-bears/>
3. Student Worksheet with Pre-lesson questions to fill in while watching video
4. Student Bear Management Plan Worksheet



PROCEDURES

Session 1

Before watching the *Managing Black Bears* video or reading the website background information, ask students how many have had encounters with black bears. Also ask students how much they know about living near bears and how to avoid conflicts. Lead a short discussion on what students have learned about themselves and bears by either their encounters with or from their preconceived ideas about black bears.

Have students download, or print and distribute the Pre-Lesson Student Worksheet (copy contained in this PDF and 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.

After viewing the video, review and discuss the answers to the questions as a class.

Divide the class into these four (4) Bear Management Teams: 1) Bear biologists, 2) Public Safety Officials, 3) Protect the Bears Society, 4) Ecosystem Managers. Inform students they will be working as teams in Sessions 2 & 3.

MANAGING BLACK BEARS

PROCEDURES *(continued)*

Session 2 - Team Research & Plan Development

Have students download and print, or hand out to each student the **Black Bear Management Plan Worksheet** (copy contained in this PDF and on the web link). Each of the four teams have assigned goals and objectives in developing their management plans. In their separate assigned “Bear Management Teams”, have students perform online research from the links provided, and other sources, then discuss and develop their bear management goals. The worksheet provides instructions and research options for students to gather information. Inform each group that two members of each team will also prepare a presentation to present their bear management recommendations to the class during Session 3. Their presentation should be supported by factual data and some form of media (either video, poster, graphs, charts, images).

Session 3 - Team Presentations & Class Debate

Have each team present their **Black Bear Management Plan** and supporting reasons. After all four teams present their plans, lead a group discussion on how the teams can work through their differences in the best interest of the bear population (both present and future) and the public safety. Their final plan should attempt to strike a scientific and factual balance between the biological and cultural carrying capacity.

Conclude the discussion with a sampling of students who are still dissatisfied with the overall plan and explore what realistic options might be available to fulfill their team goals.

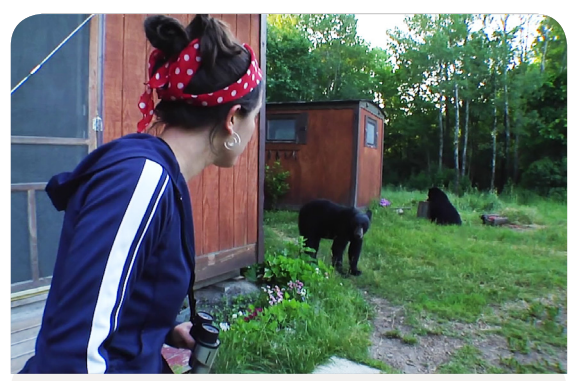
ASSESSMENT

Students will be informally assessed based on their participation in the teams and during class presentations and discussions. Teachers could collect the discussion notes students took during the video to check for completion.

Students can be formally assessed using their Pre-Lesson Student Worksheets. Students can be assessed on meeting the formal learning objectives on how thoroughly students completed their Black Bear Management Plan Worksheets

EXTENSION ACTIVITY

Student Teams with unresolved issues in their Bear Management Plan could email or call a state or federal bear management professional or wildlife biologist to explore how real professionals might develop solutions. Have students prepare their questions beforehand and be respectful of the professional’s time. Students can later present their findings in class and compare their issues with what they discovered about modern scientific wildlife management.



SPECIAL CONSIDERATIONS:

1. During the video, the instructor may want to pause the video to allow students time to fill in their Pre-Lesson Student Worksheet.
2. Sessions 2 & 3 of this activity are richest when completed in groups with answers shared with and discussed as a whole class. The Black Bear Management Plan worksheet is not a typical worksheet as it encourages students to research and construct knowledge as they answer questions.



RESOURCES for Teachers & Student Research

- <http://blackbearinfo.com/>
- <https://www.nps.gov/subjects/bears/black-bears.htm>
- <http://myfwc.com/wildlifehabitats/managed/bear/plan-faqs/>
- <https://www.dec.ny.gov/animals/7215.html>
- <http://www.bearsmart.com/managing-communities/human-bear-conflict-management-plans/>
- Internet Search "Black Bear Management Plan" in your State

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

NATIONAL COMMON CORE STANDARDS

CCSS.ELA-LITERACY.RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

CCSS.ELA-LITERACY.RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

CCSS.ELA-LITERACY.RST.6-8.8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

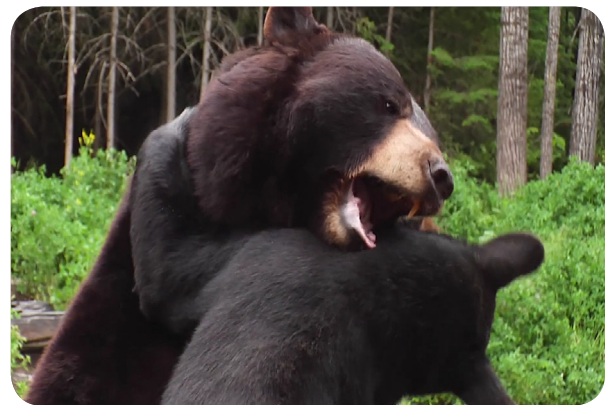
CCSS.ELA-LITERACY.WHST.6-8.1 Write arguments to support claims with clear reasons and relevant evidence.

CCSS.ELA-LITERACY.WHST.6-8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

CCSS.ELA-LITERACY.WHST.6-8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation

CCSS.ELA-LITERACY.WHST.6-8.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.



National Common Core Standards Continued:

CCSS.ELA-LITERACY.SL.8.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.8.3 Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.

CCSS.ELA-LITERACY.SL.8.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

CCSS.ELA-LITERACY.SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

Next Generation Science Standards:

MS-LS2 Ecosystems: Interactions, Energy, and Dynamics

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. [Clarification Statement: Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.]

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. [Clarification Statement: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.]

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. [Clarification Statement: Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.]

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.* [Clarification Statement: Examples of ecosystem services could include water purification, nutrient recycling, and prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations.]

Black Bear Management Pre-Lesson Student Worksheet

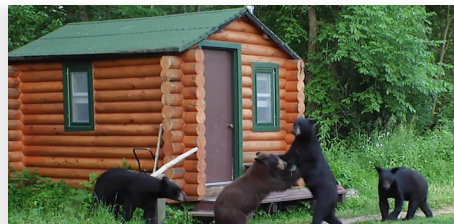
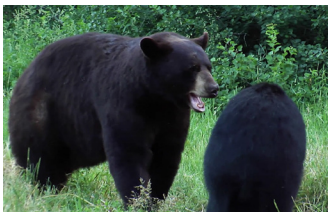
Student Name: _____

Class: _____

Date: _____

Before watching the video or exploring the website, review these questions and look for answers during the video.

1. What is the relative trend in black bear populations today?
2. What is the biological carrying capacity of black bears in an area?
3. What is the cultural carrying capacity of a black bear population in an area?
4. What tools do wildlife professionals use to establish both biological and cultural carrying capacities?
5. What are the methods of managing wildlife populations within the two carrying capacities?
6. What challenges do wildlife managers face in deciding the right balance?



Black Bear Management Plan Worksheet

(Create separate sheets for additional plan information)

Student Name:

Class:

Team#

Date:

The teacher has divided the class into four (4) Bear Management Teams listed below. Each team will conduct research and prepare a black bear management plan that supports your team's goals. When developing your team plan, consider the goals of the other teams and how they conform or conflict with your team goals. In class Session 3, the teams will present their plans then have a class debate on solutions to developing an overall bear management plan that best serves the present and future health of the local bear population and the public.

Team #1 - Bear biologists You are trained wildlife professionals who are entrusted with managing the black bear population. Your goal is to manage the bear population just below the biological carrying capacity that will result in both healthy individual bears and a healthy, sustainable population without negatively impacting the overall ecosystem. You use science, logic, and the modern model for wildlife conservation in developing a plan. Your plan may consider the goals of the other teams.

Team #2 - Public Safety Officials Your team is made up of public safety and community officials who are entrusted with protecting the public and managing bears within the cultural carrying capacity of your community. Your goals are to prevent negative conflicts between your community citizens and the black bear neighbors who also share the landscape in and near your town. You don't want people or bears hurt and recognize the challenge of that balance. Your plan should consider various methods of achieving your goals and the goals of the other teams.

Team #3 - Protect the Bears Society Your team admires black bears and what they represent as one of the remaining iconic wild creatures that have been displaced by human encroachment and extermination. You believe that bears deserve the same rights to enjoy life as humans and will use a variety of methods to achieve that goal. Your goal is to also minimize the potential conflicts that may occur between bears and humans that could result in bears being harmed. Your plan should consider various methods of achieving your goals and the goals of the other teams.

Team #4 - Ecosystem Managers Your team is made up of licensed hunters and conservation groups. Your goals are similar to the bear biologists and the public safety officials. You want to help both of them achieve their goals in managing the wildlife resource. You also share some of the goals of the Protect the Bears Society in that you wish to reduce conflicts between bears and people. Your goal is to follow the modern wildlife conservation model supported by factual information and the funding your team provides to wildlife management. Your plan should consider various methods of achieving your goals and the goals of the other teams.

Use the following links to research and help develop your Team's Black Bear Management Plan,

- <http://blackbearinfo.com/>
- <https://www.nps.gov/subjects/bears/black-bears.htm>
- <http://myfwc.com/wildlifehabitats/managed/bear/plan-faqs/>
- <https://www.dec.ny.gov/animals/7215.html>
- <http://www.bearsmart.com/managing-communities/human-bear-conflictmanagement-plans/>
- Internet Search "Black Bear Management Plan" in your State or Region