BROMELIAD SOCIETY OF SAN FRANCISCO

July 2009

NEWSLETTER

Our next meeting will be held on **Thursday, July 16, 2009** at 7:30 PM
Recreation Room, San Francisco County Fair Building, 9th Avenue at Lincoln Way, Golden Gate Park, San Francisco

July Program

Taking the long road to Oaxaca

Our program this month includes many unique and interesting plants that **Kelly Griffin** encountered on a cross country trip through Mexico. He spent an amazing three weeks searching the hills and country side studying the flora and found interesting Hechtias, Tillandsias, Echeverias, Agaves and of course loads of other assorted succulent plants!

Kelly Griffin is the curator of Xerophytic Plants at Rancho Soledad Nurseries in Rancho Santa Fe, CA. The nursery grows a great assortment of beautiful and unusual plants for the home and landscape.

Please welcome Kelly as our July guest speaker. In addition to our regular plant table, Kelly will be bringing some plants for sale; he is noted for his colorful Aloe hybrids, but I suspect he will bring other desirable plants as well.

Here is a photo of **Kelly Griffin** with *Aloe helenae* 20 km northwest of Fort Dauphin, Madagascar. Photo is courtesy of the Tucson Cactus and Succulent Society.

July Refreshments

Marilyn Moyer, Peder Samuelsen, and **Tom Vincze** signed up for refreshments this month**.**

June Meeting

Last month, **Bruce McCoy** gave a slide show on his 2005 visit to Costa Rica. Since you editor was visiting Brazil, he had to miss the meeting and has no summary for you this month.

Biological Vocabulary Builders

This article is reprinted from the May 2004 The Bromeliadvisory, newsletter of the Bromeliad Society of South Florida. Article sources are Australian Government Department of Environment and Heritage and www.hyperdictionary.com.

Solanaceae: an agronomical important plant family comprising more than 3000 species, many of which evolved in the Andean/Amazonian regions of South America in habitats that vary dramatically and include rain forests that receive more than 3 meters of rain annually to deserts with virtually no rainfall and high mountains with regular snowfall and sub-freezing temperatures. The center of diversity of the Solanaceae is near the equator and thus species were undisturbed by the ice ages and have had time to accumulate adaptive genetic variation for extreme ecological niches (sound familiar?). The Solanaceae are also the third most important plant taxon economically and the most valuable in terms of vegetable crops, and are the most variable of crop species in terms of agricultural utility, as it includes the tuber-bearing potato, a number of fruit-bearing vegetables (tomato, eggplant, peppers), ornamental plants (petunias, Nicotiana), plants with edible leaves (*Solanum aethiopicum*, *S. macrocarpan*), and medicinal plants (e.g., Daturea, Capsicum). Solanaceaous crops have been subjected to intensive human selection, allowing their use as models to study the evolutionary interface between plants and people. The ancient mode of Solanaceae evolution, coupled with an exceptionally high level of conservation of genome organization at the macro and micro levels make the family a model to explore the basis of phenotypic diversity and adaptation to natural and agricultural environments.

So what does this have to do with Bromeliads? They evolved in the same place under the same conditions. And like tomatoes they survived the ice ages because they were in equatorial America and not the desert that equatorial Africa and Australasia became, or buried under glaciers of ice in Europe, Asia, North America and Antarctica.

Plant Hardiness Zone: Plant hardiness maps allow producers to label their plants as being suitable for particular areas, and, in theory at least, this results in happy customers who can confidently buy plants that will survive in their locality. Early in 1990 the United States Department of Agriculture (USDA) published an updated version of their map of plant hardiness zones. This divides the United States into 11 zones (1-11), characterized by their average minimum temperature. Zones 2-10 are also subdivided into “a” or “b”, giving a total of 20 zones or sub-zones. These zones, of course, only apply to plants growing out of doors with no protection, which are provided with adequate water.

The statistic used by the USDA is the average annual minimum temperature. This causes some confusion straight away, because in Australia we use this term to mean the average minimum temperature over the whole year, whereas the USDA means the average over ten or more years, of the very lowest temperature (the absolute minimum) observed for each year for each meteorological station. I prefer to call the USDA term the average annual lowest temperature. This figure tends to make places look very cold! For example, Florida, which we think of as a warm place, is in the US Zone 10 which has minimum temperatures from 30°F to 40ºF (-1°C to +4ºC). Zone 1 (e.g., central Alaska) is below -50°F (-45ºC) which is very cold!

Phytotelmata: are structures formed by non-aquatic plants that impound water, such as modified leaves, leaf axils, flowers, stem holes or depressions, open fruits and fallen leaves. The word was coined by Varga (1928) [Biologlsches Zentralblatt 48: 143-162] and has been adopted into English (see Maguire 1970 and Fish 1983). The singular is phytotelma (or phytotelm), and plural is Phytotelmata (or phytotelms). Basically,

these are the cups of bromeliads where water pools.

Colonization of bromeliads by Crustacea

This article is reprinted from the May 2004 The Bromeliadvisory, newsletter of the Bromeliad Society of South Florida. Article source is the University of Florida website.

Phytotelmata are temporary water bodies, even if the habitats themselves are permanently available. The duration of single phytotelms depends on the development of the bromeliads, where new leaves in the center of the plants form new habitats. Older outer leaves entrap water to a greater extent, but water-holding capacity is lost when the leaves die. Here, the question about the mechanisms of immigration into a newly formed leaf and its phytotelm or even in Phytotelmata of different bromeliads raises. Colonization of Phytotelmata can be described as "the result of a series of interlinked events – dispersal, immigration, and establishment" (Maguire 1991, p. 461). Dispersal depends on the mode of transportation, being either passive or active. Active dispersal and selection of a suitable habitat is already described for the bromeliad crab *Metopaullas depressus* (Diesel 1989). Passive dispersal includes disseminules, for instance resting eggs, blown with the wind. Common in algae, this transport mechanism might also hold for *Phyllognathopus viguieri*, which was found even in a rain meter near our field station (Janetzky, pers. obs.). However, it should be kept in mind that passive dispersal is of high risk to fail. Phoresy is still a passive, but more certain way to reach a nearby habitat, because animals, such as frogs visiting Phytotelmata for water uptake, are used by smaller ones for transportation. Examples are ostracods found to be carried by birds or frogs (e.g., Roy 1931, Seidel 1995).

Colonization experiments performed in Jamaica (bromeliads were cleaned, refilled, and exposed to various environmental conditions; Janetzky 1997).have shown that the cyclopoid *Tropocyclops jamaicensis*, a species widespread in bromeliads of the study site is a rapid colonizer of Phytotelmata in terrestrial bromeliads. Two weeks after start of colonization experiments, *T. jamaicensis* was already found in the manipulated bromeliads. In that particular plant the second observation was six weeks later (Reid & Janetzky 1996), which might be caused by the sampling technique. The discontinuity in copepod records in all bromeliads under investigation led to the assumption that different Phytotelmata even in the same bromeliad form distinct habitats with their own "history" in the colonization and establishment of aquatic communities. The re-establishment of stable populations of *T. jamaicensis* required several months, most probably due to the need to build up organic matter as food resource. The lack of sufficient food supply could have led to strong competition and to the failure of some early populations (Reid & Janetzky 1996). This suggestion is supported by the observation that higher individual numbers of harpacyicoid copepods were observed only when the aquatic fauna was depauperate (Janetzky 1997) and in investigation of aquatic communities in Puerto Rican bromeliads (Maguire 1970). Maguire (1970) has shown that harpacticoid copepods and ostracods as well as cyclopoid copepods and mosquito larvae exclude each other because of similar feeding habitats (negative associations). In contrast, cyclopoids and harpacticoids or ostracoids could be found together (positive associations).

Cut Your Plants in Half

This article is reprinted from the January 2007 The BSGC News, newsletter of the Bromeliad Society of Greater Chicago and originally appeared in the Sep/Oct 2007 Queensland Newsletter.

"Cut your plants in Half." This is the advice often given if one is seeking more pups. After your plants have finished blooming, cut off the inflorescence to promote pupping. At that time cut the leaves back to about half their original length. This will permit more light to reach the pups as they emerge, allowing them to grow faster with better conformation and less distortion. It will also promote more pupping on most bromeliads and reduce the amount of space you must give your bloomed-out plants.

Caring for Tillandsia Clumps

This article by Len Colgan is reprinted from the January 2007 The BSGC News, newsletter of the Bromeliad Society of Greater Chicago.

In the common parlance of Tillandsia taxonomists, there are "Lumpers" and the "Splitters". By these terms, it is meant to distinguish those that always look for the similarities between two plants under investigation (hoping to prove that they are the same species or linked varieties) from those who always look for differences, in the belief or hope that one of them is new.

However, in a different context, the language of mere collectors like me involves the "Clumpers" and the "Dividers". The first term is commonly used to distinguish those tillandsia (and other genera) collectors who prefer to have their plants in large clumps rather than dividing them up on a regular basis. Those who have investigated my collection definitely agree that I am a clumper.

However, there are inherent risks in such an approach. When asked, what are the most important aspects in successfully growing mounted tillandsias, I always respond with the following five necessities:

- Good fresh air movement
- Good light
- Good fresh air movement
- Regular watering, and
- Good fresh air movement.

There are a number of species that I encourage to form large clumps. These include the common *T. aeranthos, T. bergeri, T. crocata, T. ionantha, T. ixioides, T. juncea, T. magnusiana, T. palaecea*, *T. recurvifolia* (including var. *subsecundifolia*), *T. tenuifolia*, and *T* Floridiana. These are invariably attached to natural cork and hung from mesh inside a shade cloth covered frame. In one situation, tillandsias are hung from both sides of a common frame on shade cloth support and it is here that problems have arisen. At the end of the last wet winter, the back third of many large tillandsia clumps in this situation were found to be dead. I had to remove large dead sections from *T. aeranthos, T. bergeri*, and *T. stricta*.

Although one of the necessities, namely regular watering, had been available, it proved that adversely, good light and (most importantly) good fresh air movement were missing. Clearly, all of the plants at the back of the clumps facing the shade cloth with plants on the other side were deprived of vital natural light and air and so rotted. No such problems existed for individual plants or sparsely growing specimens.

What should you do to avoid this? Assuming that you still wish to create large tillandsia clumps, I recommend:

- Before the wet season arrives, carefully remove old plants and leaves, especially near the center of the clump
- Place the clump in a situation that maximizes the light and the air movement from all directions.

In the future, all my clumps will be prepared for the wet season.

June Bromeliad Sale Results

Our sale last month was not as successful as most of our June sales over the last few years. The club profits are about $2000. Part of the reason for this downturn is probably the recession and the fact that rental for the facility has greatly increased. One interesting marker of how sales were lower is the slow turnover of *Tillandsia cyanea*. We usually sell these out on Saturday. This year we had a few left at the end of the sale.

Many of you helped get ready for the sale by ordering plants for the society from nurseries, potting them, and pricing them, or putting bar codes on the hundreds of tillandsias that our society purchased. We also had excellent participation from our membership helping to sell the plants and educate the public. Our society wishes to thank each of you for your participation in helping on this sale.

Welcome New Member

Helen Lindqvist
3 Cazadero Lane
Tiburon, CA 94920-1983
(415) 789-0703
helen_lindqvist@yahoo.com

Puya alpestris

Lana Fisher, one of our longtime members, has had her *Puya alpestris* flower in her yard in Oakland after 20 years in the ground. Here are some of the pictures she submitted.

BROMELIAD SOCIETY OF SAN FRANCISCO (BSSF)

The BSSF is a non-profit educational organization promoting the study and cultivation of bromeliads. The BSSF meets monthly on the 3rd Thursday at 7:30 PM in the Recreation room of the San Francisco County Fair Building, 9th Avenue at Lincoln Way, Golden Gate Park, San Francisco. Meetings feature educational lectures and displays of plants. Go to the affiliate section of the BSI webpage for information about our meetings.

The BSSF publishes a monthly newsletter that comes with the membership. Annual dues are single ($15), dual ($20). To join the BSSF, mail your name(s), address, telephone number, e-mail address, and check made payable to the BSSF to:
Harold Charns, BSSF Treasurer, 255 States Street, San Francisco, CA 94114-1405.

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BROMELIAD SOCIETY INTERNATIONAL

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BROMELIAD SOCIETY
OF
SAN FRANCISCO

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See some of the beautiful bromeliads of Oaxaca this month!