NAME OF SPECIES: *Ranunculus ficaria* L.	
Synonyms: *Ficaria verna* Huds.; *Ficaria ficaria* (L.) H. Karst.; *Ranunculus ficaria* var. *bulbifera* Marsden-Jones; *Ranunculus ficaria* ssp. *bulbifera* (Marsden-Jones) Lawalree; *Ranunculus ficaria* var. *ficaria* L.	
Common Name: Lesser celandine, fig buttercup, pilewort, small celandine, mukulaleinikki, lesser crowfoot, buttercup , dusky maiden	**Cultivars?** YES ☒ NO ☐
A. CURRENT STATUS AND DISTRIBUTION	
I. In Wisconsin?	1. YES ☒ NO ☐
	2. Abundance: Low (4)
	3. Geographic Range: several populations near Lake Geneva in Walworth county (13)
	4. Habitat Invaded: Only tetraploid associated with undisturbed (1) Disturbed Areas ☒ Undisturbed Areas ☒
	5. Historical Status and Rate of Spread in Wisconsin: First reported in May of 1970 in Walworth county. Appears to be spreading to other sites in the vicinity of several miles, although the patches are discontinuous they appear to be expanding in size (10, 13)) This is the only county it has been reported in (13).
	6. Proportion of potential range occupied: Low in WI
II. Invasive in Similar Climate Zones	1. YES ☒ NO ☐ Where (include trends): CT , DC , DE , IL , KY , MA, MD , MI , MO , NH , NJ , NY , OH , OR , PA , RI , TN , VA , WA and WV (4) Increasing in patch size and abundance (4) Extremely invasive in N. Ohio. In one park in Cleveland alone, aprox 400 acres are dominated by this plant. (16)
III. Invasive in Which Habitat Types	1. Upland ☒ Wetland ☒ Dune ☐ Prairie ☐ Aquatic ☐ Forest ☒ Grassland ☐ Bog ☐ Fen ☐ Swamp ☐ Marsh ☐ Lake ☐ Stream ☐ Other: Ditches, roadsides (11).
IV. Habitat Affected	1. Soil types favored or tolerated: pH of 4.4 to 6.9 (5)
	2. Conservation significance of threatened habitats: Large infestations of this plant eliminate spring ephemeral communities in woodlands, including native plants and presumably all species dependent on these plants. (11) It readily establishes in mature, moist, forested floodplains and also inhabits some drier upland areas.(4)
V. Native Range and Habitat	1. List countries and native habitat types: Norway/Russia to the Mediterranean/Portugal (12)
VI. Legal Classification	1. Listed by government entities? Connecticut and Massachusetts, (4)
	2. Illegal to sell? YES ☒ NO ☐ Notes: CT
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
I. Life History	1. Type of plant: Annual ☐ Biennial ☐ Monocarpic Perennial ☐ Herbaceous Perennial ☒ Vine ☐ Shrub ☐ Tree ☐
	2. Time to Maturity: Blooms late winter/early spring (12)
	3. Length of Seed Viability: Seeds remain viable for at least 18 months; information not available for tubers or bulbets (11)

	4. Methods of Reproduction: Asexual ☒ Sexual ☒ Notes: It is reproductively aggressive due to its ability to produce abundant tubers and above-ground bulblets that can separate, easily disperse and become their own individual plants. (4, 16) Extensive, highly aggressive vegetative reproduction (11). Also produces viable seed. (16)
	5. Hybridization potential: Yes
II. Climate	1. Climate restrictions: Tolerates USDA Zone's 4a-9b, and needs full sun to partial shade. Prefers moist mature areas especially forests. (12)
	2. Effects of potential climate change:
III. Dispersal Potential	1. Pathways - Please check all that apply: Unintentional: Bird ☐ Animal ☒ Vehicles/Human ☒ Wind ☒ Water ☒ Other: Numerous opportunities for long-distance dispersal (adaptations exist for long-distance dispersal and evidence that many seeds disperse greater than 100 meters from the parent plant) (11) Intentional: Ornamental ☒ Forage/Erosion control ☐ Medicine/Food: ☒ Other:
	2. Distinguishing characteristics that aid in its survival and/or inhibit its control: It can out-compete native spring ephemerals by emerging well in advance of the native species. It has several very effective means of reproduction, seeds, producing abundant below-ground tubers and small bulblet at the base of the plant. (4, 11, 16) Shade tolerance and its' perennial habit add to its competitive abilities.(11) Waxy leaves make it resistant to herbicides while growing with spring ephemerals makes control without impacting non-target species very difficult (16)
IV. Ability to go Undetected	1. HIGH ☐ MEDIUM ☐ LOW ☒ When flowering
C. DAMAGE POTENTIAL	
I. Competitive Ability	1. Presence of Natural Enemies: N/a
	2. Competition with native species: Vigorously covers ground, forms dense patches that easily displace native plants especially spring flowering plants. Severe impact on other species or species groups (6, 16). Large infestations of this plant eliminate spring ephemeral communities in woodlands, including native plants and presumably all species dependent on these plants (11, 16).
	2. Rate of Spread: -changes in relative dominance over time: -change in acreage over time: HIGH(1-3 yrs) ☒ MEDIUM (4-6 yrs) ☐ LOW (7-10 yrs) ☐ Notes: Very rapid spread
II. Environmental Effects	1. Alteration of ecosystem/community composition? YES ☒ NO ☐

	Notes: Causes major alteration in community composition at a local level – Oftentimes will substantially increase herb layer monoculture, oftentimes extirpating many native species, especially spring ephemerals (11)
	2. Alteration of ecosystem/community structure? YES ☒ NO ☐ Notes: Influences structure in one layer – ground cover. (6) Increases density of the herbaceous layer (11).
	3. Alteration of ecosystem/community functions and processes? YES ☐ NO ☒ Notes:
	4. Allelopathic properties? YES ☐ NO ☒ Notes:
D. SOCIO-ECONOMIC EFFECTS	
I. Positive aspects of the species to the economy/society:	Notes: Can be sold as an ornamental and used for medicinal purposes Based on the 2011 WNA Economic Impact Survey, the following information was reported for this plant. Out of the 204 nurseries responding, 2 reported selling this plant. Both reported it comprised <1% of their gross plant sales. The estimated total dollar amount contributed to Wisconsin's economy by this plant is $9,625. It ranks 44th among the 63 taxa surveyed. The estimated wholesale value of plants in production is $1,000. The majority of respondents said it took <6 months to produce this plant. The trend for the 2011 season was to remain unchanged (14).
II. Potential Socio-Economic Effects of Requiring Controls:	Positive: Prevention of grazing animal deaths. Preventing large infestations from becoming established. Negative:
III. Direct and indirect Socio-Economic Effects of Plant :	Notes: see above
IV. Increased Costs to Sectors Caused by the Plant::	Notes: May cause death in cattle and sheep (5) Land managers and volunteers in areas with large infestations spend many hours and hundreds of dollars/acre year after year to contain and control this species. (16)
V. Effects on human health:	Notes: Used widely in folklore medicine. Has been used for the treatment of piles, (5) an anti-inflammatory, astringent, and antibiotic, but documented to cause acute hepatitis. (6) Ranunculus ficaria contains vitamin C. It also has a drying effect, soothes mucous membranes, and contains substances that cause skin irritation. Some researchers think that Ranunculus ficaria might kill or prevent the growth of bacteria and fungus and treat hemorrhoids. (7)
VI. Potential socio-economic effects of restricting use:	Positive: Will not risk infestation of grazing land and will help prevent new infestations from emerging. Negative: Would not be able to sell or use as an ornamental

E. CONTROL AND PREVENTION	
I. Costs of Prevention (please be as specific as possible):	Notes: N/a
II. Responsiveness to prevention efforts:	Notes: N/a
III. Effective Control tactics: (provide only basic info)	Mechanical ☒ Biological ☐ Chemical ☒ Times and uses: No known good control methods for large infestations in high quality natural areas. Chemical control can be achieved by general use herbicides such as glyphosate, use in late winter-early spring, but there is significant chance of collateral damage. (7, 16) Mechanical removal can be done especially for small populations, but much effort is required to ensure that tubers and very small bulblets are not left behind. Herbicide application in late winter-early spring can be successful if there are no concerns about damaging native plants (11, 16).
IV. Costs of Control:	Notes:
V. Cost of prevention or control vs. Cost of allowing invasion to occur:	Notes:
VI. Non-Target Effects of Control:	Notes: High collateral damage from all known means of control (16)
VII. Efficacy of monitoring:	Notes: Monitoring this plant at the earliest stage is most helpful; pulling alone will not be effective at preventing an infestation.
VIII. Legal and landowner issues:	Notes:
F. HYBRIDS AND CULTIVARS AND VARIETIES	
I. Known hybrids? YES ☒ NO ☐	Name of hybrid: Names of hybrid cultivars:
II. Species cultivars and varieties	Names of cultivars, varieties and any information about the invasive behaviors of each: *Ranunculus ficaria ssp chrysocephalus* 'Pencarn' The plant has silvery leaves and large flowers, typical of the subspecies, but with dark reverses (9) Two growers responded to the nursery survey. One is growing Buttered Popcorn, and commented that the plant needs to be "used with caution." (14)

	Notes: At least nine subspecific taxa exist, but *Ranunculus ficaria* var. *bulbifera* *Ranunculus ficaria* var. *ficaria* are dominant (6) Ranunculus ficaria L. subsp. bulbilifera Lambinon Ranunculus ficaria L. subsp. calthifolius (Rchb.) Arcang. Ranunculus ficaria L. subsp. ficaria Ranunculus ficaria L. var. bulbifera Albert (10)

G. REFERENCES USED:

☒ UW Herbarium (Madison or Stevens Point)
☐ WI DNR
☒ Bugwood (Element Stewardship Abstracts)
☐ Native Plant Conservation Alliance
☐ IPANE
☒ USDA Plants

Number	Reference
1	USDA Forest Service. Northeastern Area State and Private Forestry. <http://na.fs.fed.us/pubs/misc/ip/ip_field_guide_supp_lr.pdf#xml=http://na.fs.fed.us/cgi-bin/texis.exe/Webinator/search/xml.txt?query=Ranunculus+ficaria&pr=default&prox=page&rorder=500&rprox=500&rdfreq=500&rwfreq=500&rlead=500&sufs=0&order=r&cq=&id=4a024f6b7>
2	Hawaiian Ecosystem at Risk Project. <http://www.hear.org>
3	Inasive.org Center fore Invasive Species and Ecosystem Health. <http://www.invasive.org>
4	NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: March 30, 2011).
5	Garden Organic. The national charity for organic growing. <http://www.gardenorganic.org.uk/organicweeds/weed_information/weed.php?id=122>
6	Invasive.org. Weeds. <http://www.invasive.org/weedcd/pdfs/northeast/LESSERCELANDINE.pdf>
7	WebMD. Vitamins and Supplements. <http://www.webmd.com/vitamins-supplements/ingredientmono-546-LESSER+CELANDINE.aspx?activeIngredientId=546&activeIngredientName=LESSER+CELANDINE>
8	Farm Industry News. <http://farmindustrynews.com/price-glyphosate>
9	Jearrard's Herbal. <http://www.johnjearrard.co.uk/plants/ranunculusficaria/ranunculusficariapencarn/species.html>
10	Robert W. Freckmann Herbarium. University of Wisconsin – Stevens Point. <http://wisplants.uwsp.edu/scripts/detail.asp?SpCode=RANFIC>
11	Jordan, M.J., G. Moore and T.W. Weldy. 2008. Invasiveness ranking system for non-native plants of New York. Unpublished. The Nature Conservancy, Cold Spring Harbor, NY; Brooklyn Botanic Garden, Brooklyn, NY; The Nature Conservancy, Albany, NY. http://nyis.info/PlantAssessments/Ranunculus%20ficaria.NYS.pdf
12	Dave's Gardens. Guides and Information. <http://davesgarden.com/guides/pf/go/1961/>
13	Wisconsin Botanical Information System. Wisconsin State Herbarium. Wisflora - Vascular Plant Species. <http://www.botany.wisc.edu/cgi-bin/SearchResults.cgi>
14	Wiegrefe, Susan. 2011. Wisconsin Nursery Association Survey of the Economic impact of potentially invasive species in Wisconsin
15	Retrieved [12/16/2011], from the Integrated Taxonomic Information System (ITIS) (http://www.itis.gov).
16	Hilmer, Jenifer. Cleveland MetroParks land manager. 12/14/2011. Personal communication with K. Kearns

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