***Cereus greggii* Engelmann** night-blooming cereus
CACTACEAE

Synonyms: *Peniocereus greggii* (Engelm.) Britt. & Rose
Cereus greggii Engelmann var. *roseiflorus* Kuntze
Cereus pottsii Salm-Dyck

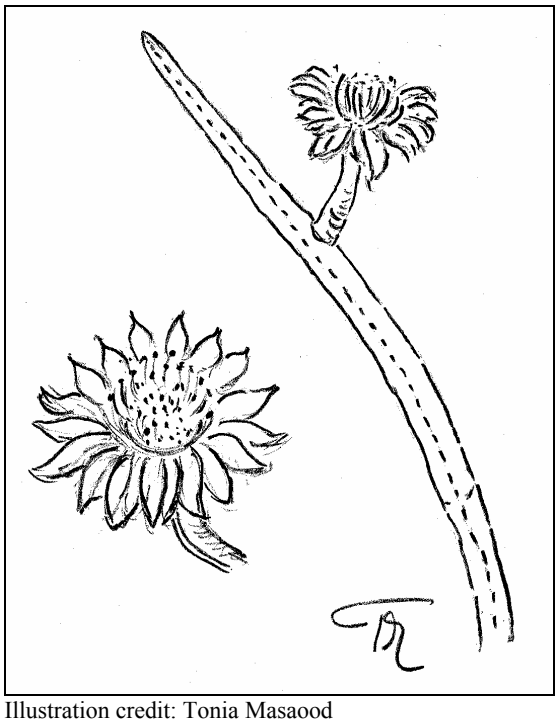
Illustration credit: Tonia Masaood

General Description.—The common names for *Cereus greggii* are night-blooming cereus, Texas night-blooming cereus, Arizona queen-of-the-night, reina-de-la-noche, sweet-potato cactus, and deer horn cactus. It is a perennial, succulent shrub (Vines 1960). Night-blooming cereus is a Federal Species of Concern and is listed as endangered by the State of New Mexico (Sivinski and Lightfoot 1995, NMRPTC 2002). It is threatened by illegal collection throughout its range. Although this plant is cryptic and may be more common than verified documentation suggests, many occurrences of night-blooming cereus are known to have been extirpated due to collection pressures, and its range-wide abundance is believed to be declining. Night-blooming cereus has erect or sprawling stems that may grow to 2.4 m in length but are typically less than 1.5 m. The gray-brown stems are four to five ribbed and approximately 1.25 cm in diameter. There are 11 to 13 dark spines that tend to be swollen at the base, per areole. The lower spines may have some white coloration. The flower is particularly remarkable, having waxy white, pointed "petals" with numerous white to yellow-tipped stamens. It is fragrant and up to 5 cm in diameter and 15 cm long. The orange-red, oblong fruit is up to 7.6 cm long and 3.8 cm in diameter with short spines. The root is a fleshy taproot and typically weighs 2.3 to 6.8 kg (Weniger 1991, Earle 1963, Vines 1960). In old plants it may be up to 0.6 m in diameter and weigh 125 lbs (Weniger 1991). In 1919 a specimen with purplish flowers was collected in Organ, New Mexico, but since then only plants with white flowers have been recorded (Weniger 1969). There are two varieties of night-blooming cereus, *Cereus greggii* var. *greggii* and *Cereus greggii* var. *transmontanus*. Variety *transmontanus* differs from the typical variety in that the flowers are larger, approximately 7.5 cm in diameter, and the hypanthium is particularly spiny, and the spines generally 1.5 to 3.0 cm long (Benson 1982, Martin and Hutchins 1980). The hypanthium is the cup-like enlargement of the floral axis below the calyx that surrounds the ovary. The hypanthium of variety *greggii* is covered by minute, inconspicuous spines and the flowers are smaller. These varieties are in need of further study (NMNPPAC 1984). Some sources (Natural Resources Conservation Service 2003) maintain that the synonym, *Peniocereus greggii* (Engelm.) Britt. & Rose is the correct name. Night-blooming cereus provides an interesting evolutionary link. It appears to possess anatomical characteristics that are relictual from its nonsucculent, woody, Pereskia-like ancestor (Mauseth and others 1998).

Range.—Night-blooming cereus grows in southern New Mexico, southeastern Arizona, western Texas, eastern Chihuahua, northeastern Durango, northern Zacatecas, and Coahuila, Mexico (Kearney and others 1960, Powell 1998, Vines 1960). Benson (1982) defined the range of variety *transmontanus* as the Arizona and Sonoran Desert that possibly also includes Hildalgo County in New Mexico, and that of variety *greggii* as the Chihuahuan Desert of New Mexico, western Texas and Mexico.

Ecology.—Night-blooming Cereus grows in dry alluvial soils at elevations between 370 and 1,500 m. Again, the varieties are distinguished by variety *transmontanus* growing at the lower end of the elevation range (300 to 1,050 m) and variety *greggii* growing above 1200 m (Benson 1982). Night-blooming cereus generally grows in slightly broken to level terrain in desert grassland or Chihuahuan desert scrub. Typically it grows in sandy to silty gravelly soils on upper to mid bajadas among, depending upon the desert region, creosotebush (*Larrea tridentata*), mesquite (*Prosopsis glandulosa*), paloverde (*Cercidium* species), and knife-leaf condalia (*Condalia* species). It is also commonly associated with Ocotillo (*Fouquieria splendens*), tarbush (*Flourensia cernua*) and dropseed (*Sporobolus* species). Habitat alteration such as that caused by the high impact trampling of heavy grazing is suspected to reduce population size (NMNPPAC 1984).

Reproduction.—As the common name suggests, night-blooming cereus blooms only at night. Just after dark the flowers open in a series of "jerks" (Benson 1982). Individual flowers only bloom for one night. The total flowering period of plants within a population is also brief and generally all flowers bloom within a 2-day period. However, in unusual circumstances, flowers on different individuals within a population may bloom periodically over a period of almost one month. Flowering occurs in late May into July depending on geographic area (Earle 1963, Epple 1995, Kearney and others 1960). The fragrance of the flowers is pleasant, and humans can detect the perfume of the flowers up to 30 m away from the plant (Benson 1982, Epple 1995, Vines 1960). Flowers are pollinated principally by hawk moths (ASDM 2002) and possibly other night feeding insects (Epple 1995) that search for nectar. The flowers are not self-fertile and must be cross-pollinated. Therefore the hawk moths (Sphingidae) must fly hundreds of yards between the sparsely distributed plants (ASDM 2002). In areas where pesticides are heavily used for agriculture, the hawkmoth populations are devastated, and most of the flowers on plants in adjacent natural habitat fail to fruit (ASDM 2002).

Growth and Management.—The stems generally grow up through, and later become supported by, shrubs. It is likely that the shrubs provide protection and a suitable microclimate for germination and subsequent plant development. Any activity that reduces shrub cover is a threat to night-blooming cereus. Therefore, fire is a potential hazard, although the direct effect of fire on night-blooming cereus is not well documented. The substantial tuberous root may provide the plant the means to recover if the above-ground stems are killed, and therefore, it is likely that individual plants can tolerate light fires that do not decimate the shrubs with which they are associated (Thomas 1991). More severe fires that scorch and heat the soil are likely to be more detrimental. Herbivores such as white-throated woodrats (packrats) and cactus borers (*Cactobrosis fernaldialis*) eat the stems, but new stems soon sprout from the tuberous root (ASDM 2002). Many populations throughout its range have been extirpated due to private and commercial collection, and the time required for population re-establishment is not known. However, although slow growing, it is easily propagated by short stem cuttings and from seed. Seeds of many cacti species, including *Cereus* species, are subject to physiological dormancy. For example, seeds of *Cereus griseus* were dormant at maturity but germinated after 8 weeks in a dry environment (Baskin and Baskin 2001). *Cereus griseus* seeds have an absolute light requirement for germination (Baskin and Baskin 2001). If the plant is dug up for transplantation it is actually difficult to keep alive (Weniger 1969). Apparently the root is susceptible to fungus. Damp soil has to be avoided, but even if root rot is prevented, the plant tends to decline over a few years if kept in a pot or in a greenhouse (Weniger 1969).

Benefits.—Night-blooming Cereus plants have commercial value especially among cactus collectors (Epple 1995). Not only is it an aesthetically desirable cactus, but it has considerable medicinal value. The root is generally believed to be the organ that has medicinal properties (Moerman 1998, Moore 1989, Powell 1998). However, the stems also have the same properties although "more feebly" (Moerman 1998, Moore 1989, Powell 1998). Active ingredients include penicerol, viperidone, desoxy viperidone, viperidinone, β-sitosterol and, most likely, caffeine (Moore 1989). It is likely that night-blooming cereus is not unique in its medicinal value as other species of *Cereus* contain similar active ingredients (Ecdybase 2002). The commercial toll on this species has not been established, but wild-harvested material is available on the Internet (Pacific West Botanicals 2002). It is called "pain in the heart" by the Death Valley Shoshones (Moore 1989). This tribe presumably uses it in a manner similar to Native Americans of Nevada who ingest an infusion of the roots as a cardiac stimulant

(Moerman 1998). Other Native Americans have used a decoction of the roots for diabetes, the seedpods mixed with deer fat as a salve for sores, and the cut slices of root as an externally applied cure for chest colds (Moerman 1998, Vines 1960). The fruits, flowers, young stalks, and roots have been eaten for food (Moerman 1998). This use of the root may account for the common name "sweet potato cactus." Chewing the raw root has been reported to quench thirst. Birds eat the seed and contribute to seed dispersal (Vines 1960).

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