

Winners and Losers at Stephen F. Austin Gardens: Surviving the Winter of 2009-2010[®]

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INTRODUCTION

Stephen F. Austin Gardens (SFA) comprises 52 ha (128 acres) of on-campus property at Stephen F. Austin State University, Nacogdoches, Texas. Stephen F. Austin Gardens is the umbrella organization responsible for the activities, growth, and development of four gardens. Stephen F. Austin Mast Arboretum was the first phase of the SFA Garden and is composed of 17 ha (10 acres). The SFA Mast Arboretum was initiated in 1985 and includes the horticulture facility of the Agriculture Department. The Ruby M. Mize Azalea garden is a 3.2-ha (8-acre) garden of primarily azaleas, camellias, and Japanese maples and was dedicated in April 2000. The 17-ha (42-acre) Pineywoods Native Plant Center (PNPC) was dedicated by Lady Bird Johnson in April 2000. Finally, the newest land resource, SFA's Recreational Trail and Gardens was dedicated in March 2010 and comprises 27.5 ha (68 acres) of mostly undisturbed forest. As the result of a donor with a vision, SFA Gardens is currently responsible for the development of a new 3.2-ha (8-acre) garden in the SW portion of this property, directly across from the Ruby M. Mize Azalea Garden. That garden is in the early stages of planning and the exact mission yet to be defined. Stephen F. Austin Gardens enjoys four full-time employees and two half-time employees, all funded by a combination of state and external grant funding. The SFA Gardens is a collector's garden, one that adds hundreds of new plants each year to the plantings. Those that survive, perform well, and impress visitors make their way into propagation and distribution. This program has introduced and promoted numerous plants through a wide range of print and electronic media <<http://arboretum.sfasu.edu>>. Many plants have been documented in past *International Plant Propagators' Combined Proceeding* (Creech, 2001; Creech, 2003; Creech, 2005; Creech, 2009).

SURVIVING RECENT CLIMATE EXTREMES

Nacogdoches is a small town of 30,000 citizens near the center of east Texas, about 100 km (60 miles) from the Louisiana border. Our region is part of the great swath of Pineywoods that runs from here to the east coast. Soils are generally well drained, slightly acidic, and the native flora is dominated by pine, oak, river birch, sweetgum, sycamore, Florida maple, hornbeam, elm, hackberry, pecan, and hickory. Nacogdoches lies on the Zone 8 a/b line with an average annual rainfall of 1219 mm (48 in.). Nacogdoches is about 800 km (120 miles) north of the Texas coast, but both Hurricane Rita in 2005 and Ike in 2008 managed to sustain 100+ mph winds in our city. Many towering pines and oaks were lost. June through August is characteristically hot and dry. Record low and high temperatures for the Garden were, respectively, 1 Sept. 2000 44.4 °C (112 °F) and 23 Dec. 1989 -17.8 °C (0 °F). Since that record low in 1989, winter low temperatures have been in the teens. On 10 Jan. 2010, the temperature dipped to a low of -12.2 °C (10 °F).

PLANT PERFORMANCE

The following list is comprised of notes taken on a few plants at SFA Gardens selected on the basis that there is limited prior evidence of response by these species to a winter as severe as this past one (three significant snowfall events, extended cold periods, numerous events below freezing, and a 10 Jan. 2010 low of -12.2 °C (10 °F)).

***Alocasia odora*, upright elephant ear, Asian taro.** Suffering no damage, this small yet architecturally perfect tropical boasts spade-shaped foliage held upright on sturdy stems. Plants typically reach 60 cm (2 ft) in our garden. Our specimens have been in the ground for 3 years.

***Acer coriaceifolium*.** Received by SFA Gardens as *C. cinnamomifolium*, this is a rarely encountered evergreen Chinese maple that suffered minor leaf damage and some tips were nipped. *Acer fabri* and *A. oblongum* both suffered leaf scorch, but no branch or bud damage, and growth was vigorous in the spring.

***Acer saccharum* subsp. *skutchii*, Mexico mountain sugar maple.** This maple suffered no winter damage. Our oldest tree was planted in 1994, a seedling grown from seed collected at Tamaulipas, Mexico, by John Fairey and Carl Schoenfeld. It is now over 12 m (40 ft) tall with a 0.5 m (20 in.) circumference at breast height. The tree generally produces butterscotch yellow to orange-red or yellow foliage in the fall depending on the year. Leaves hold well into the winter here. The tree is drought resistant, and possibly quite alkaline tolerant. While many seed are infertile (>90%), they are plentiful and those that do have viable embryos germinate readily after a few months of stratification.

***Bambusa* species, clumping bamboos.** While most died to the ground or lost most of the upper parts of the plant, they generally regenerated well in the spring. *Bambusa multiplex* fared best but suffered leaf burn and shoot damage and our largest plants of this species suffered the least. *Bambusa sinospinosa* survived after dying back to the ground, which it has done every year in our garden. Those frozen to the ground but regenerating in the spring include *B. tuldooides*, *B. malingensis*, *B. ventricosa*, and *B. eutuldooides*.

***Beschorneria*.** False red yucca (the name we are calling the species) suffered only modest winter foliage damage. This evergreen, clumping desert lily is proving to be excellent for dry shade. The strange flowering stalk — often bright red on some genotypes — produces oddly interesting bell-shaped greenish-burgundy flowers that turn into hanging green egg-sized fruit. These ripen to produce a bounty of black seed that readily germinate. We are primarily working with seedlings of a *B. septentrionalis* × *B. yuccoides* subsp. *dekosteriana* cross we have come to like in our garden. Once well established, and in the right spot, these plants have been bullet proof.

***Callistemon taxa*.** Bottlebrush is an exciting ornamental, one that we thought might have more potential here. However, this past midwinter low took most of taxa to the ground or badly damaged above-ground parts. *Callistemon viminalis* 'Hannah Ray' is one of our favorites but it too died to the ground. It resumed resume growth late in the spring. *Callistemon linearis*, an old plant from the JC Raulston

Arboretum, was unaffected. *Callistemon brachyandrus* also fared well with damage only to the foliage and smaller branches.

***Cestrum nocturnum*, night-blooming jasmine.** Greenish white tubular flowers are produced in abundance throughout the summer. Flowers are sweetly fragrant, emitting their soft perfume in the later hours of the day. Our plants have survived two mild winters and were equally as vigorous after the 2009–2010 Winter.

***Costus tropicalis*, *Costus afer*, spiral ginger.** Dead after the Winter of 2009–2010, but not a surprising loss in our garden as we have tried this genus before. *Costus* species do not typically overwinter for us with the exception of spring planted *C. speciosus*. Our strategy to offer better drainage and more sunlight did not improve survival.

***Dalea greggi*, Greg's dalea.** This plant suffered damage this winter to leaves and a few of the thinner branches. However, this small groundcover is proving to be a very durable and perhaps the ultimate green roof or container plant. This clone was rescued from the original Benny Simpson planting at Texas A&M University, Renner, Texas.

***Distylium racemosum* 'Ishi's Variegated'.** *Distylium racemosum* 'Ishi's Variegated' is an evergreen tree that suffered only minor tip damage and leaf scorching, but rebounded quickly in the spring. This clone was a gift from Mr. Ishi of Japan to the SFA Mast Arboretum years ago. It sports new growth often pure white with pinkish overtones, which fades to a spider-web green/white splotchy appearance, and finally changes to dark green in the summer. Our 3-m tree has become more impressive with time, a large shrub under the high canopy of pines. Other *Distylium* in the gardens were unaffected by the winter.

***Ensete ventricosum* 'Maurelii', Abyssinian red banana.** A single-trunk banana with 3-m (10-ft) leaves bathed in red failed to survive this winter. Often used in cooler climates as a container specimen or tropical annual and in our garden plants easily reach 3 to 4.6 m (10 to 15 ft) in one season. During previous milder winters *Ensete* typically suffer damage to the foliage only and recover fine.

***Furcraea foetida* 'Mediopicta'.** This spectacular spineless *Agave* relative native to Brasil failed to survive. Succulent leaves can reach up to 4 ft (1.2 m) in frost-free climates. Leaves have a spectacular, creamy-white stripe and are more vertical than horizontal in mature plants. Typically this is something we would keep in a container for several years, overwintering in a greenhouse, to produce a large plant, one more likely to survive a winter test.

***Gaillardia aestivalis* var. *winklerii*, Texas white firewheel.** It was unaffected this past winter, has been trialed for over 20 years at SFA and tested in Georgia, Florida, Arizona, North Carolina, Tennessee, and Connecticut. This endangered species is known from only one small area in southeast Texas. Stephen F. Austin Gardens has introduced 'Grape Sensation' with purple petals and dark purple center which comes true from seed. The species offers breeding opportunities for flower colors with petal hues varying from white, pink, rose, lavender, and purple, and flower centers varying from yellow to dark purple.

***Musa velutina*, pink velvet banana.** A “diminutive” banana reaching a relatively small 1.8 m (6 ft) and reliably producing small, seedy fruit with pink skin. While the flesh is sweet and tasty, its edible charm is compromised by a copious amount of seed. While our mother plants died this year, seedlings were, as usual, prolific in this heavily mulched plot.

***Nothaphoebe cavaleriei*.** This is a rare Chinese evergreen tree in the laurel family. Our sole specimen reached 9.1 m (30 ft) in 15 years and appeared on track to make a large tree. However, during this past winter, the tree was killed back to the main trunk and a few of the larger branches. It lost all its leaves and smaller branches, but it did survive and force vigorous new growth. This species sports lustrous dark green foliage and the leaf underside is a bright gray. As a result of this winter, we surmise the species is a candidate for Zone 9 and higher.

***Quercus rhysophylla*.** The loquat-leaved oak from the San Madre Oriental Mountains was introduced in the 1970s by Lynn Lowrey. Our oldest tree is 12.2 m (40 ft) and was planted in 1988 and is normally fully evergreen in our region. The 10 Jan. 2010 freeze did scald a few leaves and leaves dropped at the very top of the tree, but no twig or bud damage was evident. Our oldest tree, grows reasonably fast, and features coarse leather-like leaves that do not shed until new growth has emerged. This is an underutilized oak that is drought resistant and alkaline tolerant.

***Scutellaria suffrutescens* ‘Texas Rose’.** ‘Texas Rose’ is a pink-flowering skull-cap found in 1986 near Horsetail Falls, west of Monterrey, Mexico, by Lynn Lowrey and me. This plant suffered only mild leaf burn and rebounded quickly in the spring. Dry loving, performs well in sun, blooms on rainfall events, and is already quite popular in the trade.

***Taxodium distichum* var. *mexicanum*, Montezuma cypress.** This cypress suffered no damage. The bald cypress is well represented at SFA Gardens. The SFA Mast Arboretum has been collecting and evaluating bald cypress genotypes since the mid 1980s (Creech, 2003a; Creech, 2007a; Creech, 2007b). Over the years, the gardens have grown to include over 100 different genotypes, varieties, or selections. Selection T302, later named ‘Nanjing Beauty’, was provided by Professor Yin Yunlong of the Nanjing Botanical Garden, Nanjing, China, and was introduced into the SFA Mast Arboretum as 50 small bare-root cuttings in December 2001. Because this plant was registered at both the provincial and federal level in China, and it was popular in commerce, the decision was made not to initiate a patent, but instead to introduce the concept of clonal bald cypress to the marketplace. With the approval of Nanjing Botanical Garden, T302 was given the cultivar name of ‘Nanjing Beauty’. That clone has been cutting propagated and distributed to many locations. It has been proven to have good adaptation in a wide range of sites. We are currently working with six Chinese bred clones that are now in trialing agreements across the south. Readers interested in SFA’s *Taxodium* research can access the plants page of our website: <<http://pnpc.sfasu.edu>>.

***Thysanoleana maxima*, tiger grass.** This is an awesome ornamental grass with the look of bamboo but the size of a well-mannered ornamental grass. Established plants returned with less vigor and plants planted in Spring of 2009 did not survive the winter.

***Yucca cernua*, nodding yucca.** This yucca is an E.L. Keith discovery found in Jasper and Newton counties in southeast Texas and just described in 2003! No damage. It is apparently quite hardy in Zone 8, and deserves further testing in Zones 6 and 7.

***Xanthosoma maffafa* 'Aurea', lime zinger elephant ear.** The bright, yellow-green foliage brightens up shady areas. In our garden, plants are dug and potted for the next year as the vigor diminishes considerably in a normal winter. Surprisingly, one clump left in the garden returned and performed considerably better than in previous years.

***Zingiber officinale* 'Twice as Nice', common ginger.** 'Twice as Nice' is an exceptional selection of common ginger. Plants produce pine-cone-like, succulent bracts both basally and terminally. This cultivar has overwintered better for us than the species, but has diminished vigor each successive year. We would be hard pressed to call it truly hardy.

CONCLUSIONS

While certainly one of the worst winters in almost two decades, many plants fared better than expected. Older specimens fared better than younger ones and the fact that the mid-winter low came well into the winter may have allowed many plants to harden off properly before the hard freeze event.

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