

CUPANIOPSIS ANACARDIOIDES (SAPINDACEAE) NATURALIZED IN TEXAS

JEFFREY N. MINK

176 Downsville Road
Robinson, Texas 76706
jmink@mcclennan.edu
jeffreynormanmink@gmail.com

JASON R. SINGHURST

Wildlife Diversity Program
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

WALTER C. HOLMES

Department of Biology
Baylor University
Waco, Texas 76798-7388

ABSTRACT

Recent botanical work in Cameron Co., Texas, has resulted in the discovery of naturalized *Cupaniopsis anacardioides* in the understory of a *Sabal mexicana-Ebenopsis ebano* forest in a Nature Conservancy preserve. The population includes 30-40 plants of varying age classes from mature to seedling trees.

Cupaniopsis (Sapindaceae) is a genus of about 67 species known from Australia, New Guinea, and nearby islands of Micronesia, New Caledonia, and eastern Indonesia (Morat et al. 2012; Reynolds 1985; Hyland et al. 2010). *Cupaniopsis anacardioides* (carrotwood, tuckeroo) is native to Australia, Indonesia, and Papua New Guinea and has been introduced to the USA — California (Lockhart et al. 1999), Florida (Oliver 1992), Hawaii (O‘ahu, Frohlich & Lau 2010; Maui, Starr & Starr 2011; and Kauai, Starr & Starr 2015). Establishment in the USA apparently has resulted from its usage in the subtropical nursery trade during the 1950s and early 1960s. The present paper documents the occurrence of the species to Texas, based on the following specimen.

TEXAS. Cameron Co.: Nature Conservancy Southmost Preserve 0.7 mi S on Southpoint Rd. from junction of FM 1419 and Southpoint Rd. Resaca (15°51'04", 97°23'52"), near Alabama-Arkansas Colonia (South Point), old river channel (resaca) of the Rio Grande, 9 Dec 2015, *Singhurst 21,031* with D. Allen and M. Pons (BAYLU).

The Texas locality is in the lower Rio Grande Valley in an old river channel (*resaca*) that accumulates water during rainy periods. The population (Figs. 1 and 2) occurs in the understory of a *Sabal mexicana-Ebenopsis ebano* forest and includes 30-40 plants of varying age classes, from mature to seedling trees. This community is a subtropical, evergreen forest dominated by a mixture of subtropical and temperate riverine species with scattered *Sabal mexicana*. In addition, associated vegetation includes *Fraxinus berlandieriana*, *Celtis laevigata*, *Ulmus crassifolia*, *Ebenopsis ebano* (= *Pithecellobium ebano*), *Leucaena pulverulenta*, and *Ehretia anacua*. Typical shrubs include *Sideroxylon celastrinum* (= *Bumelia celastrina*), *Malvaviscus arboreus* var. *drummondii* (= *Malvaviscus drummondii*), and *Celtis pallida*.



Figure 1. *Cupaniopsis anacardioides* in understory of a *Sabal mexicana*-*Ebenopsis ebano* forest Cameron Co., Texas. Photo by Jason Singhurst, 9 December 2015.



Figure 2. *Cupaniopsis anacardioides* in understory of *Sabal mexicana*-*Ebenopsis ebano* forest, Cameron Co., Texas. Photo by Jason Singhurst, 9 December 2015.

Cupaniopsis anacardioides fruits are consumed by birds and seeds dispersed far from parent plants (Lockhart et al. 1999), which likely are the source and establishment of Gulf intercoastal island populations of *C. anacardioides* adjacent to the Florida coastline. Distributional expansion of *C. anacardioides* in Florida has been well documented (Wunderlin et al. 1996; Wunderlin & Hansen 2008). The species was placed on the noxious weed list of Florida in 1999 (Langeland & Enloe 2001), but seed dispersal by birds frustrates efforts to control the spread of the species (Langeland & Burks 1998). In Florida, consumption of fruits by fish crows (*Corvus ossifragus*) is particularly noteworthy because of the exaggerated seed dispersal from inland feeding sites to coastal islands, which threatens coastal communities (Lockhart et al. 1999), potentially mangrove stands. Discussion of frugivory and dispersal of coastal exotic fruiting species by native passerines is discussed in Mink et al. (2015).

Known areas of *Cupaniopsis anacardioides* distribution in Florida receive a minimal rainfall of 122 cm/year (= 48 inches/year) (Spatial Climate Analysis Service — PRISM 2015). Precipitation values for the Texas coast below Corpus Christi to South Padre Island averages 68.1 cm/year (= 26.8 inches /year), but rainfall for the upper (northern) Gulf coast can exceed 153.5 cm/year (60.4 inches/year), which might be favorable for the species should it reach the area and tolerate the cooler temperatures.

Masterson (2007) cited temperature as the probable key factor limiting the spread of *Cupaniopsis anacardioides* in north Florida, with -6° C (value from Lockhart 2006) as the lower

lethal for the species, although test specimens have survived winter temperatures as low or lower. This suggests to us that there would be little or no impediment to spread of the species northward along the Texas coast, where average minimum temperatures are 15.0° C to 19.4° C (Spatial Climate Analysis Service — PRISM 2015).

Texas Nature Conservancy plans on removal of *Cupaniopsis anacardioides* from the preserve but current efforts are on eradicating *Megathyrsus maximus* (guinea grass), *Pennisetum ciliare* (buffelgrass), *Ricinus communis* (castor bean), and other exotics more locally aggressive than *C. anacardioides*.

ACKNOWLEDGEMENTS

We thank Max Pons, Manager of the Southmost Preserve, and the Texas Chapter of the Nature Conservancy for access to this extremely special preserve.

LITERATURE CITED

- Frohlich, D. and A. Lau. 2010. New plant records from O‘ahu for 2008. Bishop Museum Occ. Papers 107: 3–18.
- Hyland, B.P.M., T. Whiffin, F.A. Zich, et al. 2010. Australian Tropical Rainforest Plants. Edition 6.1, online version [RFK 6.1]. Commonwealth Scientific and Industrial Research Organisation (CSIRO), through its Division of Plant Industry; the Centre for Australian National Biodiversity Research; the Australian Tropical Herbarium. James Cook University, Cairns, Australia. Accessed 14 January 2016.
- Langeland, K.A. and K. Craddock Burks. 1998. Identification and Biology of Non-Native Plants in Florida’s Natural Areas. IFAS Publication SP 257. Univ. of Florida, Gainesville.
- Langeland, K.A. and S.F. Enloe. 2001. Natural area weeds: Carrotwood (*Cupaniopsis anacardioides*). IFAS Publication SS-AGR-165. Univ. of Florida, Gainesville.
- Lockhart, C.S., D.F. Austin, W.E. Jones, and L.A. Downey. 1999. Invasion of Carrotwood (*Cupaniopsis anacardioides*) in Florida Natural Areas (USA). Natural Areas J. 19: 254–262.
- Lockhart, C.S. 2006. Carrotwood (*Cupaniopsis anacardioides*) data sheet. Plant Conservation Alliance, Alien Plant Working Group (cited in Masterson 2007 q.v.)
- Masterson, J. 2007. Indian River Lagoon Species Inventory. *Cupaniopsis anacardioides*. <http://www.sms.si.edu/irlspec/Cupaniopsis_anacardioides.htm> Accessed 25 January 2017.
- Mink, J.N., J.R. Singhurst, and W.C. Holmes. 2015. *Jasminum laurifolium* (Oleaceae) adventive in Texas, with observations on alien plant invasions and distribution on the Texas Gulf Coast by passerines. Phytoneuron 2015-36: 1–5.
- Morat, P., T. Jaffré, F. Tronchet, J. Munzinger, Y. Pillon, J.-M. Veillon, M. Chalopin. 2012. The taxonomic database "Florical" and characteristics of the indigenous Flora of New Caledonia. *Adansonia* [sér. 3] 34: 177–219.
- Oliver, J.D. 1992. Carrotwood: A review of the literature. Techn. Report, Florida Dept. of Environmental Protection, Bureau of Aquatic Plant Management, Tallahassee.
- PRISM Climate Group. 2015. Station observations from NOAA cooperative and USDA-NRCS SnoTel networks. Oregon State University, Corvallis. Maps created in 2000 and 2010 based on thirty year precipitation values. <<http://prism.oregonstate.edu>>
- Reynolds, S.T. 1985. Flora of Australia, Melianthaceae to Simaroubaceae, Vol. 25: 87–93 (online version). CSIRO Publishing/Australian Biological Resources Study. Accessed 14 January 2016.
- Starr, F. and K. Starr. 2011. New plant records from Midway atoll, Maui, and Kaho‘olawe. Bishop Museum Occ. Papers 110: 23–35.
- Starr F. and K. Starr. 2015. New plant records from Maui, Kaho‘olawe, and Kaua‘i. Bishop Museum Occ. Papers 116: 23–25.

- Wunderlin, R.P., B.F. Hansen, and E.L. Bridges. 1996. Atlas of Florida Vascular Plants. CD-ROM. Univ. of South Florida, Tampa.
- Wunderlin, R.P. and B.F. Hansen. 2008. Atlas of Florida Vascular Plants. [S.M. Landry and K.N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, Univ. of South Florida, Tampa. <<http://florida.plantatlas.usf.edu/>>