



Most Unwanted! Team Media Project

Researching and Creating Media that Communicates

Grade

Grades 9–12

Length

2–4 weeks

Subjects/strands

Biology, ecology, science inquiry, research. *Teachers can adapt the project requirements to meet specific classroom benchmarks.*

Topics

Watersheds, structure and function, habitat, interactions of organisms, researching a topic, citing sources, peer review, presenting research, characteristics of invasive species, life cycles.

MOST UNWANTED! TEAM MEDIA PROJECT

Suggested for Grades 9–12

LEARNING OBJECTIVES

In a team learning experience, students will

- learn in-depth details about a specific invasive species
- conduct scientific research on the team's species of choice, becoming, as a team, the classroom experts on the species
- work in teams to simulate a real-life collaborative work situation
- design a media project to convey the information collected in a way that promotes audience knowledge of invasive species, their impacts, and what individuals can do to control or eradicate invaders
- present information to their classmates on the biology of the team's species of choice, the impact their invader has on other species (including humans), and what needs to be done to control or eradicate the species from the "invaded" environment

INTRODUCTION

This project, designed for more advanced students, is a comprehensive teaching-through-research lesson that incorporates scientific research with an understanding of the importance of communication to solve a problem. By researching, designing, and executing a media project that focuses on an invasive species, its impacts, and solutions to control the species, each team of students develops enough expertise to share with others, both classroom peers and the general public.

You and students can browse possible species and access resources at MenaceToTheWest.org, or through other resources as indicated in the Preparation section of this lesson plan.

Students will present their knowledge to their classmates using an engaging form of media. Through this process, students gain in-depth knowledge about one invasive species, acquire knowledge about multiple invasive species, practice presentation skills, develop the ability to use some form of creative media while presenting, and become more comfortable talking in front of groups and sharing their expertise.

We invite you to share your students' projects with the WISE program so we can showcase their work. Find out how at MenaceToTheWest.org.

BACKGROUND

In this project, students will learn the importance of science communication in reaching different audiences with information about ecological issues in general, and about aquatic invasive species in particular. By conceiving, researching, designing, refining, and executing a media product to convey information on invasives, they will learn not only about their selected species, but how to develop a communication vehicle that explains the importance of educating the general public about invasive species: what they are and how they impact environments and other organisms. Another important aspect of this project is to convey information effectively on how individuals can take action to slow or stop invasions, or to prevent aquatic invasions altogether.

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VOCABULARY

Brainstorming process, characteristic, common name, consensus, ecosystem, generalist species, habitat, invasive species, kingdom, life cycle, macroscopic, microscopic, native species, niche, nonnative species, parasitic, project proposal, range, research process, scientific name, specialization, storyboard, thumbnail sketch, vector.

MATERIALS NEEDED

- **Research:** Depending on your classroom resources, have students access information about their species on their own devices (tablet, smart phone) or on school computers. Species guides and the *On the Lookout for Aquatic Invaders* identification guide are available in the Toolkit; printable species guides are also available on the website, **MenaceToTheWest.org**. Students can also conduct online searches for their particular species and access information from the websites included in the Resources section of this lesson plan.
- **Presentation tools and materials:** Depending on the project type, students will need access to computer graphics program(s); presentation software, such as PowerPoint; a word processing program; print media, such as 11 × 17-inch or larger paper for poster; video and/or animation tools; hand-drawing tools; and/or other project type-specific tools.
- **Student worksheets:**
 - Worksheet 1: Media Product Research and Design
 - Worksheet 2: Select Species and Project Format
 - Worksheet 3: Project Proposal
 - Worksheet 4: Project Evaluation

PREPARATION

It is useful to gain some familiarity with invasive species topics before teaching this lesson. Research a list of invasive species in your area to suggest topics for your students. Check with your local, state, or regional Fish and Wildlife office, Department of Agriculture, or county extension office for information and ideas. If you conduct an online search, be sure you are referencing a reputable source, such as a state or federal

agency or university research center. Make these online resources available to your students when they start conducting their own research.

For more information on aquatic invasive species in the western states, see the introductory chapters of the *Menace to the West* Curriculum, available in the Toolkit or at <http://seagrant.oregonstate.edu/invasive-species>.

PROCEDURE: TEAM MEDIA PROJECT

- 1 Teams should consist of at least two and no more than four students, to ensure that all team members can participate fully in the project.
- 2 Have each team select an invasive species found in your local or regional environment. You or another instructor should approve each species to ensure that sufficient resources are available to the students, and, if possible, to avoid duplication of species among teams in the classroom.
- 3 Guide your students in the research, design, and presentation of a high-quality, informative creative media product that will be used as a communications outreach tool. Possibilities for media formats include slide shows, informational brochures directed at the public, a series of newspaper articles, or a field guide. Formats can also include animated movies, videos, music videos, websites, educational displays, magazine articles, educational DVDs, persuasive research papers, and murals or signage with interpretive text, such as a leaflet or information sheet explaining scientific content shown.
- 4 **Worksheet 1: Media Project Research and Design.** Both the media product and classroom presentation should include informational criteria indicated on the *Presentation Checklist*. Additional parameters pertaining to specific types of media products are included in the *Media Product Parameters* section of the same checklist. If you wish, you may also assign additional informational content specific to your classroom goals.
- 5 **Worksheet 2: Select Species and Project Format.** Assist student teams in selecting their first and second choices for a species to study. Make final assignments based on appropriateness of species to your

classroom goals and ensuring breadth of information in your classroom (i.e., try to avoid duplication of species among teams). Approve all final choices by signing off on each team's worksheet. *Each team should submit one copy of approved Worksheet 2.*

- 6 **Worksheet 3: Project Proposal.** Have each team draft a project proposal that includes elements on Worksheet 3. This is the basic “roadmap” that your teams will follow in researching, designing, and executing their media project. Have teams pay special attention to developing a timeline that will help them stay on track, coincides with your classroom goals, and ensures that all students participate equally in the project. *Each team should submit one copy of Worksheet 3: Project Proposal.*
- 7 Guide your student teams through the complete design and execution process (see **Worksheet 1**). If possible, offer computer-lab research sessions during class for the research phase, time to conduct research on their own devices in class, or direct your student teams to available Internet resources in your school. Students will also need access to computer resources for completing the final product, such as computer graphics programs, video editing capabilities, and/or word processing.
- 8 **Worksheet 4: Project Evaluation.** Have all students evaluate their own projects and those of other teams for content, expertise, and effectiveness of message. Page 1 of the worksheet includes basic information about the organism. Page 2 is a scoring rubric for students to use in evaluating all of the presentations, including their own. *Each student should submit one copy of Worksheet 4: Project Evaluation.*

PRESENTATION AND EVALUATION

Allow between 5 and 15 minutes per presentation, depending on grade level, class size, and team sizes (allow longer for bigger teams).

While each team presents its projects, peers should complete the *Project Evaluation* and *Peer Review Scoring Guide* on **Worksheet 4**.

Project Evaluation

Questions for students to answer as their peers are presenting include the following.

- What is the organism's name?
- Have you seen it before? Where?
- What other species are related to the organism?
- Did you know it was invasive? Why or why not?
- What are three interesting facts that you learned about this species?
- How can you help prevent the spread of or eradicate this species?

Peer Review Scoring Guide

Have each student complete the evaluation and the scoring guide for all presentations, including his or her own presentation.

Once all the individual evaluations are complete, have students meet with their own teams to discuss their individual evaluations, with the goal of agreeing on a combined team score for each presentation. Have all teams submit both the individual team member evaluations and an additional team evaluation form for each project.

VOCABULARY

- **Brainstorming process:** A group-creativity technique through which team members try to find a solution to a specific problem by gathering a list of ideas spontaneously contributed by its members. Initially, no judgment is made on any of the ideas, and final solutions are defined through discussion of the options offered, ideally by using a **consensus model** of decision making.
- **Characteristic:** A distinguishing trait, feature, or quality of an organism.
- **Common name:** The nonscientific name by which an organism is known, based on the normal language of everyday life.
- **Consensus:** A group decision-making process through which group members develop, and agree to support, a decision in the best interest of the whole.

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The resolution is ideally one that can be supported by everyone in the group, even if the results are not the “favorite” outcome of each individual.

- **Ecosystem:** A system formed by the interaction of biological and physical components. That is, a community of organisms interacting with their physical environment.
- **Generalist species:** Species with the ability to live in many different places while tolerating a wide range of environmental conditions.
- **Habitat:** Area where a species has the necessary food, water, shelter, and space to live and reproduce.
- **Invasive species:** Nonindigenous species whose introduction and proliferation causes or is likely to cause economic and/or environmental harm or harm to human health.
- **Kingdom:** In biology, a taxonomic category of the highest rank, grouping together all forms of life having certain fundamental characteristics in common. The five-kingdom classification scheme adopted by many biologists includes Animalia (animals), Plantae (plants), Fungi (fungi), Protista (protozoa and eucaryotic algae), and Monera (bacteria and blue-green algae).
- **Life cycle:** A series of changes in form that an organism undergoes, returning to the starting state. It entails the course of development of an organism; that is, from the time of inception to growth to maturity, when an organism can viably produce another of its kind.
- **Macroscopic:** Items large enough to be visible without the aid of a microscope.
- **Microscopic:** Of extremely small size, usually visible only with the aid of a microscope.
- **Native species:** A plant or animal species that naturally occurs in an area and has not been introduced from another area, state, or continent. Synonym: *indigenous species*.
- **Niche:** The function or position of an organism or population within an ecological community, based on life history, habitat, trophic position (place in food chain), and geographic range.
- **Nonnative species:** A plant or animal species living outside its natural past or present distribution; includes any part, gamete, seeds, eggs, or propagules of such species that might survive and subsequently reproduce. Because some nonnative species may be harmful or invasive while others are not, this term should be used with great care. Synonyms: *nonindigenous, foreign, alien, and exotic species*.
- **Parasitic:** An organism that lives and feeds on or in an organism of a different species, usually causing harm to its host.
- **Project proposal:** A description of activities that explains the steps in solving a particular problem. In addition to identifying an objective and steps to accomplish the goal, a project proposal will often set forth the benefits of pursuing the endeavor.
- **Range:** In biology, the geographical area within which a species can be found.
- **Research process:** Any gathering of data, information, and facts for the advancement of knowledge.
- **Scientific name:** The Latin name of an organism, including genus and species, and generally shown in italics (*Genus species*).
- **Specialization:** The adaptation of an organism to a special function or environment.
- **Storyboard:** A series of panels in which a set of sketches is arranged sequentially, depicting the important changes of scene and action in a series of shots. Often used for outlining visual (filmed scenes, animated scenes) and verbal (script, dialogue) components for a film, slide show, or other sequential visual presentation.
- **Thumbnail sketch:** A small drawing on paper used to explore multiple ideas quickly, such as the basic layout of a poster (i.e., where the text and pictorial components will appear and how much space each element will take up). Thumbnail sketches are similar to doodles, but may include as much detail as a small sketch.
- **Vector:** Transportation of a species on or through a pathway via natural or human-made materials such as wind, water, shipping materials, wholesale products, cargo, equipment, people, transport vessels and vehicles, and outboard motors.

SELECTED RESOURCES

Invasive Species in Oregon

Salem Statesman Journal

Ten-month series investigating invasive species Includes various articles and videos, 2007–2014.

www.InvasiveSpeciesOfOregon.com (search archive)

Nab the Aquatic Invader! Be a Sea Grant Super Sleuth

Indiana-Illinois Sea Grant College Program, Wisconsin Sea Grant Institute, and New York Sea Grant Institute.

National education site on invasive species, developed in collaboration with education and outreach staff of all seven Great Lakes Sea Grant programs.

www.iisgcp.org/NabInvader/

National Invasive Species Information Center

USDA National Agricultural Library

Educational resources for all levels.

www.invasivespeciesinfo.gov/aquatics/education.shtml

Network of Oregon Watershed Councils

Clearinghouse for information from all Oregon Watershed Councils.

www.oregonwatersheds.org

Oregon Invasive Species Council

Examples of media projects, including Don't Let It Loose poster submissions.

www.oregon.gov/OISC/

Top 100 Invasive Species in Oregon

www.oregoninvasivespeciescouncil.org/100-worst-list

Portland State University: Center for Lakes and Reservoirs

Home of the Aquatic Bioinvasion Research and Policy Institute (ABRPI), a joint initiative between Portland State University and the Smithsonian Environmental Research Center (SERC).

www.pdx.edu/center-for-lakes-and-reservoirs/abrpri

The Silent Invasion

Oregon Public Broadcasting in partnership with the Oregon Invasive Species Council and The Nature Conservancy

Documentary by OPB and partners focusing on invasive species in Oregon. The site includes several short video segments about specific invasive species and case studies (56:06; originally aired on April 22, 2008).

www.opb.org/programs/invasives

Willamette Valley Region Invasive Species

Environmental stewardship in Oregon.

www.solveoregon.org/why-we-care/invasive-plants

STANDARDS ADDRESSED

Common Core Standards

Writing

- Text Types and Purposes W.1, W.2, W.1, W.2
- Production and Distribution of Writing 8-12th grades W.6, W.7
- Research to build and present knowledge W.7, W.8

Speaking and Listening

- Comprehension and Collaboration SL.1–SL.3
- Presentation Knowledge and Ideas SL.4–SL.6

Next Generation Science Standards

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.