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Byrsonima crassifolia (Nance, Nancite, Shoemaker's Tree)

W. R. Anderson

This plant of the family Malpighiaceae is a shrub or a small tree about 7 m tall, though it reportedly grows up to 10 m (fig. 7.28*c*). Interpreted broadly to include closely related segregates, it ranges from Mexico south to Paraguay. It grows in lowland savannas and open, semideciduous woods; indeed, in Central America *Byrsonima crassifolia* (L.) H. B. K. and *Curatella americana* (Dilleniaceae) dominate many savannas. Like most savanna plants, *B. crassifolia* is resistant to fire, and it often shows the twisted, even gnarled architecture of savanna trees. The mature fruit (fig. 7.28*b*) is a small orange drupe with an edible exocarp and a single stone containing one to three seeds. Birds disperse the fruits, and it seems likely that small ground animals do too, though no one has reported such observations. The flesh is slightly oily and astringent but not unpleasant, and the fruits are sold in markets in Central America (*nance*) and the Amazon (*murucí*). In the same regions a drink is made by removing the stones and mashing the flesh in water with sugar; this is delicious, either straight or fermented. Horses eat these fruits readily (D. H. Janzen, pers. comm.). In Belém one can relish the ultimate in exotica, murucí ice cream. The cortex of the stem has astringent chemicals that make it useful in tanning hides (*byrsa* is Greek for "leather"); this may explain its use in the preparation of various folk remedies such as febrifuges.

The yellow and orange flowers of *Byrsonima crassifolia* (fig. 7.28*a*) are typical of those of the Malpighiaceae, in which the flowers are very conservative relative to other structures (Anderson 1979). The only rewards for pollinators are pollen and an oil that collects in blisters on

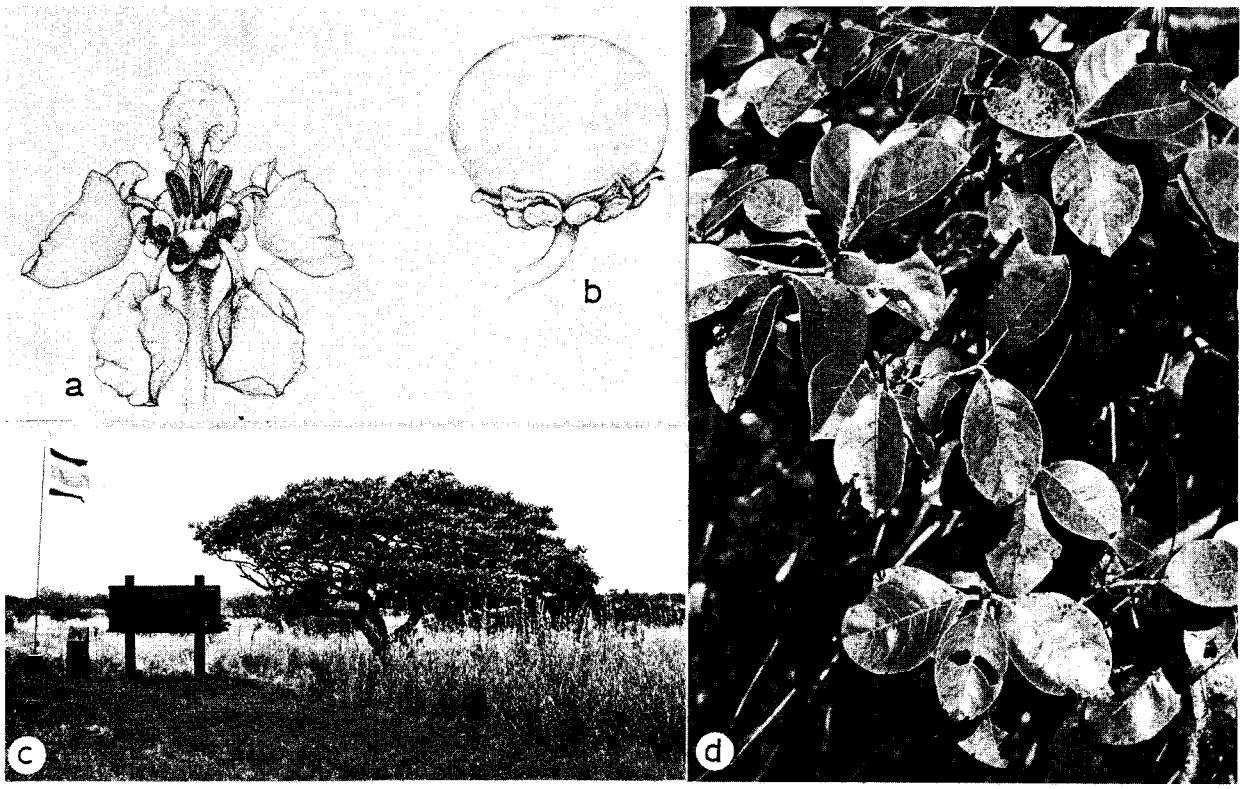

FIGURE 7.28. *a,* Flower of *Byrsonima crassifolia. b,* Fruit of *B. crassifolia. c,* Large adult *B. crassifolia* at entrance to Santa Rosa National Park, Guanacaste, Costa Rica. *d,* Mature foliage (photos, D. H. Janzen).

the large glands borne on the abaxial side of the sepals. *Trigona* bees take pollen from the flowers (K. S. Bawa, B. Gates, pers. comm.), but it is not certain whether they are effective pollinators. The oil is collected by the females of certain anthophorid bees, most commonly *Centris* spp. (Vogel 1974; K. S. Bawa, S. L. Buchmann, B. Gates, pers. comm.). The bee alights on the flower, orienting with her head toward the flag petal and grasping its claw with her mandibles. Reaching between the clawed petals with her front two pair of legs, she scrapes the glands, depositing the oil in special structures on her hind legs. The oil is mixed with pollen to make food for her larvae; the adult bee herself feeds on sugary nectars obtained from other species of flowering plants (Vogel 1974). Some species of *Byrsonima* have eglandular flowers, either throughout the species or only in certain individuals or populations. It would be interesting to study the pollination biology of such species, especially in populations with both glandular and eglandular plants, as in *B. chrysophylla* on the campus of INPA in Manaus. There are several hypotheses that could explain such polymorphism, some of them tied to the behavior of the oil bees. In this connection it is important to note that Bawa (1974) found *B. crassifolia* to be self-compatible. Also see Anderson (1980).

Many genera of Malpighiaceae have extrafloral nectaries on the petiole or blade of the leaf. These large glands secrete a sugary nectar and are visited by ants. Costa Rican genera with such glands are *Banisteriopsis, Heteropterys,* and *Stigmaphyllon;* all are vines with samaroid fruits. *Byrsonima* and a few of its closest relatives have lost (or never had?) such nectaries, and the only glands on the plant are the calyx glands.

Byrsonima is a very large genus (130 species or more), probably the largest in the Malpighiaceae. It has achieved a level of diversity and distribution far greater than its more primitive relatives in the subfamily Byrsonimoideae. This seems likely to be related primarily to its evolution of bird-dispersed fruits, whereas most members of the subfamily have little or no adaptation for efficient dispersal. Two other genera of Malpighiaceae, *Malpighia* and *Bunchosia,* have evolved bird-dispersed fruits. They are not closely related to *Byrsonima* or to each other, and fleshy fruits very probably evolved three times in parallel in this family (Anderson 1978). Although some species of *Byrsonima* inhabit wet forests, the great majority grow in savannas, where they vary from fairly large trees down to twiggy subshrubs with subterranean stems, forming a matlike covering on termite mounds in central Brazil.

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