

3.5 EXOTIC PLANT ERADICATION PROGRAM

Native plant communities evolve with a complex relationship of natural controls that keep them in balance. These natural controls may include environmental requirements, competing plant species, herbivores including insects, and pathogens. When exotic plants are introduced to areas, they often have a competitive advantage over native plants because natural controls of the exotic plants are not present. Removal of exotic plant species and restoration of native communities includes supplemental control methods to replace natural controls. These supplemental controls may include manual and/or mechanical removal, physical control such as fire or water level manipulation, chemical control including application of herbicides, and biological controls such as natural insect or pathogenic controls. The ultimate exotic plant control objective is to remove exotic species and re-establish natural conditions that will restore normal competitive processes, reducing the potential for re-invasion and the requirement for continual maintenance.

Exotic plant species commonly found in the Stevenson Creek Watershed are listed in Table 3.5-1:

Table 3.5-1 Exotic Plant Species Found in the Stevenson Creek Watershed

Scientific Name	Common Name	Scientific Name	Common Name
<i>Casuarina equisetifolia</i>	Australian pine	<i>Melaleuca quinquenervia</i>	Melaleuca
<i>Colocasia esculenta</i>	Wild taro	<i>Melia azedarach</i>	Chinaberry
<i>Dioscorea bulbifera</i>	Air-potato	<i>Panicum repens</i>	Torpedo grass
<i>Eichhornia crassipes</i>	Water-hyacinth	<i>Ricinus communis</i>	Castor bean
<i>Enterolobium contortisiliquum</i>	Ear-pod tree	<i>Sapium sebiferum</i>	Chinese tallow tree
<i>Hibiscus tiliaceus</i>	Mahoe	<i>Schinus terebinthifolius</i>	Brazilian pepper
<i>Hydrilla verticillata</i>	Hydrilla	<i>Typha sp.</i>	Cattail
<i>Leucaena leucocephala</i>	Lead tree	<i>Urena lobata</i>	Caesar's weed
<i>Ludwigia peruviana</i>	Primrose willow	<i>Wedelia trilobata</i>	Wedelia

Citation: Florida Exotic Pest Plant Council. FLEPPC 1999 List of Florida's Most Invasive Species. Internet: <http://www.fleppc.org/99list.htm>



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Current exotic plant control techniques used by City of Clearwater employees for non-aquatic vegetation include manual removal, herbicide application, and burning. Mechanical removal is not effective for control of Australian pine, Brazilian pepper, or melaleuca when used alone because the disturbance of soil creates conditions for regrowth from seeds and root fragments, and allows further invasion by pioneering exotic plants. Intense follow up with other control methods, preferably herbicide, is also required. Burning and water level manipulation are not applicable within this watershed due to the high density of the residential and commercial areas.

Aquatic nuisance vegetation is removed from lakes and ponds via herbicide application, manual removal, and the installation of native species. Private contractors do the majority of the exotic plant maintenance. The maintenance activity in the watershed is concentrated on the removal and treatment of emergent nuisance species such as *Ludwigia peruviana*, *Typha* sp., and *Eichhornia crassipes*. These plants can choke waterways and cause flooding.

3.5.1 Brazilian Pepper

Brazilian pepper is the most aggressive exotic in the watershed, and has been found in every terrestrial plant community. This exotic forms dense monocultures in previously disturbed areas and along roadside ditches. Brazilian pepper seeds are commonly dispersed by birds and small mammals.

Removal techniques for Brazilian pepper currently used in the City of Clearwater include manual removal and herbicide application. Herbicide application involves basal bark application of a Garlon 4/diesel solution in a minimum 4-inch band approximately 6 to 12 inches above ground. The Garlon 4/diesel solution consists of two ounces of Garlon 4, Ortho X-77 spreader, and one quart diesel mixed into three quarts of water. Diesel is added to the herbicide to increase adherence to the stem, and decrease the potential for wash-off during rainfall. Retreatment may be required for larger stems. Dead stems are left standing to decay, or are removed to a landfill or mulch site. Mist application of a Garlon 4/diesel solution using one part Garlon 4 in 50 parts water is also required for treatment of seedlings under mature trees. Garlon 4 should also be applied to



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roots to eliminate regrowth. Safety equipment required during application includes a respirator, safety face shield, rubber gloves, and protective clothing. Eyewash should be carried to flush eyes in case of accidental splash or spray.

3.5.2 Australian pine

Australian pine also spreads through dispersion of seeds deposited along shorelines. Australian pine grows rapidly, forms dense monocultures, and tolerates saline conditions and a wide range of soil moisture. The dense shade and thick litter layer produced by stands of Australian pine prevent germination and growth of native species that provide food for birds and small mammals. Australian pine boles do not decay readily after being killed by girdling and tend to dry without decaying (“petrify”).

Australian pine removal techniques currently used in the City of Clearwater include cutting of the stem with a chainsaw, and spraying the stump with the Garlon 4/diesel solution described for Brazilian pepper. The cut stem is left to dry (“petrify”) for later disposal or use as fuel source. The effects of herbicide application will be noticeable within 3 to 7 days of application. Although trees can be treated throughout the year, herbicide application in April and May is most effective, followed by applications in June or July. Retreatment is performed after one month if required for larger trees. Small stems can be hand-pulled, bagged, and burned. The Garlon 4/diesel solution is also applied to roots to eliminate regrowth. Safety equipment required during application is the same as described for Brazilian pepper.

3.5.3 Melaleuca

Development activities, water level alterations, and climatic conditions make all areas in south and central Florida vulnerable to invasion by this exotic. Melaleuca grows very rapidly with trees as young as two years producing seeds. Melaleuca bark is thick and fire resistant; consequently, this exotic cannot be controlled by fire. Viable seeds formed on trees cannot be killed with herbicide or by cutting of the stem because any interference with water flow through the xylem to the seed capsules triggers immediate seed release.



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Melaleuca removal techniques currently utilized in the City of Clearwater include removal as encountered including manual cutting of the trunk, followed by stump treatment with herbicide Garlon 4. Seed capsules are put in plastic garbage bags within 20 minutes of stem cutting for disposal at the Pinellas County landfill. Landfill disposal includes burial at a depth sufficient to allow decay of the seed capsules, eliminating the potential for future sprouting. Stems are cut up and left to decay. Small seedlings are hand pulled, bagged, and burned; saplings too large to be pulled are sprayed with Garlon 4. Garlon 4 is also applied to the ground within an approximately 10-foot radius of the trunk to prevent growth of seedlings. Retreatment is provided as necessary at approximately six-month intervals.

3.5.4 Other Exotics

Other exotics currently present in areas within the watershed include ear-tree, chinaberry, Caesar weed, and air potato. These exotics are more easily controlled than those listed above. Removal techniques currently used for ear-tree include girdle and application of the Garlon 4/diesel solution described for Brazilian pepper. Chinaberry and air potato are controlled through manual removal and application of Garlon 4. These exotics are removed as encountered.

3.5.5 Estuary Restoration Plan

The U.S. Army Corps of Engineers is currently reviewing an application from the City of Clearwater to participate in a Brownfields demonstration project using the Stevenson Creek Estuary. The proposed Section 206 project will involve the removal of approximately 80,000 cubic yards of muck sediments from the creek between the Douglas Avenue Bridge and the North Fort Harrison Bridge. In addition to the muck removal, the project will involve the removal of nuisance species that currently grow on some of the sediment deltas and on the shoreline of the creek. Species to be removed include cattail, torpedo grass, Brazilian pepper, melaleuca, and mahoe. Once the nuisance vegetation accumulated sediments are removed, the shorelines of the creek will be planted with native vegetation, such as mangroves, cord grass and giant leather leaf fern.



3.5.6 Summary and Recommendations

The proposed watershed improvements are expected to effect exotic control activities in areas currently being maintained, and to facilitate removal and maintenance activities in additional exotic species affected areas by increasing accessibility. Some exotic species removal may be proposed as mitigation for impacts to wetlands during watershed improvements.

Precautions must be taken during all grading and filling activities associated with the watershed improvements, as well as removal of large-stem exotics, to minimize the enhancement of seedbed conditions. Enhancement may arise from scraping of existing seedbeds or deposition of materials that provide a seed source for exotics.

Damage to non-target vegetation and potential water contamination are potential concerns for exotics control. Herbicides effective for Australian pine and Brazilian pepper control are not selective and many native species are highly sensitive to these herbicides. Over spray and heavy rainfall following application can wash the herbicide off the trunk and damage non-target vegetation and/or enter surface water. For these reasons, the use of injection techniques instead of basal bark or girdle applications is preferred for exotics control in wetlands. In addition, while the current practice of leaving stems to decay or “petrify” provides some habitat value as bird perches and small mammal cover, stems and debris generated from larger scale exotics removal activities must be removed from wetland areas.

Exotic plant species control methods and recommendations discussed above are primarily applicable to the undeveloped public lands within the watershed. Development of a detailed plan for exotics removal and maintenance is recommended.

