

## ***Gaillardia aestivalis* (Walt) H. Rock. var. *winkleri* (Cory)**

Texas white firewheel was one of the first rare plants to fall under the rescue, research and reintroduction program of the SFA Mast Arboretum and Pineywoods Native Plant Center. A legitimate G5T2S2 species with special charm and grace, this is certainly a



poster child of the plant conservation crowd in our region of Texas. *Gaillardia aestivalis* is yellow-flowered while var. *winklerii* is generally white with a yellow center. While white flowers with yellow centers are the most commonly encountered, it's apparent that under cultivation there's a wide range of flower diversity available, with flowers sporting light to dark lavenders to purple rays, with yellow to and varying colors of dark centers. Global Range: *G. aestivalis* var. *winkleri* is found in only three counties along the West Gulf Coastal Plain of East Texas (Poole, et. al. 2007). In addition to Hardin county, the white fire wheel has been documented by Edwin Bridges and Jason Singhurst in Tyler County (2 locations) and Newton County (1 location). The records for these occurrences were provided to the Texas Natural Diversity Database at TPWD in 2007.

Type Specimen: Cory 20067 (Gray Herbarium, Harvard University); Vicinity of Fletcher Lake, about five miles south of Silsbee, Hardin County, Texas, September 15, 1936.

Synonymy: *Gaillardia lutea* Greene var. *winkleri* Cory

Current Federal Status: Endangered

Rescue target: *Gaillardia aestivalis* var. *winkleri* is a misunderstood species with vague details of taxonomy. Also, little information is known about the current status of accurate

localities, habitat structure, current distribution and range, potential range, primary threats, cultural needs, management requirements, and restoration potential.

Habitat: *G. aestivalis* var. *winkleri* occurs in deep loose sands in openings, sandy woodlands, and in pine-oak woodlands particularly along the unshaded margin.

Herbaceous associates include *Ambrosia artemisiifolia*, *Andropogon gerardii*, *Berlandiera* sp., *Chamaechrista fasciculata*, *Centrosema virginianum*, *Cnidoscopus texanus*, *Croton capitatus*, *C. glandulosus*, *Croptilon divaricatum*, *Diodia teres*, *Euphorbia cordifolia*, *E. corollata*, *Froelichia floridana*, *Heterotheca latifolia*, *H. pilosa*, *Lechea mucronata*, *Liatris elegans*, *Monarda punctata*, *Panicum brachyanthum*, *Ruellia humilis*, *Schizachyrium scoparium*, *Silene subciliata*, *Solidago nitida*, *Stylosanthes biflora*, *Tradescantia reverchonii*, *Trichostema dichtomum*, and *Vernonia texana* (TNHP 1993).

General Description: *G. aestivalis* var. *winkleri* is a perennial white-flowered variety of *Gaillardia aestivalis*, tap-rooted, with slender rhizomes, and is restricted to loose, white sandy soils in Hardin County, Texas. The variety *winkleri* does not co-occur with its closely related taxon, *G. aestivalis* var. *flavoriens* nor with the species *G. aestivalis* var. *aestivalis*.

An albino form of *Gaillardia pulchella* was described in 1914 by Cockerell. In a "Revision of the Genus *Gaillardia*" by Susan Fry Biddulph a paragraph was devoted to the white *Gaillardia* growing in Hardin County, Texas. Plant material was sent to her by V. L. Cory and P. A. Winkler, a landscape gardener and botanist both of Beaumont, Texas. Biddulph grew this plant in her garden and the rays and disks were pure white.

She states that, "Because *G. lutea* has also been collected in Hardin County, Texas, the 'white *Gaillardia*' may be only an albino form of that species" (Turner 1979).

Two collections of *G. lutea*, the yellow *Gaillardia*, are cited from Hardin County by Biddulph: the earlier had been collected at Fletcher in 1916 (Palmer 10569), and the other from the vicinity of Fletcher Lake (Cory 20067). Neither one of these collections were the yellow *Gaillardia*. During four years that Cory collected in Hardin County and during the many years Winkler botanized in Hardin County, neither had ever seen specimens of the yellow *Gaillardia*. Cory stated that "the white is not a form of the yellow as interpreted by Biddulph". In Cory's experience, "such forms occur only along with the species" (Turner 1979).

In October, 1945, in another nearby locality the white showed a different aspect in this locality which is a tributary of Village Creek, two and one-half miles west of Silsbee, and five miles north of the other localities. Most of the plants bore white flowers (Cory 49879) but in one limited locality there were several plants with predominantly pink rays (Cory 49885).

Since Cory's description of the variety, at least four additional collections, all from Hardin County in the vicinity of Silsbee along Village Creek have been made (Correll 31999, LL. Correll & Correll 36011, LL; Turner 9233, TEX; and Watson 1513, TEX).

Phenology: *G. aestivalis* var. *winkleri* flowers from May-June in the spring (TNHP 1993).

Population Biology: Information on pollinators, seed dispersal, and germination requirements is currently known by Dr. Tom Watson, University of Texas Herbarium, Austin.

Special Identifying Features: *G. aestivalis* var. *winkleri* is readily distinguished from all other Texas *Gaillardia* species by its white to pinkish ray florets. No other variety of *Gaillardia aestivalis* occurs in the immediate area, although var. *aestivalis* is known in southeast Texas. *G. aestivalis* var. *winkleri* is closely related to *G. aestivalis* var. *flavovirens* (Turner 1979). *Gaillardia aestivalis* var. *winkleri* is perhaps closest to *G. aestivalis* var. *flavovirens* (C. Mohr) Cronq., a taxon of eastern Texas and adjacent states. It possesses yellow disk and ray florets and is a perennial with rhizomes (at least in east-central Texas). Turner (1979) stated that var. *winkleri* is essentially an albino population (or populations) of var. *flavovirens* which has undergone at least some habitat selection (white sandy soils, versus the moistly red soils wherein occurs var. *flavovirens* and var. *aestivalis*) and presumably local, if not regional, isolation.

#### Opportunities for Horticultural

Improvement: Dawn Stover, Research Associate, has selected a color form (purple rays and dark center) and stabilized it through five successive generations. It has been disseminated as 'Grape Sensation'. Alan Armitage at the University of Georgia has also found promise with various color forms and plant habit characteristics.



Horticulturally, the species is very drought and heat tolerant and appears to return reliably in zone 8 and perhaps zone 7. Propagation by cuttings is best accomplished with young new growth and cuttings that are slightly hardened off. Dawn Stover has had success with seed over a fine seed bed and placed under mist. Once germinated, the seedlings

need to be moved to a drier location – they are prone to damping off so care must be taken to prevent too much moisture.

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