

Family: *Solanaceae*

Taxon: *Acnistus arborescens*

Synonym: *Atropa arborescens* L. (*basionym*)

Common Name: Hollowheart
Wild tabbaco
gallinero
fruta-de-sabiá

| Questionnaire Status: | Assessor: | Data Entry Person: | Designation: |
|---------------------------------------|---|--|--------------------------------|
| current 20090513 Assessor Approved | Chuck Chimera | Chuck Chimera | EVALUATE WRA Score 2 |
| 101 | Is the species highly domesticated? | y=-3, n=0 | n |
| 102 | Has the species become naturalized where grown? | y=1, n=-1 | |
| 103 | Does the species have weedy races? | y=1, n=-1 | |
| 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 | n |
| 302 | Garden/amenity/disturbance weed | n=0, y = 1*multiplier (see Appendix 2) | n |
| 303 | Agricultural/forestry/horticultural weed | n=0, y = 2*multiplier (see Appendix 2) | n |
| 304 | Environmental weed | n=0, y = 2*multiplier (see Appendix 2) | n |
| 305 | Congeneric weed | n=0, y = 1*multiplier (see Appendix 2) | n |
| 401 | Produces spines, thorns or burrs | y=1, n=0 | n |
| 402 | Allelopathic | y=1, n=0 | |
| 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 | y=1, n=0 | n |
| 407 | Causes allergies or is otherwise toxic to humans | y=1, n=0 | |
| 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 | y=1, n=0 | n |
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | y=1, n=0 | y |

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| 411 | Climbing or smothering growth habit | y=1, n=0 | n |
| 412 | Forms dense thickets | y=1, n=0 | |
| 501 | Aquatic | y=5, n=0 | n |
| 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 | y=1, n=-1 | y |
| 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 | 2 |
| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | y=1, n=-1 | |
| 702 | Propagules dispersed intentionally by people | y=1, n=-1 | y |
| 703 | Propagules likely to disperse as a produce contaminant | y=1, n=-1 | n |
| 704 | Propagules adapted to wind dispersal | y=1, n=-1 | n |
| 705 | Propagules water dispersed | y=1, n=-1 | n |
| 706 | Propagules bird dispersed | y=1, n=-1 | y |
| 707 | Propagules dispersed by other animals (externally) | y=1, n=-1 | n |
| 708 | Propagules survive passage through the gut | y=1, n=-1 | y |
| 801 | Prolific seed production (>1000/m2) | y=1, n=-1 | n |
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | y=1, n=-1 | |
| 803 | Well controlled by herbicides | y=-1, n=1 | |
| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire | y=1, n=-1 | |
| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents) | y=-1, n=1 | |

Designation: EVALUATE

WRA Score 2

Supporting Data:

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| 101 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Is the species highly domesticated? No] No evidence |
| 102 | 2012. WRA Specialist. Personal Communication. | NA |
| 103 | 2012. WRA Specialist. Personal Communication. | NA |
| 201 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Species suited to tropical or subtropical climate(s) 2-High] "Range.—Gallinero is native to the Greater Antilles, the Lesser Antilles, Trinidad and Tobago, Mexico, Central America, and South America through Brazil and Peru (Howard 1989, Little and others 1974)." |
| 202 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Quality of climate match data 2-High] |
| 203 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Broad climate suitability (environmental versatility)? No] "Ecology.—Gallinero is widespread and rare to common on a wide range of soils over both igneous and sedimentary rocks. In Puerto Rico, it grows in areas that receive from about 1600 to 2500 mm of mean annual precipitation. The species is most common from 700 to 1,500 m in elevation in Costa Rica (Haber 2002) and from 450 to 900 m in Puerto Rico (Little and others 1974)." |
| 204 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Native or naturalized in regions with tropical or subtropical climates? Yes] "Range.—Gallinero is native to the Greater Antilles, the Lesser Antilles, Trinidad and Tobago, Mexico, Central America, and South America through Brazil and Peru (Howard 1989, Little and others 1974)." |
| 205 | 1989. Flynn, T.. Specimen Details for <i>Acnistus arborescens</i> (L.) Schldl. [BISH 655262]. Bishop Museum, http://nsdb.bishopmuseum.org/species_detail.cfm?id=290552041 | [Does the species have a history of repeated introductions outside its natural range? Unknown] "Polynesia Hawaiian Islands Kauai USA Koloa Dist. Lawai Valley. National Tropical Botanical Garden, Big Valley" |
| 205 | 1997. Annable, C.R./Collins, M.. Specimen Details for <i>Acnistus arborescens</i> (L.) Schldl. [BISH 655262]. Bishop Museum, http://nsdb.bishopmuseum.org/species_detail.cfm?id=290552041 | [Does the species have a history of repeated introductions outside its natural range? Unknown] "Polynesia Hawaiian Islands Oahu USA Waimea Arboretum & Botanical Garden, 59 864 Kam Hwy., Hale'iwa, S.Amer. Sec" |
| 205 | 2012. WRA Specialist. Personal Communication. | [Does the species have a history of repeated introductions outside its natural range? Unknown] |
| 301 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/ | [Naturalized beyond native range? No evidence] |
| 301 | 2007. Randall, R.P.. The introduced flora of Australia & its weed status. CRC for Australian Weed Management, Glen Osmond, Australia | [Naturalized beyond native range? No evidence in Australia] |
| 301 | 2012. Wagner, W.L./Herbst, D.R./Khan, N./Flynn, T.. Hawaiian Vascular Plant Updates: A Supplement to the Manual of the Flowering Plants of Hawai'i & Hawai'i's Ferns & Fern Allies. http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/supplement.htm | [Naturalized beyond native range? No evidence in Hawaiian Islands] |
| 302 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Garden/amenity/disturbance weed? Potentially. Adapted for disturbance] "The species is frequently found on roadsides, landslides, old pastures, and young secondary forests (Haber 2002). Disturbance is necessary for establishment. Gallinero is intolerant of shade; at least broken sunlight is necessary for long-term survival and flowering." |
| 302 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/ | [Garden/amenity/disturbance weed? No evidence] |

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| 303 | 2012. WRA Specialist. Personal Communication. | [Agricultural/forestry/horticultural weed? No evidence] |
| 304 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/ | [Environmental weed? No evidence] |
| 305 | 2008. Smith, S.D./Hall, S.J./Izquierdo, P.R./Baum, D.A.,. Comparative Pollination Biology of Sympatric and Allopatric Andean <i>Lochroma</i> (Solanaceae). <i>Annals of the Missouri Botanical Garden</i> . 95: 600-617. | [Congeneric weed? No] "Here, the campanulate form is represented by <i>Acnistus arborescens</i> (L.) Schtdl., the sole member of the genus <i>Acnistus</i> (Hunziker, 2001), which is nested within the core clade of <i>Lochroma</i> (Smith & Baum, 2006)." [Sole species in genus] |
| 401 | 2004. Francis, J.K. (ed.). <i>Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1</i> . Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Produces spines, thorns or burrs? No] "It is an evergreen shrub or small tree to 6 m in height and 15 cm in stem diameter. Multiple stems are usual for older plants. The trunk is supported by extensive lateral roots with "sinkers" and abundant fine roots. The roots are flexible, light tan, and have furrowed bark. Stem bark is light brown or gray and finely fissured. Stem wood is light brown and hard. Twigs of gallinero are stout, light brown or gray and finely hairy. The simple, alternate leaves are elliptical to lanceolate, 5 to 30 cm long by 3 to 14 cm broad, entire, and pointed at both ends." |
| 402 | 2012. WRA Specialist. Personal Communication. | [Allelopathic? Unknown] |
| 403 | 2004. Francis, J.K. (ed.). <i>Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1</i> . Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Parasitic? No] "It is an evergreen shrub or small tree to 6 m in height and 15 cm in stem diameter." [Solanaceae] |
| 404 | 2004. Francis, J.K. (ed.). <i>Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1</i> . Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Unpalatable to grazing animals? No] "A number of insect species feed on the leaves and parasitize the fruits (Engriser 1995, Haber 2002, Simpson and others 2002)." |
| 404 | 2004. Van den Eynden, V.. Use and management of edible non-crop plants in southern Ecuador. PhD Dissertation. Ghent University, Ghent, Belgium | [Unpalatable to grazing animals? No] "Table 5-6. Managed edible non-crop plants found in homegarden in Andean southern Ecuador" ... " <i>Acnistus arborescens</i> " ... "tolerated for fruit, fuel, fodder and hedging" |
| 405 | 2004. Van den Eynden, V.. Use and management of edible non-crop plants in southern Ecuador. PhD Dissertation. Ghent University, Ghent, Belgium | [Toxic to animals? No evidence] "Table 5-6. Managed edible non-crop plants found in homegarden in Andean southern Ecuador" ... " <i>Acnistus arborescens</i> " ... "tolerated for fruit, fuel, fodder and hedging" |
| 405 | 2008. Wagstaff, D.J.. <i>International poisonous plants checklist: an evidence-based reference</i> . CRC Press, Boca Raton, FL | [Toxic to animals? No evidence] |
| 406 | 2004. Francis, J.K. (ed.). <i>Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1</i> . Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Host for recognized pests and pathogens? No evidence] |
| 407 | 2004. Francis, J.K. (ed.). <i>Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1</i> . Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Causes allergies or is otherwise toxic to humans? No evidence] "The wood is burned for fuel (Espinoza 1985). Practitioners of traditional herbal medicine use extracts of leaves to treat cancerous growths. An alcoholic extract was tested and found to inhibit cancerous cells in vitro and in vivo. The active ingredients were identified as Withaferin A and Withacnistin (Kupchan and others 1969). Extracts of gallinero were the most effective against hamster lung fibroblasts of 31 Columbian plants used in herbal medicine to treat cancer (Lopez de Cerain and others 1996). The species is used in Brazil as a diuretic, to treat liver infections, as well as an antitumor agent (Mingussi and Barata 2002)." |
| 407 | 2012. Trade Winds Fruit. <i>Wild Tobacco - Acnistus arborescens</i> . http://www.tradewindsfruit.com/wild_tobacco.htm | [Causes allergies or is otherwise toxic to humans? No evidence, but medicinal properties suggest that caution should be exercised with this plant] "Uses: Plant contains Withaferin A and Withacnistin, both having anti-tumor properties. Extracts from this plant have historically been used by natives as an herbal treatment for cancer. Can also be used as a diuretic." |
| 408 | 1974. Gentry, J.L./Standley, P.C.. <i>Flora of Guatemala - Vol. 24 - Part X - Numbers 1 to 2</i> . Fieldiana. 24: 1-151. | [Creates a fire hazard in natural ecosystems? No] "Damp or wet thickets, 1,360 m." [No evidence. Found in wet areas] |

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| 408 | 2000. Liogier, A.H./ Martorell, L.F.. Flora of Puerto Rico and adjacent islands: a systematic synopsis. La Editorial, UPR, San Juan, Puerto Rico | [Creates a fire hazard in natural ecosystems? No] "In wood and thickets in wet or moist parts of the central districts ascending to higher elevations, Puerto Rico; West Indies, continental tropical America." [No evidence. Found in wet areas] |
| 409 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Is a shade tolerant plant at some stage of its life cycle? No] "Disturbance is necessary for establishment. Gallinero is intolerant of shade; at least broken sunlight is necessary for long-term survival and flowering." |
| 410 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Tolerates a wide range of soil conditions? Yes] "Ecology.—Gallinero is widespread and rare to common on a wide range of soils over both igneous and sedimentary rocks." |
| 411 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Climbing or smothering growth habit? No] "It is an evergreen shrub or small tree to 6 m in height and 15 cm in stem diameter." |
| 412 | 1974. Gentry, J.L./Standley, P.C.. Flora of Guatemala - Vol. 24 - Part X - Numbers 1 to 2. Fieldiana. 24: 1-151. | [Forms dense thickets? Unknown] "Damp or wet thickets, 1,360 m." [Probably a component of thicket vegetation] |
| 412 | 2000. Liogier, A.H./ Martorell, L.F.. Flora of Puerto Rico and adjacent islands: a systematic synopsis. La Editorial, UPR, San Juan, Puerto Rico | [Forms dense thickets? Unknown] "In wood and thickets in wet or moist parts of the central districts ascending to higher elevations, Puerto Rico; West Indies, continental tropical America." [Probably a component of thicket vegetation] |
| 501 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Aquatic? No] Terrestrial |
| 502 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Grass? No] Solanaceae |
| 503 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Nitrogen fixing woody plant? No] Solanaceae |
| 504 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "It is an evergreen shrub or small tree to 6 m in height and 15 cm in stem diameter. Multiple stems are usual for older plants. The trunk is supported by extensive lateral roots with "sinkers" and abundant fine roots. The roots are flexible, light tan, and have furrowed bark. Stem bark is light brown or gray and finely fissured. Stem wood is light brown and hard. Twigs of gallinero are stout, light brown or gray and finely hairy." |
| 601 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Evidence of substantial reproductive failure in native habitat? No] "Reproduction.— Gallinero flowers in May and June and fruits from May to September in Costa Rica. Occasional individuals may be found in flower at any time during the year (Haber 2002). In Puerto Rico, the species flowers in spring and fruits in late spring and summer (Little and others 1974)." |
| 602 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Produces viable seed? Yes] "A collection of fruits from Puerto Rico averaged 0.2025 + 0.0084 g/fruit. Seeds separated from them weighed an average of 0.00074 + 0.00017 g/seed or 1,350,000 seeds/kg. Sown on commercial potting mix, 88 percent germinated between 11 and 35 days after sowing." |
| 603 | 2006. Smith, S.D./Baum, D.A. Phylogenetics of the Florally Diverse Andean Clade <i>Lochrominae</i> (Solanaceae). American Journal of Botany. 93(8): 1140–1153. | [Hybridizes naturally? Yes] "Alternatively, because <i>A. arborescens</i> may occasionally hybridize in nature with related higher-elevation taxa such as <i>Lochroma confertiflorum</i> (S. D. Smith, personal observation), it is possible that different <i>A. arborescens</i> populations have acquired different introgressed alleles from other members of the <i>A</i> clade." |

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| 603 | 2007. Smith, S.D./Baum, D.A.. Systematics of lochrominae (Solanaceae): Patterns in Floral Diversity and Interspecific Crossability. Acta Horticulturae (. 745: 241-254. | [Hybridizes naturally? Yes] "Vassobia breviflora pollen failed to yield fruit when used to pollinate Eriolarynx lorentzii, lochroma cyaneum, and I. gesnerioides, and I. cyaneum also did not produce fruit when pollinated with Acnistus arborescens or Dunalia brachyacantha pollen (Table 2A). For several crosses, percent fruit set was actually higher in interspecific crosses than in intraspecific crosses (Table 2A). However, all but two crosses (E. lorentzii x I. australe and A. arborescens x V. breviflora) had fewer seeds per fruit in interspecific crosses (Table 2B)." ... "Crosses among species were largely successful with only two (V. breviflora x Eriolarynx lorentzii and V. breviflora x lochroma cyaneum) of the 21 species pairs failing to produce viable seed in both directions (Figure 2)." |
| 604 | 2007. Smith, S.D./Baum, D.A.. Systematics of lochrominae (Solanaceae): Patterns in Floral Diversity and Interspecific Crossability. Acta Horticulturae (. 745: 241-254. | [Self-compatible or apomictic? Yes] "Five of the seven species were self incompatible, producing fruit only when pollinated with pollen from another individual. The two remaining species, Acnistus arborescens and Vassobia breviflora, appeared to be at least partly self compatible, setting some seed when pollinated with self pollen (mean = 4.2 and 5.9 per cross, or 17% and 16% of the seed set from crosses, respectively) and setting a few seed with no hand pollination (mean = 0.2 and 2.2 per cross, respectively)." ... "We found that, of the seven species examined, two (Acnistus arborescens and Vassobia breviflora) were capable of producing seed from self-pollination while the remaining five appeared to be self-incompatible." |
| 605 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnisc Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Requires specialist pollinators? No] "Gallinero bears tiny, fragrant, greenish-white flowers in clusters of 30 or more in axillary fascicles." ... "The flowers are pollinated by bees, wasps, flies, butterflies, beetles, and occasionally hummingbirds (Haber 2002)." |
| 605 | 2008. Smith, S.D./Hall, S.J./Izquierdo, P.R./Baum, D.A.,. Comparative Pollination Biology of Sympatric and Allopatric Andean lochroma (Solanaceae). Annals of the Missouri Botanical Garden. 95: 600-617. | [Requires specialist pollinators? No] "The insect-pollinated taxa Acnistus arborescens and I. ellipticum were both white, scented, and offered a low reward, but varied in shape and size" |
| 606 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnisc Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Reproduction by vegetative fragmentation? Yes] "Layering (rooting) occurs whenever the trunk or branches come in contact with the ground; sprouts from prostrate trunks and branches sometimes become independent plants." |
| 607 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnisc Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Minimum generative time (years)? Unknown] "Growth and Management. — Gallinero has a moderate growth rate and is relatively short lived (10 to 20 years)." |
| 607 | 2009. Zahawi, R.A./Holl, K.D.. Comparing the Performance of Tree Stakes and Seedlings to Restore Abandoned Tropical Pastures. Restoration Ecology. 17(6): 854–864. | [Minimum generative time (years)? 2-3] "Tree seedlings are commonly planted to restore abandoned agricultural lands, whereas vegetative plantings have received little study. We evaluated the ability of 10 tree species to establish and survive over 3 years by planting 2-m-tall vegetative stakes at three sites in southern Costa Rica." ... "Three species developed fruit by the second year, including Erythrina berteroana (n ¼ 5), Ficus (n ¼ 2), and Acnistus (n ¼ 5). By the third year, the number increased to four species and 46 individuals, including E. berteroana (n ¼ 20), Ficus (n ¼ 17), Acnistus (n ¼ 7), and Gliricidia (n ¼ 2). Fruiting occurred predominantly at San Gabriel and Santo Domingo with only two fruiting individuals at Campo Tres." [Although plantings were from tree stakes, the ability of Acnistus to propagate vegetatively suggests that rooted stem fragments could fruit within 2-3 years] |
| 701 | 1973. Woodson, Jr., R.E./Schery, R.W./D'Arcy, W.G.. Flora of Panama. Part IX. Family 170. Solanaceae. Annals of the Missouri Botanical Garden. 60: 573-780. | [Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Potentially] "For unknown reasons, Acnistus arborescens, which ranges from Mexico to Brazil and throughout the Antilles, has not been found in Panama. In the countries where it occurs, it is common as a shrub of roadsides and successional forests." [May be inadvertently dispersed in these regions, or may just prefer disturbed roadside habitat which is ecologically similar to successional forests] |
| 702 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnisc Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Propagules dispersed intentionally by people? Yes] "Gallinero is used occasionally as an ornamental and for hedges and living fence posts. Chickens eat the fruits (Little and others 1974)." |

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| 702 | 2009. Rauch, F.D./Weissich, P.R.. Small Trees for the Tropical Landscape. University of Hawaii Press, Honolulu, HI | [Propagules dispersed intentionally by people? Yes] "...this species develops a fissured, corky bark that is an excellent site for the hobbyist-grower to display his collection of small epiphytic ferns, bromeliads, and orchids." ... "It provides a pleasant, open shade and is well used to line both sides of a walkway in a narrow space." |
| 703 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Propagules likely to disperse as a produce contaminant? No] "A fruiting tree produces an enormous number of seeds. Birds and bats eat the fruits and disperse the seeds (Engriser 1995)." [Possible, but unlikely. No evidence to data] |
| 704 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Propagules adapted to wind dispersal? No] "The fruits (berries) are numerous in each cluster, yellow or orange, globose, 5 to 11 mm in diameter, and have a persistent calyx. The fruit pulp is juicy, almost tasteless or slightly bitter, and not edible to humans. Each fruit contains numerous yellow, flattened seeds 1.5 to 2 mm wide with a rolled embryo (Howard 1989, Liogier 1995, Little and others 1974, Stevens and others 2001)." |
| 705 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Propagules water dispersed? No] "The species is frequently found on roadsides, landslides, old pastures, and young secondary forests (Haber 2002)." [No evidence. Fleshy-fruited and not typically found in riparian areas] |
| 706 | 1984. Wheelwright, N.T./Haber, W.A./Murray, K.G./Guindon, C.. Tropical Fruit-Eating Birds and Their Food Plants: A Survey of a Costa Rican Lower Montane Forest. Biotropica. 16(3): 173-192. | [Propagules bird dispersed? Yes] "Acnistus arborescens, a common small tree with watery orange berries produced asynchronously, is fed upon heavily by at least 43 bird species (cf. Dunalia, Cruz 1981)." |
| 706 | 1992. Valburg, L.K.. Feeding Preferences of Common Bush-Tanagers for Insect-Infested Fruits: Avoidance or Attraction?. Oikos. 65(1): 29-33. | [Propagules bird dispersed? Yes] "I conducted simultaneous choice trials presenting equal masses of infested and uninfested fruits of Neea ampifolia, Lysianthes synanthera, Solanum cordovense, Cestrum racemosum, Gonzalagunia rosea, Ardisia compressa, and Acnistus arborescens to captive common bush tanagers. I also presented pierced and intact fruits of C. racemosum, G. rosea, A. compressa, and A. arborescens to the birds and recorded their choices. Common bush-tanagers discriminated between infested and uninfested fruits, but the response to different fruit species varied. Birds preferred uninfested fruits of N. ampifolia and L. synanthera over infested fruits, did not express a preference in S. cordovense, and preferred infested fruits of C. racemosum, G. rosea, A. compressa, and A. arborescens. The birds also chose pierced over intact fruits of all four species presented. The variable response suggests that common bush-tanagers do not respond simply to the presence of insect larvae, but may discriminate in a more complex manner." |
| 706 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Propagules bird dispersed? Yes] "A fruiting tree produces an enormous number of seeds. Birds and bats eat the fruits and disperse the seeds (Engriser 1995)." |
| 707 | 1984. Wheelwright, N.T./Haber, W.A./Murray, K.G./Guindon, C.. Tropical Fruit-Eating Birds and Their Food Plants: A Survey of a Costa Rican Lower Montane Forest. Biotropica. 16(3): 173-192. | [Propagules dispersed by other animals (externally)? No] "Acnistus arborescens, a common small tree with watery orange berries produced asynchronously, is fed upon heavily by at least 43 bird species (cf. Dunalia, Cruz 1981)." [Fleshy fruited adapted for consumption and internal dispersal] |
| 708 | 1984. Wheelwright, N.T./Haber, W.A./Murray, K.G./Guindon, C.. Tropical Fruit-Eating Birds and Their Food Plants: A Survey of a Costa Rican Lower Montane Forest. Biotropica. 16(3): 173-192. | [Propagules survive passage through the gut? Presumably Yes] "Acnistus arborescens, a common small tree with watery orange berries produced asynchronously, is fed upon heavily by at least 43 bird species (cf. Dunalia, Cruz 1981)." |
| 708 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnic Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Propagules survive passage through the gut? Yes] "A fruiting tree produces an enormous number of seeds. Birds and bats eat the fruits and disperse the seeds (Engriser 1995)." |
| 708 | 2007. DeLuycker, A.M.. The Ecology and Behavior of the Rio Mayo Titi Monkey (<i>Callicebus oenanthe</i>) in the Alto Mayo, Northern Peru. PhD Dissertation. Washington University, St. Louis, Missouri | [Propagules survive passage through the gut? Presumably Yes] "Fruits or fruit parts made up the majority of plant resource food items (71%), with 2635 feeding records." ... "Multiple-seeded fruits included three species of unidentified <i>Miconia</i> sp. and <i>Miconia centrodesma</i> (Melastomataceae), <i>Acnistus arborescens</i> (Solanaceae), <i>Ficus</i> sp. (Moraceae) and <i>Rubus</i> sp. (Rosaceae)." |

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| 801 | 2000. Wijdeven, S.M.J./Kuzee, M.E.. Seed Availability as a Limiting Factor in Forest Recovery Processes in Costa Rica. Restoration Ecology. 8(4): 414–424. | [Prolific seed production (>1000/m2)? Probably No] "Appendix 1. Species list and seed densities for plants from the pasture and forest seed bank. Nomenclature follows Haber (1991)." [Acnistus arborescens: Pasture = 13.8 seeds/m2; Forest = 154.4 seeds/m2] |
| 801 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnisc Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Prolific seed production (>1000/m2)? Possibly Yes] "A fruiting tree produces an enormous number of seeds." |
| 802 | 2000. Wijdeven, S.M.J./Kuzee, M.E.. Seed Availability as a Limiting Factor in Forest Recovery Processes in Costa Rica. Restoration Ecology. 8(4): 414–424. | [Evidence that a persistent propagule bank is formed (>1 yr)? Unknown] "Appendix 1. Species list and seed densities for plants from the pasture and forest seed bank. Nomenclature follows Haber (1991)." [Acnistus arborescens: Pasture = 13.8 seeds/m2; Forest = 154.4 seeds/m2. Longevity of seed bank in soil unknown] |
| 803 | 2012. WRA Specialist. Personal Communication. | [Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species |
| 804 | 2004. Francis, J.K. (ed.). Wildland Shrubs of the United States & its Territories: Thamnisc Descriptions volume 1. Gen. Tech. Rep. IITF-GTR-26. USDA Forest Service International Institute of Tropical Forestry, San Juan, PR | [Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown] "Layering (rooting) occurs whenever the trunk or branches come in contact with the ground; sprouts from prostrate trunks and branches sometimes become independent plants." |
| 805 | 2012. WRA Specialist. Personal Communication. | [Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown] |

Summary of Risk Traits:

High Risk / Undesirable Traits:

- Grows on many soil types
- Spreads by seeds and vegetatively
- Self-fertile (single trees can produce seeds)
- Seeds bird and bat dispersed

Low Risk / Desirable Traits:

- No records of naturalization or invasiveness
- Shade-intolerant
- Ornamental tree
- Medicinal uses