***Family:*** ***Bataceae***

***Taxon:*** ***Batis maritima***

***Synonym:***

***Common Name:*** Pickleweed
Saltwort
`akulikuli kai

**Questionaire :** current 20090513 **Assessor:** Patti Clifford **Designation:**

**Status:** In Progress **Data Entry Person:** Patti Clifford **WRA Score 9**

| | | | |
|---|---|---|---|
| **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** | **n** |
| **301** | **Naturalized beyond native range** | **y = 1*multiplier (see Appendix 2), n= question 205** | **y** |
| **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)** | **y** |
| **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** | **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** | **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** | **n** |

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|---|---|---|---|
| **411** | **Climbing or smothering growth habit** | **y=1, n=0** | **y** |
| **412** | **Forms dense thickets** | **y=1, n=0** | **n** |
| **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** | |
| **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** | **1** |
| **701** | **Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)** | **y=1, n=-1** | **y** |
| **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** | **y** |
| **706** | **Propagules bird dispersed** | **y=1, n=-1** | |
| **707** | **Propagules dispersed by other animals (externally)** | **y=1, n=-1** | **n** |
| **708** | **Propagules survive passage through the gut** | **y=1, n=-1** | |
| **801** | **Prolific seed production (>1000/m2)** | **y=1, n=-1** | |
| **802** | **Evidence that a persistent propagule bank is formed (>1 yr)** | **y=1, n=-1** | |
| **803** | **Well controlled by herbicides** | **y=-1, n=1** | **y** |
| **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)** | **y=-1, n=1** | |
| | **Designation:** | **WRA Score** | **9** |

**Supporting Data:**

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|---|---|---|
| 101 | 2010. WRA Specialist. Personal Communication. | No evidence. |
| 201 | 2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28398 | Native range: United States - Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, California; Mexico; Belize; Honduras; Nicaragua; Panama; Anguilla; Antigua and Barbuda; Bahamas; Cayman Islands; Cub; Dominican Republic; Grenada; Guadeloupe; Haiti; Jamaica; Martinique; Puerto Rico; St. Kitts and Nevis; Virgin Islands; Guyana; Suriname; Venezuela; Brazil; Colombia; Ecuador; Peru |
| 202 | 2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28398 | Native range: United States - Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, California; Mexico; Belize; Honduras; Nicaragua; Panama; Anguilla; Antigua and Barbuda; Bahamas; Cayman Islands; Cub; Dominican Republic; Grenada; Guadeloupe; Haiti; Jamaica; Martinique; Puerto Rico; St. Kitts and Nevis; Virgin Islands; Guyana; Suriname; Venezuela; Brazil; Colombia; Ecuador; Peru |
| 203 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "Saltwort is uncommon to abundant in low-laying areas near seashores. It grows in salt marshes, at the upper edge of tidal flats, at the edge of mangrove stands, and between scattered mangroves. It is recognized as a major colonizer after mangroves are destroyed by hurricanes." |
| 203 | 2010. Dave's Garden. PlantFiles: beachwort, saltwart, turtleweed, pickleweed Batis maritima. Dave's Garden, http://davesgarden.com/guides/pf/go/58344/ | USDA Zone 8a: to -12.2 °C (10 °F)<br>USDA Zone 8b: to -9.4 °C (15 °F)<br>USDA Zone 9a: to -6.6 °C (20 °F)<br>USDA Zone 9b: to -3.8 °C (25 °F)<br>USDA Zone 10a: to -1.1 °C (30 °F)<br>USDA Zone 10b: to 1.7 °C (35 °F) |
| 204 | 2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28398 | Native range: United States - Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, California; Mexico; Belize; Honduras; Nicaragua; Panama; Anguilla; Antigua and Barbuda; Bahamas; Cayman Islands; Cub; Dominican Republic; Grenada; Guadeloupe; Haiti; Jamaica; Martinique; Puerto Rico; St. Kitts and Nevis; Virgin Islands; Guyana; Suriname; Venezuela; Brazil; Colombia; Ecuador; Peru |
| 205 | 2010. WRA Specialist. Personal Communication. | No evidence of repeated introductions. |
| 301 | 2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28398 | Naturalized in Hawaii. |
| 302 | 2007. Randall, R.P.. Global Compendium of Weeds. http://www.hear.org/gcw/ | No evidence. |
| 303 | 2010. WRA Specialist. Personal Communication. | [No evidence of impacts to agricultural systems. The global compendium of weeds lists this reference for agricultural impacts in Cuba. Unable to access the resource] Acuna, G.J. (1974). Plantas Indeseables en Los Cultivos Cubanos. Academia de Ciencias, Insitituto de Investigaciones de Cuba, Havana. (agricultural weed) |
| 304 | 2003. Motooka, P./Castro, L./Nelson, D./Nagai, G./Ching,L.. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa, http://www.ctahr.hawaii. | Smothers low-growing coastal natives and invades anchihaline ponds. |
| 304 | 2010. U.S. Fish and Wildlife Service. Kealia pond habitat restoration. Kealia Pond National Wildlife Refuge, | The Fish and Wildlife Service removed Batis maritima from the Kanuimanu Ponds where the thick growth prevented young birds from moving between ponds. |
| 305 | 2007. Randall, R.P.. Global Compendium of Weeds. http://www.hear.org/gcw/ | No evidence. |

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| 401 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | No spines, thorns, burrs. |
| 402 | 2010. WRA Specialist. Personal Communication. | Unknown. |
| 403 | 1999. Wagner, W. L./Herbst, D. R./Sohmer, S. H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. | Not parasitic. |
| 404 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | The species is not seriously affected by insects, disease, or grazing. |
| 405 | 2010. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland http://www.ncbi.nlm.nih.gov/sites/entrez | No evidence of toxicity. |
| 405 | 2010. Specialized Information Services, U.S. National Library of Medicine. TOXNET Toxicology Data Network [Online Database]. National Institutes of Health, http://toxnet.nlm.nih.gov/ | No evidence of toxicity. |
| 406 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | The species is not seriously affected by insects, disease, or grazing. |
| 407 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | The leaves are sometimes eaten as a salad. However, it is toxic in large quantities. The species has applications in herbal medicine to treat eczema, psoriasis, and other skin conditions, rheumatism, gout, blood and vein disorders." |
| 407 | 1919. Sturtevant, E.L.. Sturtevant's notes on edible plants. Report of the New York Agricultural Experiment Station for the year 1919 II.. J.B. Lyon Company, | Batis maritima Linn. Batideae. Jamaica samphire, saltwort. Jamaica. This low, erect, succulent plant is used as a pickle. |
| 408 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | Description.—Saltwort, also known as turtleweed, pickleweed, barilla, planta de sal, camphire, herbe-à-crâbes, and akulikuli-kai, is a low, yellow-green shrub with succulent leaves. |
| 409 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | Saltwort is intolerant of shade. |

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| 410 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "Saltwort grows slowly in soils with high salt concentrations and areas with seawater overwash where it suffers little competition from other plants. The species manages salts by sequestering them in cell vacuoles and eventually shedding the leaves. It also grows in soils without salt but is vulnerable to competition from nonhalophytes. The soils are usually sandy, marly, or gravely." |
| 410 | 2010. Dave's Garden. PlantFiles: beachwort, saltwart, turtleweed, pickleweed Batis maritima. Dave's Garden, http://davesgarden.com/guides/pf/go/58344/ | Soil tolerances:6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral) 7.6 to 7.8 (mildly alkaline) 7.9 to 8.5 (alkaline) 8.6 to 9.0 (strongly alkaline |
| 411 | 2003. Motooka, P./Castro, L./Nelson, D./Nagai, G./Ching,L.. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa, http://www.ctahr.hawaii. | Smothers low-growing coastal natives and invades anchihaline ponds. |
| 412 | 1999. Wagner, W. L./Herbst, D. R./Sohmer, S. H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. | Small maritime shrub 1-1.5 m tall. |
| 501 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "Although it is not a water plant, it can endure brief flooding and long periods of waterlogged soils." |
| 502 | 1999. Wagner, W. L./Herbst, D. R./Sohmer, S. H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. | Bataceae. |
| 503 | 1999. Wagner, W. L./Herbst, D. R./Sohmer, S. H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. | Not nitrogen fixing. Bataceae |
| 504 | 1999. Wagner, W. L./Herbst, D. R./Sohmer, S. H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. | Not a geophyte. |
| 601 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | Ecology.—Saltwort is uncommon to abundant in low-laying areas near seashores. It grows in salt marshes, at the upper edge of tidal flats, at the edge of mangrove stands, and between scattered mangroves. It is recognized as a major colonizer after mangroves are destroyed by hurricanes. [no evidence of sustantial reproductive failure in natural environments] |
| 602 | 1906. Guppy, H.B.. Observations of a naturalist in the Pacific between 1896 and 1899: Plant dispersal volume 2. Macmillan and co., limited, London http://books.google.com/books?id=u8sKAQAAIAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q& | "When in Hawaii I made some observations on the germination of Batis maritima in sea water a plan with which I was also familiar in its home in the salt water pools of the coast of Peru The mature fruits on being freed from the parent plant in sea water float away and in from one to two weeks they break down from decay setting free the seeds The seeds float in sea water indefinitely their buoyancy only terminating with their germination the first seeds germinating afloat about six weeks after the breaking down of the fruit whilst the rest continue to float in the sea water during the next three months some of them germinating at intervals and all of them doing so eventually Strange to say although the seedlings remained healthy whilst afloat in the sea water they made no effort either to separate the cotyledons or to produce a plumule." |
| 603 | 2010. WRA Specialist. Personal Communication. | Unknown. |
| 604 | 1999. Wagner, W. L./Herbst, D. R./Sohmer, S. H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. | "Plants dioecious Flowers initally enclosed by a membranous saccate organ that eventually splits near the top into 2 or 4 lobes." |

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| 605 | 2005. Ronse De Craene, L.P>. Floral development evidence for the sytematic position of Batis (Bataceae). American Journal of Botany. 92: 752-760. | "The pistillate flowers of Batis show an extreme reduction linked with wind pollination: pistillate inflorescences act as units for pollen reception, providing several receptors over their surface, and function as units for dispersal, probably using sea currents and tides." |
| 606 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "Little is known about seed production or germination. Most effective reproduction of the species appears to be vegetative. Sprouting from the root crown occurs with and without disturbance." |
| 607 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "Little is known about seed production or germination. Most effective reproduction of the species appears to be vegetative. Sprouting from the root crown occurs with and without disturbance." |
| 701 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "New plants can be started by cuttings and probably broken pieces of plants are carried to new habitat by water and machinery. It is speculated that whole plants washed to sea during torrential rains in South America were carried by currents to establish the species in the Galapagos Islands." |
| 702 | 2003. Marcone, M.F.. Batis maritima (Saltwort/Beachwort): a nutritious, halophytic, seed bearings, perennial shrub for cultivation and recovery of otherwise unproductive agricultural land affected by salinity. Food Research International. 36: 123-130. | This research investigated the chemical/physical and nutritional composition and characteristics of the seed of Baits maritima (Saltwort or Beachwort) a C3 perennial, dioecious, high seed bearing, halophytic succulent shrub commonly habitating salt-marshes and salt-flats worldwide. It was found that the small (<1.00 mm and <0.5 mg) lenticular shaped oil seed was both a rich source of nutritionally important protein as well as oil (17.3 and 25.0%, respectively). Such extremely small starch granules could provide unique functional properties in such food and non-food applications as food thickeners, paper coatings, laundry starch, dusting powders, cosmetics, fat replacers, thickeners in the printing of textiles and biodegradable plastics. Batis maritima (Saltwort/Beachwort): a nutritious, halophytic, seed bearings, perennial shrub for cultivation and recovery of otherwise unproductive agricultural land affected by salinity |
| 702 | 2006. Milbrandt, E.C./Tinsley, M.N.. The role of salwort (Batis maritima L.) in rgeneration of degraded mangrove forest. Hydrobiologia. 568: 369-377. | Ecological research has studied the facilitation of Batis maritima on mangrove seedling establishment and survival in southwest Florida. |
| 702 | 2010. Cherrygal.com. ASIAN * SALTWORT * HEIRLOOM SEEDS 2010 NEW!. Cherrygal.com, http://www.cherrygal.com/asiansaltwortheirloomseeds2010new-p-14017.html | The Cherylgal heirloom seeds now has Batis maritima seeds for sale. |
| 703 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | Saltwort is uncommon to abundant in low-laying areas near seashores. It grows in salt marshes, at the upper edge of tidal flats, at the edge of mangrove stands, and between scattered mangroves. It is recognized as a major colonizer after mangroves are destroyed by hurricanes." [not grown in crop situations] |
| 704 | 1999. Wagner, W. L./Herbst, D. R./Sohmer, S. H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. | Fruit drupaceous, adapted to dispersal by flotation in saltwater. |
| 705 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "New plants can be started by cuttings and probably broken pieces of plants are carried to new habitat by water and machinery. It is speculated that whole plants washed to sea during torrential rains in South America were carried by currents to establish the species in the Galapagos Islands." |
| 706 | 2010. WRA Specialist. Personal Communication. | Unknown. |

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| 707 | 1999. Wagner, W. L./Herbst, D. R./Sohmer, S. H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. | Fruit drupaceous, adapted to dispersal by flotation in saltwater |
| 708 | 2010. WRA Specialist. Personal Communication. | Unknown. |
| 801 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "Little is known about seed production or germination. Most effective reproduction of the species appears to be vegetative. Sprouting from the root crown occurs with and without disturbance." |
| 802 | 2010. WRA Specialist. Personal Communication. | Unknown |
| 803 | 2003. Motooka, P./Castro, L./Nelson, D./Nagai, G./Ching,L.. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa, http://www.ctahr.hawaii. | "Sensitive to foliar applications of triclopyr ester at 1 lb/acre, especially with an oil carrier; glyphosate at 1 lb/acre; sulfometuron at 0.5 lb/acre and to soil applications of bromacil at 5 lb/acre and hexazinone at 5 lb/acre. National Park staff at Kaloko-Honokohau remove most of the biomass by hand and treat resprouts with a propane torch. They also reported good control of resprouts with glyphosate at1.5% Rodeo® applied to wet the foliage." |
| 804 | . Francis, J.K.. Batis maritima saltwort Bataceae. PR 00936-4984: .U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and the University of Puerto Rico Department of Agriculture, Forest Service, International | "Little is known about seed production or germination. Most effective reproduction of the species appears to be vegetative. Sprouting from the root crown occurs with and without disturbance." |
| 805 | 2010. WRA Specialist. Personal Communication. | Unknown. |