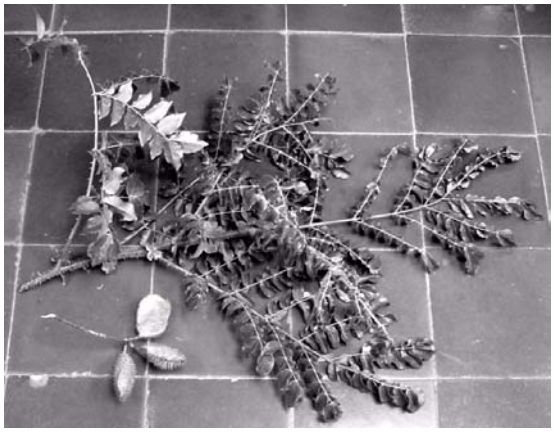
***Caesalpinia bonduc* (L.) Roxb.** gray nicker bean
FABACEAE

Synonyms: *Guilandina bonduc* L.
Guilandina bonducella L.
Caesalpinia bonducella (L.) Fleming
Caesalpinia crista of Small and other authors
Guilandina crista (L.) Small



General Description.—Gray nicker bean, also known as nicker nut, wait-a-bit, hold back, fever nut, hava de San Antonio, mato de playa, z'yeux à chatte, canique grise, and uri, is a spiny, scrambling shrub to 1.5 m in height (unsupported) and 6 m or more in extension, and has stems up to 5 cm in diameter or more. Plants usually have a single stem arising from the ground but often branch low on the stem. Seedlings form taproots and may retain them later; lateral roots are extensive. The stems grow stiffly upright for 0.75 to 1 m before curving into a more horizontal direction. The stems, twigs, and leaf rachises are covered with straight or curved prickles. The 25- to 80-cm-long leaves are bipinnately compound with four to nine pairs of pinnae, each with four to eight pairs of oblong to elliptic leaflets. Racemes of yellow flowers are lateral or terminal. Prickley, inflated legumes are flattened oval shaped, 5 to 10 cm long, and reddish-brown when dry. Within each pod are one to three (usually two) smooth, hard, 2-cm long seeds that are olive drab in the pods and remain so until exposure to the sun bleaches them to a light gray color. The pods open partially upon drying and eventually release the seeds (author's observation, Howard 1988, Liogier 1988, Nelson 1996). There are 2n = 24 chromosomes (Long and Lakela 1976).

Range.—Gray nicker bean is established in nearly every tropical shore worldwide, including Florida, Louisiana, Puerto Rico, the U.S. Virgin Islands, Hawaii, Guam, and American Samoa (Howard 1988, Liogier 1988, Pacific Island Ecosystems at Risk 2002, Vermillion 2001). It has apparently arrived at these locations by natural means, although unrecorded accidental or intentional introductions cannot be ruled out.

Ecology—Gray nicker bean is intolerant of shade and is usually open-grown or at least grows in broken sunlight. It tolerates salt spray, salty soils, and occasional flooding with seawater. The species grows in all textures of mildly acid to alkaline soil. Annual rainfall in the areas where gray nicker bean grows in Puerto Rico ranges from 750 mm to 1800 mm. The species grows from sea level to 850 m in elevation in India (Parrotta 2001). It grows most frequently on the beach strand, on coastal dunes, and at the better-drained edge of mangroves. Gray nicker bean also grows inland in disturbed areas. It competes well with grass and herbs and may ascend into the crowns of low trees.

Reproduction.—Gray nicker bean flowers and fruits year-round in Florida (Nelson 1996). A collection of seeds from Puerto Rico weighed an average of 2.444 $\pm$ 0.034 g/seed or 409 seeds/kg. Twenty-five seeds each of weathered-scarified (by nicking), weathered-unscarified, fresh-scarified, and fresh-unscarified treatments were incubated in plastic bags of moist potting mix. Most of the scarified seed germinated within a few days and had all germinated within 1 year. By 16 months, 23 of the fresh, unscarified seeds had germinated and just one of the weathered, unscarified seeds had germinated. Germination is hypogeal (author's observation). Gray nicker bean seeds are apparently carried to sea by floods and storm surges where they float until deposited on shore. The seeds are found on beaches in northern Scotland and are known to be able to float in sea

water for as long as 19 years (Markland 2002). The scarifying action of sand, weathering, insects, or rodents eventually allows water to enter the seeds and they germinate and establish themselves in the new environments. A seed collected at Macquarie Island, Antarctica, a drift of not less than 1 year, was scarified and grown successfully (Costin 1965). The stems layer (root) whenever they come in contact with the ground. Stems sprout when cut and lateral roots sometimes sucker. Clonal plants tend to remain attached to one another.

Growth and Management.—Growth of gray nicker beans is fairly rapid at all stages. Seedlings reached 26 cm in 40 days after sowing. Older plants grow a meter or more per year. Individual stems live at least 4 years. The author knows of no published management experience. Plantations undoubtedly could be established with potted seedlings or by direct seeding scarified seeds. Control could probably be obtained by lopping with a machete followed by herbicide treatment of the sprouts.

Benefits.—Gray nicker bean contributes to the biodiversity of the forests where it grows, helps protect the soil, and furnishes cover for wildlife. The seeds have been used for centuries and are still used as jewelry, prayer beads, good luck charms, and worry stones (Rancho Leona 2002, Workman 1980). They were anciently used as standards of weight in India (Vijayanagara Coins 2002). The ancient African game of mancala traditionally employs gray nicker beans as game pieces (Driedges 1972). The species is sometimes planted as a hedge to prevent undesired entry into property (Nelson 1996) and could be planted for dune stabilization. Preparations of the seeds and other plant parts are used to treat a large range of ailments (Burkill 1995, Parrotta 2001). Triterpenoids, fatty acid triglicerides, and sterols isolated from seeds may possibly explain some of the activity (Ali and others 1997, Rostogi and others 1996). Seed extracts have been shown to lower blood sugar in laboratory animals (Biswas and others 1997, Sharma and others 1997) and effectively suppress or cure infections of several species of round worms (Amarsinghe and others 1993, Rastogi and others 1996). The fat content of gray nicker nut seeds was measured at 34 $\pm$ 0.83 percent. The semidrying oil extracted would be useful for manufacture of high-quality alkyd resins, polishes, and paint (Ajiwe and others 1996).

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