

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):	Lygodium japonicum
Synonyms:	
Common names:	Japanese climbing fern
Evaluation date (mm/dd/yy):	05/02/2011
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:	Jed Aplaca/Superintendent
Affiliation:	Houston Parks and Recreation Department
Phone numbers:	713-222-5052, 281-460-2586
Email address:	jed.aplaca@houstontx.gov
Address:	115 Sabine st., Houston, TX 77007
Section below for list committee use	
List committee members:	Damon Waitt, John Karges,
Committee review date:	02/24/2012

Committee Comments:

Assessment is thorough and complete. Recommend listing JCF on the TDAnoxious and invasive plant list (Waitt).

Table 2. Criteria, Section, and Overall Scores

Species: *Lygodium japonicum* (Japanese Climbing Fern)

1.1	Impact on abiotic ecosystem processes	A	3
1.2	Impact on plant community	A	3
1.3	Impact on higher trophic levels	B	3
1.4	Impact on genetic integrity	U	3

Impact

Enter four characters from Q1.1-1.4 below:

AABU

Using matrix, determine score and enter below:

A

2.1	Role of anthropogenic and natural disturbance	A	3
2.2	Local rate of spread with no management	A	2
2.3	Recent trend in total area infested within state	U	2
2.4	Innate reproductive potential Wksht A	A	3
2.5	Potential for human-caused dispersal	A	3
2.6	Potential for natural long-distance dispersal	A	4
2.7	Other regions invaded	A	3

Invasiveness

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

18

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	3
3.2	Distribution/Peak frequency Wksht C	A	3

Distribution

Using matrix, determine score and enter below:

A

Documentation

Average of all questions

2.9

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 Other Pub. Mat'l back
Identify ecosystem processes impacted: Japanese climbing fern changes fire regime in pineywood forest by creating a fire ladder with its dead frons. This causes an increase in crown fires and can allow it to carry fire across wetland barriers that would have stopped the fire.	
Sources of information: enter text here K.A. Langeland, H.M Cherry, et al. 2008. Identification and Biology of Nonnative Plants in Florida’s Natural Areas – Second Edition. University of Florida-IFAS Pub SP 257. Miller, James H. 2003. Nonnative invasive plants of southern forests: a field guide for identification and control. Gen. Tech. Rep. SRS–62. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 93 p. Personal Communications: Dr. Ron Billings, Manager, Forest Health, Texas Forest Service. Randall Stocker, R. and K.V. Hupp. 2008. Chapter 6: Fire and Nonnative Invasive Plants in the Southeast Bioregion. USDA Forest Service Gen. Tech. Rep. RMRS-GTR-42-vol. 6. Zeller, M. and D. Leslie. 2004. Japanese Climbing Fern Control Trials In Planted Pine. <i>Wildland Weeds</i> Summer 2004.	
Question 1.2 Impact on plant community composition, structure, and interactions	A Other Pub. Mat'l back
Identify type of impact or alteration: It can grow so dense that it forms a living 'wall', leading to the elimination of seedlings and other native vegetation. Massive infestations displace all native flora and fauna, completely changing the ecosystem of the area.	
Sources of information: enter text here K.A. Langeland, H.M Cherry, et al. 2008. Identification and Biology of Nonnative Plants in Florida’s Natural Areas – Second Edition. University of Florida-IFAS Pub SP 257. Personal Communications: Dr. Ron Billings, Manager, Forest Health, Texas Forest Service. Randall Stocker, R. and K.V. Hupp. 2008. Chapter 6: Fire and Nonnative Invasive Plants in the Southeast Bioregion. USDA Forest Service Gen. Tech. Rep. RMRS-GTR-42-vol. 6.	
Question 1.3 Impact on higher trophic levels	B Other Pub. Mat'l back
Identify type of impact or alteration: By dominating the ground cover in pine forests and savannahs, Japanese climbing fern reduces the presence of granivore birds and herbivorous mammals.	
Sources of information: enter text here Leichty, E.R. 2010. Effects of Granivores and Herbivores on Pine Savanna Groundcover Vegetation. Ph.D. dissertation: Louisiana State University, Baton Rouge, LA.	
Question 1.4 Impact on genetic integrity	U Observational back
Identify impacts: No native <i>Lygodium</i> species in TX, and no known hybridization with native species.	

Sources of information: Observational, Floras of Texas, Gallo	
Native Plant Information Network: http://www.wildflower.org/plants/result.php?id_plant=LYPA3 (Accessed 2 May 2011).	
Correll, D. S. and M. C. Johnston. 1970. Manual of the vascular plants of Texas. Texas Research Foundation, Renner, Texas.	
Invasiveness	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	A Other Pub. Mat'l back
Describe role of disturbance: Can invade open forest and undisturbed lands.	
Sources of information: enter text here	
Miller, James H. 2003. Nonnative invasive plants of southern forests: a field guide for identification and control. Gen. Tech. Rep. SRS-62. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 93 p.	
Zeller, M. and D. Leslie. 2004. Japanese Climbing Fern Control Trials In Planted Pine. <i>Wildland Weeds</i> Summer 2004.	
Question 2.2 Local rate of spread with no management	A Observational back
Describe rate of spread: Increasing rapidly (doubling in <10 years)	
Sources of information: enter text here	
Personal Communications: Dr. Ron Billings, Manager, Forest Health, Texas Forest Service.	
Personal Communications: Joe Pase, Regional Forest Health Coordinator East Texas Region, Texas Forest Service.	
Personal Communications: Vanessa Adams, Biologist, Texas Parks and Wildlife – Caddo Lake Wildlife Management Area.	
Question 2.3 Recent trend in total area infested within state	U Observational back
Describe trend: no information	
Based on the Texas Forest Service most recent range map the population is increasing rapidly (doubling in range statewide in <10 years). Could be that the fern was in most counties 10 years ago, but only recently reported. So probably an A, but listing as an Unknown due to lack of evidence. Early flora (Correll and Johnston 1970) suggests that it was only found in a few s.e. counties at first. EDD Maps and BONAP (Kartesz 2011) maps show <i>Lygodium japonicum</i> from about 23 counties in SE Texas.	
Sources of information: enter text here	
Personal Communications: Dr. Ron Billings, Manager, Forest Health, Texas Forest Service.	
Personal Communications: Joe Pase, Regional Forest Health Coordinator East Texas Region, Texas Forest Service.	
Personal Communications: Vanessa Adams, Biologist, Texas Parks and Wildlife – Caddo Lake Wildlife Management Area.	
Correll, D. S. and M. C. Johnston. 1970. Manual of the vascular plants of Texas. Texas	

Research Foundation, Renner, Texas.	
Kartesz, J.T., The Biota of North America Program (BONAP). 2011. North American Plant Atlas (http://www.bonap.org/MapSwitchboard.html). Chapel Hill, N.C. [maps generated from Kartesz, J.T. 2010. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP). (in press)].	
EDDMapS. 2011. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health. Available online at http://www.eddmaps.org/ ; last accessed December 12, 2011.	
Question 2.4 Innate reproductive potential	A Other Pub. Mat'l back
Describe key reproductive characteristics:	
Refer to Worksheet A.	
Sources of information:	
Ferriter, Amy, ed. 2001. Lygodium management plan for Florida: A report from the Florida Exotic Pest Plant Council's Lygodium Task Force. [Orlando, FL]: Florida Exotic Pest Plant Council. 51 p.	
Lott, Michael S.; Volin, John C.; Pemberton, Robert W.; Austin, Daniel F. 2003. The reproductive biology of the invasive ferns <i>Lygodium microphyllum</i> and <i>L. japonicum</i> (Schizaeaceae): implications for invasive potential. <i>American Journal of Botany</i> . 90(8): 1144-1152.	
Munger, Gregory T. 2005. <i>Lygodium</i> spp. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2011, May 2].	
Volin, John C.; Lott, Michael S.; Muss, Jordan D.; Owen, Dianne; Stewart, Joy. 2003. The physiological ecology of the non-indigenous invasive <i>Lygodium microphyllum</i> in South Florida. In: Abstracts--Invasive plants in natural and managed systems: linking science and management: Proceedings, 7th international conference on the ecology and management of alien plant invasions; 2003 November 3-7; Ft. Lauderdale, FL. [Place of publication unknown]: Weed Science Society of America: 92. [Abstract].	
Volin, John C.; Lott, Michael S.; Muss, Jordan D.; Owen, Dianne. 2004. Predicting rapid invasion of the Florida Everglades by Old World climbing fern (<i>Lygodium microphyllum</i>). <i>Diversity and Distributions</i> . 10(5-6): 439-446.	
Question 2.5 Potential for human-caused dispersal	A Other Pub. Mat'l back
Identify dispersal mechanisms: Spores of this fern have been found in straw bales, and the distribution of mulch bales throughout the Southeast and East Texas. Also, spores possibly being spread on logging equipment.	
Sources of information: enter text here	
Randall Stocker, R. and K.V. Hupp. 2008. Chapter 6: Fire and Nonnative Invasive Plants in the Southeast Bioregion. USDA Forest Service Gen. Tech. Rep. RMRS-GTR-42-vol. 6.	
Zeller, M. and D. Leslie. 2004. Japanese Climbing Fern Control Trials In Planted Pine. <i>Wildland Weeds</i> Summer 2004.	
Personal Communications: Vanessa Adams, Biologist, Texas Parks and Wildlife – Caddo Lake Wildlife Management Area.	
Question 2.6 Potential for natural long-distance dispersal	A Rev'd, Sci. Pub'n back
Identify dispersal mechanisms: enter text here	
Spores can travel great distances, and in heavily infested area can create a rust colored haze. Long-distance dispersal of ferns is thought to rely on successful intragametophytic selfing, and this is shown to be present in <i>L.</i>	

japonicum.	
Sources of information: enter text here	
<p>Lott, M.S., J.C. Volin, R.W. Pemberton, D.F. Austin. 2003. The reproductive biology of the invasive ferns <i>Lygodium microphyllum</i> and <i>L. japonicum</i> (Schizaeaceae): implications for invasive potential. <i>American Journal of Botany</i> 90:1144-1152</p> <p>Van Loan, A.N. 2006. Japanese Climbing Fern: The Insidious “Other” <i>Lygodium</i>. <i>Wildland Weeds</i> Spring 2006.</p>	
Question 2.7 Other regions invaded	A Observational back
Identify other regions: enter text here	
Ecoregions similar to 34a, 34b, 34c, 32a, 32b, 32c, 33b, 33c, and 33f in Florida and Louisiana have been invaded and not yet recorded in Texas (refer to TX Ecoregion map below)	
Sources of information: enter text here	
Personal Communications: Joe Pase, Regional Forest Health Coordinator East Texas Region, Texas Forest Service.	
Distribution	
Question 3.1 Ecological amplitude/Range	A Other Pub. Mat'l back
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: enter text here	
Sources of information: enter text here	
<p>Invaders of Texas Citizen Science Program: http://texasinvasives.org/observations/mapping.php?search=Go&species=LYJA</p> <p>Personal Communications: Joe Pase, Regional Forest Health Coordinator East Texas Region, Texas Forest Service.</p> <p>The Texas Forest Service. 2011. Counties With Known Infestations of Japanese Climbing Fern in East Texas (Accessed 2 May 2011): http://texasinvasives.org/resources/publications/Japanese_Climbing_Fern_April2011.pdf.</p>	
Question 3.2 Distribution/Peak frequency	A Other Pub. Mat'l back
Describe distribution: enter text here	
Refer to Worksheet B.	
Sources of information: enter text here	
<p>Invaders of Texas Citizen Science Program: http://texasinvasives.org/observations/mapping.php?search=Go&species=LYJA</p> <p>Personal Communications: Joe Pase, Regional Forest Health Coordinator East Texas Region, Texas Forest Service.</p> <p>The Texas Forest Service. 2011. Counties With Known Infestations of Japanese Climbing Fern in East Texas (Accessed 2 May 2011): http://texasinvasives.org/resources/publications/Japanese_Climbing_Fern_April2011.pdf.</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	1
Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes	1
Fragments easily and fragments can become established elsewhere	0
Resprouts readily when cut, grazed, or burned	1
	10 pts 0 unknowns
	A (6+ points)

Note any related traits: enter text here

Japanese Climbing Fern is a fern, therefore these answers were adapted to the equivalent for a spore

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 Crosstimbers	
		Western Crosstimbers	
		Grand Prairie	
		Limestone Cut Plain	
		Carbonate Cross Timbers	
ER07	Edwards Plateau	Edwards Plateau Woodland	
		Llano Uplift	
		Balcones Canyonlands	
		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	C
		San Antonio Prairie	
		Northern Prairie Outliers	
		Bastrop Lost Pines	
		Floodplains and Low Terraces	C
ER11	Western Gulf Coastal Plain	Northern Humid Gulf Coastal Prairies	C
		Southern Subhumid Gulf Coastal Prairies	
		Floodplains and Low Terraces	C
		Coastal Sand Plain	
		Lower Rio Grande Valley	
		Lower Rio Grande Alluvial Floodplain	
		Texas-Louisiana Coastal Marshes	B
		Mid-Coast Barrier Islands and Coastal Marshes	
Laguna Madre Barrier Islands and Coastal Marshes			
ER12	South Central Plains	Tertiary Uplands	A
		Floodplains and Low Terraces	A
		Pleistocene Fluvial Terraces	
		Southern Tertiary Uplands	A
		Flatwoods	A
		Red River Bottomland	

Ecoregions of Texas

- | | | |
|--|---|--|
| <p>23 Arizona/New Mexico Mountains</p> <ul style="list-style-type: none"> 23a Chihuahuan Desert Slopes 23b Montane Woodlands <p>24 Chihuahuan Deserts</p> <ul style="list-style-type: none"> 24a Chihuahuan Basins and Playas 24b Chihuahuan Desert Grasslands 24c Low Mountains and Bajadas 24d Chihuahuan Montane Woodlands 24e Stockton Plateau <p>25 High Plains</p> <ul style="list-style-type: none"> 25b Rolling Sand Plains 25e Canadian/Cimarron High Plains 25i Llano Estacado 25j Shinnery Sands 25k Arid Llano Estacado | <p>26 Southwestern Tablelands</p> <ul style="list-style-type: none"> 26a Canadian/Cimarron Breaks 26b Flat Tablelands and Valleys 26c Caprock Canyons, Badlands, and Breaks 26d Semiarid Canadian Breaks <p>27 Central Great Plains</p> <ul style="list-style-type: none"> 27h Red Prairie 27i Broken Red Plains 27j Limestone Plains <p>29 Cross Timbers</p> <ul style="list-style-type: none"> 29b Eastern Cross Timbers 29c Western Cross Timbers 29d Grand Prairie 29e Limestone Cut Plain 29f Carbonate Cross Timbers | <p>30 Edwards Plateau</p> <ul style="list-style-type: none"> 30a Edwards Plateau Woodland 30b Llano Uplift 30c Balcones Canyonlands 30d Semiarid Edwards Plateau <p>31 Southern Texas Plains</p> <ul style="list-style-type: none"> 31a Northern Nueces Alluvial Plains 31b Semiarid Edwards Bajada 31c Texas-Tamaulipan Thornscrub 31d Rio Grande Floodplain and Terraces |
|--|---|--|



Griffith, G.E., Bryce, S.A., Omernik, J.M., Comstock, J.A., Rogers, A.C., Harrison, B., Hatch, S.L., and Bezanson, D., 2004, Ecoregions of Texas, U.S. Environmental Protection Agency, Corvallis, OR.