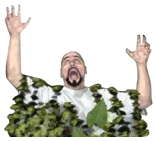
Module 1 ~ Silent Invaders (MS/HS)

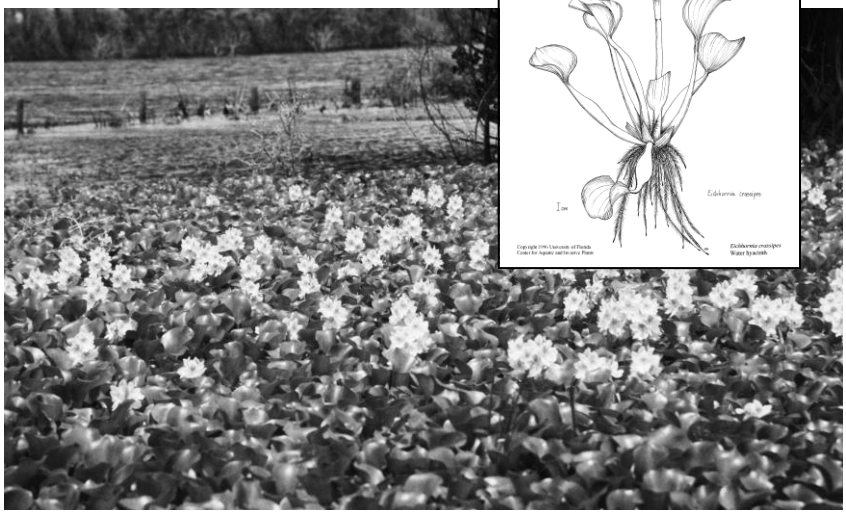
Answer Key – Invasive Plants Reading Activity



Name: _____ Class Period: _____ Date: _____

Directions: Read the passage and use the information you've learned to answer the questions below in <u>complete sentences</u>.

When a plant species is introduced to an area that is outside of its original or historic range, it is called a **non-native** plant. Non-native plants also are referred to as non-indigenous, alien, or exotic. Sometimes non-native plants are able to out-grow or replace native plant populations. This happens because the non-native plant has been taken away from its normal insect enemies, diseases, climate conditions and other stressors that keep it under control in its native range.



Above: Water hyacinth, an invasive plant, completely covers a portion of a lake. Top insert: A line drawing of a single water hyacinth plant.

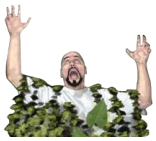
More than 1,000 non-native plant species can be found growing throughout Florida. The good news is that most of them do not cause a problem. Only about 130 non-native plant species are causing problems in our state's undeveloped (natural) areas. The bad news is that even one problem plant species can cost millions of dollars in damage. If not identified and controlled, they can spread rapidly and do a great deal of harm to our natural habitats and even to our local economies.

When a non-native plant species begins to behave like this, we consider it invasive. An **invasive plant** species is defined as "a non-native plant that is causing or is likely to cause economic or environmental harm or harm to human health." For example: When left alone, water hyacinth reproduces so fast that it can completely cover a river or lake (see image above). When water hyacinth covers the top of a water body, it causes oxygen problems for the fish and animals living in the water (ecological harm). It also prevents boaters from using the lake and spending money in the community (economic harm). This is definitely an invasive plant!

Any species removed from its native habitat and introduced into a new ecosystem has the potential to become invasive. However, many do not become invasive. Those that **do** tend to share several common traits:

- They grow fast and spread across large areas.
- They are able to reproduce in several ways including seeds, buds, vegetative fragments or from shoots that spread out from an underground root system.
- They can survive in a variety of different sunlight conditions and in a wide range of temperatures, water conditions, and soil types.
- They are difficult to control and nearly impossible to eradicate.

Some invasive plant species plaguing Florida habitats include hydrilla, Brazilian pepper-tree, melaleuca, air potato vine, Old World climbing fern, and torpedo grass. Each of these was introduced to Florida through human activity, either intentionally or unintentionally. All are considered invasive because they damage ecosystems, displace native species, and cost businesses and governments large sums of money. Torpedo grass, imported from Africa and Asia, reproduces at a very high rate and quickly takes over wetlands. It spreads out along the edges of water bodies, easily out-competing and crowding out many native species. The escaped ornamental tree known as Brazilian pepper-tree crowds out native mangrove trees along the edges of Florida brackish water bodies and coastlines. Melaleuca trees,



deliberately introduced from Australia to try to dry up wetlands in the Everglades for human use, are now devastating populations of native plants and disrupting flows of water.

Prevention is one of the most important tools for managing invasive plants. We can all help by being responsible land managers in our own yards and neighborhoods. It doesn't take long to learn to recognize plants that are invasive in our area, and it can be fun, too. Once we learn them, we can be sure not to plant them. There are lots of beautiful native plants to choose from as well as plenty of non-native, non-invasive plants. Helping to remove invasive plants from our state parks and natural areas can also be rewarding. There are a number of different organizations that work at the local level to organize volunteer invasive-plant removal. These groups work in all sorts of habitats, from dry land to in and around wetlands and water bodies – rivers, streams, lakes and swamps. Some groups focus exclusively on undeveloped or natural areas; others work in cities, towns and suburbs.

Management of invasive plants varies from habitat to habitat and species to species. Plant managers use several control methods depending on the plant and its habitat:

- **Chemical control** is the use of specially-formulated herbicides registered with the U.S. EPA and the Florida Department of Agriculture and Consumer Services to kill or damage plants.
- **Biological control** is the use of imported insects, fish, and other organisms that eat, infect, or otherwise keep specific invasive plants at low levels indefinitely. Before releasing such organisms, the United States Department of Agriculture and the Florida Department of Agriculture and Consumer Services must verify that biocontrols have proven to be host-specific, meaning they only live on and/or eat the targeted invasive plant.
- **Mechanical control** is the use of specially-made machines to harvest invasive plants by cutting them, collecting them, and transporting them to a designated place to decompose.
- **Physical control** includes hand-pulling, drawdowns (water removal), flooding, burning, dredging, and shading to control invasive plants.
- **Integrated Pest Management (IPM)** is a combination of the above methods. The integrated approach does not refer to a specific management technique, but rather a multi-strategy tactic that uses suitable and compatible techniques and methods to maintain exotic pest plant populations below levels that will cause significant economic and environmental damage.

Invasive Plants Reading Activity (MS/HS) – answer in <u>complete sentences</u>.

1. What is meant by an invasive plant?

   An invasive plant species is a non-native plant that has established self-sustaining populations outside of human cultivation and is causing economic and/or environmental harm.

2. Can you explain why some non-native plants thrive when introduced to a new area?

   Non-native plant species are sometimes able to outgrow or replace native plant populations because the non-native plant has been taken away from its normal insect enemies, diseases, climate conditions and other stresses that keep it under control in its own native range.

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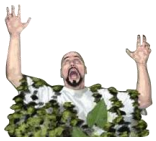

3. State how water hyacinth can cause both ecological and economic harm.

   Water hyacinth reproduce so fast that they can completely cover a river or lake and can cause oxygen problems for the fish and animals in the water (environmental harm.) Water hyacinth also prevents boaters from using the lake and spending money in the community (economic harm.)

4. What can you do to help minimize the spread of invasive plants?

   You can become a responsible land manager by learning to recognize invasive plants and make sure not to plant them or move them. Helping to remove invasive plants from our parks and natural areas will also help minimize the spread of invasive plants.

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

9th - 12th Grades

SC.912.L.17.8: Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.

Common Core State Standards

6th Grade

Common Core Code	FL Common Core Code	Common Core Standard
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.
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.
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.
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.

7th Grade

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.
RI.7.4	LAFS.7.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 a specific word choice on meaning and tone.
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.
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.

8th Grade

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.
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.
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.
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.

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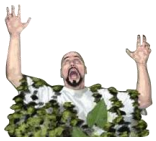

9th – 10th Grade

RI.9-10.4	LAFS.910.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 cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
L.9-10.4	LAFS.910.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9–10 reading and content, choosing flexibly from a range of strategies.
RST.9-10.4	LAFS.910.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 9–10 texts and topics.

11th – 12th Grade

RI.11-12.4	LAFS.1112.RI.2.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
L.11-12.4	LAFS.1112.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies.
RST.11-12.4	LAFS.1112.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 11–12 texts and topics.

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