CONSERVE WILDLIFE
FOUNDATION OF NEW JERSEY

SPECIES ON THE EDGE 2.0

HIGH SCHOOL LEARNING CHALLENGE 2026

Contest Overview

Are You Ready to Make a Difference?

We know you can! The **Conserve Wildlife Foundation of New Jersey** invites all students in New Jersey, grades 9–12, to participate in the **2026 Species on the Edge 2.0 Challenge**. This challenge will help students learn how to protect and preserve rare and at-risk wildlife that live, breed, and migrate through New Jersey. You may be surprised to learn how many species are currently “on the edge” and endangered here in the nation’s most densely populated state. This fun and engaging project allows students to collaborate with peers as they journey together to create real-world solutions to help keep wildlife safe.

Students will work in teams and explore several different scenarios while selecting a role such as research scientist, citizen scientist, engineer, policy maker, investigative reporter, college professor, director of a non-profit organization, or environmental artist. Students will create a video to raise awareness and educate the public about endangered species and their environments. This contest also helps students develop skills in **Science, Technology, Engineering, Art, and Mathematics (STEAM),** environmental advocacy, design thinking, social and emotional learning, teamwork, critical thinking, and project management. Entry to the contest is **free** and offers students and facilitators the opportunity to win **cash prizes**.

Student Prizes
1st Place – $2,000
2nd Place – $1,000
3rd Place – $500

Facilitator Prizes
1st Place – $750
2nd Place – $500
3rd Place – $250

Redesigned and managed by EMPOWER TRIP

How to Participate

Students must complete the online entry form by **March 31, 2026**:
http://www.conservewildlifenj.org/education/edge2.0/

Completed videos must be submitted by **May 15, 2026**.

About the Conserve Wildlife Foundation of New Jersey

The **Conserve Wildlife Foundation of New Jersey (CWF)** works to protect rare and at-risk wildlife through field research, habitat restoration, environmental education, and community engagement.

For over twenty-five years, **CWF** has played a leading role in the dramatic recovery of species such as the bald eagle, peregrine falcon, and osprey. Our work supports more than 40 imperiled species through extensive field research while educating over 8,000 students and 3,000 adults each year and engaging a community of more than 12,000 supporters. **Empower Trip LLP,** authors and educational consultants, reimagined and redesigned the **Species on the Edge 2.0 Challenge** in 2023 and now proudly manages its execution and growth in partnership with CWF.

Why Participate?

The **Species on the Edge 2.0 Contest** is designed for students to investigate and understand what is happening to endangered species in New Jersey and discover the reasons why they are in jeopardy. It is a way for students to be part of the solutions needed to help sustain and preserve New Jersey's ecosystems. It is also a way for students to learn how to identify problems, create public awareness, and create real-world solutions to help keep endangered species from further slipping away. This challenge allows students the flexibility to select from several scenarios and assume the role of a professional who will contribute to protecting endangered species. By doing this, students will benefit in the following ways:

- Gain an understanding of endangered species in NJ and have the opportunity to contribute to a real-world solution that will be showcased throughout the state.
- Utilize basic information regarding climate change and other human actions that put

wildlife in danger.

- Brainstorm, identify, and problem-solve to find solutions through the lens of empathy and caring for species and people.
- Work collaboratively in teams, with teacher facilitators, and with expert mentors, including renowned CWF biologists.
- Discover career pathways that contribute to protecting wildlife.
- Participate as citizen scientists, playing a role in their community to protect wildlife and the habitats on which they depend.
- Contribute to mitigation strategies that help offset the impacts of climate change and other environmental threats.
- Create positive and uplifting messages that can be shared through media of their choice.
- Receive a digital badge for participating.
- Have a chance to win cash prize money.

Guidelines

1. All participants must be New Jersey high school students. Students select a team of no less than two students and as many as six students. Collaboration and teamwork are important components of this challenge. Working together brings more solutions to the table. Students are responsible for acting appropriately and respectfully to other team members.
2. The challenge is free to all students. Students are asked to complete the online entry form by **March 31, 2026,** in order to be officially entered. By submitting the completed entry form, it indicates that you are committing to help endangered species. A great first step!
3. Conserve Wildlife Foundation retains the right to all entries, and students will be required to have a parent or guardian sign a photo release form.
4. Student teams will select a facilitator or mentor. The facilitator can be a teacher at your school, a parent or business leader in your community, or a leader of a club or organization. The individual selected serves as a facilitator who can provide helpful information and guidance, but is not to do the challenge—only guide from the side. The facilitator is not a team member. This is a student-led challenge. If students are having difficulty finding a facilitator, please contact CWF to receive help with this.
5. Each team will create and submit a short digital video, shared via a private link, describing their species, problems, and their solutions. The video may be anywhere between 3 and 7 minutes in length. Videos may include text, photographs, artwork,

poems, etc. regarding your project.

6. Students should read this document completely so they have an understanding of the challenge before beginning.
7. Students must follow their school district policies and guidelines, including those related to the appropriate and responsible use of artificial intelligence (AI).
8. Students must receive written permission from owners to use their images, music, and clips. Please do not use content that you do not own or have not asked permission to use. When you have permission to use content, please include the following disclaimer: “I hereby declare that I do not own the rights to this image, music, clip, etc. All rights belong to the owner (Owner’s Name and link to original source of content).”
9. Using intimidation, harassment, abuse, discrimination, derogatory or demeaning speech, violence, violent language, threat of violence, or symbols directed against another person or group of people is prohibited. Submissions that do this will be immediately disqualified.
10. Select one scenario provided in the information in this document. This will give you an opportunity to select the situation that you would like to address with your team. Each scenario provides limited guidance and suggestions for a course of action; however, your team has the freedom to go beyond the provided suggestions and create your own items and actions you would like to accomplish.
11. Become familiar with the scoring rubric. This will provide you with the topics the judges will be looking at when scoring your final solutions/submission.
12. Submit your challenge presentation and solutions no later than **May 15, 2026**, via a YouTube link.
13. Submissions will be judged, and the top ten candidates will move on to the final judging round. The top three winners will be selected after the final judging and be notified via email.
14. Winners will be announced by **June 1, 2026**. Winners are strongly recommended to attend the awards ceremony (date will be announced.)
15. All submissions should include appropriate subject matter and align with CWF’s mission and goals. **Avoid naming any specific agency, organization, company, individual, etc. as being responsible for the endangerment of the species** (Submissions that do this will be immediately disqualified.)

Below is a sampling of endangered and threatened species in NJ that you can investigate:

- bog turtle
- bobcat
- red knot
- piping plover
- Indiana bat
- timber rattlesnake
- eastern tiger salamander
- American kestrel
- Atlantic loggerhead sea turtle
- Pine Barrens Treefrog

- blue-spotted salamander
- northern long-eared bat

You may select any animal listed as endangered or threatened in the state of New Jersey. Be sure to confirm species status at https://dep.nj.gov/njfw/wildlife/endangered-threatened-and-special-concern-species/.

Background Information

Human action is causing the earth's climate to change faster now than at any point in the history of modern civilization. New Jersey is not spared from the effects of climate change. We are experiencing sea level rise, beach erosion and other environmental issues. Climate change is affecting wildlife in New Jersey in various ways, with both short-term and long-term impacts on ecosystems and individual species. Climate change is not the only issue that threatens wildlife. Species are also impacted by habitat loss, invasive and exotic species, pollution, illegal trapping and poaching, and accidental deaths. So why should we care? Humans are also in harm's way from climate change, pollution, and other human-created technologies that have consequences to our environment and our health. However, our most sensitive ecosystems and the species that live there will feel the effects and stand to suffer at no fault of their own. By helping the species on the edge we can learn how to help ourselves rethink societal unsustainable actions, and how to find solutions to climate change, human actions, and other environmental hazards.

When planning, consider the following:

Habitat range: As temperatures rise, some species are moving to find suitable habitats. This can lead to changes in the distribution of wildlife in New Jersey and place them in unfamiliar areas, and impact other animals that live in that area through unbalanced ecosystems.

Migration patterns: Climate change can affect the timing and routes of animal migrations. Birds, for example, may alter their migration patterns in response to changes in temperature and the availability of food.

Impact on food sources: Changes in temperature and precipitation patterns can affect the abundance and distribution of plant and animal species that serve as food sources for wildlife. This can impact the species that depend on these resources.

Sea level rise: New Jersey has a significant coastline, and rising sea levels due to

climate change can lead to the loss of coastal habitats. This impacts species that rely on these areas for breeding, feeding, and shelter.

Adaptation challenges: Some species may struggle to adapt to the rapidly changing climate, particularly those with specialized habitat or feeding requirements. This can lead to population declines or local extinctions.

Impact from the human-built environment and pollution: Wildlife may experience habitat destruction, fragmentation, pollution, and disruptions like noise and light pollution. Buildings, bridges, roads, pipelines and other human built structures could impede migratory pathways of certain species. Pollution from industry and transportation may create dangerous byproducts that end up in the ecosystems where wildlife lives and can harm them in many ways.

Changes in seasonal occurrences: Climate change can influence the timing of natural events, such as the timing of flowering, hibernation, or breeding. This can create mismatches between the timing of these events and the availability of resources, impacting species that depend on specific seasonal cues.

Increased frequency of extreme weather events: New Jersey is experiencing more frequent and intense weather events, including hurricanes and storms. These events can lead to habitat destruction, flooding, and disruptions to wildlife populations.

Increased stress and disease: Climate change can lead to increased stress on wildlife populations, making them more susceptible to diseases. Changes in temperature and precipitation can increase the frequency of disease among wildlife.

Note: Although the species listed are wildlife, there are several plant species that are endangered as well. Keep that in mind when taking on this challenge. Endangered plants are not part of this challenge, but know that the consequence of human progress goes beyond wildlife.

Scenarios

In this project-based learning challenge, one individual on your team will pretend that they are the person identified in the scenario that you have selected. For example, if you select the scenario of the Investigative Reporter, one individual on your team will play an investigative reporter in your video. Your final video will be submitted as your entry to the **Species on the Edge 2.0** challenge. Other members of your team may

assume another support role on the team. They may also be featured in your video, or may be a behind-the-scenes member who supports the team, offers research and findings, or even does the video production, etc. You may also have others in your video, including experts in the field (for example, an environmental biologist being interviewed by the investigative reporter in your video). Each scenario below details what should be included in your final video, but it does not limit you, and you should use your own creativity and include anything you would like to make the best possible production you decide to undertake. Your group will select **ONE** of the below scenarios for the challenge:

Scenario 1: The Investigative Reporter

One way to help protect endangered species and the environments in which they live is to find out the facts about the issues behind their endangerment. These issues can then be communicated to the public to create awareness. Imagine you and your team work for a local media/news company. The executive director of the company has a special interest in endangered species and would like your team to take on the task of doing a story on one of the endangered species in NJ. You should gather all the information you can find about why these species are at risk and report it to the public. You should provide tips for what the public can do to help. Your story can be in a typical format like a segment that you would view on a news program. You can include video or photographs, artistic renderings, maps, etc., in your news segment.

Your team may consist of any of the following:

- The investigative reporter
- Research assistant
- Camera-operator
- Technology specialist
- Others at your discretion

Scenario 2: The Research Scientist

A research scientist is someone who systematically gathers information and uses research and evidence. They make hypotheses, test them, analyze data, share their findings, and draw conclusions to provide suggested courses of action. The Conserve Wildlife Foundation of New Jersey (CWF) is requesting that as a research scientist, you take on an investigation of a NJ endangered species. They are asking you to identify the dangers to the species and design a plan to help protect and even reverse the unfortunate circumstances this species is experiencing. Your video as the research scientist will include a review of your findings and will be presented at a local conference for environmental educators.

Your team may consist of any of the following:

- The research scientist
- Data analyst
- Media specialist
- Others at your discretion

Scenario 3: The College Professor

As a professor of a local college, your department chair has asked you to create a presentation on an endangered species and deliver it to a group of individuals consisting of community members, legislators, and teachers who reside in the local area. You are to identify the threats to the species and to design a presentation for the protection of the species. Your presentation should include a call-to-action for the viewers. Your video will be of your presentation to the group and should relay detailed facts about the species, an explanation of the threats, your plan, and your call to action.

Your team may consist of any of the following:

- The professor
- The professor's teaching assistant
- Audio-visual producer
- Others at your discretion

Scenario 4: The Engineer

Some engineering and technological advancements have consequences if the environment and people are not considered in the process. In the case of endangered species, many past and current technologies and engineering improvements have had unintended consequences on the environment and have placed some wildlife and their ecosystems in harm's way. Keep in mind, not all things that humans invent are good for our environment. Unintended outcomes place us all at risk. A town in New Jersey has hired your engineering company because they are planning to build a new shopping mall and have a local species living in the area that may require protection. They do not want to have unintended consequences on the species' population. They are asking you to design an engineering plan to protect the species. Your video will include a presentation to the local government officials about the species, potential causes of endangerment from building the shopping mall, and a design plan to protect the species. Your video can include examples of other places in New Jersey that have built shopping malls and other buildings, or construction projects that have had unintended consequences to wildlife populations in New Jersey.

Your team may consist of any of the following:

• The primary engineer (you decide what type of engineering fits your solution)
• Environmental specialist
• Videographer
• Others at your discretion

Scenario 5: The Policy Maker

Policy makers play a crucial role in protecting endangered species, conserving biodiversity, and ensuring sustainable management. One of their roles includes enacting legislation and regulations and assisting in assuring enforcement and compliance. As a policy maker in New Jersey, a community activist has informed you that there is a species that is in immediate danger and requires protection. Develop a legislative platform where you address the concerns and implement strategies including policies to conduct scientific research, monitoring, and data analysis. Include an assessment of the effectiveness of conservation measures and formulate a plan that outlines specific actions, goals, and timelines for recovering the identified endangered species population and habitat. Your video presentation should include the presentation of your plan at a local town hall meeting in front of community members.

Your team may consist of any of the following:
• The policy maker
• Research assistant
• Public relations manager
• Others at your discretion

Scenario 6: The Environmental Artist

As an environmental artist, you are planning an exhibit to increase awareness and educate citizens in your community about how to protect a specific endangered species. By combining artistic creativity with educational content and community engagement, you will create a compelling exhibit that not only showcases the beauty of endangered species but also highlights the importance of conservation and collective action. Your presentation will include a narrated tour (walking or digital) of your exhibit including any of the following works of art depicting the endangered species and your solution toward mitigating its threats: interactive installations (replicas of endangered habitats), up-cycled sculptures using recycled materials or natural resources, audio-visual presentations, photography and artwork, data visualization, and/or interactive digital platforms or mobile applications that allow visitors to explore habitats through virtual or augmented reality and discover ways to contribute to conservation efforts.

Your team may consist of any of the following:

- The environmental artist
- Ecologist
- Video production manager
- Others at your discretion

Scenario 7: The Director of Non-Profit Organization
You are a director of a non-profit organization who advocates for the protection of endangered species. Your role includes driving conservation efforts, fostering collaboration, mobilizing resources and fundraising, advocating for change, and ensuring the foundation's success in protecting and preserving endangered species for future generations. Your board of directors has asked you to host an event to bring awareness and fundraise for one specific species of your choice. They are asking that you identify, cultivate, and secure funding opportunities, grants, donations, and sponsorships to support the foundation's conservation efforts and operational needs. Your video will include a presentation to the board including the research about the species, strategies for preservation, and a detailed explanation of the event that you will host to promote public awareness, education, and engagement.

Your team may consist of any of the following:
- The director of the non-profit organization
- Wildlife biologist
- Public relations manager
- Others at your discretion

Scenario 8: The Citizen Scientist Volunteer
Volunteer citizen science projects are collaborations between scientists and interested members of the public. As a citizen scientist, you play a valuable role in protecting endangered species by actively participating in scientific research, monitoring, and conservation initiatives. You have determined that the population of a local species in your community is rapidly declining. While you may not have formal scientific training, you plan to contribute your time, effort, and observations to gather data, raise awareness, and support this species' recovery. Your video will consist of the presentation of your campaign to voice concerns, provide facts about the endangered species, and detail a plan of protection at a local planning board meeting. Be sure to include data and facts that you have collected and any research-based evidence that supports your plan.

Your team may consist of any of the following:
- The citizen scientist volunteer

- Environmental advocate
- Community liaison
- Others at your discretion

Scenario 9: Endangered Species Career Path of Your Choice
If you do not select one of the above scenarios, you may identify an alternative career related to endangered species. Please make sure that your video clearly specifies what the career role is that you are assuming and includes information regarding the species, the dangers to the population, and recommendations for the recovery of the species. Create a compelling and impactful video about the species and its threats, and propose a comprehensive plan to protect the endangered species and their habitats.

Design Brief

Your mission is to design a 3–7 minute video where one member of your team plays the role you selected in your scenario. For example, if you selected the role of professor, your video will include you acting as if you were a professor, presenting to the community members, policy makers, legislators, and teachers. Your video should include information about your species, the specific threats to its population, and your solution to assisting the species' recovery. Other members of your team may play a role in the video, or you may include interviews with experts, or other characters to support the story you are telling in the video. Be sure to identify and use methodology and recommendations that can be supported by scientific research and data, and include information about how the community can keep the population safe, and what specific actions can be done to address any environmental or other issues that may be impacting the population. Also include how the community can plan for the future protection of the species. Remember to avoid naming any specific agency, organization, company, individual, etc. as being responsible for the endangerment of the species. (Submissions that do this will be immediately disqualified.)

Essential Questions

What does your team know and need to know about the situation?

What resources can your team use to find out more information?

What role will each team member assume? Is there a team leader and if so, who is

assuming that role? If there is no team leader, how will you make sure you are reaching your goals?

Who will your team collaborate with? Who can you seek out as subject matter experts/mentors?

What did your team discover?

What media or technologies will your team use to collect and share your findings and solutions?

How will your team present your findings and solutions?

Project Development Steps

1. Keeping in mind the role selected, students should thoroughly research the species in question, its habitat, threats, and current conservation status to gain a comprehensive understanding.
2. Collaborate with experts and seek guidance from conservationists, scientists, local organizations, or experts who can provide insights, resources, and support for the project.
3. Identify the primary threats facing the species such as habitat loss, pollution, climate change, poaching, or other factors.
4. Collaboratively brainstorm and develop innovative solutions to address the identified threats. This could involve habitat restoration, community education, policy advocacy, fundraising for conservation efforts, etc. (Reminder: Avoid naming any specific agency, organization, company, individual, etc. as being responsible for the endangerment of the species. Submissions that do this will be immediately disqualified.)
5. Create a detailed action plan outlining specific steps, responsibilities, timelines, and resources needed to implement the proposed solutions.
6. Include any necessary information to raise awareness within the local community about the species' plight and the importance of conservation efforts.
7. Design or identify any organized events, workshops, or campaigns to involve others in the cause.
8. Implement the action plan, monitor progress, and adjust strategies as needed. Collect data, if available, and assess the project's impact on the species and its habitat.
9. Reflect on the project's outcomes, successes, challenges, and lessons learned. Share findings, experiences, and recommendations with peers, educators,

stakeholders, and the wider community to inspire continued action and awareness.

10. Outline and include opportunities to advocate for policy change or support existing conservation policies that benefit the species and its habitat on local, national, or international levels.

11. Include any possible ongoing commitment and involvement in conservation efforts by creating sustainable initiatives, partnerships, or student-led organizations focused on protecting the species and its ecosystem.

Scoring Rubric

Criteria	Excellent (4)	Proficient (3)	Basic (2)	Limited (1)
Meets Design Brief	Fully includes all required components. Detailed explanation of species, threats, and strong protection plan.	Includes required components. Clear explanation of species, threats, and protection plan.	Partially includes components. Limited explanation. May be missing one part.	Missing multiple components and/or no protection plan.
Research & Information	Thorough and accurate research. Clear details about species, habitat, threats, and conservation.	Good research with sufficient and mostly accurate information.	Limited research. Some information provided but lacks depth.	Minimal or inaccurate research.
Presentation	Well organized with strong introduction, body, and conclusion. Engaging and effective visuals.	Organized and clear structure. Visuals support understanding.	Some organization but lacks clarity or energy. Visuals limited or weak.	Disorganized. Minimal or ineffective visuals.

Criteria	Excellent (4)	Proficient (3)	Basic (2)	Limited (1)
Creativity & Originality	Highly creative. Unique perspective. Strong use of visuals or multimedia.	Shows creativity with some unique elements.	Limited creativity. Mostly straightforward presentation.	Little to no creativity shown.
Depth of Understanding	Demonstrates deep understanding of species and ecological role.	Shows solid understanding of species and importance.	Basic understanding but lacks depth.	Limited understanding of species and role.
Clarity & Communication	Clear, effective language. Easy to follow.	Mostly clear with minor unclear areas.	Some unclear language that may confuse audience.	Unclear and difficult to follow.
Technical Skills	Excellent video production and editing. Advanced techniques used well.	Good technical skills. Basic techniques used effectively.	Basic skills with limited techniques.	Numerous technical errors or weak production quality.

Criteria	Excellent (4)	Proficient (3)	Basic (2)	Limited (1)
Engagement & Impact	Captivating and impactful. Strong emotional or intellectual connection.	Engaging and maintains interest.	Some engagement but limited impact.	Fails to engage audience. Message unclear.
Total Score				

Student Resources

A Sick Planet
https://www.youtube.com/watch?v=v006xb5nVtM

Brainstorming, Creativity, and Innovation
http://www.infinn.com/creative.html
http://www.brainstorming.co.uk/tutorials/preparingforbrainstorming.html

Citizen Science Programs (NASA GLOBE)
https://www.nasa.gov/get-involved/globe/

Climate Change – NASA
https://climate.nasa.gov/resources/global-warming-vs-climate-change/

Wildlife Habitat Supporter Program (NJ DEP)
https://dep.nj.gov/njfw/conservation/wildlife-habitat-supporter-program/

Communication Skills
http://www.mindtools.com/page8.html

Concept Mapping
http://www.cotf.edu/ete/pbl2.html

Evidence of Climate Change (Video)
https://www.youtube.com/watch?v=_zszUK7i7K0

NJ Department of Education – Climate Change Resources
https://www.nj.gov/education/climate/

NJ Climate Change Education Hub
https://njclimateeducation.org/

Environmental Protection Agency – Endangered Species
https://www.epa.gov/endangered-species

New Jersey's Endangered, Threatened, and Special Concern Species
https://dep.nj.gov/njfw/wildlife/endangered-threatened-and-special-concern-species/

Habitat Protection and Restoration in NJ
http://www.conservewildlifenj.org/protecting/habitat/

NJ Endangered and Threatened Species
http://www.conservewildlifenj.org/species/

National Geographic – Endangered Species Resource
https://education.nationalgeographic.org/resource/endangered-species/

National Park Service – Endangered Animals
https://www.nps.gov/pore/learn/nature/endangered_animals.htm

NOAA Sea Level Rise Viewer
https://coast.noaa.gov/slr/

Teamwork – Youth Development Resource
https://www.canr.msu.edu/news/five_ways_youth_can_be_good_team_members

The Center for Biological Diversity
https://www.biologicaldiversity.org/campaigns/esa/index.html

The National Wildlife Federation – Understanding Endangered Species
https://www.nwf.org/Educational-Resources/Wildlife-Guide/Understanding-Conservation/Endangered-Species

Threats to Wildlife
http://www.conservewildlifenj.org/species/threats/

United States Fish and Wildlife Service – Endangered Species Program
https://www.fws.gov/program/endangered-species

United States Geological Survey – Species Status Definitions
https://www.usgs.gov/faqs/what-are-differences-between-endangered-threatened-imperiled-and-risk-species

Teacher/Facilitator Guide

Teachers and other professionals who serve as facilitators for the Species on the Edge 2.0 contest are encouraged to allow students to drive the project, make their own decisions, document and track progress, communicate effectively, explore, and discover what is needed to solve problems that cause species to be endangered.

The teaching methods for the Species on the Edge 2.0 are based on Project and Problem Based Learning. This means students are in charge of selecting their areas of interest, and are at the center of this challenge at all times.

Some tips for facilitators include:

• Ask good questions that will help guide students and keep them on track related to the role they have selected.

• Communicate with your administration, other staff members and parents regarding the nature of the contest and students' progress on the project. This will help recruit support for their participation in the contest, in other words, expand their team.

• Assist students with outreach to subject matter experts, other teachers with content knowledge, and resources that provide background information about endangered species. Allow students to address these topics on their own first, and assist later if needed. Keep in mind, they are in charge.

• Arrange a time and a place for students to meet, work and create their solutions.

• Encourage the use of digital learning tools to assist students in all facets of their project. Students are usually very good with digital learning tools, but may struggle with utilizing them appropriately. Ensure that students exercise appropriate internet safety and that school rules are being followed.

• Support all students' ideas with encouragement, and foster the balance of the reality and practicality of their actions and solutions.

• Avoid providing students with the answers, but rather gently guide them and ask good questions that may lead them to different pathways. Guide from side and do not provide step-by-step instructions for students. We strongly suggest that facilitators do not do the project for the students or provide them with your solutions.

IMPORTANT DEFINITIONS FOR FACILITATORS

Project-based learning (PBL):

This is an educational approach that focuses on students actively engaging in real-world, meaningful projects to gain knowledge and skills. Instead of traditional classroom instruction where students passively receive information, PBL emphasizes hands-on, collaborative, and inquiry-based learning.

In a project-based learning environment, students typically work on projects that are relevant to their interests and involve solving complex problems. These projects often require critical thinking, creativity, communication, and collaboration skills. The goal is to help students develop a deeper understanding of the subject matter and acquire skills that are applicable in real-life situations.

Key characteristics of project-based learning include:

Real-world relevance: Projects are designed to be connected to the real world, addressing authentic problems or challenges.

Inquiry and exploration: Students are encouraged to ask questions, conduct research, and explore various aspects of the project to find solutions.

Collaboration: PBL often involves teamwork, fostering collaboration and communication skills, as students work together to achieve project goals.

Critical thinking: Students are challenged to think critically, analyze information, and make informed decisions within the context of their projects.

Creativity: PBL encourages students to think creatively, propose innovative solutions, and express their ideas in unique ways.

Ownership and autonomy: Students take ownership of their learning by actively participating in the planning, execution, and evaluation of their projects.

Integration of disciplines: PBL often integrates multiple subject areas, providing a holistic approach to learning.

Authentic Assessment: Assessment in this is often based on the students' ability to analyze the problem, develop solutions, and communicate their findings. Assessment methods may include presentations, reports, and demonstrations.

Design Thinking:

This is a problem-solving and innovation methodology that places a strong emphasis on understanding and meeting the needs of end-users. It originated in the field of design but has since been widely adopted in various industries as an approach to creative and collaborative problem-solving.

Design Thinking involves a structured and iterative process that focuses on empathy, ideation, and prototyping. Design Thinking is not limited to designers; it can be applied by anyone interested in solving complex problems in a user-centered and creative way. Many organizations use Design Thinking as a framework to drive innovation in product development, service design, and problem solving.

Key principles and characteristics of Design Thinking in wildlife preservation include:

Introduce the Principles: Begin by introducing learners to the core principles of wildlife preservation and key elements of design thinking using real world examples.

Empathy Activities: Incorporate activities that help learners develop empathy. This could include conducting interviews, observations, or role-playing exercises to understand wildlife needs, challenges, and experiences.

Hands-on Projects: Encourage hands-on projects where learners can apply the design thinking process to solve scenarios presented. Provide opportunities for ideation, prototyping, and testing solutions.

Collaborative Learning: Encourage collaboration and interdisciplinary teamwork, challenge assumptions, and leverage different perspectives to develop innovative solutions.

Feedback and Reflection: Emphasize the importance of feedback and reflection in the design thinking process. Encourage learners to share their ideas, receive feedback from peers and mentors, and reflect on their learning experiences to identify areas for improvement.

Provide Resources and Tools: Offer learners access to resources, tools, and technologies that support the design thinking process. This could include brainstorming tools, prototyping materials, or digital platforms for collaboration and communication.

Promote a Growth Mindset: Foster a growth mindset by emphasizing the value of

experimentation, learning from failures, and embracing challenges as opportunities for growth. Encourage learners to take calculated learning risks, and persevere through obstacles.

Celebrate Diversity: Recognize and celebrate diverse perspectives, backgrounds, and skills within the learning community. Encourage learners to embrace inclusivity and consider a wide range of viewpoints when solving problems.

Facilitate Reflection and Documentation: Encourage learners to document their design thinking process, insights, and learnings. This could include maintaining a design journal, creating portfolios, or presenting their work to peers and stakeholders.

Encourage Lifelong Learning: Design thinking is a mindset and a skill set that can be applied across various domains and throughout one's life. Encourage learners to continue exploring, experimenting, and refining their design thinking skills beyond the classroom.

STEAM Education:

This term stands for **Science, Technology, Engineering, Arts, and Mathematics.** It is an integrated approach to learning that encourages students to think more broadly about real-world problems. The inclusion of arts (the "A" in STEAM) distinguishes it from STEM education by recognizing the importance of creativity and design in problem-solving.

Key components of STEAM education include:

Science (S): Emphasizes inquiry, observation, and experimentation to understand the natural world. Students explore various scientific concepts and engage in hands-on activities.

Technology (T): Focuses on the use of technology tools and applications to enhance learning. This can include coding, digital literacy, and the use of various technological devices.

Engineering (E): Encourages a problem-solving mindset and the application of engineering principles. Students engage in designing, building, and testing solutions to real-world challenges.

Arts (A): Integrates creative thinking and artistic expression into the learning process. This includes visual arts, performing arts, and design principles. Arts help foster

innovation and imaginative problem-solving.

Mathematics (M): Involves the application of mathematical concepts in various contexts. It emphasizes critical thinking, logical reasoning, and problem-solving skills.

Key Principles of STEAM Education:

Interdisciplinary Learning: STEAM education breaks down the traditional silos between subjects and encourages the integration of knowledge from different disciplines to solve complex problems.

Hands-On and Experiential Learning: Students engage in hands-on activities, experiments, and real-world experiences to deepen their understanding of concepts. This approach helps make learning more tangible and applicable.

Inquiry-Based Learning: Students are encouraged to ask questions, explore topics independently, and discover solutions through inquiry. This promotes a sense of curiosity and a love for learning.

Creativity and Innovation: Arts and design thinking are woven into the curriculum to foster creativity. Students are encouraged to approach challenges with innovative and imaginative solutions.

Critical Thinking: STEAM education emphasizes the development of critical thinking skills, including analysis, synthesis, and evaluation of information. Students learn to think critically and solve problems systematically.

Collaboration: Students often work in teams on projects, mirroring the collaborative nature of work in many professional fields. This encourages effective communication and teamwork.

Career Pathways That Support Endangered Species

Exploring a career related to endangered species involves working to protect, conserve, and manage species that are at risk of extinction. Here are several career paths within this field:

Wildlife Biologist:
- Conduct research on endangered species to understand their behaviors, habitats, and threats.
- Monitor and assess the population status of endangered species.

• Develop and implement conservation plans to protect endangered species.

Conservation Biologist:
• Work to conserve biodiversity by studying ecosystems, habitats, and the interactions between species.
• Design and implement conservation strategies to protect endangered species and their environments.

Zoologist or Wildlife Manager:
• Manage and oversee wildlife populations, including those that are endangered.
• Develop and implement conservation programs and policies.
• Work in wildlife reserves, national parks, or conservation organizations.

Environmental Educator:
• Educate the public about endangered species, their importance, and the need for conservation.
• Develop educational materials and programs to raise awareness and promote conservation.

Wildlife Veterinarian:
• Provide medical care to endangered species in captivity or in the wild.
• Work on rehabilitation and release programs for injured or sick animals.
• Research and address health issues affecting endangered species.

Conservation Geneticist:
• Use genetic techniques to study and monitor endangered species populations.
• Develop strategies to maintain genetic diversity within populations.
• Contribute to breeding and reintroduction programs.

Environmental Lawyer:
• Advocate for the protection of endangered species through legal avenues.
• Work on cases related to habitat preservation, conservation policies, and wildlife protection laws.

Ecotourism Specialist:
• Develop and promote sustainable tourism initiatives focused on endangered species.
• Educate tourists about the importance of conservation and responsible wildlife viewing.

GIS Specialist (Geographic Information Systems):

• Use spatial data to analyze habitats, migration patterns, and other factors affecting endangered species.
• Assist in the planning and implementation of conservation projects.

Research Scientist in Ecology or Behavior:
• Study the ecological relationships and behaviors of endangered species.
• Contribute valuable information for conservation efforts and management plans.

Additional Facilitator Resources:

Educating high school students about endangered species is crucial for fostering awareness and promoting conservation efforts. Here are some websites that high school teachers can use to support their lessons on endangered species:

World Wildlife Fund (WWF)
Website: https://www.worldwildlife.org/
Features: Information on endangered species, conservation efforts, and educational resources such as lesson plans and activities.

IUCN Red List of Threatened Species
Website: https://www.iucnredlist.org/
Features: Comprehensive database of the conservation status of species, including assessments, distribution maps, and species accounts.

National Geographic – Endangered Species
Website: https://www.nationalgeographic.com/animals/reference/endangered-species/
Features: Articles, photos, and videos about endangered species, their habitats, and conservation efforts.

Endangered Species Coalition
Website: https://www.endangered.org/
Features: Information on U.S. endangered species, advocacy efforts, and educational resources for teachers and students.

Defenders of Wildlife
Website: https://defenders.org/
Features: Resources on endangered species in the U.S., conservation initiatives, and educational materials for teachers and students.

• **ARKive** *(archive site; now redirects to Wildscreen Arkive content)*
Website: https://www.arkive.org/

Features: Multimedia profiles of endangered species, including photos, videos, and factsheets, suitable for educational purposes.

Smithsonian National Museum of Natural History – Global Change
Website: https://www.si.edu/explore/science/climate-change
Features: Information on biodiversity, conservation, and the impact of global change on species, with educational resources for teachers.

Conservation International
Website: https://www.conservation.org/
Features: Articles, reports, and educational resources on conservation topics, including endangered species and their habitats.

The Nature Conservancy
Website: https://www.nature.org/
Features: Information on conservation projects, endangered species, and ecosystems, with resources for educators and students.

Wildlife Conservation Society
Website: https://www.wcs.org/
Features: Profiles of endangered species, conservation initiatives, and educational materials for teachers and students.

National Wildlife Federation
Website: https://support.nwf.org/
Features: Protect and restore wildlife habitats across public lands, working lands, waterways, coasts, and communities.

Sample Connections to NJSLS:

English Language Arts (NJSLS-ELA) — High School (Grades 9–12)

Writing (W)
• W.IW.9–10.2 Write informative/explanatory texts (including narration of historical events, scientific procedures/experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through effective selection, organization, and analysis of content.
• W.NW.9–10.3 Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

• W.AW.11–12.1 Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
• W.IW.11–12.2 Write informative/explanatory texts (including the narration of historical events, scientific procedures/experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through effective selection, organization, and analysis of content.

Speaking & Listening (SL)
• SL.PE.9–10.1 Initiate and participate effectively in collaborative discussions with peers on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
• SL.II.9–10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, qualitatively, orally), evaluating the credibility and accuracy of each source.
• SL.PI.9–10.4 Present information, findings, and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.

Reading (RI)
• RI.CR.11–12.1 Accurately cite a range of textual evidence and make relevant connections to support a comprehensive analysis of informational texts (explicit and inferential).
• RI.CT.11–12.8 Analyze and reflect on documents of historical and scientific significance for their purposes, including primary source documents and texts proposing scientific or technical advancements.

Science: Life Science & Earth Systems

These standards focus on biological evolution, biodiversity, and human impact on the environment.

Biological Evolution: Unity and Diversity (LS4)

- HS-LS4-4: Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
  - *Focus:* Using data to show how biotic and abiotic factors (like climate change or geographic barriers) lead to changes in gene frequency.
- 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.
  - *Focus:* Determining cause-and-effect relationships for how environment-driven

changes (e.g., deforestation, drought) affect the distribution or disappearance of traits.

- HS-LS4-6: Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.
  - *Focus:* Using models to see how human-led conservation or restoration efforts can protect ecosystem health.

Earth and Human Activity (ESS3)

- HS-ESS3-3: Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
  - *Focus:* Modeling the "balancing act" between human consumption (energy, minerals, food) and the health of the natural world.
- HS-ESS3-4: Evaluate or refine a technological solution that reduces impacts of human activities on climate change and other natural systems.
  - *Focus:* Analyzing real-world solutions like carbon capture, renewable energy, or waste management to see if they actually stabilize a system.

Math: Statistics and Probability

B. Making Inferences and Justifying Conclusions (S-IC)

S-IC.B.1 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

S-IC.B.3 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.

S-IC.B.4 Evaluate reports based on data (interrogate study design, data sources, randomization, and analysis methods) to identify and explain misleading uses of data or flawed arguments.