UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
E. "KIKA" DE LA GARZA PLANT MATERIALS CENTER
KINGSVILLE, TEXAS

And

TEXAS A&M UNIVERSITY-KINGSVILLE
CAESAR KLEBERG WILDLIFE RESEARCH INSTITUTE
SOUTH TEXAS NATIVES
KINGSVILLE, TEXAS

And

TEXAS A&M AGRILIFE EXTENSION SERVICE
RESEARCH STATION
BEEVILLE, TEXAS

NOTICE OF RELEASE OF BALLI GERMPLASM PROSTRATE BUNDLEFLOWER SELECTED PLANT MATERIAL

The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), E."Kika" de la Garza Plant Materials Center and Texas A&M University-Kingsville, Caesar Kleberg Wildlife Research Institute, *South Texas Natives*, and Texas A&M Agrilife Extension Service Research Station at Beeville, Texas announce the release of a selected plant material of prostrate bundleflower (*Desmanthus virgatus* (L.) Willd. var. *depressus* (Willd.) B. L. Turner) for the south Texas Ecoregion.

This plant will be referred to as Balli Germplasm prostrate bundleflower, and is released as a selected plant material class of certified seed (natural track). Seed of Balli Germplasm prostrate bundleflower will be identified by USDA NRCS accession number 9085381.

This alternative release procedure is justified because there are no existing Texas commercial sources of tested and adapted prostrate bundleflower for the south Texas ecoregion. The potential for immediate use is high, especially for upland wildlife plantings, critical site revegetation, roadside plantings, and for inclusion in range seeding mixes.

A. Proposed Variety Name and Temporary Designation:

BALLI GERMPLASM PROSTRATE BUNDLEFLOWER

B. Family, kind, genus and species:

Family: Fabaceae

Kind: prostrate bundleflower

Genus and species: *Desmanthus virgatus* (L.) Willd. var. *depressus* (Willd.) B. L. Turner

C. Origin and breeding history of the variety:

Collection Site Information: Balli Germplasm was collected by Dr. Richard Hoverson in 2000 from native plants located 0.8 km south of Edcouch-Elsa in Hidalgo County, Texas.

Breeding history: Plants evaluated in the initial trials were grown from the original seed collection. Breeder seed of the accession was grown from an isolated increase plot derived from the original seed collection. All seed increase plots were grown in isolation from other *Desmanthus virgatus* accessions and from wild populations of the species. No intentional breeding, selection or genetic manipulation has been carried out on this accession.

D. Objective description of the variety:

Description: Prostrate bundleflower is a decumbent or occasionally erect herbaceous perennial with stems 75 cm or longer. It has a cylindrical, woody, gnarled, dark brown, corky tap root up to 50 cm long and 1-2 cm in diameter. Stems are terete, red or brown, glabrous and shiny. Stipules have a conspicuous aricle. Leaves are bipinnate, alternate, 2.4-6.0 cm long, with 2-7 pairs of pinnae, and 11-30 mm long. Petiolar gland are present at the base of lower pair of pinnae only, and are less than 7 mm long. Leaflets are in 11-23 pairs, nearly sessile 2.4-7.0 mm long and 0.7-1.6 mm wide. Heads 1 per leaf axil, borne on peduncles 0.6-4.0 cm long. Bract subtending each flower 1.0-2.2 mm long, deltate, pale green with red tips. Floral buds are obovate, and apically rounded. Heads 6.0 -10 mm wide and 0.3-1.0 cm long containing 3-22 sterile, functionally male, and perfect flowers, sterile or male flowers sometimes absent. Flowers are white. Fruiting peduncles are 1.0-5.2 cm long, bearing 1-11 pods. Legumes dehiscent along both sutures; pods 2.2-8.8 cm long, 2.5-4.0 mm wide, linear, tips acute with 9-27 seeds per pod. Seeds 2.1-2.9 mm long, 1.4-2.7 mm wide, obliquely inserted, ovate, flattened, red or golden-brown in color (Luckow 1993). Prostrate bundleflower has about 62,000 seeds per pound.

Potential Uses: Balli Germplasm prostrate bundleflower is recommended for upland wildlife plantings, roadside plantings, critical site revegetation and for inclusion in range seeding mixes in south Texas. Balli Germplasm is a common native species of *Desmanthus.* It may be used to as a substitute for the non-native cultivar 'BeeWild' bundleflower (*Desmanthus bicornutus* S. Watson) that is often used in range seedings in south Texas. 'Beewild' can be problematic to manage on certain soil types (Richardson and King 2011), and often limits native grass establishment because of its stature and vigor. Balli Germplasm is more compatible with native grasses, and should allow for establishment of diverse seed mixtures, and maintenance of more diverse plant communities.

E. Evidence

Method of Breeding and Selection:

Initial Evaluation

As part of an effort to collect, evaluate, and release adapted germplasms of a variety of plants native to south Texas, personnel from USDA NRCS E."Kika" de la Garza Plant Materials Center (here after PMC) and *South Texas Natives* (here after STN) obtained seed of native populations of various bundleflowers (*Desmanthus* spp.) from across Texas. Although our focus was on *Desmanthus virgatus*, we also obtained some collections of *D. velutinus* and *D. reticulatus*. In January 2001, 73 accessions of bundleflower were seeded in the greenhouse. Fifty-seven accessions (represented by 3-10 plants of each accession and spaced 1 foot apart) were transplanted into an initial evaluation plot in April 2001 at the PMC in Kingsville, TX. Nine accessions did not live long enough for collection of evaluation data and are not presented (322411, 29624 O, 900529 B, 900529 A, 38701, 4691, 900538, 2406, 9076950). The surviving accessions were evaluated for field performance in 2002 (Table 1). Evaluations were based on survival, regrowth following winter dormancy, density of leaves per height of plant, resistance to diseases, insects, cold, heat and drought and seed production. Rankings were based on an ocular estimate with 1 being the best and 10 being the worst. Seed was collected from the top 16 accessions in 2001 (Table 1) and tested for germination. Seed from the top two performing accessions (9085381 and 9076962) was harvested and tested for active germination during the summer of 2002. Accession 9085381 produced 68.7 grams of seed and Accession 9076962 produced 31.8 grams of seed during the 2002 growing season. The seed harvested during 2002 from the two accessions was germination tested without any scarification in March 2003. Germination tests were conducted using 12 hours of dark at 16ºC and 12 hours or light at 30ºC. Seed from accession 9085381-Hidalgo County had 28% germination in 28 days and 9076962-Cameron County had 22% during the same time. Overall, accessions 9076962 and 9085381 were the best performing accessions in the initial evaluations.

Table 1. Field performance of prostrate bundleflower from the initial field evaluation plot transplanted in April 2001 and evaluated throughout 2002 located in Kingsville, TX on a Cranell sandy clay loam soil. Survival and regrowth are a percent while foliage density, disease resistance, and seed production are ocular estimates with 1 being the best.

Accession Number	Source (County)	% Survival	% Regrowth	Foliage Density	Disease Resistance	Seed Production	Seed (grams)
2407 A	Victoria	70	80	6.2	6.2	7.3	-
29624	Washington	0	seedlings	4.3	3.5	6.3	-
9076962	Cameron	100	100	4.5	5.0	6.0	31.8
9076959	Kleberg	40	62	5.0	5.7	4.0	-

Table 1. Continued… Field performance of prostrate bundleflower from the initial field evaluation plot transplanted in April 2001 and evaluated throughout 2002 located in Kingsville, TX on a Cranell sandy clay loam soil. Survival and regrowth are a percent while foliage density, disease resistance, and seed production are ocular estimates with 1 being the best.

Accession Number	Source (County)	% Survival	% Regrowth	Foliage Density	Disease Resistance	Seed Production	Seed (grams)
9076958	Kleberg	60	30	6.8	7.2	0	-
477961 B	Medina	100	5	7.7	7.7	0	-
29583	Tom Green	100	10	8.3	7.2	0	-
2409	Knox	50	70	5.5	5.3	6.0	-
4703 A	Waller	100	90	5.3	5.0	7.0	5.5
4726 A	Austin	100	73	4.8	4.7	4.3	32.5
85332	Atascosa	75	30	6.3	6.5	-	-
29634	Lee	100	40	5.8	5.8	5.3	-
4704 A	Waller	100	68	4.5	4.8	6.7	-
38828	Wilson	90	90	5.0	5.2	5.7	22.4
9085381	Hidalgo	100	90	4.0	4.0	3.3	68.7
2407 B	Victoria	71	80	6.3	6.3	5.0	6.4
29665	Willacy	50	75	5.0	5.0	5.0	37.0
29698 B	Caldwell	83	40	6.0	6.0	7.7	2.9
38781	Schleicher	100	20	6.5	6.7	0	-
76961 A	McMullen	83	25	6.5	6.6	8.0	4.4
900525 B	Comal	100	50	6.5	6.5	5.0	-
29698 O	Caldwell	100	25	6.7	6.7	0	-
4689	Ft. Bend	83	58	5.2	5.2	5.8	10.1
9076957	Kleberg	0	seedlings	5.0	4.2	7.5	-
29623	Walker	0	seedlings	5.3	4.5	8.0	-
900526	Edwards	33	10	7.2	7.5	0	-
29662	Fayette	0	seedlings	5.0	2.5	0	-
38703 B	Williamson	0	seedlings	5.5	2.5	0	-
53724	Nueces	100	27	7.0	7.2	8.0	3.1
38746	Falls	0	seedlings	5.5	3.0	0	-
29624 R	Washington	50	70	6.0	5.7	4.0	-

Table 1. Continued… Field performance of prostrate bundleflower from the initial field evaluation plot transplanted in April 2001 and evaluated throughout 2002 located in Kingsville, TX on a Cranell sandy clay loam soil. Survival and regrowth are a percent while foliage density, disease resistance, and seed production are ocular estimates with 1 being the best.

Accession Number	Source (County)	% Survival	% Regrowth	Foliage Density	Disease Resistance	Seed Production	Seed (grams)
38726 B	Burleson	50	20	7.7	7.7	0	-
29598	Bee	100	50	8.0	8.0	5.0	6.1
2408	Texas	100	50	6.0	6.5	6.7	8.8
38700 B	Comal	25	5	8.3	8.0	0	-
9053737	Jim Wells	100	35	6.7	6.7	0	-
38720	Travis	100	30	6.5	6.8	0	-
35758 B	Guadalupe	100	80	5.7	6.0	7.0	-
9085336	Kerr	100	56	5.7	6.2	0	-
29698 R	Caldwell	100	70	5.7	5.8	5.7	-
29603	Hays	0	seedlings	5.0	5.0	0	-
43213	Walker	100	80	4.8	5.3	5.7	-
9053735	Kenedy	100	30	6.7	6.8	0	-
29593	Williamson	75	5	7.5	7.5	0	-
29653	Motley	66	68	5.3	5.3	4.0	-
38824	Kendall	50	40	7.3	7.3	0	-
4705	Williamson	100	15	6.7	7.0	0	-

Advanced Evaluation

An advanced evaluation plot was planted in 2003 at the PMC in Kingsville, TX. We evaluated accessions 9076962 and 9085381 for field performance of these two accessions in 2003 from both the newly planted advanced evaluation plot and the older initial evaluation plot (Table 2). The original plants in the initial evaluation plot had little regrowth in 2003. However, numerous seedlings emerged in the plots from fallen seed, indicating acceptable seed fill and germination.

The two selected accessions had good field performance in the advanced evaluation plots and seed was harvested from these plots. Some seed was scarified to assess the impact of scarification on increasing germination. Scarification was done from 0 to 90 seconds in 10 second intervals in a sandpaper drum scarifier. Both light and dark seeds were tested to see if there was a difference in germination. Seeds started to split open after 60 seconds in the scarifier. Ten seconds was all that was needed to significantly increase seed germination. The

color of the seed did not affect seed germination (Table 3). The initial evaluation plot was discontinued early in 2004 due to a lack of regrowth from the original plants.

Table 2. Field performance of prostrate bundleflower from the field plots planted during 2001 and 2003 at the E. "Kika" de la Graza Plant Material Center Kingsville, TX and evaluated throughout 2003. Survival and regrowth are a percent while foliage density, disease resistance, and seed production are ocular estimates with 1 being the best.

Accession Number	Source (County)	Year planted	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Disease Resistance	Seed Production	Grams Harvested
9076962	Cameron	2001	100	30	7.0	7.0	7.0	8.0	n/a
9085381	Hidalgo	2001	100	40	6.5	6.5	6.5	5.0	n/a
9076962	Cameron	2003	34.5	n/a	5.2	5.2	5.2	6.0	119.8
9085381	Hidalgo	2003	71.0	n/a	5.5	5.5	5.5	4.6	204.9

Table 3. Percent germination at 3, 15, and 28 days tested for light and dark seed evaluating different levels of scarification on the germination for Accession 9085381 prostrate bundleflower from the seed harvested in 2003 tested under 12 hours of dark at 16ºC and 12 hours of light at 30ºC.

Scarification Time	Seed Color	3 Days %	15 Days %	28 Days %
0 sec	light	8	18	18
0 sec	dark	4	10	12
10 sec	light	92	94	94
10 sec	dark	70	86	86
20 sec	light	94	96	96
20 sec	dark	86	96	96
30 sec	light	98	98	98
30 sec	dark	100	100	100
40 sec	light	96	100	100
40 sec	dark	98	98	98
50 sec	light	98	98	98
50 sec	dark	94	94	94
60 sec	light	98	98	98
60 sec	dark	94	98	98
70 sec	light	92	92	92
70 sec	dark	96	96	96
80 sec	light	94	94	94
80 sec	dark	98	97	98
90 sec	light	90	90	90
90 sec	dark	90	90	90

In June of 2004, seed of accession 9076962 that had fallen on the weed mat in 2003, and over-wintered, was collected and germination tested. After 5 seconds of scarification, germination was 95% in 4 days and 96% after 28 days. It appears that seed of prostrate bundleflower has good over-wintering traits and thus, may be collected off the ground or weed-mat without impairing its germination abilities. A commercial seed producer may want to follow a conventional harvest with a vacuum harvest to maximize seed yields.

An evaluation of three accessions: Cameron County – 9076962, Hidalgo County – 9085381, and Maverick County – 9090608 was conducted for field performance in July, 2004 at the PMC Kingsville, TX in order to evaluate a new collection of prostrate bundleflower with the 2 top performing accessions from previous evaluations (Table 4). While the Maverick County collection and the Cameron County collection performed well, the Hidalgo collection had superior growth, density, and seed production. Seed was harvested in 2004 from all three accessions in the evaluation plot. This harvest was germination tested in August of 2005 (Table 5).

Table 4. Field performance of prostrate bundleflower from plots evaluated at the E. "Kika" de la Garza PMC Kingsville, TX in July 2004. Regrowth are a percent while foliage density, disease resistance, and seed production are ocular estimates with 1 being the best.

Accession Number	Source (County)	% Regrowth	Plant Vigor	Foliage Density	Disease Resistance	Seed Production
9076962	Cameron	100	5.0	5.0	5.0	5.0
9085381	Hidalgo	100	3.0	3.0	3.0	3.0
9090608	Maverick	new	5.0	6.0	5.0	6.0

Table 5. Grams of seed harvested in 2004 from the evaluation plot of prostrate bundleflower planted at the E. "Kika" de la Garza PMC Kingsville, TX, and percent germination at 3, 7, and 28 days tested under 12 hours of dark at 16ºC and 12 hours of light at 30ºC results including 2 different scarification treatments from the seed tested in August of 2005.

Accession Number	Date Harvested	Grams Harvested	3 Days %		7 Days %		28 Days %	
Length of scarification time in seconds			0	5	0	5	0	5
9076962	June	48	1	95	3	97	3	97
	November	8	15	65	17	69	20	70
9085381	June	59	2	97	3	97	5	97
	November	16	3	27	3	29	5	29
9090608	June	18	0.7	80	1	85	4	91
	November	0.4*	-	-	-	-	-	-

*Not enough seed to test

At the end of 2005, one superior performing accession, 9085381 from Hidalgo County was chosen out of seventy-four original accessions of *Desmanthus* spp. Accession 9085381-Hidalgo had more regrowth, greater density of foliage, and better seed production than most accessions in the evaluation.

Accession 9085381 was also included in a series of evaluations during 2006 and 2007 located approximately 20 kilometers south of Laredo, TX on a Lagloria silt loam soil type and a second location approximately 7 kilometers northeast of Beeville, TX on a Parrita sandy clay loam soil type (USDA-NRCS 2012). At both locations accessions were started from transplants and were evaluated using ocular estimations of 6 criteria with 1 being the best and 10 being the worst. At both locations accession 9085381 outperformed all other accession of *Desmanthus virgatus* evaluated (Table 6).

Table 6. Summary 2006 and 2007 evaluations conducted near Laredo, TX on a Lagloria silt loam soil and near Beeville, TX on a Parrita sandy clay loam soil. All evaluations are ocular estimates with 1 being the best and 10 being the worst.

Accesion Number	Location	Vigor	Foliage Density	Uniformity	Seed Production	Forage Production	Height
9085381	Laredo	1.2	1.4	1.2	1.3	1.3	1.9
9088705	Laredo	1.9	2.2	1.3	1.5	2.2	2.1
9088949	Laredo	2.5	2.4	1.1	2.3	2.5	2.1
9090608	Laredo	2.9	3.0	1.2	2.3	3.0	2.4
9091932	Laredo	2.6	2.9	1.2	1.9	3.0	2.2
9091959	Laredo	2.0	2.3	1.4	2.2	2.2	2.1
Beewild	Laredo	1.2	2.0	1.0	1.0	1.0	1.0
Illinois	Laredo	5.8	5.7	1.3	8.8	8.0	5.2
9088946	Laredo	2.7	2.7	1.1	1.5	3.1	2.2
9089018	Laredo	2.1	2.6	1.3	2.1	2.6	2.0
9089013	Laredo	2.8	2.7	1.2	2.4	2.5	2.1
Beewild	Beeville	1.7	2.7	1.0	1.0	1.0	1.0
9091959	Beeville	5.0	5.0	1.7	4.7	5.7	5
9091932	Beeville	4.7	4.7	1.7	4.5	5.0	4.7
9090608	Beeville	4.2	4.5	1.5	3.2	4.0	4.2
9089018	Beeville	3.8	4.0	1.3	3.3	4.2	4.3
9089013	Beeville	3.8	4.3	1.5	3.7	4.7	4.2
9088949	Beeville	4.7	4.8	1.8	5.0	5.2	4.8
9088946	Beeville	5.0	4.8	1.7	4.4	5.0	4.8
9088705	Beeville	3.7	3.8	1.3	3.3	4.2	3.8
9085381	Beeville	1.8	1.3	1.0	1.2	1.5	2.0

During 2010 and 2011 accession 9085381 was included in another advanced evaluation plot study at the STN Farm in Kingsville, TX on a Clareville clay loam soil. This evaluation included 5 other accessions, including Hondo Germplasm velvet bundleflower (*Desmanthus velutinus* Scheele), 'Sabine' Illinois bundleflower (*Desmanthus illinoenisis* (Michx.) MacMill. Ex B.L. Rob. & Fernald), and two *Desmanthus virgatus* selections (USDA-NRCS 2008). During the first year after planting, accession 9085381 was clearly the superior accession based on its ability to remain growing through the heat of the summer while all others selections in this trial defoliated and initiated summer dormancy (Table 7). From a harvest standpoint 9085381 had the growth form most conducive to mechanical harvest among the *Desmanthus virgatus* entries. In year two we measured seedling emergence in the row furrows of the experiment. Accession 9085381 produced an average of 17 seedlings/ft^2 underneath the previous year's canopy, indicating an excellent ability to reseed itself and persist on a planting site. None of the other four accessions/releases evaluated produced volunteer seedlings in year two. In year two there was also no survival from either Sabine Illinois bundleflower or Hondo Germplasm velvet bundleflower. All of the other accessions had 100% year two survival.

Table 7. Summary 2010 and 2011 evaluations conducted in Kingsville, TX on a Clareville clay loam soil. All evaluations are ocular estimates with 1 being the best and 10 being the worst.

Accession Number	Vigor	Foliage Density	Uniformity	Seed Production	Forage Production
Sabine	8.7	8.1	3.6	7.8	8.3
Hondo	5.3	5.6	2.8	3.3	5.9
9085381	2.5	2.3	2.1	3.2	4.1
9090608	7.8	8.4	3.4	6.4	8.6
9093239	6.1	5.1	2.5	4.1	5.7

Seed Increase

Seed was harvested from a small seed increase plot in 2005 of accession 9085381. This seed was germination tested in September of 2009 (Table 8). All harvests exhibited hard seed and low germination (<10%) but were increased significantly (80-89%) with five seconds of scarification in a sandpaper drum.

Original seed from accession 9085381 was planted in the STN green house in the winter of 2011. Six hundred of these plants were transplanted in May of 2012 at the STN facility in Kingsville, TX. From these 600 plants we are able to make two harvests in 2012, yielding a combined total of 775 lbs pure live seed/acre in a single year. The first harvest was made on two separate dates to assess the ability of Balli Germplasm for after-harvest ripening (seed was cut before it was fully mature). We found delaying harvest for two days substantially increased yields and seed quality. The seed harvested during 2012 had an average pure live seed of 85% (Table 9).

Table 8. Seed harvested during 2005 and tested in September 2009 under 12 hours of dark at 16ºC and 12 hours of light at 30ºC for the total percent germination at 3, 7, and 28 days seeds tested were collected from the seed increase plot of accession 9085381 prostrate bundleflower.

Date Harvested	Grams Harvested	Scarification	3 Days %	7 Days %	28 Days %
8-9-05	19.4	0-sec	0	3	5
		5-sec	22	81	81
8-24-05	44.7	0-sec	0.7	2.0	3
		5-sec	83	87	87
9-28-05	0.4	0-sec	4	8	8
		5-sec	68	88	88
12-13-05 (vac off mat)	40.0	0-sec	5	5	7
		5-sec	60	89	89

Table 9. Seed harvested from 600 plants during 2012 from seed increase plots located at STN facilities in Kingsville, TX.

Date Harvested	Bulk Harvested (#)	Pure Live Seed of Harvest
6/16/12	5	79.12
6/18/12	18	89.28%
8/7/12	18.5	85.25%

Seed Production, Harvest, and Cleaning

Seed production for Balli Germplasm can be started from transplants or direct seeded on beds or flat ground. Seed is best harvested using a combine with a grain-style header. The seed of Balli Germplasm dehisces at maturity, however about 75% of the seed ripens uniformly. Seed can be harvested before peak ripeness; however, harvesting too early has resulted in lower seed quality making the added yields negligible. There are a host of insects that feed on the seed of prostrate bundleflower which can continue feeding on and damaging seed after harvest. In order to reduce the detrimental effects of these insects it is recommended that following harvest and drying, seed should be placed in a freezer for a minimum of 48 hrs to kill seed-feeding insects. It is possible that an insecticide treatment prior to harvest may eliminate this problem however this has not been tested. Following harvest, trash can be removed using a Clipper seed cleaner. After the trash has been removed, seed can be further cleaned using a gravity table. This will remove light (immature) seed, which will greatly increases purity of the seedlot.

G. Area of Adaptation

Balli Germplasm is likely to perform best in the Rio Grande Plain, Gulf Coast Prairies and Marshes, and Sand Sheet ecoregions. Balli Germplasm may also be adapted to areas of the southern Edwards Plateau and western portion of the Trans Pecos Mountains and Basins ecoregions.

H. Procedure for maintaining stock classes of seed

The parent population of Balli Germplasm will be maintained by *South Texas Natives* in conjunction with the Kingsville PMC. G0 seed is the seed that has been harvested from isolated plantings of the parent line. G1 seed is that which is harvested from plantings made using the G0 seed. G1 seed can be replanted for production of G2 seed. Increase of the variety using G2 seed is prohibited.

I. Additional restrictions, etc.

All commercial seed fields of Balli Germplasm must be located in Texas and isolated from other cultivated varieties and wild populations of the *Desmanthus virgatus* by a minimum of 1,320 feet. Care should be taken to carefully inspect production areas for volunteer populations of *Desmanthus virgatus.* Release of this variety will be limited to a single grower, with preference given to those who can provide production locations meeting isolation requirements.

G0 and G1 seed fields have a 7 year production limit.

Will application be made to the Plant Variety Protection Office? YES__ NO_X__

If yes will the application specify that the variety is to be sold by variety name only as a class of certified seed? YES__ NO___

Royalty distribution: A royalty of 2% of net sales of Certified Pure Live Seed sold will be collected by the TAMU Office of Technology and Commercialization, and placed in a project account with discretionary spending authority requiring approval for expenditures by the *South Texas Natives* Project Director, Manager of the USDA NRCS E. "Kika" de la Garza Plant Materials Center, and Resident Director of the Texas AgriLife Research Center Corpus Christi for the benefit of native seed development research for south Texas.

Ecological Considerations and Evaluation: An Environmental Evaluation of Plant Materials Releases was completed using guidelines established by NRCS, and the best available information for this species. Results of this evaluation determined that Balli Germplasm prostrate bundleflower was suitable for release based on the criterion contained in this document. This conclusion is mainly because prostrate bundleflower is a naturally occurring species in Texas and planting it would therefore not constitute an introduction of an exotic species into local ecosystems. Any negative impacts on other native plant species would likely be minimal to

non-existent. Also, release of this species will make available an additional native species for rangeland planting, will provide a good source of forage for deer, a seed source to upland avian wildlife species and provide ecological benefits by maintaining and contributing habitat that harbors beneficial insects and butterflies (Everitt et al. 1999).

Conservation Use: Balli Germplasm prostrate bundleflower is recommended for upland wildlife plantings, critical site revegetation and for inclusion in range seeding mixes in south Texas.

Availability of Plant Materials: Breeder Seed will be maintained by *South Texas Native* and USDA NRCS E. "Kika" de la Garza Plant Materials Center, Kingsville, Texas. A non-exclusive license agreement for production of South Texas Germplasm will be negotiated with the assistance of the Texas A&M University System Office of Technology and Commercialization.

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Prepared by:

John Lloyd-Reilley
Manager

Shelly Maher
Soil Conservationist

USDA-NRCS E.”Kika” de la Garza Plant Materials Center
3409 N. FM 1355
Kingsville, TX 78413

Anthony Falk
Research and Evaluation Coordinator

Forrest S. Smith
Dan L Duncan Endowed Director

William R. Ocumpaugh, PhD.
Research Associate

South Texas Natives
Caesar Kleberg Wildlife Research Institute
Texas A&M University-Kingsville
MSC 218, 700 Univ. Blvd.
Kingsville, TX 78363

Figure 1. Collection, evaluation, and experimental planting sites used in development of prostrate bundleflower.

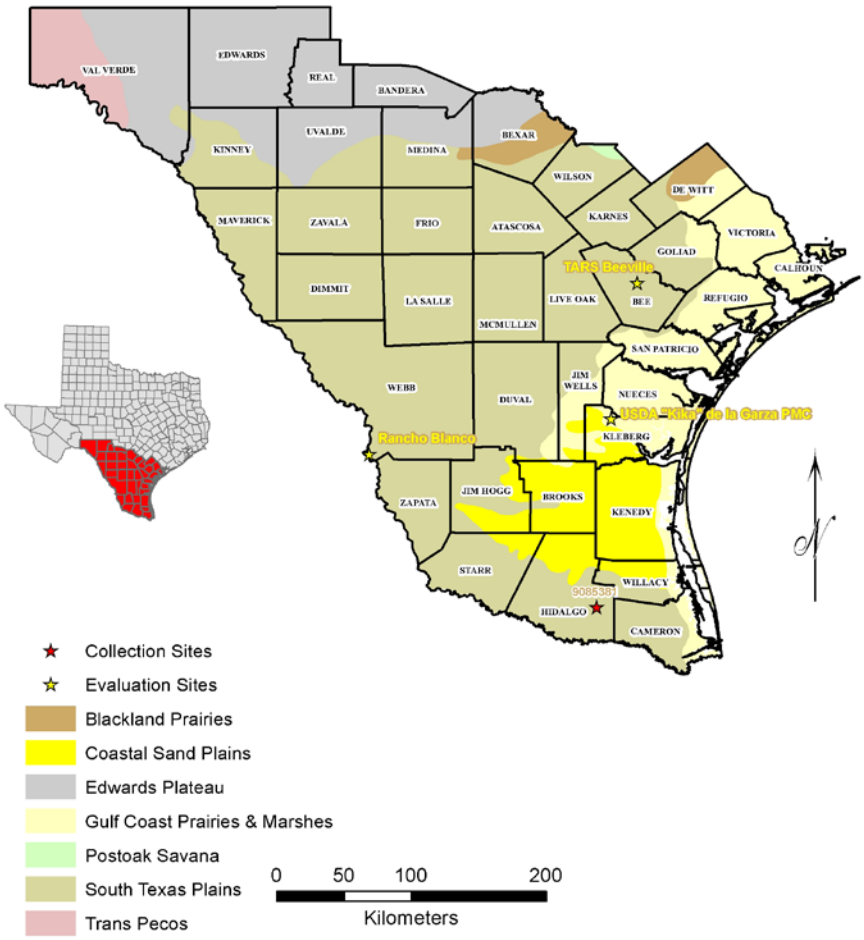

Figure 2. Seed increase field Balli Germplasm prostrate bundleflower.

Figure 3. Representative plant of Balli Germplasm prostrate bundleflower.

Figure 4. Cleaned seed harvested from Balli Germplasm prostrate bundleflower

Signatures for release of:
BALLI GERMPLASM PROSTRATE BUNDLEFLOWER
Desmanthus virgatus (L.) Willd. var. *depressus* (Willd.) B. L. Turner

_____ _____
Dr. Fred C. Bryant Date
Leroy Denman, Jr. Director of Wildlife Research
Caesar Kleberg Wildlife Research Institute
Texas A&M University-Kingsville
Kingsville, TX

_____ _____
Dr. George Allen Rasmussen Date
Dean
Dick and Mary Lewis Kleberg College of
Agriculture, Natural Resources and Human Sciences
Texas A&M University-Kingsville
Kingsville, TX

_____ _____
Dr. Craig L. Nessler Date
Director
Texas A&M Agrilife Extension Service
College Station, TX

_____ _____
Salvador Salinas Date
Texas State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Temple, TX

_____ _____
Terrell Erickson Date
Director
Ecological Sciences Division
United States Department of Agriculture
Natural Resources Conservation Service
Washington, D.C.