

**INVASIVE SPECIES / ADAPTATION**  
**5E Lesson Plan**

**2. Subject area / course / grade level:**

Science / Environmental Systems / High School

**3. Materials List:** Chromebook with internet access

**4. Overarching TEKS, ELPS, CCRS, and Global Graduate/other district standards (chart or list).**

*TEK CCRS ELPS*

*Science: The student is expected to explore how structures and functions enable organisms to survive in their environment*

*Integrate and organize material effectively*

*Standard English Conventions  
uses, gather, and manage relevant to the topic.*

*ng*

*ELAR: Edit drafts using*

**5. Lesson Objective/Summary:** The student will learn about the attributes of invasive species and the problems they can cause in an ecosystem using invasive lionfish in the Gulf of Mexico, Caribbean Sea, and Southern Atlantic Seaboard as an example

**6. Differentiation Opportunities:** Students can ask their own questions of the biologist. As long as they have the basic elements of

**7. Community-Based Resources:** Invite staff from Flower Garden Banks National Marine Sanctuary to speak/Skype with the class about invasive species in the sanctuary, opportunities for students to get

involved, and careers in marine science and conservation.

**8. Engage:** Watch the Alien Invaders lionfish episode at <https://www.youtube.com/watch?v=Peq-PJWAgXA>.

**9. Explore:** Students perform a web search to find information on lionfish fishing tournaments, lionfish cooking recipes, where lionfish can be purchased for cooking locally, and places to buy lionfish jewelry. Students can upload their findings to an online discussion board where it can remain as a resource that they can all use if they decide to take action to help control the spread of invasive lionfish

**10. Explain:** Watch the California Academy of sciences video “Introduced Species and Biodiversity” at <https://www.youtube.com/watch?v=J-ftiWffNTc>. The video describes characteristics that can lead to an introduced species becoming invasive. Students will create a chart that lists the characteristics and, for each trait, gives an example of how the lionfish either do or do not provide a good example of this characteristic. The video also describes how invasive species can reduce ecosystem function. Students can create a similar chart describing the ways this occurs and whether or not the lionfish provide a good example of this.

**10. Explanation:** Students should read the article about invasive lionfish at Flower Garden Banks National Marine Sanctuary <https://flowergarden.noaa.gov/education/invasivelionfish.html> . Staff from Flower Garden Banks National Marine Sanctuary will come to the classroom/ or video chat with the students and answer the questions they have about the sanctuary, the presence of lionfish in the sanctuary, and the success or failure of efforts to control the spread of lionfish. The students can also ask about opportunities to get involved with the sanctuary and careers in marine science or conservation. Kelly Drinnen ([kelly.drinnen@noaa.gov](mailto:kelly.drinnen@noaa.gov)) is a good point of contact for finding an appropriate speaker.

**11. Elaboration:** Students will select an invasive species that impacts Texas and create a “wanted” poster describing the species’ crimes against the ecosystem. A suggested grading rubric for the poster is included in the “Invasive Species Project” attached at the end of this document.

**12. Evaluation:** Students will write a paper about the invasive species for which they made their “wanted” poster (an option for a presentation is also possible). A suggested grading rubric for the paper is included in the “Invasive Species Project” attached at the end of this document.

As an extension, students can create a plan for how scientists could monitor the status of the invasive species in Texas habitats and come up with creative ideas for controlling the spread of the invasive species.

## **Invasive Species Project --- Mr. Skudder's Environmental Systems**

One of the impacts humans have on earth's ecosystems is that we move living things from one place to another, sometimes introducing a species to a habitat or ecosystem where it did not exist before. Some of these introductions are intentional like agricultural crop species but some have been unintentional (small organisms can "hitchhike" or "stowaway" and accidentally be brought to a new place along with other cargo, for example). Organisms have always found ways to colonize new environments but the activities of humans have increased the frequency of these introductions. Sometimes these introduced species cause problems with the existing ecosystem by preying upon or competing with native species -- these trouble-maker species are called "invasive" species. You can find an informative video on invasive species at the following link: <https://youtu.be/J-ftiWffNTc>

Your assignment will be to research an invasive species that exists in Texas, or one that people are concerned may eventually come here. The project will have 2 parts: a paper and a "wanted" poster.

The paper should be 750 words and should demonstrate your ability to gather detailed knowledge about a topic and organize your thoughts in clear, concise written english. The paper will have the following requirements and will count for 60 points:

- Minimum of 750 words (10 pts) - Physical description of the species (5 pts) - What is the species' original habitat? (5 pts) - How did the species get to Texas? (10 pts) - Where in Texas is the species found? (5 pts) - What characteristics of invasive species does the species exhibit? (10 pts) - How does the species impact Texas Ecosystems? (10 pts) - Does the species have an economic impact? (5 pts)

The poster should be printed on a single sheet of 8.5 x 11 paper and will take the format of an old west "wanted" poster. It will show your ability to identify the most important information from your research paper and to communicate it to others. It should be graphically excellent and visually interesting. It will count for 40 points and have the following requirements:

- Image of the criminal and other information to identify it (10 pts) - What crimes has the species committed against Texas' native species or economy (murder? theft?) (10 pts) - Where was the criminal last seen? (5 pts) - What precautions can people take to prevent the criminal's activity? (5 pts) - Who can people notify if they see the criminal? (5 pts) - Reward for information leading to control of the criminal (5 pts) - Creativity and the use of humor are encouraged!