

Introduction and propagation of coastal desert plants

Arthur C. Gibson
David Verity
Barry Prigge

With the increasing interest in water conservation in landscaping, new drought-tolerant species are needed for cultivation in dry regions of the Southwest. Of course, cacti and other succulent plants have been used for many years, but over the last two decades there has also been a strong movement to find appropriate nonsucculent native desert shrubs and trees with potential horticultural value.

Each of the principal desert regions of North America has a characteristic pattern of rainfall and temperature and, as a consequence, a special set of plant species. For example, plants of the Chihuahuan Desert are accustomed to summer rainfall and fairly cold winter temperatures, whereas plants of the Mojave Desert experience winter rainfall and hot, dry summers. Previous attempts to use nonsucculent desert species in coastal southern California gardens, which have a Mediterranean-type climate, have been mostly unsuccessful, because the growth requirements of the desert plants, even of the nearby Mojave Desert, do not match the maritime,

Mediterranean-type climate (cool, moist winters and hot, dry summers) found along the Pacific coast of southern California. The California desert species are presumably unable to tolerate the moister climate or heavier soils of the coast.

Diamonds in the rough

One approach that has not been attempted for southern California is to use plants from the coastal deserts of western Baja California, where the climate is very similar to but slightly drier than that of San Diego and Los Angeles. The Pacific coastal desert of Baja California has intermittent fog, strong onshore winds of moderately high relative humidity, and nonfreezing temperatures in winter months coupled with moderate amounts of winter rainfall. The flora in this region includes hundreds of perennials that do not occur in southern California--or anywhere outside Baja California. It seems likely that, through careful selection for interesting growth forms, leaves, and flowers, horticulturists can find some "diamonds in the rough."

In 1983, the Elvenia J. Slosson Endowment Fund sponsored several expeditions to arid and semiarid coastal areas in northwestern Baja California, from Ensenada to Guerrero Negro. Seeds were collected from about 50 species of nonsucculent native shrubs and subshrubs that grew in locations with a maritime climate. A special effort was made to collect showy or architecturally interesting desert perennials of the Sonoran Desert that have not been commercially cultivated; these were obtained from the westernmost (most maritime) localities. Many of the species that are totally restricted to Baja California were collected at their northernmost localities, which have a climate closest to that of southern California.



Drought-resistant desert shrubs, such as *Dalea bicolor* var. *orcuttiana*, from coastal Baja California are well suited for planting in maritime areas of southern California.



The attractive leathery foliage of the evergreen shrub *Rhus lentii*, grown from seeds collected near Bahia de San Cristobal, Baja California, would make it a handsome new horticultural plant in gardens of coastal southern California.



Harfordia macroptera, a dwarf, scrambling species with short narrow leaves, tiny flowers, and inflated red-veined bracts, may be useful as a low-maintenance ground cover in ornamental plantings. This specimen was grown from seeds collected near Puerto San Isidro, Baja California.



Among candidates for cultivation in coastal southern California are small desert shrubs with drought-deciduous leaves, such as *Verbena lilacina*, originating in west-central Baja California.

The guidelines used were successful, because young plants (germinated indoors) were able to grow in outside beds at UCLA in Westwood, which is 4 miles from the Pacific Ocean in northwestern Los Angeles County. In Westwood, the outdoor plants received special, periodic watering only during the first summer drought, but otherwise relied on natural rainfall.

New prospects

A number of handsome new horticultural prospects were obtained from this study. Most interesting of the larger shrubs were the narrowly restricted, evergreen oak *Quercus cedrosensis* and the evergreen sumac *Rhus lentii*. Both species occur only on Cedros Island and a strip of the adjacent mainland. *Rhus lentii*, which is very similar to *Rhus integrifolia* of southern California, grows quickly and forms a

fairly dense shrub 2 meters tall. Leaves of wild plants of this species are much more gray than those grown in Westwood. Although *Quercus cedrosensis* is slow-growing, it is an interesting shrubby oak, because those we have grown tend to have entire, instead of lobed, leaves.

Another noteworthy evergreen shrub is *Ceanothus verrucosus*, which is very similar to *Ceanothus megacarpus* of California, except that the former has smaller, finer leaves. *Ceanothus verrucosus*, which occurs in San Diego County, could do well in southern California without summer watering.

A large shrub, *Prosopidastrum mexicanum*, is a legume that can be 1.5 meters tall and almost 3 meters in diameter. This interesting native of Baja California has remarkable green stems with gray, corky striations along the length. Plants have relatively small, bright green leaves that are drought-deciduous, but one exceptionally fine plant is evergreen, keeping its leaves year-round.

Among the smaller shrubs with thin, small, drought-deciduous leaves were several candidates for cultivation in coastal southern California: *Cassia purpusii*, *Dalea bicolor* var. *orcuttiana*, *Crossosoma bigelovii*, *Calliandra californica*, *Asclepias subulata*, *Salvia chionocephala*, and *Verbena lilacina*. Low, compact plants were obtained for the first four species in this list, and these can probably be used as hedges on dry banks, but they certainly do best in well-drained soils. *Asclepias subulata*, an essentially leafless, green-stemmed desert milkweed, can be used as a specimen plant in gardens. The coastal form of this milkweed is highly branched at the base and forms thinner stems than typical desert forms of this species. The narrowly restricted sage *Salvia chionocephala* closely resembles *Salvia leucophylla* of southern California but has bluer flowers; this species would fit well into a native California garden. One of the most attractive finds of the survey is a shrubby vervain, *Verbena lilacina*, which grows to 1 meter tall and, for long periods, is covered with clusters of light lavender flowers. If this plant responds well to pruning, it may become an important addition to California dry landscapes.

Dalea bicolor var. *orcuttiana* has been cultivated in California desert areas, but those plants generally are open shrubs. Plants grown from seeds collected in coastal desert localities are low and flat-topped, and do not appear to need shaping or pruning. This species may also be a good ground cover, because it reseeds itself but has not shown signs of becoming weedy.

A dwarf, scrambling species that may be useful as a ground cover is *Harfordia macroptera*, a plant less than 20 centimeters tall with short narrow leaves, tiny nonshowy flowers, but magnificent red-veined bladders on the fruit. Also very promising is the even lower *Eriogonum pondii*, which has whitish-green foliage. Both of these species go completely dormant and turn brown during the summer drought, but perhaps periodic watering in the summer would keep those plants green year-round.

Some were less spectacular

The study was not without some disappointments, however. In the survey were, for example, seven species that grow in the wild as perennials; in Westwood they grew as annuals or very short-lived perennials. In addition, several of the species that have showy flowers or fruits in the wild had less spectacular structures when cultivated outside in Westwood. Another very attractive plant, *Viguiera lanata*, which has silvery-white leaves and flowers for long periods, did not maintain a compact growth form under Westwood conditions.

The UCLA project on perennial xerophytes, or drought-tolerant species, for southern California gardens has produced a useful plant source for future experimental plantings and vegetative propagation. Moreover, by cultivating these plants, many of which are uncommon and narrowly restricted in the wild, we help to ensure the survival of these species on earth and give professional botanists a chance to study their biological properties up close.

Arthur C. Gibson is Director, Department of Biology, University of California, Los Angeles; David Verity is Senior Museum Scientist, and Barry Prigge is Associate Museum Scientist at the Mildred E. Mathias Botanical Garden, UCLA.