

| <b><i>Heteropterys brachiata</i> (Beechy's withe, Redwing [?]) -- Florida</b> |   | <b>Answer</b> | <b>Score</b> |
|---|---|---------------|--------------|
| 1.01  | Is the species highly domesticated?   | n             | 0            |
| 1.02  | Has the species become naturalised where grown?   |               |              |
| 1.03  | Does the species have weedy races?  |               |              |
| 2.01  | Species suited to FL climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)   | 2             |              |
| 2.02  | Quality of climate match data (0-low; 1-intermediate; 2-high)   | 2             |              |
| 2.03  | Broad climate suitability (environmental versatility)   | y             | 1            |
| 2.04  | Native or naturalized in regions with an average of 11-60 inches of annual precipitation  | y             | 1            |
| 2.05  | Does the species have a history of repeated introductions outside its natural range?  | y             |              |
| 3.01  | Naturalized beyond native range   | y             | 2            |
| 3.02  | Garden/amenity/disturbance weed   | y             | 2            |
| 3.03  | Weed of agriculture   | n             | 0            |
| 3.04  | Environmental weed  | y             | 4            |
| 3.05  | Congeneric weed   | n             | 0            |
| 4.01  | Produces spines, thorns or burrs  | n             | 0            |
| 4.02  | Allelopathic  | n             | 0            |
| 4.03  | Parasitic   | n             | 0            |
| 4.04  | Unpalatable to grazing animals  |               |              |
| 4.05  | Toxic to animals  | n             | 0            |
| 4.06  | Host for recognised pests and pathogens   | n             | 0            |
| 4.07  | Causes allergies or is otherwise toxic to humans  | n             | 0            |
| 4.08  | Creates a fire hazard in natural ecosystems   |               |              |
| 4.09  | Is a shade tolerant plant at some stage of its life cycle   |               |              |
| 4.10  | Grows on infertile soils (oligotrophic, limerock, or excessively draining soils).<br>North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols. |               |              |
| 4.11  | Climbing or smothering growth habit   | y             | 1            |
| 4.12  | Forms dense thickets  | y             | 1            |
| 5.01  | Aquatic   | n             | 0            |
| 5.02  | Grass   | n             | 0            |
| 5.03  | Nitrogen fixing woody plant   | n             | 0            |
| 5.04  | Geophyte  | n             | 0            |
| 6.01  | Evidence of substantial reproductive failure in native habitat  | n             | 0            |
| 6.02  | Produces viable seed  | y             | 1            |
| 6.03  | Hybridizes naturally  |               |              |
| 6.04  | Self-compatible or apomictic  |               |              |
| 6.05  | Requires specialist pollinators   |               |              |
| 6.06  | Reproduction by vegetative propagation  |               |              |
| 6.07  | Minimum generative time (years)   |               |              |

|      |  |   |               |
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| 7.01 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) |   |               |
| 7.02 | Propagules dispersed intentionally by people   | y | 1             |
| 7.03 | Propagules likely to disperse as a produce contaminant   |   |               |
| 7.04 | Propagules adapted to wind dispersal   | y | 1             |
| 7.05 | Propagules water dispersed   | ? |               |
| 7.06 | Propagules bird dispersed  |   |               |
| 7.07 | Propagules dispersed by other animals (externally)   | n | -1            |
| 7.08 | Propagules dispersed by other animals (internally)   |   |               |
| 8.01 | Prolific seed production   |   |               |
| 8.02 | Evidence that a persistent propagule bank is formed (>1 yr)                                    |   |               |
| 8.03 | Well controlled by herbicides  |   |               |
| 8.04 | Tolerates, or benefits from, mutilation or cultivation   |   |               |
| 8.05 | Effective natural enemies present in U.S.  |   |               |
|      | <b>Total Score</b>   |   | <b>14</b>     |
|      | <b>Implemented Pacific Second Screening</b>  |   | <b>No</b>     |
|      | <b>Risk Assessment Results</b>   |   | <b>Reject</b> |

|      | Reference  | Source data  |
|------|--|--|
| 1.01 |  | Cultivated, but no evidence of selection for reduced weediness.  |
| 1.02 |  | Skip to 2.01   |
| 1.03 |  | Skip to 2.01   |
| 2.01 | <p>1. PERAL NAPPFAST Global Plant Hardiness (<a href="http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgn.d.tif">http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgn.d.tif</a>) &amp; USDA Plant Hardiness Zone Map, 2012. Agricultural Research Service, U.S. Department of Agriculture. Accessed from <a href="http://planthardiness.ars.usda.gov">http://planthardiness.ars.usda.gov</a>. 2. Tropicos.org. Missouri Botanical Garden. 05 Sep 2013 &lt;<a href="http://www.tropicos.org">http://www.tropicos.org</a>&gt;. 3. Accessed through GBIF data portal, 05 Sept 2013. Missouri Botanical Garden, <a href="http://data.gbif.org/datasets/resource/12084">http://data.gbif.org/datasets/resource/12084</a>), CAS Botany (BOT), <a href="http://data.gbif.org/datasets/resource/14128">http://data.gbif.org/datasets/resource/14128</a>), Field Museum of Natural History (Botany) Seed Plant Collection, <a href="http://data.gbif.org/datasets/resource/14346">http://data.gbif.org/datasets/resource/14346</a>), Field Museum of Natural History (Botany) Seed Plant Collection, <a href="http://data.gbif.org/datasets/resource/14346">http://data.gbif.org/datasets/resource/14346</a>), Phanerogams herbarium specimens, <a href="http://data.gbif.org/datasets/resource/13686">http://data.gbif.org/datasets/resource/13686</a>), Herbario IEB del Instituto de Ecología, A.C., México (IE-BAJÍO), <a href="http://data.gbif.org/datasets/resource/11106">http://data.gbif.org/datasets/resource/11106</a>), Bishop Museum Natural Sciences Data, <a href="http://data.gbif.org/datasets/resource/54">http://data.gbif.org/datasets/resource/54</a>), Instituto de Ciencias Naturales, <a href="http://data.gbif.org/datasets/resource/2559">http://data.gbif.org/datasets/resource/2559</a>), MEXU/Flora de Oaxaca, <a href="http://data.gbif.org/datasets/resource/8392">http://data.gbif.org/datasets/resource/8392</a>), Phanerogamic Botanical Collections (S), <a href="http://data.gbif.org/datasets/resource/8113">http://data.gbif.org/datasets/resource/8113</a>),</p> | <p><b>No computer analysis was performed.</b> 1. Global plant hardiness zones 8(?)–13; equivalent to USDA Hardiness zones 8a–11b (north, central, south zones of Florida). 2. Native distribution occurs in Mesoamerica (Belize, El Salvador, Guatemala, Honduras, Mexico, &amp; Panama) and South America (Bolivia, Colombia, Peru, Venezuela). 3. Native distribution includes Costa Rica, Ecuador, &amp; Nicaragua.</p> |

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| 2.01<br>cont | <p>herbario, <a href="http://data.gbif.org/datasets/resource/566">http://data.gbif.org/datasets/resource/566</a>),<br/> Wilson Botanical Garden - Las Cruces Biological Station,<br/> <a href="http://data.gbif.org/datasets/resource/14097">http://data.gbif.org/datasets/resource/14097</a>),<br/> Especímenes INBio,<br/> <a href="http://data.gbif.org/datasets/resource/13473">http://data.gbif.org/datasets/resource/13473</a>), Nationaal<br/> Herbarium Nederland,<br/> <a href="http://data.gbif.org/datasets/resource/11520">http://data.gbif.org/datasets/resource/11520</a>), Herbario<br/> XAL del Instituto de Ecología, A.C., México (IE-XAL),<br/> <a href="http://data.gbif.org/datasets/resource/10980">http://data.gbif.org/datasets/resource/10980</a>), Árboles de<br/> la Península de Yucatán, Flora del Distrito de Tehuantepec,<br/> Oaxaca y Familia Asteraceae en México (IBUNAM),<br/> <a href="http://data.gbif.org/datasets/resource/2491">http://data.gbif.org/datasets/resource/2491</a>), Inventario<br/> florístico de la región Calakmul-parte baja de la región<br/> Lacandona (Cuenca alta del Usumacinta y Marqués de<br/> Comillas), <a href="http://data.gbif.org/datasets/resource/13140">http://data.gbif.org/datasets/resource/13140</a>),<br/> Herbarium of The New York Botanical Garden,<br/> <a href="http://data.gbif.org/datasets/resource/8967">http://data.gbif.org/datasets/resource/8967</a>), Herbario de<br/> la Universidad de Arizona, EUA,<br/> <a href="http://data.gbif.org/datasets/resource/2479">http://data.gbif.org/datasets/resource/2479</a>), UA<br/> Herbarium, <a href="http://data.gbif.org/datasets/resource/7900">http://data.gbif.org/datasets/resource/7900</a>),<br/> Formación del banco de datos del herbario (UCAM),<br/> <a href="http://data.gbif.org/datasets/resource/13339">http://data.gbif.org/datasets/resource/13339</a>), Base de<br/> datos de las regiones prioritarias 113 y 120 en los<br/> municipios de Zirándaro y Coahuayutla, (Guerrero),<br/> <a href="http://data.gbif.org/datasets/resource/13164">http://data.gbif.org/datasets/resource/13164</a>)</p> |  |
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| 2.01 cont | <p>Actualización e incremento del banco de datos de la colección de herbario del Jardín Etnobotánico de Oaxaca, <a href="http://data.gbif.org/datasets/resource/13267">http://data.gbif.org/datasets/resource/13267</a>), Inventario florístico de la Sierra de Huautla, Morelos, <a href="http://data.gbif.org/datasets/resource/13367">http://data.gbif.org/datasets/resource/13367</a>), Diversidad y riqueza vegetal de los substratos rocosos del centro del estado de Veracruz, <a href="http://data.gbif.org/datasets/resource/13188">http://data.gbif.org/datasets/resource/13188</a>), Lund Botanical Museum (LD), <a href="http://data.gbif.org/datasets/resource/1028">http://data.gbif.org/datasets/resource/1028</a>), Flora y datos básicos para la evaluación de las actividades apícola y forestal en tres áreas focales del corredor Sian Ka'an-Calakmul, <a href="http://data.gbif.org/datasets/resource/13239">http://data.gbif.org/datasets/resource/13239</a>), Florística y biogeografía de algunos bosques mesófilos de la Huasteca Hidalguense: Fase 3 (Chapulhuacán y Pisaflores), <a href="http://data.gbif.org/datasets/resource/13152">http://data.gbif.org/datasets/resource/13152</a>), Lista florística preliminar de Tamaulipas, <a href="http://data.gbif.org/datasets/resource/13141">http://data.gbif.org/datasets/resource/13141</a>).</p> |  |
| 2.02      |  | <b>No computer analysis was performed.</b> 1. Native range is well known; refer to 2.01 source data.   |
| 2.03      | 1. Köppen-Geiger climate map ( <a href="http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf">http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf</a> ).  | 1. Native distribution appears to be in at least three climatic groups (Af, Am, Aw, BWh[?], BSh, BSk, Cwa, Cwb).   |
| 2.04      | 1. The World Bank. <a href="http://data.worldbank.org/indicator/AG.LND.PRCP.MM">http://data.worldbank.org/indicator/AG.LND.PRCP.MM</a> . Accessed 06 Sept 2013.  | 1. 700 mm-3000 mm (29.5"-118").  |
| 2.05      | 1. Anderson, W. R., C. Anderson, and C. C. Davis. 2006. Malpighiaceae. Keys to the Species of Malpighiaceae Found in the USA. <a href="http://herbarium.lsa.umich.edu/malpigh/index.html">http://herbarium.lsa.umich.edu/malpigh/index.html</a> [04 Sept 2013].  | 1. Locally naturalized in southern Florida.  |
| 3.01      | 1. Anderson, W. R., C. Anderson, and C. C. Davis. 2006. Malpighiaceae. Keys to the Species of Malpighiaceae Found in the USA. <a href="http://herbarium.lsa.umich.edu/malpigh/index.html">http://herbarium.lsa.umich.edu/malpigh/index.html</a> [04 Sept 2013].  | 1. Locally naturalized in southern Florida.  |
| 3.02      | 1. Possley, Jennifer. "RE: Redwing." Message to the author. 05 Sept. 2013. E-mail.   | 1. "Occurs in hardwood hammocks" of four natural areas (Castellow Hammock parcel 31, Chernoff Hammock, Ross Hammock, & The Barnacle State Historic Park) in Miami-Dade County. |
| 3.03      |  | No evidence.   |

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| 3.04 | 1. Possley, Jennifer. "RE: Redwing." Message from the author. 24 July 2013. E-mail.   | 1. "Climbs into canopy" potentially disrupting/altering the composition, structure, or normal processes of a natural ecosystem (e.g., changes fire regime, alters wildlife abundance, adds a new stratum, etc.)  |
| 3.05 |   | No evidence.   |
| 4.01 |   | No evidence.   |
| 4.02 |   | No evidence.   |
| 4.03 |   | No evidence.   |
| 4.04 |   |  |
| 4.05 | 1. Huerta-Reyes, M et al. 2013. Neuropharmacological in vivo effects and phytochemical profile of the extract from the aerial parts of <i>Heteropterys brachiata</i> (L.) DC. (Malpighiaceae). <i>Journal of Ethnopharmacology</i> , 146: 311–317.  | 1. The anxiolytic, anticonvulsant, antidepressant and sedative effects produced by the methanolic extract of <i>Heteropterys brachiata</i> (HbMeOH) in ICR mice. The extract was safe with no deaths in mice treated orally with 2000mg/kg. HbMeOH extract can be considered safe or of low toxicity when orally administered. |
| 4.06 |   | No evidence.   |
| 4.07 |   | No evidence.   |
| 4.08 |   |  |
| 4.09 |   |  |
| 4.10 |   |  |
| 4.11 | 1. Huerta-Reyes, M et al. 2013. Neuropharmacological in vivo effects and phytochemical profile of the extract from the aerial parts of <i>Heteropterys brachiata</i> (L.) DC. (Malpighiaceae). <i>Journal of Ethnopharmacology</i> , 146: 311–317. 2. Possley, Jennifer. "RE: Redwing." Message from the author. 24 July 2013. E-mail. 3. Anderson, W. R., C. Anderson, and C. C. Davis. 2006. Malpighiaceae. <a href="http://herbarium.lsa.umich.edu/malpigh/index.html">http://herbarium.lsa.umich.edu/malpigh/index.html</a> [04 Sept 2013]. | 1. A liana, or woody vine, from the Malpighiaceae family. 2. "Climbs into canopy." 3. Woody vines climbing high in trees by twining stems.   |
| 4.12 | 1. Possley, Jennifer. "RE: Redwing." Message from the author. 24 July 2013. E-mail.   | 1. "It is growing densely on a private parcel adjacent to Chernoff," a natural area in Miami-Dade County.  |
| 5.01 | 1. Huerta-Reyes, M et al. 2013. Neuropharmacological in vivo effects and phytochemical profile of the extract from the aerial parts of <i>Heteropterys brachiata</i> (L.) DC. (Malpighiaceae). <i>Journal of Ethnopharmacology</i> , 146: 311–317.  | 1. A liana, or woody vine, from the Malpighiaceae family.  |
| 5.02 | 1. Huerta-Reyes, M et al. 2013. Neuropharmacological in vivo effects and phytochemical profile of the extract from the aerial parts of <i>Heteropterys brachiata</i> (L.) DC. (Malpighiaceae). <i>Journal of Ethnopharmacology</i> , 146: 311–317.  | 1. A liana, or woody vine, from the Malpighiaceae family.  |

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| 5.03 | 1. Huerta-Reyes, M et al. 2013. Neuropharmacological in vivo effects and phytochemical profile of the extract from the aerial parts of <i>Heteropterys brachiata</i> (L.) DC. (Malpighiaceae). <i>Journal of Ethnopharmacology</i> , 146: 311–317.  | 1. A liana, or woody vine, from the Malpighiaceae family.   |
| 5.04 |   | Perennial plant but no evidence of tubers, corms, or bulbs.   |
| 6.01 |   | No evidence.  |
| 6.02 | 1. Possley, Jennifer. "RE: Redwing." Message to the author. 05 Sept. 2013. E-mail.  | 1. Observed "a lot of seed recruitment in the areas where fruiting plants are found."   |
| 6.03 |   |   |
| 6.04 |   |   |
| 6.05 |   |   |
| 6.06 |   |   |
| 6.07 |   |   |
| 7.01 |   |   |
| 7.02 | 1. Anderson, W. R., C. Anderson, and C. C. Davis. 2006. Malpighiaceae. <a href="http://herbarium.lsa.umich.edu/malpigh/index.html">http://herbarium.lsa.umich.edu/malpigh/index.html</a> [04 Sept 2013].  | 1. A few species are cultivated for their large showy inflorescences and the red immature samaras.  |
| 7.03 |   |   |
| 7.04 | 1.a-b. Anderson, W. R., C. Anderson, and C. C. Davis. 2006. Malpighiaceae. <a href="http://herbarium.lsa.umich.edu/malpigh/index.html">http://herbarium.lsa.umich.edu/malpigh/index.html</a> [04 Sept 2013]. 2. Possley, Jennifer. "RE: Redwing." Message to the author. 05 Sept. 2013. E-mail. | 1.a. Family description: bearing wings or setae and dispersed by wind. 1.b. Genus description: dry, breaking apart into three samaras. 2. "Seems to be wind-dispersed." |
| 7.05 | 1. Anderson, W. R., C. Anderson, and C. C. Davis. 2006. Malpighiaceae. <a href="http://herbarium.lsa.umich.edu/malpigh/index.html">http://herbarium.lsa.umich.edu/malpigh/index.html</a> [04 Sept 2013].  | 1. Those of some genera or species containing aerenchyma or other tissues that facilitate dispersal by water.   |
| 7.06 |   |   |
| 7.07 |   | No adaptations that would suggest that it could attach itself externally to animals.  |
| 7.08 |   |   |
| 8.01 |   |   |
| 8.02 |   |   |
| 8.03 |   |   |
| 8.04 |   |   |
| 8.05 |   |   |