BIGROOT II—Illustration of Seed Production and Dieback San Clemente, California

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Introduction

This third slide show of the Manroot Gallery features again a species of Manroot common in coastal and mountain regions of Southern California known as Cucamonga Bigroot, or just Bigroot, *Marah macrocarpus*. Earlier stages of growth of *M. macrocarpus* were shown in the second slide show. Here we concentrate on the last stage of growth.

Manroot is at home on the coast of Southern California—in coastal areas as well as in chaparral and at the edges of coastal forests in the north and south of the state and on into Oregon. All the photos in this section were taken in wild coastal scrub and residential sites at San Clemente, California, on April 14-17, 2010.

Coastal Scrub

Figure: The Pacific Ocean appears in the distance beyond cliffside homes. Several of the following photos were taken in this area of coastal scrub. Others were taken from sidewalks in the residential area nearby.

Residential area

Figure: Senescent yellowing vines of Bigroot can be seen stretching out on the large shrub at the center of the photo and draped over the fence to its right. The vine is probably wild.

Bigroot vines climb onto supports by means of tendrils.

Figure: Cucamonga Bigroot tendrils typically have two filaments: one major and one minor. Here both are shown on a maturing vine. By coiling after attachment to a suitable structure, like a stem or fence wire, a tendril pulls the tip of the vine closer to a support, helping to direct the vine upwards.

But variations with one filament are possible.

Figure: A single-filament tendril grows from the leaf axil. It appears to have withered at the distal end.

Heavy lift

Figure: The major filament of this tendril was probably coiled tighter until the separation increased between the vine and support, stretching out the coils. The *reversal* (where the sense of coiling of the tendril reverses direction) can be seen near the middle.

Or life of ease

Figure: Some tendrils remain unattached. Without tension, this tendril filament has curled into the shape of a butterfly proboscis.

Bigroot vine crawling over roadside shrubs

Figure: With the assistance of tendrils, two vines have climbed on top of roadside shrubs for access to sunlight.

Sprawling over feathery bed of sage

Figure: Bigroot vines are opportunists and will climb toward sunshine over any suitable support.

More shrubs, more vines!

Figure: A senescent vine appears in the foreground, and several maturing vines are visible in the background.

Dying back on brambles

Figure: Bigroot vines die shortly after producing seeds. The seedpods are barely visible here.

Ripening green seed pods hang from dying vine

Figure: Now in its last days, this vine sprouted from a subterranean tuber, climbed its way onto a shrub, flowered and set seeds that are now ripening in pods that will soon turn brown and prickly before releasing their seeds.

Death and transfiguration I

Figure: The ripe seedpod at lower left has burst open and dropped its seeds. The nearly ripe pod at center right is beginning to open, and a black seed is barely visible at the opening. The vine will soon shrivel and be driven away by wind or rainfall.

Death and transfiguration II

Figure: The two branching and coiled filaments of a tendril are at top center. Other tendrils are visible. They pulled the vine upward into sunshine, furnishing the tuber with increased energy for another year and making it possible to produce pods full of seeds for a new generation. And so it goes from season to season.

A puzzling seedpod

Figure: Was the bottom of this seedpod expelled by force, perhaps by accumulating gas pressure within the ripening pod? Or did it just fall out this way?

Pod as prickly to the touch as it looks

Figure: Hanging down from the vine, a seedpod rips open from its distal end, dropping its seeds. However dispersal occurs (a good question), rooting and long-term survival of a seedling must be rare because the Bigroot population is more-or-less stable, and parent tubers can live on for many years.

Seeds in a pod

Figure: Bigroot seeds come in three colors. These are white, other can be tan or black. Is color a sign of fertility? (Another good question)

How large is a seed?

Figure: This one looks like a bird's egg.

And so to sleep, not to wake 'til early next year

Figure: This Manroot has concluded its time above Earth for now. The withered vine will fall away from the host, leaving the tuber to rest for ten months—loaded with energy for next year's growth.

Where to find more information

Charles Darwin's essay on tendril bearing plants is classic and is still available in many reprint editions : *The Movements and Habits of Climbing Plants*, 2^{nd} crctd ed, 1882.

The characteristics and distribution of *Marah* species, in particular *Marah fabaceus* featured in these slides, can be found in any of the major manuals of California flora. The most current and complete is:

The Jepson Manual: Higher Plants of California by James C. Hickman (editor) and Willis Linn Jepson, 1993.

Online, see *The Jepson Online Interchange—California Floristics* at `http://ucjeps.berkeley.edu/interchange.html`.

A discussion of the "pulling power" of tendrils is available with this Gallery at an associated URL: *Can a Manroot Tendril Pull its Vine Closer to a Support even as the Tendril increase in Length?*

Further references

Manroot is a characteristic plant of the California chaparral and associated floristic communities. For general information:

Introduction to California Chaparral by Ronald D. Quinn and Sterling C. Keeley, 2006.

Fire, Chaparral, And Survival In Southern California by Richard W. Halsey, 2008.

California Chaparral: An Elfin Forest by Winfield Scott Head, 1972.

For botanical terminology, these are excellent:

Plant Identification Terminology: An Illustrated Glossary by James G. Harris and Melinda Woolf Harris, 2001.

The Cambridge Illustrated Glossary of Botanical Terms by Michael Hickey and Clive King, 2001.

Photographs and Contacts

These slides are accessible on the web at:

www.mikeraugh.org/WildThings

The photos in the slides are low-resolution thumbnails of Vicki Johnson's high-resolution originals.

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