

## Module 3 ~ Why Manage Invasive Plants? (LE/UE)

### Teacher Guide – What’s eating the alligator weed?



**INTRODUCTION:** An invasive species is defined as non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Non-native plants can reach much higher densities when they are moved to new geographic areas and become invasive. This is because the plants escape control by natural enemies that occur in their native range. Natural enemies typically include insects and disease causing pathogens. Some natural enemies are highly host specific, meaning that they will only feed or infect one or a very few plant species. Biological control involves the identification of these specialized natural enemies and their introduction into the invaded range. If successful, the natural enemies provide a self-sustaining and permanent suppression of the target weed.

Alligator weed (*Alternanthera philoxeroides*), was introduced from South America in the late 1890s through ballast water emptied from ships. It grows quickly and forms thick mats, making recreation, fishing, and other activities difficult. It also reduces light penetration in the water and displaces native species. In the mid-1960s, the alligator weed flea beetle was introduced to help control the spread of alligator weed. This lesson introduces students to invasive plant management using a humorous video presentation. Then students visit activity stations to learn more about the invasive plant alligator weed and its predator, the alligator weed flea beetle. They will work in groups to investigate and then explain in their own words the concept of biological control as a way to manage invasive plants.

#### ESSENTIAL QUESTION:

- How can we prevent the spread of (control) alligator weed?

**SUBJECTS:** Biology, life science, ecology, environmental science

**GRADE LEVEL:** 3<sup>rd</sup>-6<sup>th</sup> grade

**TIME ESTIMATES:** 20 minutes for video presentation; 50 minutes for activity

**VOCABULARY:** ballast, biological control, defoliate, elliptic, epidermis, infestation, invasive, node, progeny

**LESSON SUMMARY:** The class starts by viewing a presentation on invasive plant management. Students then split into groups and take turns rotating through 4 activity stations to further explore the topic, focusing on the invasive plant alligator weed. After the groups have completed all 4 stations the class re-groups and discusses what they have learned. As an extension assignment, students can consolidate this information into a newspaper report.

#### LEARNING OBJECTIVES:

Students will be able to:

- Describe the ecological impacts of alligator weed;
- Explain the relationship between alligator weed and the alligator weed flea beetle
- Recommend a way to manage the invasive plant alligator weed



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Florida Invasive Plant Education Initiative • <http://plants.ifas.ufl.edu/education>  
A Collaboration of the UF/IFAS Center for Aquatic and Invasive Plants  
and the Florida Fish and Wildlife Conservation Commission / Invasive Plant Management Section

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### MATERIALS:

Note: All materials are available to download from [plants.ifas.ufl.edu/education](http://plants.ifas.ufl.edu/education). Contact us at [caip-education@ufl.edu](mailto:caip-education@ufl.edu) with any questions.

1. Computer and projector (to show video presentation)
2. Access to presentation *Why Manage Invasive Plants?*
3. Station numbers (2 pages): Print and cut along dotted line, then fold on solid line to create markers for each station.
4. Station fact sheets (4 pages): Print and place at each station.
5. Station questions (4 pages): Print and place at each station. Students are to write their answers on their own sheet of paper.
6. (Extension option) Writing prompt for final assignment (1 page)

### The fact sheets for this activity are excerpted from:

- UF/IFAS Extension Publication: *Alligatorweed Flea Beetle* *Agasicles hygrophila*  
<https://edis.ifas.ufl.edu/in831>
- UF/IFAS Center for Aquatic and Invasive Plants Plant Profile:  
<http://plants.ifas.ufl.edu/plant-directory/alternanthera-philoxeroides/>

### ADVANCE PREPARATION:

Set up four work stations for students. Each of the four stations should have a station number, and the corresponding station fact sheet and questions, as follows:

- **Station 1:** How do you think we can control alligator weed?
- **Station 2:** What do you think the alligator weed “flea beetle” looks like? What is the relationship between the flea beetle and alligator weed?
- **Station 3:** Draw an alligator weed plant and the alligator weed flea beetle
- **Station 4:** Control/management options for alligator weed

### PROCEDURE:

1. As a class, view the presentation *Why Manage Invasive Plants?* (20 minutes)
2. Divide the students into four groups and assign each a station to begin.
3. At each station, students read the fact sheet and discuss the question as a group. Have them each write the answer to the question on their own sheet of paper. After 10 minutes have the students rotate stations. (40 minutes)
4. After the groups have completed all 4 stations, re-group and as a class discuss what they learned. (10 minutes)

**ASSESSMENT:** Student performance in group discussion and written responses to station activities and essential question.

**EXTENSION:** Provide students with the prompt below and have them respond. This can alternatively be assigned as homework.

*Pretend you are a newspaper journalist and have to write an article for the local paper about alligator weed. Include facts and ideas that you had from each station to write up your report. REMEMBER journalists often write opinionated (editorial) articles so you may include your own thoughts and ideas. Refer back to stations for help if needed.*



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### LIST OF STANDARDS:

The following is a list of suggested standards that pertain to this activity. This list is provided as a reference to incorporate and expand upon as needed.

### Next Generation Sunshine State Standards

#### 4<sup>th</sup> Grade

SC.L.17.4: Recognize ways plants and animals, including humans, can impact the environment.

#### 5<sup>th</sup> Grade

SC.5.L.17.1: Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycle variations, animal behaviors, and physical characteristics.

#### 7<sup>th</sup> Grade

SC.7.L.17.3: Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.

### Common Core State Standards

#### 3<sup>rd</sup> Grade

Common Core Code	FL Common Core Code	Common Core Standard
CCSS.ELA-LITERACY.L.3.4	LAFS.3.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.
CCSS.ELA-LITERACY.RI.3.1	LAFS.3.RI.1.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

#### 4<sup>th</sup> Grade

CCSS.ELA-LITERACY.RI.4.1	LAFS.4.RI.1.1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
CCSS.ELA-LITERACY.RI.4.4	LAFS.4.RI.2.4	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a <i>grade 4 topic or subject area</i> .
CCSS.ELA-LITERACY.L.4.4	LAFS.4.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.

#### 5<sup>th</sup> Grade

CCSS.ELA-LITERACY.RI.5.1	LAFS.5.RI.1.1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
CCSS.ELA-LITERACY.RI.5.4	LAFS.5.RI.2.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 5 topic or subject area</i> .
CCSS.ELA-LITERACY.SL.5.1	LAFS.5.SL.1.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 5 topics and texts</i> , building on others’ ideas and expressing their own clearly.



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**6<sup>th</sup> Grade**

CCSS.ELA-LITERACY.RI.6.1	LAFS.6.RI.1.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
CCSS.ELA-LITERACY.RI.6.4	LAFS.6.RI.2.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
CCSS.ELA-LITERACY.L.6.4	LAFS.6.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.
CCSS.ELA-LITERACY.RST.6-8.4	LAFS.68.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and the topics.

**7<sup>th</sup> Grade**

CCSS.ELA-LITERACY.RI.7.1	LAFS.7.RI.1.1	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.RI.7.4	LAFS.7.RI.2.4	Determine the meaning of words and phrases as they were used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.
CCSS.ELA-LITERACY.L.7.4	LAFS.7.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 7 reading and content, choosing flexibly from a range of strategies.
CCSS.ELA-LITERACY.RST.6-8.4	LAFS.68.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

**8<sup>th</sup> Grade**

CCSS.ELA-LITERACY.RI.8.1	LAFS.8.RI.1.1	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.8.4	LAFS.8.RI.2.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
CCSS.ELA-LITERACY.SL.8.1	LAFS.8.SL.1.1	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.L.8.4	LAFS.8.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.
CCSS.ELA-LITERACY.L.8.6	LAFS.8.L.3.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CCSS.ELA-LITERACY.RST.6-8.4	LAFS.68.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.
CCSS.ELA-LITERACY.WHST.6-8.9	LAFS.68.WHST.3.9	Draw evidence from informational texts to support analysis reflection, and research.

