**Taxon:** Micranthemum glomeratum (Chapm.) Shinners **Family:** Linderniaceae

**Common Name(s):** baby tears
manatee mudflower

**Synonym(s):** Micranthemum nuttallii var. glomeratum Chapm.

**Assessor:** Chuck Chimera **Status:** Approved **End Date:** 10 Oct 2023

**WRA Score:** 13.0 **Designation:** H(HPWRA) **Rating:** High Risk

**Keywords:** Creeping Herb, Aquatic, Spreads Vegetatively, Water-Dispersed, Bird-Dispersed

| Qsn # | Question | Answer Option | Answer |
|---|---|---|---|
| 101 | Is the species highly domesticated? | y = -3, n = 0 | n |
| 102 | Has the species become naturalized where grown? | | |
| 103 | Does the species have weedy races? | | |
| 201 | Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical" | 0 = low, 1 = intermediate, 2 = high (see Appendix 2) | High |
| 202 | Quality of climate match data | 0 = low, 1 = intermediate, 2 = high (see Appendix 2) | High |
| 203 | Broad climate suitability (environmental versatility) | y = 1, n = 0 | n |
| 204 | Native or naturalized in regions with tropical or subtropical climates | y = 1, n = 0 | y |
| 205 | Does the species have a history of repeated introductions outside its natural range? | y= -2, ? = -1, n = 0 | ? |
| 301 | Naturalized beyond native range | y = 1*multiplier (see Appendix 2), n = question 205 | y |
| 302 | Garden/amenity/disturbance weed | | |
| 303 | Agricultural/forestry/horticultural weed | y = 2*multiplier (see Appendix 2), n = 0 | n |
| 304 | Environmental weed | | |
| 305 | Congeneric weed | | |
| 401 | Produces spines, thorns or burrs | y = 1, n = 0 | n |
| 402 | Allelopathic | | |
| 403 | Parasitic | y = 1, n = 0 | n |
| 404 | Unpalatable to grazing animals | y = 1, n = -1 | n |
| 405 | Toxic to animals | y = 1, n = 0 | n |
| 406 | Host for recognized pests and pathogens | | |
| 407 | Causes allergies or is otherwise toxic to humans | y = 1, n = 0 | n |
| 408 | Creates a fire hazard in natural ecosystems | y = 1, n = 0 | n |
| 409 | Is a shade tolerant plant at some stage of its life cycle | | |
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | | |

| Qsn # | Question | Answer Option | Answer |
|---|---|---|---|
| 411 | Climbing or smothering growth habit | y = 1, n = 0 | n |
| 412 | Forms dense thickets | | |
| 501 | Aquatic | y = 5, n = 0 | y |
| 502 | Grass | y = 1, n = 0 | n |
| 503 | Nitrogen fixing woody plant | y = 1, n = 0 | n |
| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers) | y = 1, n = 0 | n |
| 601 | Evidence of substantial reproductive failure in native habitat | y = 1, n = 0 | n |
| 602 | Produces viable seed | y = 1, n = -1 | y |
| 603 | Hybridizes naturally | | |
| 604 | Self-compatible or apomictic | y = 1, n = -1 | y |
| 605 | Requires specialist pollinators | y = -1, n = 0 | n |
| 606 | Reproduction by vegetative fragmentation | y = 1, n = -1 | y |
| 607 | Minimum generative time (years) | 1 year = 1, 2 or 3 years = 0, 4+ years = -1 | 1 |
| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | | |
| 702 | Propagules dispersed intentionally by people | y = 1, n = -1 | y |
| 703 | Propagules likely to disperse as a produce contaminant | | |
| 704 | Propagules adapted to wind dispersal | y = 1, n = -1 | n |
| 705 | Propagules water dispersed | y = 1, n = -1 | y |
| 706 | Propagules bird dispersed | y = 1, n = -1 | y |
| 707 | Propagules dispersed by other animals (externally) | y = 1, n = -1 | y |
| 708 | Propagules survive passage through the gut | y = 1, n = -1 | n |
| 801 | Prolific seed production (>1000/m2) | | |
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | | |
| 803 | Well controlled by herbicides | | |
| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire | | |
| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents) | | |

Supporting Data:

| Qsn # | Question | Answer |
|---|---|---|
| 101 | Is the species highly domesticated? | n |
| | Source(s) | Notes |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [No evidence of domestication] "Micranthemum glomeratum (Chapm.) Shinners inhabits ditches, drains, swamps, and the shores of lakes, ponds, and rivers, often growing submersed in shallow water (to 1 m)." |

| 102 | Has the species become naturalized where grown? | |
|---|---|---|
| | Source(s) | Notes |
| | WRA Specialist. (2023). Personal Communication | NA |

| 103 | Does the species have weedy races? | |
|---|---|---|
| | Source(s) | Notes |
| | WRA Specialist. (2023). Personal Communication | NA |

| 201 | Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical" | High |
|---|---|---|
| | Source(s) | Notes |
| | Flora of North America Editorial Committee, eds. (1993+).Flora of North America North of Mexico [Online]. 22+ vols. New York and Oxford. http://beta.floranorthamerica.org. [Accessed 9 Oct 2023] | "Micranthemum glomeratum primarily occurs in the central part of the peninsula; it has not been found in the extreme southern counties. In the northern panhandle region, there is an outlier record from Gadsden County." |
| | KewScience. (2023). Plants of the World Online - Micranthemum glomeratum. http://powo.science.kew.org. [Accessed 9 Oct 2023] | "The native range of this species is Florida. It is an annual and grows primarily in the subtropical biome." |

| 202 | Quality of climate match data | High |
|---|---|---|
| | Source(s) | Notes |
| | KewScience. (2023). Plants of the World Online - Micranthemum glomeratum. http://powo.science.kew.org. [Accessed 9 Oct 2023] | "The native range of this species is Florida. It is an annual and grows primarily in the subtropical biome." |

| Qsn # | Question | Answer |
|---|---|---|
| 203 | **Broad climate suitability (environmental versatility)** | **n** |
| | **Source(s)** | **Notes** |
| | Godfrey, R.K. & Wooten, J.W. (1981). Aquatic and Wetland Plants of Southeastern United States: Dicotyledons. University of Georgia Press, Athens, GA | "In and around swamps, shores of lakes, ponds, rivers. Endemic to pen. Fla." [Presumably no. Restricted native distribution] |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "Micranthemum glomeratum (Chapm.) Shinners inhabits ditches, drains, swamps, and the shores of lakes, ponds, and rivers, often growing submersed in shallow water (to 1 m). Although found mainly in freshwater, the plants are euryhaline with a high salinity tolerance (up to 117 ppm sodium; 208 ppm chloride). Most occurrences are found in hard waters (mean CaCO3 alkalinity: 30 ppm [2.8-55.2]; mean pH: 7.4 [6.3-8.5]). The substrates include gravel, mud, and sand. Optimal growth in water occurs at temperatures of 24°C-26°C." [Restricted distribution] |

| | | |
|---|---|---|
| 204 | **Native or naturalized in regions with tropical or subtropical climates** | **y** |
| | **Source(s)** | **Notes** |
| | KewScience. (2023). Plants of the World Online - Micranthemum glomeratum. http://powo.science.kew.org. [Accessed 9 Oct 2023] | "The native range of this species is Florida. It is an annual and grows primarily in the subtropical biome." |
| | Faccenda, K. (2023). UH Botany Dept. Pers. Comm. 08 Jun | [Oahu. Location: 21.347076,-157.821199] "Escaped aquarium plant growing on surface of concrete dam across road from Judd trail trailhead. Area was not surveyed further downstream or upstream for more populations. Identified using Weakley's Flora of the Southeastern United States" [Report submitted to 643Pest] |

| | | |
|---|---|---|
| 205 | **Does the species have a history of repeated introductions outside its natural range?** | **?** |
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2023). Personal Communication | Sold as an aquarium plant. Unclear how widespread this plant has been introduced into the natural environment. |

| | | |
|---|---|---|
| 301 | **Naturalized beyond native range** | **y** |
| | **Source(s)** | **Notes** |
| | Faccenda, K. (2023). UH Botany Dept. Pers. Comm. 08 Jun | [Oahu. Location: 21.347076,-157.821199] "Escaped aquarium plant growing on surface of concrete dam across road from Judd trail trailhead. Area was not surveyed further downstream or upstream for more populations. Identified using Weakley's Flora of the Southeastern United States" [Report submitted to 643Pest] |

| | | |
|---|---|---|
| 302 | **Garden/amenity/disturbance weed** | |
| | **Source(s)** | **Notes** |
| | PlantedTank.net (2013). Hemianthus glomeratus type. Discussion starter · Oct 3, 2013 [Online plant discussion forum]. https://www.plantedtank.net/threads/hemianthus-glomeratus-type.448921/#post-4406169. [Accessed 10 Oct 2023] | [Grower comments on the invasiveness of this plant] "Quite an invasive little plant from what I can tell. Just pulled a 16oz. cup full out of some christmas moss. Any left over trimmings seem to grow wherever they land." |
| | WRA Specialist. (2023). Personal Communication | The majority of information about this plant comes from its native range, or from the aquarium trade, and evidence of weediness within introduced areas is lacking. |

| Qsn # | Question | Answer |
|---|---|---|
| | Zandstra, B., Particka, M. & Masabni, J. (2004). Guide to Tolerance of Crops and Susceptibility of Weeds to Herbicides. Extension Bulletin E-2833. Michigan State University, East Lansing, Michigan | Unknown. Micranthemum glomeratum is included in a list of weeds, but with no specified impacts. |

| 303 | Agricultural/forestry/horticultural weed | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Zandstra, B., Particka, M. & Masabni, J. (2004). Guide to Tolerance of Crops and Susceptibility of Weeds to Herbicides. Extension Bulletin E-2833. Michigan State University, East Lansing, Michigan | Micranthemum glomeratum is included in a list of weeds, but with no specified impacts. |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | No evidence |

| 304 | Environmental weed | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2023). Personal Communication | No evidence to date, but the majority of information about this plant comes from its native range, or from the aquarium trade, and evidence of weediness or detrimental impacts within introduced areas is lacking. |

| 305 | Congeneric weed | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Aquaplant. (2023). How to Control Shade Mudflower - Micranthemum umbrosum. Texas A&M AgriLife Extension Service, College Station, TX. https://aquaplant.tamu.edu/management-options/how-to-control-shade-mudflower/. [Accessed 9 Oct 2023] | "1. Physical Management Options. Shade mudflower can be cut, and the roots can be dug up. However, physical control is difficult because it can re-establish from seeds and remaining roots." [Control options also include various herbicides, suggesting this plant may become weedy or invasive in certain situations, although specific impacts have not been documented on this website] |
| | AquariumStoreDepot. (2023). A care and info guide on the Monte Carlo Plant. https://aquariumstoredepot.com/blogs/news/monte-carlo-plant. [Accessed 10 Oct 2023] | [Micranthemum tweediei described as invasive within an aquarium environment] "Under good light and proper conditions, Micranthemum Monte Carlo grows pretty fast and can be pretty invasive, which is great if you enjoy working on your aquascape, or maybe not that great if you're looking for a low-maintenance option." |
| | CABI. (2023). Invasive Species Compendium. Wallingford, UK: CAB International. https://www.cabidigitallibrary.org/product/qi. [Accessed 10 Oct 2023] | Micranthemum umbrosum is included in the invasive species compendium with no evidence or description of impacts provided. |

| Qsn # | Question | Answer |
|---|---|---|
| 401 | Produces spines, thorns or burrs | n |
| | **Source(s)** | **Notes** |
| | Godfrey, R.K. & Wooten, J.W. (1981). Aquatic and Wetland Plants of Southeastern United States: Dicotyledons. University of Georgia Press, Athens, GA | [No evidence] "Creeping, forming tangled mats in semiaquatic habitats, frequently producing hairlike, yellowish roots up to 5 cm long from the nodes. Leaves oblanceolate, variable in size up to 10 mm long, usually not exceeding 2-4 mm long. Flowers minute, their stalks 0.5-1 mm long or a little more. Calyx 1-1. 5 mm long, lobes nearly deltoid, 3 sinuses shallow, the 4th reaching nearly to the base of the calyx. Corolla white to pinkish, l-lipped, lip 3-lobed, distal lobe longest, about 2 mm long and curved upward, the 2 lateral lobes about 1/1 as long and turned nearly at right angles to the long axis of the lip, a few hairs along the sinuses within. Filaments curved and distally almost paralleling the upcurved distal corolla lobe, a spurlike projection at the bend of each filament. Seeds cylindric, slightly ribbed longitudinally and with fine transverse lines between them, brownish yellow. (Hemianthus glomeratus (Chapm.) Pennell)" |

| 402 | Allelopathic | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [Unknown. No evidence found. Occurs with a number of other species] "Reported associates: Acrostichum danaeifolium, Alternanthera philoxeroides, Amaranthus australis, Apios americana, Bacopa monnieri, Blechnum serrulatum, Boehmeria cylindrica, Canna flaccida, Centella asiatica, Cephalanthus occidentalis, Chamaecrista fasciculata, Chara, Colocasia esculenta, Commelina diffusa, Crinum americanum, Cyperus odoratus, Dichanthelium, Diodia virginiana, Dryopteris ludoviciana, Eclipta prostrata, Eleocharis baldwinii, Erechtites hieraciifolia, Eupatorium capillifolium, Fuirena, Galactia, Hydrocotyle umbellata, Hypericum tetrapetalum, Hyptis alata, Ipomoea indica, Juncus, Ludwigia peruviana, L. repens, Lygodium microphyllum, Mikania scandens, Mimosa quadrivalvis, Nuphar advena, Nymphaea odorata, Osmunda regalis, Panicum hemitomon, P. repens, P. rigidulum, Paspalum distichum, Pennisetum purpureum, Persicaria, Phyla nodiflora, Pluchea, Pontederia cordata, Psychotria nervosa, P. sulzneri, Ptilimnium capillaceum, Rapanea punctata, Rhynchospora inundata, R. rariflora, Rubus trivialis, Sabal palmetto, Sagittaria lancifolia, S. latifolia, Salix, Sambucus nigra, Sarcostemma clausum, Saururus cernuus, Sesbania punicea, Smilax bona-nox, Sphagneticola trilobata, Thelypteris interrupta, T. palustris, T. serrata, Toxicodendron radicans, Tripsacum dactyloides, Typha, Urena lobata, Vitis rotundifolia." |

| 403 | Parasitic | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Godfrey, R.K. & Wooten, J.W. (1981). Aquatic and Wetland Plants of Southeastern United States: Dicotyledons. University of Georgia Press, Athens, GA | "Creeping, forming tangled mats in semiaquatic habitats, frequently producing hairlike, yellowish roots up to 5 cm long from the nodes." [No evidence] |

| 404 | Unpalatable to grazing animals | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Aquaplant. (2023). How to Control Shade Mudflower - Micranthemum umbrosum. Texas A&M AgriLife Extension Service, College Station, TX. https://aquaplant.tamu.edu/management-options/how-to-control-shade-mudflower/. [Accessed 10 Oct 2023] | "At this time, there are no known biological controls for shade mudflower; although, goats are known to forage on many types of emergent vegetation." [Goats may browse on related species] |

| Qsn # | Question | Answer |
|---|---|---|
| | Hilmon, J. B. (1964). Plants of the Caloosa experimental range. U. S. Forest Service Research Paper SE- 12. USDA Forest Service, Southeastern Forest Experiment Station. Asheville, NC | [Infrequently browsed, but apparently palatable] "Poor--species grazed infrequently or during periods when -- more palatable forage was lacking." [Hemianthus glomeratus - Forage value = Poor] |

| 405 | Toxic to animals | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Hilmon, J. B. (1964). Plants of the Caloosa experimental range. U. S. Forest Service Research Paper SE- 12. USDA Forest Service, Southeastern Forest Experiment Station. Asheville, NC | [No evidence. Infrequently browsed, but apparently palatable] "Poor--species grazed infrequently or during periods when -- more palatable forage was lacking." [Hemianthus glomeratus - Forage value = Poor] |
| | Burrows, G. E., & Tyrl, R. J. (2013). Toxic Plants of North America. Second Edition. Wiley-Blackwell, Hoboken, NJ | No evidence in genus |
| | Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL | No evidence in genus |

| 406 | Host for recognized pests and pathogens | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2023). Personal Communication | Unknown. Could possibly harbor unwanted pests and hitchhikers such as snails, larvae, eggs, etc. unless cultured in a sterile environment |

| 407 | Causes allergies or is otherwise toxic to humans | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Burrows, G. E., & Tyrl, R. J. (2013). Toxic Plants of North America. Second Edition. Wiley-Blackwell, Hoboken, NJ | No evidence in genus |
| | Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL | No evidence in genus |

| 408 | Creates a fire hazard in natural ecosystems | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [No evidence. A succulent plant of aquatic habitats] "Micranthemum is a genus of amphibious annuals that is more common in warmer parts of the New World. The species grow either submersed in shallow water or as emergents along shorelines and on moist or drying substrates." |

| Qsn # | Question | Answer |
|---|---|---|
| 409 | Is a shade tolerant plant at some stage of its life cycle | |
| | **Source(s)** | **Notes** |
| | Flowgrow. (2023). Hemianthus glomeratus. https://www.flowgrow.de/db/aquaticplants/hemianthus-glomeratus. [Accessed 10 Oct 2023] | "H. glomeratus is a relatively undemanding plant that develops best under lots of light (approx. 0,5 watts per litre or more)." |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [Light requirements unknown, but occurs in apparently high light environments in and on the perimeter of bodies of water] "Micranthemum glomeratum (Chapm.) Shinners inhabits ditches, drains, swamps, and the shores of lakes, ponds, and rivers, often growing submersed in shallow water (to 1 m)." |

| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Flora of North America Editorial Committee, eds. (1993+).Flora of North America North of Mexico [Online]. 22+ vols. New York and Oxford. http://beta.floranorthamerica.org. [Accessed ] | "Habitat: Margins of lakes and streams, sandy soils." |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "mean pH: 7.4 [6.3-8.5]). The substrates include gravel, mud, and sand." |

| 411 | Climbing or smothering growth habit | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Godfrey, R.K. & Wooten, J.W. (1981). Aquatic and Wetland Plants of Southeastern United States: Dicotyledons. University of Georgia Press, Athens, GA | "Creeping, forming tangled mats in semiaquatic habitats, frequently producing hairlike, yellowish roots up to 5 cm long from the nodes." |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "Key morphology: stems (to 30 cm) creeping or floating, glabrous, succulent; leaves (to 15 mm) opposite, entire, round to oblanceolate, essentially sessile" |

| 412 | Forms dense thickets | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Godfrey, R.K. & Wooten, J.W. (1981). Aquatic and Wetland Plants of Southeastern United States: Dicotyledons. University of Georgia Press, Athens, GA | "Creeping, forming tangled mats in semiaquatic habitats, frequently producing hairlike, yellowish roots up to 5 cm long from the nodes." [Unknown if these mats can exclude other vegetation] |

| 501 | Aquatic | y |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Faccenda, K. (2023). UH Botany Dept. Pers. Comm. 08 Jun | "Escaped aquarium plant growing on surface of concrete dam across road from judd trail trailhead. Area was not surveyed further downstream or upstream for more populations." |
| | Godfrey, R.K. & Wooten, J.W. (1981). Aquatic and Wetland Plants of Southeastern United States: Dicotyledons. University of Georgia Press, Athens, GA | "In and around swamps, shores of lakes, ponds, rivers. Endemic to pen. Fla." |

| Qsn # | Question | Answer |
|---|---|---|
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "Micranthemum glomeratum (Chapm.) Shinners inhabits ditches, drains, swamps, and the shores of lakes, ponds, and rivers, often growing submersed in shallow water (to 1 m). Although found mainly in freshwater, the plants are euryhaline with a high salinity tolerance (up to 117 ppm sodium; 208 ppm chloride). Most occurrences are found in hard waters (mean CaCO3 alkalinity: 30 ppm [2.8-55.2]; mean pH: 7.4 [6.3-8.5])." |
| | Pennell, F. W. (1919). Scrophulariaceæ of the Southeastern United States. Proceedings of the Academy of Natural Sciences of Philadelphia, 71(3), 224-291 | [Hemianthus glomeratus] "Sandy shores of lakes and rivers, known from Lake Okeechobee and along the Gulf coast from Tampa to the Caloosahatchee River, southern Florida." |

| 502 | Grass | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | KewScience. (2023). Plants of the World Online - Micranthemum glomeratum. http://powo.science.kew.org. [Accessed 10 Oct 2023] | Linderniaceae |

| 503 | Nitrogen fixing woody plant | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | KewScience. (2023). Plants of the World Online - Micranthemum glomeratum. http://powo.science.kew.org. [Accessed 10 Oct 2023] | Linderniaceae |

| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers) | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Godfrey, R.K. & Wooten, J.W. (1981). Aquatic and Wetland Plants of Southeastern United States: Dicotyledons. University of Georgia Press, Athens, GA | "Creeping, forming tangled mats in semiaquatic habitats, frequently producing hairlike, yellowish roots up to 5 cm long from the nodes." |

| 601 | Evidence of substantial reproductive failure in native habitat | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [No evidence] "Micranthemum glomeratum (Chapm.) Shinners inhabits ditches, drains, swamps, and the shores of lakes, ponds, and rivers, often growing submersed in shallow water (to 1 m)." |
| | Flora of North America Editorial Committee, eds. (1993+).Flora of North America North of Mexico [Online]. 22+ vols. New York and Oxford. http://beta.floranorthamerica.org. [Accessed ] | [No evidence] "Micranthemum glomeratum primarily occurs in the central part of the peninsula; it has not been found in the extreme southern counties. In the northern panhandle region, there is an outlier record from Gadsden County." |

| 602 | Produces viable seed | y |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Flora of North America Editorial Committee, eds. (1993+).Flora of North America North of Mexico [Online]. 22+ vols. New York and Oxford. http://beta.floranorthamerica.org. [Accessed ] | "Capsules 1.1-1.3 × 0.9-1.2 mm. Seeds ellipsoid, 0.2-0.3 × 0.05-0.1 mm." |
| | Godfrey, R.K. & Wooten, J.W. (1981). Aquatic and Wetland Plants of Southeastern United States: Dicotyledons. University of Georgia Press, Athens, GA | "Seeds cylindric, slightly ribbed longitudinally and with fine transverse lines between them, brownish yellow. (Hemianthus glomeratus (Chapm.) Pennell)" |

| Qsn # | Question | Answer |
|---|---|---|
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "seeds numerous, minute (to 0.3 mm), reticulate, ribbed" ... "Crosspollination by flies (Insecta: Diptera) probably occurs in some species. The minute seeds are thought to be dispersed in mud that becomes attached to waterbirds (Aves)." |

| 603 | Hybridizes naturally | |
|---|---|---|
| | Source(s) | Notes |
| | WRA Specialist. (2023). Personal Communication | Unknown. No evidence found |

| 604 | Self-compatible or apomictic | y |
|---|---|---|
| | Source(s) | Notes |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "pollination: self; sexual condition: hermaphroditic" ... "The self-compatible flowers appear to be largely autogamous, but there have been no adequate investigations of the reproductive biology for any of the species. Cross-pollination by flies (Insecta: Diptera) probably occurs in some species." |

| 605 | Requires specialist pollinators | n |
|---|---|---|
| | Source(s) | Notes |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "The self-compatible flowers appear to be largely autogamous, but there have been no adequate investigations of the reproductive biology for any of the species. Crosspollination by flies (Insecta: Diptera) probably occurs in some species." |

| 606 | Reproduction by vegetative fragmentation | y |
|---|---|---|
| | Source(s) | Notes |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "asexual reproduction: shoot fragments;" ... "The stems, which produce roots (up to 5 cm) along their nodes, can become dislodged during floods. The plants are annual, but can reproduce vegetatively by layering or by fragmentation of the stems during the growing season." |

| 607 | Minimum generative time (years) | 1 |
|---|---|---|
| | Source(s) | Notes |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "Life history: duration: annual (fruit/seeds);" ... "The plants are annual, but can reproduce vegetatively by layering or by fragmentation of the stems during the growing season." |

| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | |
|---|---|---|
| | Source(s) | Notes |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [Could potentially be dispersed by other animals, or by hikers, although direct evidence is lacking] "The minute seeds are thought to be dispersed in mud that becomes attached to waterbirds (Aves)." |

| 702 | Propagules dispersed intentionally by people | y |
|---|---|---|

| Qsn # | Question | Answer |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Flowgrow. (2023). Hemianthus glomeratus. https://www.flowgrow.de/db/aquaticplants/hemianthus-glomeratus. [Accessed 10 Oct 2023] | [Cultivated and sold as an aquarium plant] "This Hemianthus can be used in many ways. Under intensive light it forms a nice carpet in the foreground, and when it is trimmed frequently it can be formed into a nice bush in the middleground. In small aquaria it can even form a decorative eyecatcher in the background of the tank. Its small leaves make Hemianthus glomeratus an especially interesting plant for nano tanks" |

| 703 | Propagules likely to disperse as a produce contaminant | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "The seeds probably are dispersed by water, but little information on seed ecology (e.g., germination requirements) exists for this species." [Unknown. Could possibly be dispersed though cultivation of kalo, rice, or or other aquatic crops, if this plant became established in aquatic agricultural systems] |

| 704 | Propagules adapted to wind dispersal | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "The minute seeds are thought to be dispersed in mud that becomes attached to waterbirds (Aves)." |

| 705 | Propagules water dispersed | y |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "The seeds probably are dispersed by water, but little information on seed ecology (e.g., germination requirements) exists for this species. The stems, which produce roots (up to 5 cm) along their nodes, can become dislodged during floods. The plants are annual, but can reproduce vegetatively by layering or by fragmentation of the stems during the growing season." |

| 706 | Propagules bird dispersed | y |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "The minute seeds are thought to be dispersed in mud that becomes attached to waterbirds (Aves)." |

| 707 | Propagules dispersed by other animals (externally) | y |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | "The minute seeds are thought to be dispersed in mud that becomes attached to waterbirds (Aves)." |

| 708 | Propagules survive passage through the gut | n |
|---|---|---|
| | **Source(s)** | **Notes** |

| Qsn # | Question | Answer |
|---|---|---|
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [Not fleshy-fruited. Seeds dispersed externally and by water] "capsules (to 1 mm) subglobose, septicidal, irregularly dehiscent; seeds numerous, minute (to 0.3 mm), reticulate, ribbed" ... "The minute seeds are thought to be dispersed in mud that becomes attached to waterbirds (Aves)." |

| 801 | Prolific seed production (>1000/m2) | |
|---|---|---|
| | Source(s) | Notes |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [Densities unknown] "capsules (to 1 mm) subglobose, septicidal, irregularly dehiscent; seeds numerous, minute (to 0.3 mm), reticulate, ribbed" |

| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | |
|---|---|---|
| | Source(s) | Notes |
| | WRA Specialist. (2023). Personal Communication | Unknown |

| 803 | Well controlled by herbicides | |
|---|---|---|
| | Source(s) | Notes |
| | Aquaplant. (2023). How to Control Shade Mudflower - Micranthemum umbrosum. Texas A&M AgriLife Extension Service, College Station, TX. https://aquaplant.tamu.edu/management-options/how-to-control-shade-mudflower/. [Accessed 10 Oct 2023] | [Related species reported to be successfully controlled with various herbicides]<br>"Herbicide Control Options<br>Always read the product label for directions and precautions, as the label is the law. Click on the name of the product to see the label. Read the label for specific water use restrictions.<br>The active ingredients that have been successful in treating shade mudflower include:<br>Bispyribac<br>Glyphosate<br>Imazamox<br>Imazapyr<br>Penoxsulam<br>Triclopyr<br>2,4-D" |

| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire | |
|---|---|---|
| | Source(s) | Notes |
| | Les, D. H. (2017). Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics. CRC Press, Boca Raton, FL | [Unknown. Tolerates breaking and spreads vegetatively. May tolerate repeated damage to vegetative parts] "The stems, which produce roots (up to 5 cm) along their nodes, can become dislodged during floods. The plants are annual, but can reproduce vegetatively by layering or by fragmentation of the stems during the growing season." |

| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents) | |
|---|---|---|
| | Source(s) | Notes |
| | WRA Specialist. (2023). Personal Communication | Unknown |

**Summary of Risk Traits:**

Micranthemum glomeratum, (manatee mudflower, baby tears) is a creeping, aquatic or semi-aquatic plant endemic to swamps, shores of lakes, ponds, and rivers of peninsular Florida. It is popular among aquarium enthusiasts for its attractive appearance and low-maintenance requirements. A wild population was found in May 2023 near a dam connecting to Nu'uanu Stream, Oahu, which appears to be the first record of naturalization anywhere in the world. It is suspected that the plants could have originated from discarded aquarium water or plants. The ability of this plant to spread by stem fragments carried by water, and by seeds in mud attached to waterbirds, suggests that it could be more widely distributed on Nu'uanu Stream and perhaps in other streams or aquatic habitats on the island, but it is unclear what impacts this would have in these environments.

High Risk / Undesirable Traits
• Grows, and capable of spreading, in regions with tropical climates
• Naturalized on Oahu (Hawaiian Islands)
• Reported to be weedy by aquarium enthusiasts, and designated as a weed in at least one publication, but negative impacts have not been described
• Other Micranthemum species are also reported to be weedy, but with unspecified impacts
• A mat-forming plant that may competed with native or desirable vegetation in aquatic habitats
• Reproduces by seeds and vegetatively by stem fragments
• Self-compatible
• A fast-growing annual, capable of reaching maturity in one growing season
• Seeds and stem fragments spread by water and through intentional cultivation.
• Suspected of being spread by dumped aquarium plants.
• Seeds are reported to be dispersed by mud stuck to waterbirds.

Low Risk Traits
• Unarmed (no spines, thorns, or burrs)
• Palatable, if not a preferred forage plant, for browsing animals
• Non-toxic
• Grows in high light environments (dense shade might inhibit growth or spread)
• Herbicides are reported to be effective at controlling a related species and may be similarly effective on Micranthemum glomeratum.