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| Taxon: <i>Rothea myricoides</i> (Hochst.) Steane & Mabb. | Family: Lamiaceae |
| Common Name(s): blue butterfly bush blue glory bower blue wings Cambridge bush Oxford bush | Synonym(s): <i>Clerodendrum myricoides</i> (Hochst.) <i>Clerodendrum ugandense</i> Prain <i>Spironema myricoides</i> Hochst. |

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|--------------------------------|----------------------------------|------------------------------|
| Assessor: Chuck Chimera | Status: Assessor Approved | End Date: 23 May 2016 |
| WRA Score: 6.0 | Designation: H(HPWRA) | Rating: High Risk |

Keywords: Naturalized, Tropical Shrub, Medicinal Uses, Shade-tolerant, 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 | y |
| 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 | y |
| 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 | n=0, y = 2*multiplier (see Appendix 2) | n |
| 304 | Environmental weed | n=0, y = 2*multiplier (see Appendix 2) | n |
| 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 | | |
| 406 | Host for recognized pests and pathogens | y=1, n=0 | n |
| 407 | Causes allergies or is otherwise toxic to humans | | |

| Qsn # | Question | Answer Option | Answer |
|-------|--|---|--------|
| 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 | y |
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | y=1, n=0 | y |
| 411 | Climbing or smothering growth habit | y=1, n=0 | n |
| 412 | Forms dense thickets | | |
| 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 | | |
| 604 | Self-compatible or apomictic | y=1, n=-1 | n |
| 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 | 3 |
| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | y=1, n=-1 | n |
| 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 | | |
| 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) | | |
| 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 | y=1, n=-1 | y |
| 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 |
| | Steane, D., & Mabberley, D. J. 1998. <i>Rothea</i> (Lamiaceae) revived. <i>Novon</i> , 8(2): 204-206 | [Several morphological variants, but no evidence of domestication] "Central and east to northeast tropical Africa. <i>Rothea myricoides</i> comprises a perplexing complex of morphological variants (see Verdcourt (1992) and Persson (1992) for discussion), of which 'Uganden- sis' is widely cultivated (known as Oxford & Cambridge bush due to its dark blue and light blue corolla lobes); see Staples (1991)." |

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|-----|---|-------|
| 102 | Has the species become naturalized where grown? | |
| | Source(s) | Notes |
| | WRA Specialist. 2016. Personal Communication | NA |

| | | |
|-----|--|-------|
| 103 | Does the species have weedy races? | |
| | Source(s) | Notes |
| | WRA Specialist. 2016. 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 |
| | USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 19 May 2016] | "Native: Africa East Tropical Africa: Kenya; Tanzania; Uganda Northeast Tropical Africa: Ethiopia; Somalia; Sudan South Tropical Africa: Angola; Malawi; Mozambique; Zambia; Zimbabwe Southern Africa: Botswana; Namibia; South Africa - KwaZulu-Natal, - Transvaal; Swaziland West Tropical Africa: Ghana West-Central Tropical Africa: Burundi; Congo; Rwanda; Zaire Western Indian Ocean: Madagascar" |

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|-----|---|-------|
| 202 | Quality of climate match data | High |
| | Source(s) | Notes |
| | USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 19 May 2016] | |

| | | |
|-----|---|---|
| 203 | Broad climate suitability (environmental versatility) | y |
|-----|---|---|

| Qsn # | Question | Answer |
|-------|--|---|
| | Source(s) | Notes |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. Tropical Shrubs. University of Hawaii Press, Honolulu, HI | "Adaptable; will grow almost anywhere in Hawai'i except in extreme salt conditions; grows best in rich , well-watered, well-drained soil" |
| | Hyde, M.A., Wursten, B.T., Ballings, P. & Coates Palgrave, M. (2016). Flora of Zimbabwe: Species information: <i>Rothea myricoides</i> . http://www.zimbabweflora.co.zw/speciesdata/species.php?species_id=149090 . [Accessed 23 May 2016] | "Altitude range: (metres) Up to 1700 m " [Elevation range exceeds 1000 m, demonstrating environmental diversity in tropical climates] |
| | Floridata. 2016. <i>Clerodendrum ugandense</i> . http://floridata.com/Plants/Verbenaceae/Clerodendrum%20ugandense/979 . [Accessed 23 May 2016] | "Hardiness: USDA Zones 10 - 11. Blue butterfly bush performs best in a frostfree climate, but it is root hardy in zones 8 and 9, freezing to the ground in winter, but returning from its roots in spring." |

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|------------|---|--|
| 204 | Native or naturalized in regions with tropical or subtropical climates | y |
| | Source(s) | Notes |
| | USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 23 May 2016] | "Native: Africa East Tropical Africa: Kenya; Tanzania; Uganda Northeast Tropical Africa: Ethiopia; Somalia; Sudan South Tropical Africa: Angola; Malawi; Mozambique; Zambia; Zimbabwe Southern Africa: Botswana; Namibia; South Africa - KwaZulu-Natal, - Transvaal; Swaziland West Tropical Africa: Ghana West-Central Tropical Africa: Burundi; Congo; Rwanda; Zaire Western Indian Ocean: Madagascar" |

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|------------|--|--|
| 205 | Does the species have a history of repeated introductions outside its natural range? | y |
| | Source(s) | Notes |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. Tropical Shrubs. University of Hawaii Press, Honolulu, HI | "Adaptable; will grow almost anywhere in Hawaii except in extreme salt conditions" |
| | McCormack, G. 2007. Cook Islands Biodiversity Database, Version 2007.2. Cook Islands Natural Heritage Trust, Rarotonga. http://cookislands.bishopmuseum.org . [Accessed 23 May 2016] | " <i>Clerodendrum ugandense</i> ... Introduced - Recent, Not naturalised; Land, lowlands, gardens" |
| | The Tropical Flowering Zone. (2015). <i>Rothea myricoides</i> (Blue Butterfly Bush). https://tropicalfloweringzone.wordpress.com/2015/01/09/rothea-myricoides-blue-butterfly-bush/ . [Accessed 23 May 2016] | " <i>Rothea myricoides</i> is native to tropical East Africa and is cultivated as an ornamental throughout the tropics and widely cultivated elsewhere." |
| | Negi, P. S., & Hajra, P. K. 2007. Alien flora of Doon Valley, Northwest Himalaya. <i>Current Science</i> 92(7): 968-978 | "Table 1. Exotics of the Doon Valley (enumeration)" [<i>Clerodendrum ugandense</i> present but not reported as naturalized in this publication] |

| Qsn # | Question | Answer |
|-------|--|--|
| | Callmander, M. W., Phillipson, P. B., Wearn, J. A., & Kok, R. P. D. (2013). Adieu Adelosia Blume (Lamiaceae): Further Observations on <i>Rothea</i> Raf. for Madagascar. <i>Candollea</i> , 68(2), 316-320 | "We have also re-examined the status of <i>Rothea myricoides</i> (Hochst.) Steane & Mabb., which is treated as native to Madagascar in the Flore de Madagascar et des Comores (as <i>Clerodendrum myricoides</i> Hochst.), based on the collection "Warbur 553" [Warburg?] cited as from Madagascar without locality (MOLDENKE, 1956). The specimen of this gathering at P is clearly marked as having been collected in a garden. We have found no evidence of the species occurring naturally in Madagascar, nor of this commonly cultivated ornamental plant having become in any way naturalized." |

| 301 | Naturalized beyond native range | y |
|-----|--|--|
| | Source(s) | Notes |
| | Auckland Museum. (2016). <i>Rothea myricoides</i> 'Ugandensis'. http://www.aucklandmuseum.com/collection/object/am_naturalsciences-object-305084 . [Accessed 23 May 2016] | "Sporadically naturalised (AK 256579) along roadside from a single plant growing in Lodge gardens with blue flowers (AK 256579)" |
| | Frohlich, D. & Lau, A. 2012. New plant records for the Hawaiian islands. <i>Bishop Museum Occasional Papers</i> 113: 27–54 | "This species is occasionally grown in Hawai'i and was noted in a pasture area on Kaua'i where several individuals appeared naturalized along a fenceline. This species apparently forms fruit in Hawai'i (Staples 2005) and is likely dispersed by birds. it is very likely this population represents a sparingly naturalized one, though this status was not clearly stated by the collectors. Material examined. KAUA'I: Kōloa Distr, Kalāheo. Collected at pasture edge on Po'ohiwi Rd. Small, purple, butterfly shaped flowers. Several individuals appeared to be naturalized along pasture fenceline, 15 oct 2007, C. Trauernicht & M. Clark 207." |
| | Heenan, P. B., de Lange, P. J., Cameron, E. K., Ogle, C. C., & Champion, P. D. 2004. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2001–2003. <i>New Zealand Journal of Botany</i> , 42(5): 797-814 | [Naturalizing & eradicated] "Sporadic plants grow near cultivated plants in the grounds and adjacent hedgerows of the Symonds Street University of Auckland Campus. On Great Barrier Island plants occurred along a roadside near Whangaparapara and were spreading, presumably through bird-dispersed fruits, from a planted specimen nearby. The parent plant and wildlings have since been eradicated. Often known in cultivation as <i>C. ugandensis</i> Prain." |
| | Howell, C. J., & Sawyer, J. W. (2006). New Zealand naturalised vascular plant checklist. New Zealand Plant Conservation Network, Wellington, NZ | <i>Clerodendrum myricoides</i> - Naturalised plant status = Casual |

| 302 | Garden/amenity/disturbance weed | |
|-----|--|--|
| | Source(s) | Notes |
| | Learn 2 Grow. 2016. <i>Clerodendrum ugandense</i> . http://www.learn2grow.com/plants/clerodendrum-ugandense/ . [Accessed 23 May 2016] | "In tropical regions, blue butterfly bush is an aggressive plant that tends to spread and may become invasive. Once established, prune by hand semi-annually to shape and maintain manageability. Be vigilant about removing any suckers that pop up out of bounds." |

| Qsn # | Question | Answer |
|-------|--|--------------|
| 303 | Agricultural/forestry/horticultural weed | n |
| | Source(s) | Notes |
| | Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia | No evidence |

| | | |
|-----|--|--------------|
| 304 | Environmental weed | n |
| | Source(s) | Notes |
| | Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia | No evidence |

| | | |
|-----|--|---|
| 305 | Congeneric weed | |
| | Source(s) | Notes |
| | Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia | Possibly, depending on taxonomic treatment. Several Clerodendrum species are listed as weeds. |

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|-----|---|---|
| 401 | Produces spines, thorns or burrs | n |
| | Source(s) | Notes |
| | Van Wyk, B. & Van Wyk, P. 1997. Field Guide to Trees of Southern Africa. Struik Publishers, Cape Town, South Africa | [No evidence] "Deciduous shrub or mall tree; occurring in bushveld and coastal bush, often in rocky places or on termitaria. Leaves ovate. opposite or 3- or 4-whorled. softly textured. velvet hairy above and often more densely so below. unpleasantly scented when crushed: margin coarsely toothed. mainly in the upper half." |

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| 402 | Allelopathic | |
| | Source(s) | Notes |
| | WRA Specialist. 2016. Personal Communication | Unknown |

| | | |
|-----|---|---|
| 403 | Parasitic | n |
| | Source(s) | Notes |
| | Van Wyk, B. & Van Wyk, P. 1997. Field Guide to Trees of Southern Africa. Struik Publishers, Cape Town, South Africa | [No evidence] "Deciduous shrub or mall tree; occurring in bushveld and coastal bush, often in rocky places or on termitaria. Leaves ovate. opposite or 3- or 4-whorled. softly textured. velvet hairy above and often more densely so below. unpleasantly scented when crushed: margin coarsely toothed. mainly in the upper half." [Lamiaceae. Verbenaceae] |

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|-----|---------------------------------------|--------------|
| 404 | Unpalatable to grazing animals | n |
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|---|---|
| | Lusigi, W. J., Nkurunziza, E. R., & Masheti, S. (1984). Forage preferences of livestock in the arid lands of Northern Kenya. <i>Journal of Range Management</i> , 37(6): 542-548 | "Table 1. Food preference of various livestock species in the Integrated Project on Arid Lands (I.P.A.L.) Study Area in the wet and dry seasons. (VD - Very desirable; D - Desirable; I - Intermediate; U - Undesirable)" [Clerodendrum myricoides listed as U - Undesirable to Camels, Sheep, Goats, & Cattle. Listed as Intermediate desirability to goats during the dry season] |
| | Oloo, T. W., Brett, R., & Young, T. P. (1994). Seasonal variation in the feeding ecology of black rhinoceros (<i>Diceros bicornis</i> L.) in Laikipia, Kenya. <i>African Journal of Ecology</i> , 32(2), 142-157 | [Palatable to rhinos] "Table 1. Food plants eaten by black rhinoceros during wet and dry periods on 01 Ari Nyiro Ranch, Laikipia, Kenya, based on indirect feeding observations" [Clerodendrum myricoides - A=all plant parts eaten] |

| 405 | Toxic to animals | |
|-----|--|---|
| | Source(s) | Notes |
| | Getahun, A. (1976). Some common medicinal and poisonous plants used in Ethiopian folk medicine, Addis Abeba University, Addis Abeba, Ethiopia | "The plant is also used as a vermifuge, expellant and to cause diarrhea in stock." |
| | Lusigi, W. J., Nkurunziza, E. R., & Masheti, S. (1984). Forage preferences of livestock in the arid lands of Northern Kenya. <i>Journal of Range Management</i> , 37(6): 542-548 | [Avoided by most livestock] "Table 1. Food preference of various livestock species in the Integrated Project on Arid Lands (I.P.A.L.) Study Area in the wet and dry seasons. (VD - Very desirable; D - Desirable; I - Intermediate; U - Undesirable)" [Clerodendrum myricoides listed as U - Undesirable to Camels, Sheep, Goats, & Cattle. Listed as Intermediate desirability to goats during the dry season] |
| | Dave's Garden. 2016. Butterfly Bush, Oxford Bush, Cambridge Bush 'Ugandense' - <i>Rothea myricoides</i> . http://davesgarden.com/guides/pf/go/1874/ . [Accessed 23 May 2016] | [Possibly, but may be avoided by animals] "Danger: Parts of plant are poisonous if ingested All parts of plant are poisonous if ingested Handling plant may cause skin irritation or allergic reaction" |

| 406 | Host for recognized pests and pathogens | n |
|-----|--|---|
| | Source(s) | Notes |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. <i>Tropical Shrubs</i> . University of Hawaii Press, Honolulu, HI | "Insects / Diseases: None of any consequence." |
| | Top Tropicals. 2016. <i>Clerodendrum ugandense</i> , <i>Rothea myricoides</i> . http://toptropicals.com/catalog/uid/Clerodendrum_ugandense.htm . [Accessed 23 May 2016] | "It has an odd scent when the leaves are brushed which may serve to repel chewing insects because it is pest free." |

| 407 | Causes allergies or is otherwise toxic to humans | |
|-----|--|--|
| | Source(s) | Notes |
| | Dave's Garden. 2016. Butterfly Bush, Oxford Bush, Cambridge Bush 'Ugandense' - <i>Rothea myricoides</i> . http://davesgarden.com/guides/pf/go/1874/ . [Accessed 23 May 2016] | "Danger: Parts of plant are poisonous if ingested All parts of plant are poisonous if ingested Handling plant may cause skin irritation or allergic reaction" |

| Qsn # | Question | Answer |
|-------|--|---|
| | The Tropical Flowering Zone. (2015). <i>Rothea myricoides</i> (Blue Butterfly Bush). https://tropicalfloweringzone.wordpress.com/2015/01/09/rothea-myricoides-blue-butterfly-bush/ . [Accessed 23 May 2016] | "The entire shrub is poisonous." |
| | Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL | [Used medicinally. Possibly toxic if taken at incorrect dosage] "Poison antidote, a root decoction is drunk; crushed roots oxytocic. Leaves analgesic, antipyretic; leaves decoction stomachic. Veterinary medicine, leaves infusion for East Coast fever." |

| 408 | Creates a fire hazard in natural ecosystems | n |
|-----|---|--|
| | Source(s) | Notes |
| | Van Wyk, B. & Van Wyk, P. 1997. Field Guide to Trees of Southern Africa. Struik Publishers, Cape Town, South Africa | "Deciduous shrub or small tree; occurring in bushveld and coastal bush. often in rocky places or on termitaria." [No evidence] |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. Tropical Shrubs. University of Hawaii Press, Honolulu, HI | "requires constant moisture for optimum growth" [Moisture requirements suggests plants will not thrive in fire prone areas or contribute to fire risk] |

| 409 | Is a shade tolerant plant at some stage of its life cycle | y |
|-----|---|--|
| | Source(s) | Notes |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. Tropical Shrubs. University of Hawaii Press, Honolulu, HI | "blooms in full sun or partial shade." |
| | Grow Wild. (2016). <i>Rothea myricoides</i> (was <i>Clerodendrum myricoides</i>) Blue Cats Whiskers. http://growwild.co.za/trees/rothea-myricoides-was-clerodendrum-myricoides . [Accessed 23 May 2016] | "It is not fussy requiring full sun, shade or semi-shade." |
| | Floridata. 2016. <i>Clerodendrum ugandense</i> . http://floridata.com/Plants/Verbenaceae/Clerodendrum%20ugandense/979 . [Accessed 23 May 2016] | "Light: Grow this clerodendrum in partial shade" |
| | Dave's Garden. 2016. Butterfly Bush, Oxford Bush, Cambridge Bush 'Ugandense' - <i>Rothea myricoides</i> . http://davesgarden.com/guides/pf/go/1874/ . [Accessed 23 May 2016] | "Sun Exposure: Sun to Partial Shade Light Shade" |

| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | y |
|-----|---|---|
| | Source(s) | Notes |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. Tropical Shrubs. University of Hawaii Press, Honolulu, HI | "Adaptable; will grow almost anywhere in Hawai'i except in extreme salt conditions; grows best in rich , well-watered, well-drained soil" |
| | Learn 2 Grow. 2016. <i>Clerodendrum ugandense</i> . http://www.learn2grow.com/plants/clerodendrum-ugandense/ . [Accessed 23 May 2016] | "Soil pH: Acidic, Neutral, Alkaline Soil Drainage: Well Drained Soil type: Loam, Sand" |

| 411 | Climbing or smothering growth habit | n |
|-----|-------------------------------------|---|
|-----|-------------------------------------|---|

| Qsn # | Question | Answer |
|-------|--|---|
| | Source(s) | Notes |
| | Van Wyk, B. & Van Wyk, P. 1997. Field Guide to Trees of Southern Africa. Struik Publishers, Cape Town, South Africa | "Deciduous shrub or mall tree; occurring in bushveld and coastal bush, often in rocky places or on termitaria. Leaves ovate. opposite or 3- or 4-whorled. softly textured. velvet hairy above and often more densely so below. unpleasantly scented when crushed: margin coarsely toothed. mainly in the upper half." |
| | Learn 2 Grow. 2016. Clerodendrum ugandense. http://www.learn2grow.com/plants/clerodendrum-ugandense/ . [Accessed 23 May 2016] | "Often listed as a vine, it has a weak, upright habit and sometimes requires support, though it is far too rangy or bushy to be considered a true vine." |

| 412 | Forms dense thickets | |
|-----|---|---|
| | Source(s) | Notes |
| | Hyde, M.A., Wursten, B.T., Ballings, P. & Coates Palgrave, M. (2016). Flora of Zimbabwe: Species information: <i>Rothea myricoides</i> . http://www.zimbabweflora.co.zw/speciesdata/species.php?species_id=149090 . [Accessed 23 May 2016] | [A component of thickets. Unknown if dense monospecific stands are formed] "Occurring in thickets in rocky places, along streams and at the edges of evergreen forest." |
| | Kew Databases. 2016. Flora Zambesiaca. FZ volume:8 part:7 (2005) Lamiaceae by R. Fernandes. <i>Rothea myricoides</i> forma <i>myricoides</i> . http://apps.kew.org/efloras/namedetail.do?flora=fz&taxon=11644&nameid=29762 . [Accessed 23 May 2016] | [In dense thickets] "Coastal plains and dunes on sandy soil, usually in dense thickets; also in wooded grassland, deciduous woodland, riverine forest and low altitude mixed evergreen forest; 5–1000 m." |

| 501 | Aquatic | n |
|-----|---|---|
| | Source(s) | Notes |
| | Van Wyk, B. & Van Wyk, P. 1997. Field Guide to Trees of Southern Africa. Struik Publishers, Cape Town, South Africa | [Terrestrial] "Deciduous shrub or mall tree; occurring in bushveld and coastal bush, often in rocky places or on termitaria." |

| 502 | Grass | n |
|-----|---|--|
| | Source(s) | Notes |
| | USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 19 May 2016] | Family: Lamiaceae Subfamily: Ajugoideae Altfamily: Verbenaceae |

| 503 | Nitrogen fixing woody plant | n |
|-----|---|--|
| | Source(s) | Notes |
| | USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 19 May 2016] | Family: Lamiaceae Subfamily: Ajugoideae Altfamily: Verbenaceae |

| Qsn # | Question | Answer |
|-------|---|--------------------------------|
| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers) | n |
| | Source(s) | Notes |
| | Van Wyk, B. & Van Wyk, P. 1997. Field Guide to Trees of Southern Africa. Struik Publishers, Cape Town, South Africa | "Deciduous shrub or mall tree" |

| | | |
|-----|---|--|
| 601 | Evidence of substantial reproductive failure in native habitat | n |
| | Source(s) | Notes |
| | Hyde, M.A., Wursten, B.T., Ballings, P. & Coates Palgrave, M. (2016). Flora of Zimbabwe: Species information: <i>Rothea myricoides</i> . http://www.zimbabweflora.co.zw/speciesdata/species.php?species_id=149090 . [Accessed 23 May 2016] | "Frequency: Common" ... Worldwide distribution: Angola, Botswana, Namibia, Burundi, DRC, Rwanda, Uganda, Sudan, Ethiopia, Kenya, Tanzania, Malawi, Mozambique, Zambia, Zimbabwe and South Africa." |
| | Loffler, L. & Loffler, P. 2005. Swaziland Tree Atlas—including selected shrubs and climbers. Southern African Botanical Diversity Network Report No. 38. SABONET, Pretoria, S.A. | "Land tenure: Wide range. Conservation Status: Least Concern" |

| | | |
|-----|--|--|
| 602 | Produces viable seed | y |
| | Source(s) | Notes |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. Tropical Shrubs. University of Hawaii Press, Honolulu, HI | "Propagation: Grown from seeds or cuttings." |
| | Oakman, H.1995. Harry Oakman's what flowers when: the complete guide to flowering times in tropical and subtropical gardens. Univ. of Queensland Press, St. Lucia, Australia | "raised from seed or tip cuttings" |

| | | |
|-----|--|--------------|
| 603 | Hybridizes naturally | |
| | Source(s) | Notes |
| | WRA Specialist. 2016. Personal Communication | Unknown |

| | | |
|-----|---|---|
| 604 | Self-compatible or apomictic | n |
| | Source(s) | Notes |
| | Plant of the Day. (2015). <i>Rothea myricoides</i> or blue glory bower. Monday, August 31, 2015. http://plantotheday.blogspot.com/2015_08_01_archive.html . [Accessed 23 May 2016] | "A quick note on crossing: These are really cool flowers that do not self pollinate and evolved a morphological strategy to avoid it. In the top picture you can see how the style sticks out and bends away from the anthers, this helps avoid getting pollen on the stigma, keeping it clear for other pollen brought in from another plant." |

| | | |
|-----|--|--------------|
| 605 | Requires specialist pollinators | n |
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|---|--|
| | Dave's Garden. 2016. Butterfly Bush, Oxford Bush, Cambridge Bush 'Ugandense' - <i>Rothea myricoides</i> . http://davesgarden.com/guides/pf/go/1874/ . [Accessed 23 May 2016] | "Bloom Characteristics: This plant is attractive to bees, butterflies and/or birds" |
| | Learn 2 Grow. 2016. <i>Clerodendrum ugandense</i> . http://www.learn2grow.com/plants/clerodendrum-ugandense/ . [Accessed 23 May 2016] | "The fluttering blooms are borne in clusters at the ends of the branches and are insect pollinated." |
| | South African National Biodiversity Institute. (2014). Indigenous South African Plants that Provide Food for Honey Bees. http://www.sanbi.org/documents/kirstenbosch-nbg-list-plants-provide-food-honeybees . [Accessed 23 May 2016] | "This list is based on observations of bees visiting flowers in Kirstenbosch National Botanical Garden, and on a variety of references" [List includes <i>Clerodendrum myricoides</i> & <i>Clerodendrum ugandense</i>] |
| | Miss Smarty Plants. (2014). <i>Clerodendrum</i> for Florida. http://misssmartyplants.com/clerodendrum-for-florida/ . [Accessed 23 May 2016] | "True blue is a color that is hard to find in nature. This plant does well in both moist sun and shade and produces these blue flowers throughout most of the year. It is a favorite of bees and certainly a pollinator magnet. Despite the name Blue Butterfly Bush I haven't actually seen many butterflies attracted to these flowers." |

| 606 | Reproduction by vegetative fragmentation | y |
|-----|---|---|
| | Source(s) | Notes |
| | Floridata. 2016. <i>Clerodendrum ugandense</i> . http://floridata.com/Plants/Verbenaceae/Clerodendrum%20ugandense/979 . [Accessed 23 May 2016] | "Propagation: Blue butterfly bush is easy to propagate from stem or root cuttings, or from rooted suckers." |
| | Learn 2 Grow. 2016. <i>Clerodendrum ugandense</i> . http://www.learn2grow.com/plants/clerodendrum-ugandense/ . [Accessed 23 May 2016] | [Spreads by suckers] "In tropical regions, blue butterfly bush is an aggressive plant that tends to spread and may become invasive. Once established, prune by hand semi-annually to shape and maintain manageability. Be vigilant about removing any suckers that pop up out of bounds." |

| 607 | Minimum generative time (years) | 3 |
|-----|--|--|
| | Source(s) | Notes |
| | Learn 2 Grow. 2016. <i>Clerodendrum ugandense</i> . http://www.learn2grow.com/plants/clerodendrum-ugandense/ . [Accessed 23 May 2016] | "Growth Rate: Fast" |
| | Grows on You. 2016. <i>Clerodendrum ugandense</i> . http://www.growsonyou.com/photo/slideshow/182316-clerodendrum-ugandense/all . [Accessed 23 May 2016] | "They have to germinate first. Then about three years to flower or thereabouts!" |

| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | n |
|-----|--|---|
| | Source(s) | Notes |
| | Grow Wild. (2016). <i>Rothea myricoides</i> (was <i>Clerodendrum myricoides</i>) Blue Cats Whiskers. http://growwild.co.za/trees/rothea-myricoides-was-clerodendrum-myricoides . [Accessed 23 May 2016] | "The edible fruit is eaten by birds and monkeys." |

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

| Qsn # | Question | Answer |
|-------|--|---|
| | Source(s) | Notes |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. Tropical Shrubs. University of Hawaii Press, Honolulu, HI | "C. ugandense is grown mainly for its ornamental value, for it is one of the world 's very few plants that has truly blue flowers ." |
| | Learn 2 Grow. 2016. Clerodendrum ugandense. http://www.learn2grow.com/plants/clerodendrum-ugandense/ . [Accessed 23 May 2016] | "The unusual, colorful flowers of blue butterfly bush make this a highly sought after garden plant for temperate and tropical gardens alike." |

| 703 | Propagules likely to disperse as a produce contaminant | n |
|-----|--|---|
| | Source(s) | Notes |
| | Grow Wild. (2016). <i>Rothea myricoides</i> (was <i>Clerodendrum myricoides</i>) Blue Cats Whiskers. http://growwild.co.za/trees/rothea-myricoides-was-clerodendrum-myricoides . [Accessed 23 May 2016] | "The edible fruit is eaten by birds and monkeys." Unlikely. A fleshy-fruited shrub that is uncommonly cultivated] |

| 704 | Propagules adapted to wind dispersal | n |
|-----|---|--|
| | Source(s) | Notes |
| | Van Wyk, B. & Van Wyk, P. 1997. Field Guide to Trees of Southern Africa. Struik Publishers, Cape Town, South Africa | "Fruit fleshy. 2-4-lobed. yellowish red ripening black. each lobe single-seeded" |

| 705 | Propagules water dispersed | n |
|-----|---|---|
| | Source(s) | Notes |
| | Meerts, P. (2016). An annotated checklist to the trees and shrubs of the Upper Katanga (DR Congo). <i>Phytotaxa</i> , 258 (3), 201-250 | " <i>Rothea myricoides</i> ... Habitat: riverine and swamp forests; distribution uncertain" [Possibly. Water may disperse plants in riverine & swamp forests] |
| | Hyde, M.A., Wursten, B.T., Ballings, P. & Coates Palgrave, M. (2016). Flora of Zimbabwe: Species information: <i>Rothea myricoides</i> . http://www.zimbabweflora.co.zw/speciesdata/species.php?species_id=149090 . [Accessed 23 May 2016] | [Distribution along streams may result in water dispersal] "Occurring in thickets in rocky places, along streams and at the edges of evergreen forest." |

| Qsn # | Question | Answer |
|-------|--|--|
| 706 | Propagules bird dispersed | y |
| | Source(s) | Notes |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. Tropical Shrubs. University of Hawaii Press, Honolulu, HI | "from late fall to carl)' spring, black, 1/2-inch berries follow the blossoms." |
| | Heenan, P. B., de Lange, P. J., Cameron, E. K., Ogle, C. C., & Champion, P. D. 2004. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2001–2003. New Zealand Journal of Botany, 42(5): 797-814 | "On Great Barrier Island plants occurred along a roadside near Whangaparapara and were spreading, presumably through bird-dispersed fruits, from a planted specimen nearby." |
| | Grow Wild. (2016). <i>Rothea myricoides</i> (was <i>Clerodendrum myricoides</i>) Blue Cats Whiskers. http://growwild.co.za/trees/rothea-myricoides-was-clerodendrum-myricoides . [Accessed 23 May 2016] | "The edible fruit is eaten by birds and monkeys." |
| | Frohlich, D. & Lau, A. 2012. New plant records for the Hawaiian islands. Bishop Museum Occasional Papers 113: 27–54 | "This species apparently forms fruit in Hawai'i (Staples 2005) and is likely dispersed by birds." |

| | | |
|-----|---|---|
| 707 | Propagules dispersed by other animals (externally) | n |
| | Source(s) | Notes |
| | Van Wyk, B. & Van Wyk, P. 1997. Field Guide to Trees of Southern Africa. Struik Publishers, Cape Town, South Africa | "Fruit fleshy. 2-4-lobed. yellowish red ripening black. each lobe single-seeded" [Presumably adapted for frugivory & internal seed dispersal] |

| | | |
|-----|--|--|
| 708 | Propagules survive passage through the gut | y |
| | Source(s) | Notes |
| | Grow Wild. (2016). <i>Rothea myricoides</i> (was <i>Clerodendrum myricoides</i>) Blue Cats Whiskers. http://growwild.co.za/trees/rothea-myricoides-was-clerodendrum-myricoides . [Accessed 23 May 2016] | "The edible fruit is eaten by birds and monkeys." [Presumably Yes] |
| | New Zealand Plant Conservation Network. (2010). <i>Clerodendrum myricoides</i> . http://m.nzpcn.org.nz/flora_details.aspx?ID=4136 . [Accessed 23 May 2016] | [Presumably Yes] "Dispersal Bird dispersed and by gravity" |

| | | |
|-----|---|--------------|
| 801 | Prolific seed production (>1000/m2) | |
| | Source(s) | Notes |
| | WRA Specialist. 2016. Personal Communication | Unknown |

| | | |
|-----|---|--------------|
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | |
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|---|---|
| | Chapano, C., Zimudzi, C., Makaka, C. M., & Mapaya, R. J. (2013). Species composition and spatial heterogeneity of the seed bank and vegetation in protected and disturbed Miombo Woodland at Christon bank, Zimbabwe. <i>Journal of Biodiversity and Environmental Sciences</i> 3(8): 133-149 | "Appendix 1. List of species identified from the above ground vegetation and soil seed bank" [<i>Rothea myricoides</i> present in the AGVP-Aboveground vegetation protected, AGVD Aboveground vegetation disturbed, & SSBP-Soil seed bank protected. Longevity of seeds unspecified] |
| | Royal Botanic Gardens Kew. (2016) Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/ . [Accessed 23 May 2016] | "Storage Behaviour: No data available for species or genus. Of 604 known taxa of family LAMIACEAE, 98.01% Orthodox(p/?), 0.50% Recalcitrant(?), 0.17% Intermediate(?), 1.32% Uncertain" |

| 803 | Well controlled by herbicides | |
|-----|--|---|
| | Source(s) | Notes |
| | WRA Specialist. 2016. Personal Communication | Unknown. No information on herbicide efficacy or chemical control of this species |

| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire | y |
|-----|---|---|
| | Source(s) | Notes |
| | Floridata. 2016. <i>Clerodendrum ugandense</i> . http://floridata.com/Plants/Verbenaceae/Clerodendrum%20ugandense/979 . [Accessed 23 May 2016] | "freezing to the ground in winter, but returning from its roots in spring." ... "Prune back this gangly shrub as needed to keep it in check. <i>Clerodendrum</i> s flower on the current season's growth, so you can prune them anytime. Cut back the old wood to a pair of buds to improve flowering." |
| | Clay, H.F., Hubbard, J.C. & Golt, R. 1987. <i>Tropical Shrubs</i> . University of Hawaii Press, Honolulu, HI | "May be pruned severely to induce new growth and flowering . For best results prune back in late spring, after the blooming period." |

| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents) | |
|-----|---|--|
| | Source(s) | Notes |
| | Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI | [Unlikely. No native <i>Rothea</i> or <i>Clerodendrum</i> species in the Hawaiian Islands, & no evidence that biocontrol agents have been release for this taxon] "The plants are pest free and easy to grow, though they require ample moisture and are not salt tolerant." |

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Grows in tropical climates
- Naturalizing on Kauai, Hawaiian Islands, & New Zealand
- Described as an aggressive plant that tends to spread and may become invasive
- Unpalatable to most grazing animals
- Potentially toxic
- Shade tolerant
- Tolerates many soil types
- Reproduces by seeds & vegetatively by suckers
- Seeds dispersed by birds & intentionally by people
- Resprouts after cutting or severe pruning

Low Risk Traits

- Unarmed (no spines, thorns or burrs)
- Ornamental
- Self-incompatible

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Yes. Tolerates shade.

(B) Bird-dispersed?> Dispersed by birds

(C) Life cycle <4 years? Yes. Reported to reach maturity in 3 years

Outcome = Reject (High Risk)