

RE-MODERNIZING THE PITTMAN-ROBERTSON WILDLIFE RESTORATION ACT

Peer Driven High School Learning

Teacher: Dan Bertalan

CONTENT AREAS – Natural Resource
Management, Social Studies, Conservation

THEME – Future Funding the North
American Model of Wildlife Conservation

TIME REQUIRED – Three, 55-minute Sessions

AN INTERACTIVE LEARNING ACTIVITY

The following discussion guide and education activity is designed for several sessions of peer-driven High School learning that provides engagement and mock ownership by the various stakeholder groups involved in funding the North American Model of Wildlife Conservation. Four separate Re-Modernizing Pittman Robertson stakeholder group worksheets are included in this activity. This expanded activity is designed to offer a lasting and meaningful learning opportunity as opposed to shorter, single session lessons, plus has a special extension designed for a single learner.

OVERVIEW

The Pittman-Robertson Wildlife Restoration Act (PR Act) was passed in 1937 that put an 11% excise tax on firearms, ammunition and archery and reallocated the proceeds to fund state wildlife agencies for their “wildlife restoration projects.”

There’s little irony in that the PR Act also marked a period of sharp decline in certain game species populations because of a combination of overharvest and habitat loss. In large part, the Act was intended to promote the preservation and restoration of wildlife habitats. Wildlife was defined broadly as “any species of wild, free-ranging fauna including fish.” However, in 1956, the U.S. Fish and Wildlife Service (FWS) issued regulations that restricted the use of PR Act funds to only birds and mammals, probably because these represented the greatest interest to hunters and wildlife managers.



Revenues generated from PR taxes now average \$1 BILLION dollars a year, with guns and ammunition accounting for nearly 93% of PR revenues. These taxes are deposited into a “Wildlife Restoration Account” administered by the FWS and dispersed for these six main purposes:

1. Program administration
2. Traditional multistate conservation grants
3. “R3” (“Recruit, Retain, Reactivate”) multistate grants
4. Enhanced hunter education and safety grants
5. Basic hunter education and safety grants
6. Wildlife restoration grants

Though last on the list, by far the Wildlife Restoration Program receives the largest share of apportioned funds. In FY2021 a total of \$679 million was apportioned to the states and territories as follows:

- Wildlife Restoration grants: 79 percent,
- Basic Hunter Education grants: 20 percent
- Enhanced Hunter Education grants: 1 percent
- Traditional multi state grants: \$8 million
- Administration: \$12 million

Congress made an important change to the PR Act in 2019 by passing the “Modernizing the Pittman-Robertson Fund for Tomorrow’s Needs Act.” These amendments eliminated the prohibition on states using Pittman-Robertson funds for “R3” activities intended to offset the decades-long decline in hunters nationwide, specifically for the “promotion of hunting and recreational shooting.”

Decoding a popular myth – The fact remains that although excise taxes paid on guns and ammunition account for the bulk of PR Act revenues (more than 90% of the total), most guns and ammunition in the U.S. are in fact not purchased for use in hunting. One study revealed that it’s estimated that less than one-quarter of all firearms and ammunition were purchased for hunting, which equates to hunters only contributing about 23% of the “conservation” funds. Through their purchase of guns and ammunition, it’s actually “shooting sports enthusiasts” who are the user group making the majority of contributions to state wildlife agency budgets for conservation.



Another interesting fact is that agencies and programs sometimes use PR funds, whole or in part, for various non-game or endangered species, such as the Kirtland warbler; an iconic species in the birding world that has been brought back from the brink of extinction by using past PR funds. A deeper dig into a variety of species and their habitats that have been managed using PR funds would be an interesting exercise. In fact, that's some of what you're about to consider in this activity where you will take part in a mock exercise in further Re-Modernizing Pittman-Robertson.

ENDURING UNDERSTANDING:

Participants will understand the differences between various PR taxed "user groups" and how those funds are supposedly used for "conservation."

CONTENT OBJECTIVES:

Participants will be able to evaluate the user group sources and relative amounts of PR funding. They will also be able to research, debate and develop a re-modernized amendment to the Pittman-Robertson Act that will ensure the long-term benefits to society, various wildlife species, biodiverse habitats, and sustainable funding for conservation.

LEARNER OBJECTIVES

Participants will use online research to explore the different current and potential sources and societal support for future funding of PR. Participants will use other online research, presentations, and interactive debate to explore various options for amending the PR Act.

PROCESS OBJECTIVES

Depending on group size, Participants will work either alone or in small and large groups to process new information and use evidence to come to conclusions.





MATERIALS NEEDED

(Each group, Each Participant):

- Access to computers and the Internet
- The [Decoding the cycle of Wildlife Conservation](#) video and background information in this “Overview”
- Pre-lesson Worksheet with questions to fill in while watching the video
- Presentation Materials – Smartphone, computer, graphics or video software
- Four (4) Stakeholder Group Worksheets:
 1. Sport Shooters Alliance
 2. PR Fund Wranglers
 3. Hunters for Conservation
 4. Species Protection League

PROCEDURE

Divide the class into four (4) separate groups. These will represent the four stakeholder groups noted above.

Session 1 - Before watching the [Decoding the Cycle of Wildlife Conservation](#) video, or researching the Internet for more background information, share a 10 to 15-minute discussion about what each person knows about where the funding comes from that pays for the North American Model of Wildlife Conservation (wildlife species and their habitats). If anyone in the class has direct experience in hunting or conservation activities, have them share their perspective.

Next, print and distribute the *Pre-Activity Questions Worksheet* (contained further in this PDF). Have one person in the class read the simple instructions. Then have the class watch the video while they fill in the worksheet questions. After viewing the video, review and discuss the answers to the questions as a group. Share both common and varying answers, including why.

Next, decide which of the four groups of students will assume each of the four following stakeholder roles:

- Sport Shooters Alliance
- PR Fund Wranglers
- Hunters for Conservation
- Species Protection League

To conclude Session 1

Print and distribute the four different stakeholder worksheets. Each stakeholder group should read their particular worksheet so the larger group understands the rest of the activity, and share any questions within the group so that everyone understands what will happen in Sessions 2 and 3.

Session 2 - Research & Presentation Development

Each of the four stakeholder worksheets have specific and sometimes different agendas in developing their positions and presentations. The worksheets provide the typical stakeholder “mindset,” instructions and research guidelines for each of the participants to gather and present their positions on how and why they think the PR Act should be “Re-Modernized.”

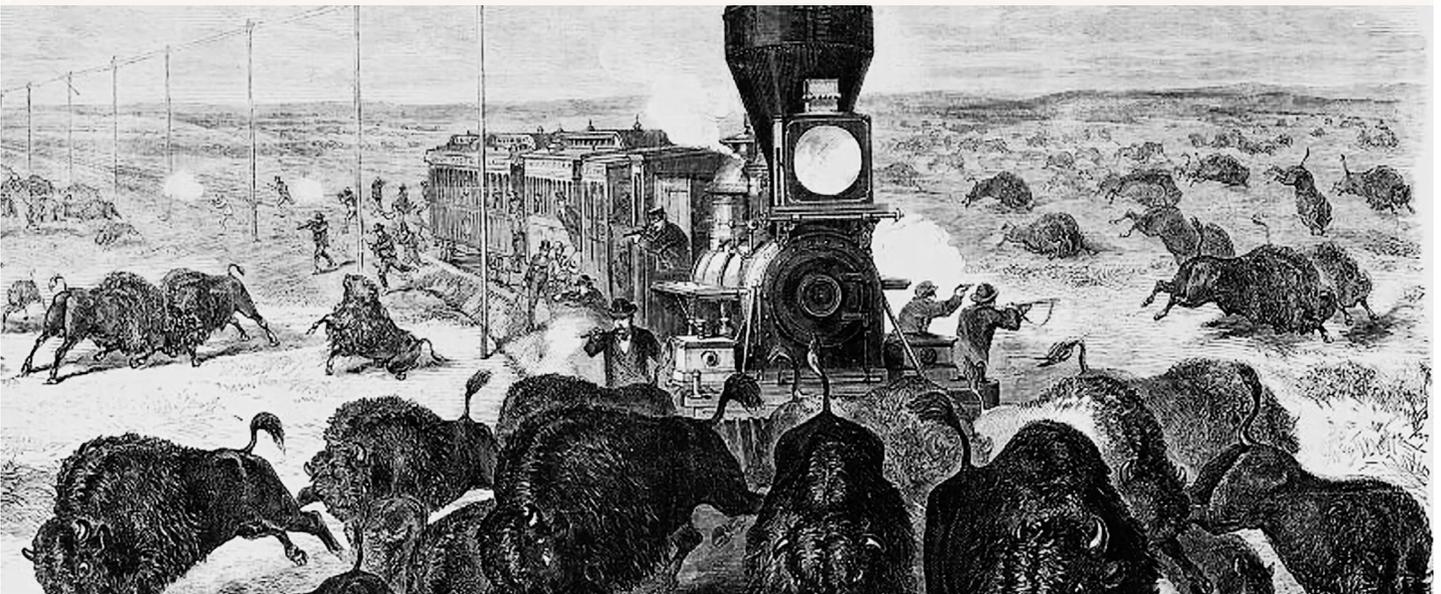
During Session 3, two students from each group will be making their stakeholder group presentations before the other groups. Presentations should be supported by factual research and/or evidence, and presented with at least one form of art or media prepared by the participant (either video, poster, graphs, charts, images, PowerPoint).

Session 3 – Presentations & Debate

In no particular order, each group should present their findings and recommendations for their Re-Modernizing Pittman-Robertson (PR) amendment. Each group should try to limit their presentation to six (6) minutes. The rest of the groups should hold off on questions or “perspective challenges” until after a presentation. Each presentation can be followed by two to three minutes of questions by the other groups.

After all the presentations and questions are complete, the PR Fund Wranglers will guide a group discussion on aspects of Re-Modernizing Pittman-Robertson that are common between the different presentations. Next, the PR Fund Wranglers will guide a group debate on potentially conflicting positions, and try to find common ground on resolving differences for the benefit of society, various wildlife species, biodiverse natural habitats, and sustainable funding for conservation.

Assessment – If desired, students may be informally assessed in respectful discussion with other students, based on their level of participation in group debate and resolution of differences. Students can also be informally assessed by discussing the various answers in their Pre-Lesson Worksheets. If desired, students may be formally assessed on meeting the learning objectives based on how thoroughly they completed their stakeholder worksheets.





Re-Modernizing the Pittman-Robertson Wildlife Restoration Act

Pre-Lesson Video Question Worksheet

Name: _____ Agency/Org: _____ Date: _____

Before watching the [Decoding the cycle of Wildlife Conservation?](#) video, review these questions, then look for and write down your answers while watching the video.

1. What impact can herds of large herbivores have on an ecosystem?
2. How is market hunting different from modern hunting?
3. How does the Pittman-Robertson Act affect conservation?
4. Where does the money come from that pays for wildlife conservation? (who?)
5. What are some of the things that PR funds are used for?
6. List some potential benefits to participating in hunting and shooting sports?
7. What surprised you most about what you learned in watching the video?

Sport Shooters Alliance Worksheet

Name: _____ Agency/Org: _____ Date: _____

Welcome to the PR Fund Wranglers. This worksheet details the typical “mindset” of a member of the PR Fund Wranglers to help you understand the perspective and play the role during the group discussion.

The PR Fund Wranglers manage the \$700 million to \$1 billion a year that comes in from PR taxes. You’re grateful for America’s 19th Century conservation pioneers and the Pittman-Robertson Act, and all that it’s done for America’s conservation programs. Sometimes however, you’re not completely grateful for the fact that your boss took you from the field position as a wildlife biologist and turned you into a bureaucrat for PR fund management. And to top it off, it’s often stressful because you’re torn between doing what’s required by your job, the PR Act requirements, and what you personally think would be best for wildlife conservation and the future health of a planet in peril.

However, be aware that your group, as well as the other groups will likely be influenced by different goals and biases. That’s why it is wise to also consider other perspectives and possibly, what might be best for those environmental citizens that don’t have a voice in what humans decide is “best.”

As a trained scientist and PR Fund manager, you also realize how much our world has changed in the past 85 years since PR was enacted. The past threats of market hunting and lack of conservation rules/agencies no longer jeopardize today’s healthy wildlife populations. Populations are so healthy in fact, that keystone herbivores such as deer and elk in many areas actually threaten biodiversity. Some days you wonder if “wildlife conservation” has tipped the scales too far in favor of big game that can be hunted recreationally. Then there’s the big kicker, that since 1937 when PR was enacted, the human population has tripled in America, resulting in the reshaping of our natural landscapes.

So when you hear rumors that various stakeholder groups affected by PR taxes want to “re-modernize PR” to better address the challenges of our changing and shrinking wild environments, you listen with both an attentive ear and an open mind. Maybe human-induced mass extinction is a fact of life on a planet dominated by an expanding and unsustainable biomass of humans, but maybe re-modernizing PR can somehow help save what’s left of our natural world.

Your goal is to preserve the key foundations of PR, yet create options to possibly Re-Modernize the Pittman-Robertson Wildlife Restoration Act for the future of humanity, wildlife and Planet Earth. And considering that various stakeholders will likely want what’s most advantageous for their special interests, you face a very real challenge in “wrangling” their often opposing and sometimes narrow agendas.

On a separate sheet of paper or on your computer, develop your own Re-Modernizing the Pittman-Robertson Wildlife Restoration Act that should include:

- Reasons why the majority of PR dollars should remain dedicated to traditional “wildlife conservation” programs. List the core principles of PR that should remain while considering what might be changed to address the needs of a changing world.
- Because you know that different stakeholders think they are disproportionately paying for PR which all of society ultimately benefits from, consider innovative funding mechanisms using forward thinking for the needs of the planet.
- You know that granting PR dollars for research to chart the future is critical yet you also know that some interest groups want to limit research funding. Be prepared to offer your scientific voice and reasoning for why research needs to still be funded by PR dollars.
- All of this inequity proves that you need a more powerful voice in where your PR funds are spent. If AFWA and FWS (those who benefit the most from your sport shooters PR taxes) decide how to spend your PR money, shouldn't you have a louder voice and vote on how it's spent? Of course. But how?
- Because money talks, and complaining walks, you need to consider how to come up with an innovative funding mechanism similar to PR that reasonably taxes everything used by those who cherish and use the outdoors, and reducing your percent so that everyone pays their fair share for America's conservation programs. What about all the companies that use USFS and BLM lands for profit and negatively impact wildlife habitat? What do cattle and sheep grazers that make money from grazing livestock on federal lands pay into PR?

Select two from your group who will be presenting your position before the other stakeholder groups in Session 3. Use a combination of passion with facts, presented with some form of art or media to make your points. When creating your pitch, also be aware of what other stakeholders may want in their Re-Modernizing the Pittman-Robertson Wildlife Restoration Act and explore creative ways to use that to your advantage.



Hunters for Conservation Worksheet

Name: _____ Agency/Org: _____ Date: _____

Welcome to the Hunters for Conservation. This worksheet details the typical “mindset” of a member of Hunters for Conservation to help you understand the perspective and play the role during the group discussion.

You’re mighty grateful for America’s 19th Century conservation pioneers and the Pittman-Robertson Act, and all that it’s done for America’s conservation programs in the past 85 years. Facts don’t lie. Most iconic wildlife populations across the country are healthier now than they’ve been in the past 100 years. And the voices of hunters, and their PR taxes plus license dollars, have made that possible. So, you can stand tall when someone says, “Hunters pay for conservation.”

However, be aware that your group, as well as the other groups will likely be influenced by different goals and biases. That’s why it is wise to also consider other perspectives and possibly, what might be best for those environmental citizens that don’t have a voice in what humans decide is “best.”

You’ve heard unsettling rumors from the “recreational shooting sports” groups that they feel you’re taking all the credit for “paying for conservation,” when they actually disproportionately pay the majority of PR funds. You’ve also caught wind of a new group who want to divert more traditional PR wildlife funds to restoring endangered and threatened species. From your perspective, it’s not that big of a deal if a few bugs and songbirds disappear, it’s just part of nature’s process of evolution. After all, human-induced mass extinction is a fact of life on a planet dominated by an expanding and unsustainable biomass of humans. But you do believe that one of the few things we’ve done right is that the wildlife community and hunters have pumped billions and new life into America’s wildlife populations, particularly game species.

Your goal is to develop solid and valid reasons to Re-Modernize the Pittman-Robertson Wildlife Restoration Act; reasons that recognize Hunters for Conservation and all that they represent as leaders in developing and supporting the North American Model of Wildlife Conservation, which benefits all of society.

Though that sounds simple enough, the challenge you face is that other stakeholders are making rumblings that the PR Act needs an overhaul. For you, this seems like a non-issue, “if it ain’t broke, don’t fix it,” if you will. And you believe that if America’s wildlife could speak, millions of furry and feathered voices would yell, “Yeah Dude, Don’t Fix It!” But you might be alone in that sentiment, so keep those other perspectives in mind as you create your Re-Modernized plan for the PR Act.

On a separate sheet of paper or on your computer, develop your own Re-Modernizing the Pittman-Robertson Wildlife Restoration Act that should include:

- Reasons why the majority of PR dollars should be dedicated to traditional “wildlife conservation” programs with clear limits on funding special interest nature programs that deal with songbirds, insects and a handful of imperiled species. Without the voices and efforts of hunters, there wouldn’t be a PR Act funding conservation for all Americans. So, let’s keep that focus in the spotlight.
- If some stakeholders think hunters aren’t paying enough, then you need to consider how other user groups that enjoy wildlife and wildlife habitat in different ways should become part of PR. Why aren’t birding binoculars and bird seed taxed as birders enjoy the benefits of 85 years of wildlife habitat improvement? Research and list other nature or wildlife user groups, or nature gear manufactures and the ways they might also get on the PR Act band wagon to help pay their share for conservation.
- You’ve also just discovered that millions of PR dollars actually get granted back to wildlife agencies and orgs to pay for “studying the effectiveness” of their wildlife programs. This doesn’t exactly sit well with you because you believe those funds should be used elsewhere. Make recommendations and reasons for dedicating limits on research and more on programs that actually improve, restore or preserve wildlife habitat.
- Because money talks, and complaining walks, you need to consider how to come up with an innovative funding mechanism similar to PR that reasonably taxes everything used by those who cherish and use the outdoors, so that everyone pays their fair share for America’s conservation programs. What about all the companies that use U.S.Forest Service and Bureau of Land Management lands for profit while negatively impacting wild life habitat? You’ve hunted BLM lands that were grazed to the dirt by sheep and the real wildlife got starved out. Shouldn’t they pay into PR? Or maybe diesel vehicle manufacturers making billions while their byproducts (CO2 and other climate influencers) further injure wild ecosystems on Planet Earth with climate change. You get the idea.

Select two from your group who will be presenting your position before the other stakeholder groups in Session 3. Use a combination of passion with facts, presented with some form of art or media to make your points. When creating your pitch, also be aware of what other stakeholders may want in their Re-Modernizing the Pittman-Robertson Wildlife Restoration Act and explore creative ways to use that to your advantage.



Species Protection League Worksheet

Name: _____ Agency/Org: _____ Date: _____

Welcome to the Species Protection League. This worksheet details the typical “mindset” of a member of the Species Protection League to help you understand the perspective and play the role during the group discussion.

You’re somewhat grateful for America’s 19th century conservation pioneers and the Pittman-Robertson Act, but you feel that the whole process has fallen sadly short on the true meaning of “conserving ALL of our treasured wildlife resources.” However, be aware that your group, as well as the other groups will likely be influenced by different goals and biases. That’s why it is wise to also consider other perspectives and possibly, what might be best for those environmental citizens that don’t have a voice in what humans decide is “best.”

Fish and game agencies boast that their “North American Model of Wildlife Conservation” is good for everyone, when in fact they mostly manage a handful of big game species in order to maintain sustainable limits for the next hunting season. But this leaves many other species in the dust so to speak with little to no protective measures.

You believe that the true purpose of the Pittman-Robertson Act is to put our wildlife resources first, meaning putting forth actions to save the imperiled pollinators, or the 30% of America’s songbirds that have been expunged from our landscapes over the past 40 years. Focusing all funds and efforts on a handful of large game species does not benefit ecosystems, it actually creates further imbalances. Your goal is to create sustainable ecosystems where all species, big and small, are looked after.

So your goal is to develop solid and valid reasons to Re-Modernize the Pittman-Robertson Wildlife Restoration Act to hopefully balance the scales so that ALL of America’s wildlife is managed for future generations and not mostly next year’s duck and deer seasons.

However, the challenge you face is that other stakeholders either think that everything’s okay as is, or that the lobbied outcry for more game species will somehow drown out the voices vying for the billions of pollinators, songbirds, and amphibians that teeter on the brink of extinction within the next decade.

On a separate sheet of paper or on your computer, develop your own Re-Modernizing the Pittman-Robertson Wildlife Restoration Act that should include:

- Why the North American Model of Wildlife Conservation is sadly skewed to mostly benefit wildlife agencies and hunters, leaving billions of wonderful wild creatures that enrich the lives of countless more Americans with little to no management resources.
- Why the voice and conservation principles of the Species Protection League should be heard. It finally places a much greater societal and resource value on ALL wildlife species, especially imperiled species, instead of the short-term benefits of the dwindling 7% of humans who hunt.
- If more PR funds can be focused on conservation that helps ALL wildlife species, then the issues of dwindling bio diversity and even climate change might fix themselves when the natural world finally has a chance to heal itself and come into a homeostasis balance.
- Maybe your research can reveal that the 77% of PR Funds from shooting sports, not related to hunting, would show that they care about whether or not America's children and grandchildren can still see a meadowlark or monarch someday.
- Because money talks, and complaining walks, you need to consider how other special interest groups, or society in general, cares about the future health of all wild things. Then come up with a funding mechanism similar to PR that relates to taxing everything used by those who cherish the outdoors.
- And because you're a special interest whose voice is easily drowned out by the entrenched wildlife establishment, consider what legal intervention opportunities exist in the PR Act and its amendments.

Select two from your group who will be presenting your position before the other stakeholder groups in Session 3. Use a combination of passion with facts, presented with some form of art or media to make your points. When creating your pitch, also be aware of what other stakeholders may want in their Re-Modernizing the Pittman-Robertson Wildlife Restoration Act and explore creative ways to use that to your advantage.





Educational Partners:



PR Fund Wranglers Worksheet

Name: _____ Agency/Org: _____ Date: _____

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However, be aware that your group, as well as the other groups will likely be influenced by different goals and biases. That’s why it is wise to also consider other perspectives and possibly, what might be best for those environmental citizens that don’t have a voice in what humans decide is “best.”

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So when you hear rumors that various stakeholder groups affected by PR taxes want to “re-modernize PR” to better address the challenges of our changing and shrinking wild environments, you listen with both an attentive ear and an open mind. Maybe human-induced mass extinction is a fact of life on a planet dominated by an expanding and unsustainable biomass of humans, but maybe re-modernizing PR can somehow help save what’s left of our natural world.

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- Reasons why the majority of PR dollars should remain dedicated to traditional “wildlife conservation” programs. List the core principles of PR that should remain while considering what might be changed to address the needs of a changing world.
- Because you know that different stakeholders think they are disproportionately paying for PR which all of society ultimately benefits from, consider innovative funding mechanisms using forward thinking for the needs of the planet.
- You know that granting PR dollars for research to chart the future is critical yet you also know that some interest groups want to limit research funding. Be prepared to offer your scientific voice and reasoning for why research needs to still be funded by PR dollars.

Select two from your group who will be presenting your position before the other stakeholder groups in Session 3. Use a combination of science with facts, presented with some form of art or media to make your points. When creating your pitch, also be aware of what other stakeholders may want in their Re-Modernizing the Pittman-Robertson Wildlife Restoration Act and explore creative ways to use that to your advantage.

Special Note: Unlike the other stakeholders, you are the “wrangler” in this activity. So, your extra job is to wrangle stakeholder interactions and take charge of managing the presentations and debate portions of the activity. May the force... of nature... be with you.





EDUCATIONAL STANDARDS

CCSS.ELA-LITERACY.RI.7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
CCSS.ELA-LITERACY.W.7.2	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.W.7.1	Write arguments to support claims with clear reasons and relevant evidence.
CCSS.ELA-LITERACY.W.7.1.A	Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.
CCSS.ELA-LITERACY.W.7.1.B	Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
CCSS.ELA-LITERACY.W.7.1.C	Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence.
CCSS.ELA-LITERACY.W.7.1.D	Establish and maintain a formal style.
CCSS.ELA-LITERACY.W.7.1.E	Provide a concluding statement or section that follows from and supports the argument presented.
CCSS.ELA-LITERACY.W.7.2.A	Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
CCSS.ELA-LITERACY.W.7.2.B	Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.
CCSS.ELA-LITERACY.W.7.2.C	Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.
CCSS.ELA-LITERACY.W.7.2.D	Use precise language and domain-specific vocabulary to inform about or explain the topic.
CCSS.ELA-LITERACY.W.7.2.E	Establish and maintain a formal style.
CCSS.ELA-LITERACY.W.7.2.F	Provide a concluding statement or section that follows from and supports the information or explanation presented.
CCSS.ELA-LITERACY.W.7.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
CCSS.ELA-LITERACY.W.7.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.SL.7.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.



CCSS.ELA-LITERACY.SL.7.1.C

Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.

CCSS.ELA-LITERACY.SL.7.1.D

Acknowledge new information expressed by others and, when warranted, modify their own views.

8th Grade

Key Ideas and Details:

CCSS.ELA-LITERACY.RI.8.1

Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RI.8.2

Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.

CCSS.ELA-LITERACY.W.8.1

Write arguments to support claims with clear reasons and relevant evidence

CCSS.ELA-LITERACY.W.8.1.A

Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.

CCSS.ELA-LITERACY.W.8.1.B

Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.

CCSS.ELA-LITERACY.W.8.1.C

Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.

CCSS.ELA-LITERACY.W.8.1.D

Establish and maintain a formal style.

CCSS.ELA-LITERACY.W.8.1.E

Provide a concluding statement or section that follows from and supports the argument presented.

CCSS.ELA-LITERACY.W.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.W.8.2.A

Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.8.2.B

Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.

CCSS.ELA-LITERACY.W.8.2.C

Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.

CCSS.ELA-LITERACY.W.8.2.D

Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-LITERACY.W.8.2.E

Establish and maintain a formal style.

CCSS.ELA-LITERACY.W.8.2.F

Provide a concluding statement or section that follows from and supports the information or explanation presented.

CCSS.ELA-LITERACY.W.8.3

Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.



CCSS.ELA-LITERACY.W.8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
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.W.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.SL.8.1.A	Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
CCSS.ELA-LITERACY.SL.8.1.C	Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
CCSS.ELA-LITERACY.SL.8.1.D	Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

9-10th Grades

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.9-10.2	Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
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.9-10.1.A	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.
CCSS.ELA-LITERACY.W.9-10.1.B	Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.
CCSS.ELA-LITERACY.W.9-10.1.C	Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
CCSS.ELA-LITERACY.W.9-10.1.D	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.



CCSS.ELA-LITERACY.W.9-10.1.E	Provide a concluding statement or section that follows from and supports the argument presented.
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.9-10.2.A	Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
CCSS.ELA-LITERACY.W.9-10.2.B	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
CCSS.ELA-LITERACY.W.9-10.2.C	Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
CCSS.ELA-LITERACY.W.9-10.2.D	Use precise language and domain-specific vocabulary to manage the complexity of the topic.
CCSS.ELA-LITERACY.W.9-10.2.E	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
CCSS.ELA-LITERACY.W.9-10.2.F	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
CCSS.ELA-LITERACY.W.9-10.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
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.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.9-10.1.A	Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
CCSS.ELA-LITERACY.SL.9-10.1.C	Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
CCSS.ELA-LITERACY.SL.9-10.1.D	Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
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.



11-12th Grades

- 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.11-12.2** Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
- 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.11-12.1.A** Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.
- CCSS.ELA-LITERACY.W.11-12.1.B** Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.
- CCSS.ELA-LITERACY.W.11-12.1.C** Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- CCSS.ELA-LITERACY.W.11-12.1.D** Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- CCSS.ELA-LITERACY.W.11-12.1.E** Provide a concluding statement or section that follows from and supports the argument presented.
- 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.11-12.2.A** Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- CCSS.ELA-LITERACY.W.11-12.2.B** Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- CCSS.ELA-LITERACY.W.11-12.2.C** Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.



CCSS.ELA-LITERACY.W.11-12.2.D	Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.
CCSS.ELA-LITERACY.W.11-12.2.E	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
CCSS.ELA-LITERACY.W.11-12.2.F	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
CCSS.ELA-LITERACY.W.11-12.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
CCSS.ELA-LITERACY.W.11-12.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.W.11-12.7	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.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.11-12.1.A	Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
CCSS.ELA-LITERACY.SL.11-12.1.C	Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.
CCSS.ELA-LITERACY.SL.11-12.1.D	Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
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-LS2-3.	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. [Clarification Statement: Emphasis is on describing the conservation of matter and flow of energy into and out of various ecosystems, and on defining the boundaries of the system.] [Assessment Boundary: Assessment does not include the use of chemical reactions to describe the processes.



- 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.]

Science Addresses Questions About the Natural and Material World

- Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes. (MS-LS2-5)

Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.

- Construct an explanation that includes qualitative or quantitative relationships between variables that predict phenomena. (MS-LS2-2)

Engaging in Argument from Evidence

Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).

- Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-LS2-4)
- Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. (MS-LS2-5)

- 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-LS2-2.** Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. [Clarification Statement: Examples of mathematical representations include finding the average, determining trends, and using graphical comparisons of multiple sets of data.] [Assessment Boundary: Assessment is limited to provided data.]



- HS-LS2-3.** Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. [Clarification Statement: Emphasis is on conceptual understanding of the role of aerobic and anaerobic respiration in different environments.] [Assessment Boundary: Assessment does not include the specific chemical processes of either aerobic or anaerobic respiration.]
- HS-LS2-4.** Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem. [Clarification Statement: Emphasis is on using a mathematical model of stored energy in biomass to describe the transfer of energy from one trophic level to another and that matter and energy are conserved as matter cycles and energy flows through ecosystems. Emphasis is on atoms and molecules such as carbon, oxygen, hydrogen and nitrogen being conserved as they move through an ecosystem.] [Assessment Boundary: Assessment is limited to proportional reasoning to describe the cycling of matter and flow of energy.]
- HS-LS2-5.** Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. [Clarification Statement: Examples of models could include simulations and mathematical models.] [Assessment Boundary: Assessment does not include the specific chemical steps of photosynthesis and respiration.]
- 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.]