

Module 3 ~ Why Manage Invasive Plants? (UE/MS/HS)
Talking Points – Why Manage Invasive Plants? Presentation



To accompany *Why Manage Invasive Plants?* Presentation and/or PowerPoint

For an overview of plant management and control methods in Florida: <http://plants.ifas.ufl.edu/manage/>

Slide Number	Notes
0:31	These mats of water lettuce are blocking the navigation channel on Lake Rousseau in Citrus/Levy County.
0:50	The landscape shown here behind Otto depicts two invasive floating plants: water hyacinth (dark green) and water lettuce (light green). Both are from South America.
1:43	<p>Photo number 1, on the far left, depicts cat-tails and American lotus (yellow flower); both are native to Florida. (For details on native, non-native and invasive plants, see <i>Silent Invaders</i> PowerPoint lessons for UE, MS and HS at http://plants.ifas.ufl.edu/education)</p> <p>Cat-tails are among the most common of all aquatic and wetland plants anywhere. Cat-tails get their name from their brown cylindrical flower spikes which can be more than 1 ft. long. They provide protective cover and nesting areas for animals and birds.</p> <p>The next photo (plant with white flower) depicts "duck potato," an emersed plant, which is utilized by ducks; they eat the seeds. The plant with the purple flower is a native pickerelweed, also an emersed plant. It is a prolific grower and can cover large areas, providing wildlife habitat and helping stabilize the shoreline of many lakes, ponds and stormwater systems. It's related to the water hyacinth, which is invasive. (Do you see any similarity in the flowers?)</p> <p>The last photo (<i>far right</i>) depicts eel grass (also known as "tape grass"), an important native submersed plant. It spreads by runners and sometimes forms tall underwater meadows providing habitat for snails, aquatic insects, fish, turtles, etc. The long strands, visible in the foreground of this picture, are flower stalks. Eel grass is common in still (lakes) and fast-flowing waters (rivers).</p>
2:03	Image depicts another infestation of water hyacinth, completely blocking a waterway.
2:37	Image depicts Old World climbing fern (<i>Lygodium microphyllum</i>). This plant species is native to Asia and Australia. It climbs into trees and shades out native vegetation in hundreds of acres in east-central Florida. Dense growth of this fern can be a fire hazard, enabling ground fires to reach into tree canopies where flames can kill the growing branches. This is a perfect example of how invasive exotic plants can change physical processes in plant communities.
3:12	The photo on the right depicts an infestation of invasive torpedo grass that covered almost 20,000 acres of the marsh on Lake Okeechobee. Torpedo grass was brought to Florida in the early 1900s as a pasture grass for cattle that would grow in wet places; it is now one of the most widespread invasive plants in Florida water bodies.
3:36	The last image shown here is hydrilla covering the swimming beach at Wakulla Springs State Park. Hydrilla was brought here in the early 1950s as an aquarium plant and soon became extremely invasive in Florida waterbodies. Hydrilla is a submersed plant that roots in the bottom but grows to the surface and forms these dense mats that block light and oxygen exchange into the water column.



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3:56	<p>Left: mechanical harvester on Lake Okeechobee. Middle: a water hyacinth shredder. Right: early attempts to control hyacinth with herbicides.</p>
4:17	<p>The popular story about water hyacinth's introduction: water hyacinth (a floating plant) was on display at the Cotton Exposition in New Orleans in 1884 because of its beautiful flower. A visitor brought some back to a pond along the St Johns River and when they overgrew the pond, plants were thrown into the nearby St Johns River.</p> <p>A few more factoids about water hyacinth: This invasive nuisance is considered one of the world's worst weeds; it often jams rivers and lakes with uncounted thousands of tons of floating plant matter. A healthy acre of water hyacinths can weigh up to 200 tons! In the U.S., water hyacinth is present throughout the southeast, as well as in California and Washington state. Water hyacinth grows in all types of freshwaters. In Florida, where for 100 years this weed had the "upper-hand," it is now successfully managed (in most places) with regular maintenance control practices. This means that field crews have to constantly work to keep the plant numbers at their lowest possible levels, so our rivers and lakes remain usable.</p> <p>In the rivers of South America, where water hyacinth are thought to have originated, the plants developed the ability to reproduce quickly in response to (natural) annual flooding cycles, with floods of up to 60-90 feet. These events flush the plants out to sea each year where they die once exposed to saltwater. As a survival mechanism, hyacinth plants leave behind millions of seeds that germinate as the waters recede during the dry season. This ensures the plants' survival another year. Such prolific seed production is what gives water hyacinth an "edge" when it's introduced to new areas, allowing it to take over its new habitat. An interesting side note: now that many of the rivers in South America are being dammed for hydropower, we are seeing hyacinths become a problem in their own native habitats because they are no longer being flushed out to sea on an annual basis.</p>
4:39	<p>This is the loading dock on the St Johns River in Palatka, FL.</p>
5:38	<p>This image shows hydrilla completely covering the surface, in about 5-7 feet of water.</p>
7:23	<p>Plant managers are controlling small infestations of water hyacinth in Lake Istokpoga, in Highlands County, to preserve the native plants that you see in the background.</p>
8:20	<p>Both of these pictures are from Wakulla Springs State Park near Tallahassee, Florida. More than 6 million pounds of hydrilla were removed by hand and harvesters in a two-year period from around the swimming area. At the end, hydrilla grew even thicker than when the program started. Eventually, a herbicide treatment program was developed to control the hydrilla once each year without damaging native plants or animals.</p>
8:45	<p>Left photo: the flood control structure and outfall canal on the south end of Lake Toho in Osceola County. Right photo: hydrilla growing in the Myakka River State Park (in Sarasota County) broke loose and washed downstream where it pushed against the park bridge. The hydrilla was so thick you could walk on it (about 6-7 feet deep at the bridge).</p>
9:15	<p>Native submersed aquatic plants provide oxygen for all kinds of organisms, including fish.</p>
9:29	<p>Mosquitoes lay eggs in the water that collects in water hyacinth and some mosquito larvae tap into the roots of water lettuce to use as a source of oxygen as they develop.</p>

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<p>9:45</p>	<p>Florida lakes that have an abundance of plants tend to have "mucky" bottom sediments. The muck is from an accumulation of plant material that is constantly dropping to the bottom and decaying, like leaves that fall to the ground under a tree. In lakes with invasive plant problems, this naturally occurring process can become accelerated. Researchers at UF found that muck sediment (from dead plant material) builds up about 4 times faster under a mat of water hyacinth (than in open water). Water hyacinth roots, leaves, and shoots are constantly dying and falling off the plants; one acre of water hyacinth can shed many tons of rotting plant material to the lake or river bottom each year.</p> <p>More about sedimentation in lakes: While some level of plant material and sedimentation supports a healthy ecosystem, too much can cause problems (suffocating bottom dwelling organisms and preventing fish from spawning). Under natural conditions, Florida lakes used to be able to sustain themselves through periodic flooding and drying processes. Floods would thin out dense plant growth through shading or scouring and also flush organic debris into the uplands and marshes surrounding the lake. Plant growth in lakes was also thinned by droughts, especially in the dry winter months when lake levels naturally dropped, which exposed and/or killed back plants. Sediments were dried and compacted as a result, allowing the lake bottom to re-harden. Occasional fire during droughts burned off plant thatch and organic material exposing sandy deposits on the bottom of the lakes. Today, most Florida lake levels are stabilized with some sort of water controlling structure to reduce flooding damage to surrounding homes and to prevent them from becoming too shallow so they can be used year-round. This artificial stabilization leads quickly to organic plant material build-up and requires occasional de-watering and scraping of accumulated muck from the bottom.</p>
<p>11:09</p>	<p>Herbicides are approved by the US Environmental Protection Agency and the FL Department of Agriculture and Consumer Services after many years of testing for use to control plants in lakes, rivers, and canals.</p>
<p>11:31</p>	<p>Clockwise from the top: This image was taken while looking down from a helicopter at a mat of water hyacinth. The hyacinth ripped up beneficial native bulrush plants as the wind shifted the mat back and forth. The light brown straw-like plants are the dead bulrush.</p> <p>Lower right photo: a water level view of water hyacinth pushing over and covering up a stand of bulrush.</p> <p>Lower left photo: water lettuce (light green) is covering the open water habitat on the south end of Lake Okeechobee. (Note: Bulrush is an important native food to ducks and many other forms of wildlife.)</p>
<p>13:14</p>	<p>Alligatorweed flea beetles were released in the late 1960s and today still provide such good control, that managers rarely need to use herbicides or mechanical controls to manage alligatorweed.</p>
<p>13:56</p>	<p>Harvesters are used on a smaller scale since they cannot remove invasive plants fast enough to prevent them from becoming problems. Mechanical harvesters also have a few other limitations: when using these large machines to remove invasive plants, it is impossible to be selective about which plants are removed so many native plants are taken out along with the invasive plants. Many animals are lost as well, because they are unable to escape a harvester's path as it is removing plants.</p>



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<p>14:12</p>	<p>Left to right: This man is using a small rake to scrape invasive hygrophylla from a much larger trash rake -- a device that prevents plant materials from clogging pumps at this south Florida flood control facility.</p> <p>Middle photo: Divers pictured here are suction-dredging hydrilla from the swimming beach at Wakulla Springs State Park.</p> <p>Right photo: Exposed hydrilla is viewable in the background of the photo, along with some native water lotus plants (in the foreground). This picture was taken during a winter "drawdown" on Rodman Reservoir. "Drawdowns" are used as a management technique to control aquatic vegetation artificially by manipulating water levels. By lowering water levels, plants can be exposed to freezing and drying and it can allow bottom sediments to dry out and become hard again. These types of water level manipulation techniques are limited to closed water bodies such as lakes, ponds, canals, and reservoirs.</p>
<p>15:39</p>	<p>Water hyacinth plants stacked up against the lakeshore.</p>
<p>15:53</p>	<p>Upper right photo: Water hyacinth covering the entire Withlacoochee River channel in Pasco County.</p>
<p>16:56</p>	<p>An aquatic plant management class, taking place aboard airboats while sitting in a patch of water lettuce.</p>



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