



The Sabal

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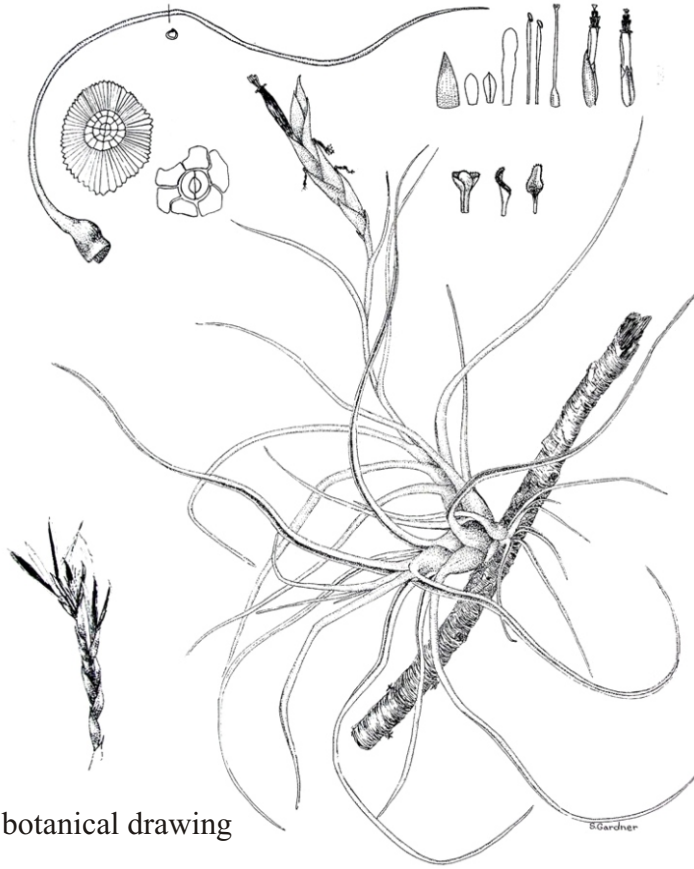
***Tillandsia baileyi* rose - Texas's Disappearing Native Air-Plant**

by Sue Sill, Ph.D.

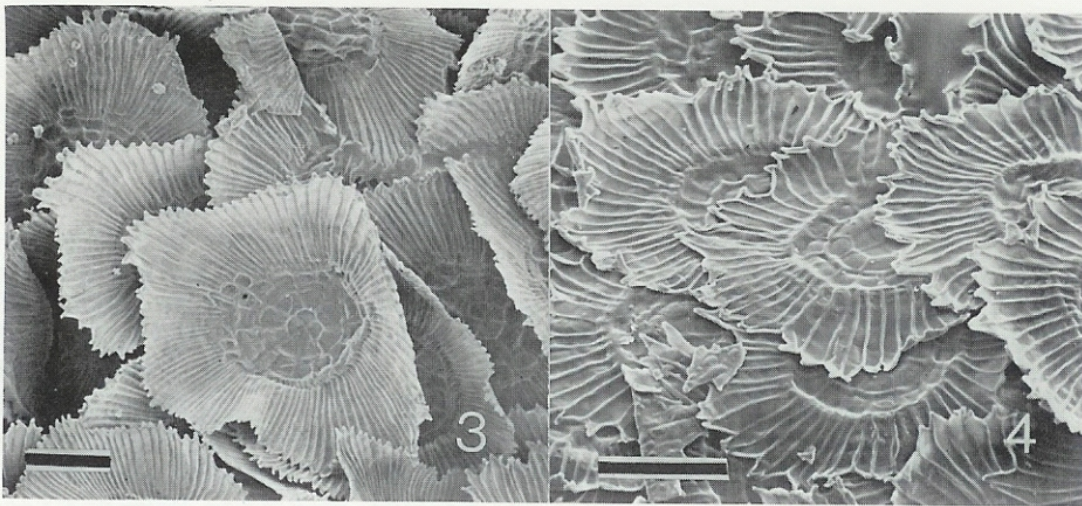
Tillandsia baileyi Rose is a silver-leafed epiphytic bromeliad that grows in dense clumps on tree trunks and branches. The typically un-branched flowering shoots emerge in the spring. Pale rose colored floral bracts persist for weeks, as tubular violet flowers present themselves, one by one. Scale-like foliar hairs, called trichomes, give deeply veined, in-curved leaves their silver appearance, and they are the plants means of collecting moisture and nutrients. The roots are reduced to holdfasts, which help the plant cling to tree bark but do not penetrate the tree's vascular system. Tillandsias glean their sustenance from humid air and rain that washes over the leaves, and are not parasites.

In extreme south Texas, near the gulf coast, *Tillandsia baileyi* is epiphytic in live oak and ebony. In coastal Tamaulipas Mexico it is primarily epiphytic in ebony and other dense thorn scrub. *Tillandsia baileyi*, commonly called Bailey's Ball Moss, is a member of *Tillandsia* subgenus *Tillandsia*, the group on which I did my Ph.D. research during the late 1970s and early 80s, as C.S. Gardner. Rather than study dried herbarium specimens, as former taxonomists had, I examined living, flowering specimens of the majority of the 100+ species then classified as part of the subgenus, which I collected in their habitat across Mexico, Florida and southern Texas.

For comparison, I looked at representatives of closely related subgenera and determined the subgenera *Tillandsia* and *Allardtia* were both likely made up of unrelated groups of species. In other words, *Tillandsia* is what is often referred to as a garbage dump genus – a genus into which



Tillandsia baileyi - botanical drawing



Figs. 3 & 4. SEM photographs of trichomes from abaxial leaf blade of *T. baileyi* and *T. pseudobaileyi* respectively. Bar represents 100 μm .

species are dumped if they don't neatly fit anywhere else. Today, botanists around the globe are using DNA and other advanced techniques to re-examine the taxonomy of this difficult group. Names are changing. Not all *Tillandsias* will continue to be called *Tillandsia*. *Tillandsia baileyi*, is part of a large and complex subgroup that is getting well deserved careful scrutiny.

Texas has two other *Tillandsias*, *T. usneoides* (Spanish Moss) and *T. recurvata* (Ball Moss), which are classified in *Tillandsia* subgenus *Diaphoranthema*, and not closely related to *T. baileyi*. *Tillandsia baileyi* is, however, closely related to a number of species that occur in Florida and northern Mexico.

Tillandsia baileyi was interpreted as ranging from South Texas to Central America, however, the broader distribution was based on confusion with another species that is now known as *Tillandsia pseudobaileyi* C.S. Gardner. *Tillandsia pseudobaileyi* can be distinguished from *T. baileyi* by its fewer and harder leaves and more inflated leaf sheath, and its often compound inflorescence with spreading branches. In addition, examination of foliar trichomes with a simple compound microscope shows the trichome cap of *T. pseudobaileyi* has fewer elongated cells in the outer row of the dead cells that play an important role in absorbing moisture and minerals.

After removing the southern Mexico and Central American populations of *T. pseudobaileyi* from consideration, we are left with a narrowly endemic species that straddles the international border near the mouth of the Rio Grande. The limits of these natural populations occur between Kingsville on the north, and Tampico on the south. On the west, its distribution seems limited to areas influenced by the Gulf of Mexico.

An attempt by FWS to list *T. baileyi* as an endangered species in 1990 failed, but it is currently listed as a species of concern. In extreme South Texas it occurs along Hwy 77, with no known record as far inland as Hwy 281. Dense colonies once occurred in oak motts growing in the deep sands along Highway 77, including at the rest stop near Sarita. It was also locally abundant on ranches along both sides of Hwy 77, including the King Ranch, where it will probably persist unless the oaks are removed. Dense colonies survive in the Lower Rio Grande Valley where old stands of Texas Ebony trees occur. Known "Valley" locations are near Mercedes and between Harlingen and Brownsville. The greatest threat to the species' well being appears to be loss of habitat, with collecting as a minor threat. Bromeliad collectors grow it as an ornamental.

In Mexico, my observations and documented reports indicate *T. baileyi* rarely occurs north of the Rio Corona or south of Tampico. Until the 1980s, *T. baileyi* grew in dense canopies of Texas Ebony trees in Tamaulipan Thorn Scrub of the coastal plain near Aldama, where it occurred along with up to 7 other *Tillandsia* species. *T. baileyi* was conspicuous by its site selection, deep shade of dense Ebony canopies while other *Tillandsia* perched in full sun. This land has now largely been cleared for pasture. Numerous Ebony trees were left, so *T. baileyi* continues to grow there, although many of the other species are now rare in this area.

Observations of the plants natural perch suggest it needs shade, however, specimens mounted in full sun at the Valley Nature Center in Weslaco are thriving, as are specimens on dead branches of a tree in a golf course in Mercedes. Efforts made by DOT to reintroduce *T. baileyi* into the Sarita Rest Stop on Highway 77 met with limited success. Dana Price, Texas Parks & Wildlife and Karen Clary, Texas Department of Transportation, mounted dozens of specimens on trees inside the maintained rest stop, as well



Tillandsia baileyi - Whole plant in bloom and close-up of flower. Courtesy: Stan O. Sterba

as in oaks west of the southbound lanes. As of 2005, 24% (7/29) had survived in the rest stop, located in the highway median, while 68% (30/44) of reintroduced plants survived on the west side of US-77. The highest survival was among plants introduced to the un-manicured areas where they are protected by dense brush, and not in the open environment of the maintained rest-stop.

Colonies in the golf course and cemetery near Mercedes are both near the Llano Grande and the Arroyo Colorado waterways. Since all known wild populations are in areas influenced by the Gulf of Mexico, it seems likely that humidity is a more important factor than protection from intense sunlight, however, little is known about this epiphyte's natural history.

As with most *Tillandsia* species, *T. baileyi* has proven to be self-fertile and able to self-pollinate. Since the flowers open during the night, one might assume the long, tubular flowers are

pollinated by large, night-flying moths. We don't know what environmental requirements are critical. What conditions provide optimum nutrient availability or ideal air circulation? What are the requirements for seed germination and seedling establishment? We know nothing about the species' breeding strategies. Are they out-crossing or do they mainly in-breed or self pollinate. What pollinates the flowers? Is it a rare or a common insect or animal? Research is needed if we are to understand *T. baileyi*'s life history. We must also protect what natural stands remain of mature ebony and oak with *T. baileyi* colonies if future generations of Texans are to enjoy this unique and attractive native air-plant.

Dr. Sill is the Executive Director of La Cruz Habitat Protection Project, Inc., past Executive Director of the North American Butterfly Association, a current Director on the NPP Board, and has been involved in plant conservation and habitat restoration for the past 30 years.

BUTTERFLY

I see in sun your fragile wings unfold
In tender tints of yellow, blue and gold--
Reflected boneset, heliotrope and rue,
A signal sent to beckon me to you--
A rainbow drifting with careless ease
Over elm, anacua and dark ebony trees--
Soft wings, the sky and every spreading tree
Send silent signals down from you to me.

- William MacWhorter

Nature Happenings Lower Rio Grande Valley, Texas

For a comprehensive calendar of Nature Happenings go to **RGV Nature Coalition** at www.rgvnaturecoalition.org Scroll down to and click on Nature Events Calendar on right side. *The following have guided walks and programs about Valley nature and wildlife:*

Edinburg Scenic Wetlands and World Birding Center (956) 381-9922

Quinta Mazatlan - McAllen Wing of the World Birding Center (956) 688-3370

Bentsen Rio Grande Valley State Park WBC (956) 584-9156

Santa Ana NWR has Nature Tram rides at 9:30, 12 noon, 2:00 (956) 784-7500

Valley Nature Center (956) 969-2475 301 S. Border Ave., Weslaco, TX.

Estero Llano Grande State Park WBC (956) 565-3919 FM 1015, Weslaco, TX.

Valley Proud Environmental Council (956) 412-8004 3 new planting guides available; vpec@sbcglobal.net or visit www.valleyproud.org.

Have you seen a really big tree in the Valley? For details on registering and measuring go to: texasforests.tamu.edu/main/article.aspx?id=1336

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The Sabal is the Newsletter of the Native Plant Project and conveys information on the native habitat, and environment of the Lower Rio Grande Valley Texas. Co-editors: Gene Lester and Eleanor Mosimann. You are invited to submit articles for *The Sabal*. They can be brief or long. Articles may be edited for length and clarity. Black and white line drawings -- and colored photos or drawings -- with or without accompanying text are encouraged. We will acknowledge all submissions. Please send them, preferable in electronic form - either Word or WordPerfect - to: Native Plant Project, P.O. Box 2742, San Juan, TX 78589.

See *The Sabal* and our 5 handbooks on our website: **www.nativeplantproject.org**

Let us know if you prefer to have your Sabal electronically delivered to your computer. Contact Bert Wessling at bwessling@rgv.rr.com

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**Native Plant Project Annual Membership
Application Form**

Regular \$15 per year Contributing \$35 per year Lifelong \$250 one time fee per individual. Members are advised of meetings, field trips, and other activities through *The Sabal*. Dues are paid on a calendar year basis. Send checks to Native Plant Project, P.O. Box 2742, San Juan, Texas 78589.

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New Renewal Address Change

Comments/ suggestions/ speaker recommendations should be sent to: Native Plant Project, P.O. Box 2742, San Juan, TX 78589

Native Plant Project Meetings – May 26, 2009. **Board meeting** at 6:30 p.m.; **General meeting** at 7:30 p.m. **Ken King** will present “Lesser Known Plants of the LRGV, Part 2”. Ken is an educator, Board member of NPP, and one of the foremost naturalists in the Valley. It’s hard to find someone with a better gift for spotting plants we should get to know. Need a plant identified? Bring a cutting.

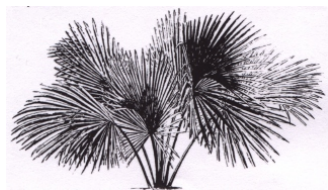
Board and General Meetings 2009:

2009: January 27 February 24 March 24 April 28 May 26
September 22 October 27 November 24

SUMMARY OF THE MINUTES OF THE BOARD MEETING – April 28, 2009

The board discussed the NPP booth at the McAllen Home Show in late March, and is awaiting a report on new memberships and plant sales/expenses from the event. Sheldon and Hathcock reported on The Invaders of Texas Workshop they had attended on April 18th at Estero Llano Grande State Park, Weslaco. Options for editing The Sabal are being considered following Gene Lester’s resignation effective at the end of May.

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