

TIPPC Plant Assessment Form

For use with “[Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands](#)”
by the California Invasive Plant Council and the Southwest Vegetation Management Association

Version February 2003, modified July 2009 for the Texas Invasive Plant & Pest Council –
www.texasinvasives.org

Table 1. Species and Evaluator Information

Species name (Latin binomial):	Hydrilla verticillata
Synonyms:	
Common names:	Hydrilla
Evaluation date (mm/dd/yy):	07/06/2011
Evaluator #1 Name/Title:	Travis Gallo/Ecologist
Affiliation:	The Lady Bird Johnson Wildflower Center
Phone numbers:	512-232-0116
Email address:	tgallo@wildflower.org
Address:	4801 La Crosse Ave., Austin, Texas 78704
Evaluator #2 Name/Title:	enter text here
Affiliation:	enter text here
Phone numbers:	enter text here
Email address:	enter text here
Address:	enter text here

Section below for list committee use—please leave blank

List committee members:	enter text here
Committee review date:	enter text here
List date:	enter text here
Re-evaluation date(s):	enter text here

<p>General comments on this assessment: Originally assessed for the City of Austin Invasive Management Plan</p>

Table 2. Criteria, Section, and Overall Scores

Species: enter text here

Region: enter text here

1.1	Impact on abiotic ecosystem processes	A	Rev'd Sci. Pub'n
1.2	Impact on plant community	A	Rev'd Sci. Pub'n
1.3	Impact on higher trophic levels	A	Rev'd Sci. Pub'n
1.4	Impact on genetic integrity	D	Other Pub. Mat'l

Impact

Enter four characters from Q1.1-1.4 below:

AAAD

Using matrix, determine score and enter below:

A

2.1	Role of anthropogenic and natural disturbance	A	Other Pub. Mat'l
2.2	Local rate of spread with no management	A	Other Pub. Mat'l
2.3	Recent trend in total area infested within state	B	Other Pub. Mat'l
2.4	Innate reproductive potential Wksht A	A	Rev'd Sci. Pub'n
2.5	Potential for human-caused dispersal	A	Rev'd Sci. Pub'n
2.6	Potential for natural long-distance dispersal	A	Rev'd Sci. Pub'n
2.7	Other regions invaded	A	Observational

Invasiveness

Enter the sum total of all points for Q2.1-2.7 below:

26

Use matrix to determine score and enter below:

A

Plant Score

Using matrix, determine Overall Score and Alert Status from the three section scores and enter below:

**High
No Alert**

3.1	Ecological amplitude/Range	A	Other Pub. Mat'l
3.2	Distribution/Peak frequency Wksht C	A	Other Pub. Mat'l

Distribution

Using matrix, determine score and enter below:

A

Documentation

Average of all questions

3.38

Table 3. Documentation (List all references at end of PAF. Short citations may be used in Table 3.)

Impacts	
Question 1.1 Impact on abiotic ecosystem processes	A Rev'd Sci. Pub'n back
Identify ecosystem processes impacted: Dense underwater stands of hydrilla raise water pH and temperature, and lower dissolved oxygen.	
Sources of information: enter text here Hydrilla. Technical Information about Hydrilla. 1999. Accessed: 06 July 11: http://www.ecy.wa.gov/programs/wq/plants/weeds/hydrilla.html . Langeland, K.A. 1996. Hydrilla verticillata (L.F.) Royle (Hydrocharitaceae), "The Perfect Aquatic Weed." Castanea 61:293-304. The Quiet Invasion: A Guide to Invasive Plants of the Galveston Bay Area. Lisa Gonzalez and Jeff DallaRosa. Houston Advanced Research Center, 2006.	
Question 1.2 Impact on plant community composition, structure, and interactions	A Rev. Sci. Mat'l back
Identify type of impact or alteration: It will grow with less light and is more efficient at taking up nutrients than native species. Taken from California Invasive Plant and Pest Council: <i>Physical blockage displaces native aquatic vegetation by forming dense stands or large subsurface mats. Dense canopies can often shade out native vegetation. Hydrilla can grow at lower light intensities than many other plants, absorb carbon from water more efficiently than other plants and can continue to thrive during the summer when carbon can become limiting, store extra P, tolerant of a wide range of water conditions, will thrive in flowing and still water, and tolerate salinity of up to 10 ppt, encroaching upon outer limits of estuaries.</i>	
Sources of information: enter text here Hydrilla. Technical Information about Hydrilla. 1999. Accessed: 06 July 11: http://www.ecy.wa.gov/programs/wq/plants/weeds/hydrilla.html . Langeland, K.A. 1996. Hydrilla verticillata (L.F.) Royle (Hydrocharitaceae), "The Perfect Aquatic Weed." Castanea 61:293-304. The Quiet Invasion: A Guide to Invasive Plants of the Galveston Bay Area. Lisa Gonzalez and Jeff DallaRosa. Houston Advanced Research Center, 2006.	
Question 1.3 Impact on higher trophic levels	A Rev'd Sci. Pub'n back
Identify type of impact or alteration: While the opinion that hydrilla is beneficial for sportfish production is supported by certain research, other research suggests that largemouth bass are adversely affected when Hydrilla coverage exceeds 30%. While the number of fish is often increased, large fish become rarer.	
Sources of information: enter text here Langeland, K.A. 1996. Hydrilla verticillata (L.F.) Royle (Hydrocharitaceae), "The Perfect Aquatic Weed." Castanea 61:293-304. The Quiet Invasion: A Guide to Invasive Plants of the Galveston Bay Area. Lisa Gonzalez and Jeff DallaRosa. Houston Advanced Research Center, 2006.	
Question 1.4 Impact on genetic integrity	D Other Pub. Mat'l back
Identify impacts: enter text here No known hybridization. No native Hydrilla species	

Sources of information: enter text here	
Waitt, D. 2011. Native Plant Information Network. Accessed 6 July 2011: http://wildflower.org/plants/	
Invasiveness	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	A Other Pub. Mat'l back
Describe role of disturbance: enter text here	
No disturbance needed. Was introduced through aquarium trade and can be passed easily between water bodies on boats and trailers.	
Sources of information: enter text here	
Hydrilla. Technical Information about Hydrilla. 1999. Accessed: 06 July 11: http://www.ecy.wa.gov/programs/wq/plants/weeds/hydrilla.html .	
Question 2.2 Local rate of spread with no management	A Other Pub. Mat'l back
Describe rate of spread: no information	
Hydrilla was first discovered in Lake Austin in July 1999, when Texas Parks and Wildlife (TPWD) documented approximately 23 acres of the plants. By July 2000, growth had increased to 200 acres.	
Sources of information: enter text here	
Gilroy, M. 2011. Hydrilla. City of Austin Watershed Protection Department. Accessed 6 July 2011: http://www.ci.austin.tx.us/watershed/hydrilla_faqs.htm#done .	
Question 2.3 Recent trend in total area infested within state	B Other Pub. Mat'l back
Describe trend: no information	
Hydrilla is actively controlled in reservoirs and usually in publicly owned bodies of water therefore is not doubling in size every ten years. But without management Hydrilla could quickly spread into water bodies were it is not present.	
Sources of information: enter text here	
Gilroy, M. 2011. Hydrilla. City of Austin Watershed Protection Department. Accessed 6 July 2011: http://www.ci.austin.tx.us/watershed/hydrilla_faqs.htm#done .	
Question 2.4 Innate reproductive potential	A Rev'd Sci. Pub'n back
Describe key reproductive characteristics:	
Refer to Worksheet A.	
Sources of information:	
Hydrilla. Technical Information about Hydrilla. 1999. Accessed: 06 July 11: http://www.ecy.wa.gov/programs/wq/plants/weeds/hydrilla.html .	
Langeland, K.A. 1996. Hydrilla verticillata (L.F.) Royle (Hydrocharitaceae), "The Perfect Aquatic Weed." Castanea 61:293-304.	
The Quiet Invasion: A Guide to Invasive Plants of the Galveston Bay Area. Lisa Gonzalez and Jeff DallaRosa. Houston Advanced Research Center, 2006.	
Question 2.5 Potential for human-caused dispersal	A Rev. Sci. Mat'l back
Identify dispersal mechanisms: enter text here	
Hydrilla is easily and commonly spread by fragments on boats and boat trailers.	
Sources of information: enter text here	
Gilroy, M. 2011. Hydrilla. City of Austin Watershed Protection Department. Accessed 6 July 2011:	

<p>http://www.ci.austin.tx.us/watershed/hydrilla_faqs.htm#done.</p> <p>Hydrilla. Technical Information about Hydrilla. 1999. Accessed: 06 July 11: http://www.ecy.wa.gov/programs/wq/plants/weeds/hydrilla.html.</p> <p>Langeland, K.A. 1996. Hydrilla verticillata (L.F.) Royle (Hydrocharitaceae), "The Perfect Aquatic Weed." Castanea 61:293-304.</p> <p>The Quiet Invasion: A Guide to Invasive Plants of the Galveston Bay Area. Lisa Gonzalez and Jeff DallaRosa. Houston Advanced Research Center, 2006.</p>	
Question 2.6 Potential for natural long-distance dispersal	A Rev. Sci. Pub'n back
<p>Identify dispersal mechanisms: enter text here</p> <p>Hydrilla can grow by fragmentation or tubers that can both be broken off and carried long distances down waterways. Tubers can survive ingestion by water fowl. There is potential for seeds to be spread by waterfowl and other birds.</p>	
<p>Sources of information: enter text here</p> <p>Hydrilla. Technical Information about Hydrilla. 1999. Accessed: 06 July 11: http://www.ecy.wa.gov/programs/wq/plants/weeds/hydrilla.html.</p> <p>Langeland, K.A. 1996. Hydrilla verticillata (L.F.) Royle (Hydrocharitaceae), "The Perfect Aquatic Weed." Castanea 61:293-304.</p>	
Question 2.7 Other regions invaded	A Observational back
<p>Identify other regions: enter text here</p> <p>Hydrilla has the potential to grow in any waterway in Texas and has not invaded all of them. Therefore it is a great threat to waterways where it is not currently present.</p>	
<p>Sources of information: enter text here</p> <p>Observation: T. Gallo</p>	
Distribution	
Question 3.1 Ecological amplitude/Range	A Other Pub. Mat'l back
<p>Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: enter text here</p> <p>Refer to Worksheet B. Hydrilla is severely underreported in Texas.</p>	
<p>Sources of information: enter text here</p> <p>Invaders of Texas Citizen Science Observations (Accessed 8 July 2011: http://texasinvasives.org/observations/search.php?satellite=&sn=HYVE3&cn=</p> <p>USDA PLANTS Database (Accessed 8 July 2011: http://plants.usda.gov/java/county?state_name=Texas&statefips=48&symbol=HYVE3)</p>	
Question 3.2 Distribution/Peak frequency	A Other Pub. Mat'l back
<p>Describe distribution: enter text here</p> <p>Refer to Worksheet B. Hydrilla is severely underreported in Texas.</p>	
<p>Sources of information: enter text here</p> <p>Invaders of Texas Citizen Science Observations (Accessed 8 July 2011: http://texasinvasives.org/observations/search.php?satellite=&sn=HYVE3&cn=</p> <p>USDA PLANTS Database (Accessed 8 July 2011: http://plants.usda.gov/java/county?state_name=Texas&statefips=48&symbol=HYVE3)</p>	

References

List full citations for all references used in the PAF (short citations such as DiTomaso and Healy 2007 may be used in table above). **Websites** should include the name of the organization and the date accessed. **Personal communications** should include the affiliation of the person providing the observation. Enter each reference on a separate line; the table will expand as needed.

Examples:

Mitich, L. W. 1995. Intriguing world of weeds: Tansy ragwort. *Weed Technology*. 9: 402-404.

HEAR. Date unknown. *Emex spinosa*. Hawaiian Ecosystems at Risk.
www.hear.org/pier/species/emex_spinosa.htm. Accessed March 17, 2009

DiTomaso, J. M. Personal communication from Dr. Joe DiTomaso, Dept. of Plant Science, UC Davis. Email received 3/17/09.

enter text here

Worksheet A

Reaches reproductive maturity in 2 years or less	1
Dense infestations produce >1,000 viable seed per square meter	2
Populations of this species produce seeds every year.	1
Seed production sustained over 3 or more months within a population annually	1
Seeds remain viable in soil for three or more years	2
Viable seed produced with <i>both</i> self-pollination and cross-pollination	Yes/No?
Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes	1
Fragments easily and fragments can become established elsewhere	2
Resprouts readily when cut, grazed, or burned	1
	Total Pts
	Total Unknowns
	Score

Note any related traits: enter text here

Hydrilla produces tubers more often than seeds, but can produce 5,000 per square meter. Therefore the seed reference is referring to tubers.

Notes for Worksheet B - Texas Ecoregions

Question 3.1

Ecological amplitude

Refer to the worksheet and select the one letter below that indicates the number of different ecological types that this species invades in your state.

- A. Widespread—the species invades at least three Level III ecoregions **or** at least 22 Level IV ecoregions.
- B. Moderate—the species invades two Level III ecoregions 8 Level IV ecoregions.
- C. Limited—the species invades only one Level III ecoregion **and** two to six Level IV ecoregions.
- D. Narrow—the species invades only one Level IV ecoregion.
- U. Unknown.

Worksheet B - Texas Ecoregions (Griffen et al, 2004).

* A. means >50% of type occurrences are invaded; B means >20% to 50%;
 C. means >5% to 20%; D. means present but ≤5%; U. means unknown

Code	Level III	Level IV	Score
ER01	Arizona/New Mexico Mountains	Chihuahuan Desert Slopes	
		Montane Woodlands	
ER02	Chihuahuan Deserts	Chihuahuan Basins and Playas	
		Chihuahuan Desert Grasslands	
		Low Mountains and Bajadas	
		Chihuahuan Montane Woodlands	
		Stockton Plateau	
ER03	High Plains	Rolling Sand Plains	
		Canadian/Cimarron High Plains	
		Llano Estacado	
		Shinnery Sands	
		Arid Llano Estacado	
ER04	Southwestern Tablelands	Canadian/Cimarron Breaks	
		Flat Tablelands and Valleys	
		Caprock Canyons, Badlands, and Breaks	
		Semiarid Canadian Breaks	
ER05	Central Great Plains	Red Prairie	
		Broken Red Plains	
		Limestone Plains	
ER06	Cross Timbers	Eastern Crossttimbers	A
		Western Crossttimbers	
		Grand Prairie	
		Limestone Cut Plain	
		Carbonate Cross Timbers	
ER07	Edwards Plateau	Edwards Plateau Woodland	
		Llano Uplift	
		Balcones Canyonlands	A
		Semiarid Edwards Plateau	
ER08	Southern Texas Plains	Northern Nueces Alluvial Plains	
		Semiarid Edwards Bajadas	
		Texas-Tamaulipan Thornscrub	
		Rio Grande Floodplain and Terraces	
ER09	Texas Blackland Prairies	Northern Blackland Prairies	
		Southern Blackland/Fayette Prairie	
		Floodplains and Low Terraces	
ER10	East Central Texas Plains	Northern Post Oak Savanna	
		Southern Post Oak Savanna	A
		San Antonio Prairie	
		Northern Prairie Outliers	
		Bastrop Lost Pines	
		Floodplains and Low Terraces	
ER11	Western Gulf Coastal Plain	Northern Humid Gulf Coastal Prairies	
		Southern Subhumid Gulf Coastal Prairies	
		Floodplains and Low Terraces	
		Coastal Sand Plain	
		Lower Rio Grande Valley	
		Lower Rio Grande Alluvial Floodplain	
		Texas-Louisiana Coastal Marshes	
		Mid-Coast Barrier Islands and Coastal Marshes	
Laguna Madre Barrier Islands and Coastal Marshes			
ER12	South Central Plains	Tertiary Uplands	
		Floodplains and Low Terraces	
		Pleistocene Fluvial Terraces	
		Southern Tertiary Uplands	
		Flatwoods	
		Red River Bottomland	

