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Madison, Wisconsin: University of Wisconsin-Madison Arboretum, 1945

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Mature Plants Transplanted into Prairie Area
of Grady Tract in Season of 1945

The word "mature" is here employed for those plants other than seedlings, many of which were likewise set out in 1945, as indicated elsewhere in this report. The numerals in parentheses following the Latin plant name indicate into which one of the numbered 168 subdivisions of the prairie the plant in question was moved. The common names of the plants are given in parentheses below the Latin name. The numbers to the left of the Latin name indicate the number of individuals, or in some cases clumps, which were transplanted.

- 16 Andropogon scoparius-small-(44, 58)
(Little blue-stem)
- 75 Aster laevis (58, 59)
(Smooth Aster)
- 2 Baptisia leucophaea (bracteata) (40, 58)
(Cream wild-indigo)
- 2 Baptisia leucantha (location uncertain)
(White wild-indigo)
- 10 Blephilia ciliata (134)
(Blephilia)
- 54 Cacalia suaveolens (166)
(Halberd-leaved Indian plantain)
- 17 Cacalia tuberosa (~~45~~^{29,30}, 114, 125)
(Indian plantain)
- 31 Eryngium yuccifolium (31, 40, 58, 87)
(Rattlesnake master)
- 15 Geum triflorum (29)
(Old man's beard)
- 1 Habenaria leucophaea (126)
(Prairie white-fringe orchid)
- 130 Helianthus occidentalis (59)
(Sunflower)
- 78 Helianthus rigidus (59)
(Sunflower)

- 10 Hierochloe odorata (31)
(Sweetgrass)
- 317 Liatris pycnostachya (124,¹²⁵ 126, 127, 134, 135)
(Gayfeather)
- 159 Liatris spheroides (13, 58, 59, 60)
(Blazing star)
- 3 Lilium philadelphicum var. andrium (40)
(Wood lily, wild orange-red lily)
- 12 Lobelia cardinalis (40, 143)
(Cardinal flower)
- 1 Partenium integrifolium (58)
(American feverfew)
- 37 Pentstemon digitalis (47, 48, 114)
(White foxglove Pentstemon)
- 163 Petalostemum purpureum (13, 16, 22, 31, 39, 48)
(Purple prairie clover)
- 35 Phlox pilosa (22, 23, 114, 126)
(Downy phlox, marsh pink)
- 15 Polemonium reptans (22, 41)
(Jacob's ladder, Greek Valerian)
- 5 Prenanthes racemosa (40, 125)
(Marsh rattlesnake-root)
- 19 Solidago rigida (58, 59)
(Stiff goldenrod)
- 4 Solidago speciosa (58)
(Goldenrod)
- 2 Solidago speciosa var. angustata (58)
(Goldenrod)
- 6 Valeriana ciliata (125)
(Valerian)
- 15 Zizia aptera (cordata) (114, 115, 125, 126)
(Heartleaf Alexanders)

Total 1821

In the seasons of 1943-44 494 plants were set out in this area making a grand total of 1830 plants. This was done entirely and without assistance by this writer.

Seedlings Set Out in Prairie Area
of Grady Tract in Season of 1945.

Seed was collected in the fall of 1944, and in November was stratified in flats (in sandy soil). In stratification the seed is planted, the soil watered moderately and its surface covered with a layer of waxed paper in order to prevent excessive drying. The flats are then wrapped in kraft paper and covered with screening to protect the seeds from mice. The flats were then placed in one of the unheated Arboretum barracks and left until the following March 24 at which time the flats were brought into the greenhouse and the seedlings allowed to develop. This was undesirably early, but the unprecedentedly warm March of 1945 so raised the temperature in the barracks that it was feared the seeds would germinate while still covered by the waxed paper. Seedlings were held in the greenhouse until the latter part of May, when it seemed that danger of frost was past. However, a severe late frost did occur and many of the seedlings were killed down. Some, such as those of Kuhnia failed to recover while others, e. g. Silphium, sent up new leaves in most cases.

It is felt that it will not be possible to judge of the failure or success of these plantings for several years, for mature plants are the criterion of success.

In the following list the numerals in parentheses indicate into which one of the numbered 168 subdivisions of the prairie the seedling in question was moved. The common names of the plants are given in parentheses below the Latin name. The numbers to the left of the Latin name indicate the number of individual seedlings which were transplanted. (In most cases seedlings were set out in paper pots, since there was less disturbance to their roots in this way.)

- 1 Astragalus canadensis (29)
(Milk vetch)
- 1 Baptisia leucophaea (bracteata) (31)
(Cream wild-indigo)
- 47 Baptisia leucantha (23, 24, 25, 27, 29, 31, 86, 87)
(White wild-indigo)
- 66 Echinacea pallida (42)
(Pale-purple coneflower)
- 28 Eryngium yuccifolium (31, 58, 87)
(Rattlesnake master)
- 54 Geum triflorum (22, 38, 45)
(Old man's beard)
- 25 Helianthus occidentalis (29, 58)
(Sunflower)
- 21 Helianthus rigidus (49, 58)
(Sunflower)
- 66 Kuhnia eupatorioides (16, 17, 27, 29)
(False boneset)
- 74 Parthenium integrifolium (10, 17, 31, 40, 48, 86, 87)
(American feverfew)
- 13 Petalostemum purpureum (29, 86, 87)
(Purple prairie clover)
- 95 Silphium laciniatum (22, 24, 25, 31, 40, 42, 48)
(Compass plant)
- 92 Silphium terebinthinaceum (13, 40, 48, 49, 87)
(Prairie dock)

Total 583

This figure combined with the 1830 mature plants gives a total of 2413 plants, mature and seedlings, which have been set out on the area since work began in 1943.

A further report on seedlings of 1945 will be presented in 1946 when it should be possible to judge somewhat more accurately the results of the plantings.

Report on Low Prairie of Grady Tract ----- 1945.

H. C. Greene.

The 1945 growing season, like that of 1944, was a favorable one, with considerable precipitation distributed throughout the spring, summer and fall. Frosts in the last week of May and the first week of June seemed to have set back plant growth very decidedly, but this was not apparent later in the season. Plants of Lespedeza capitata and seedlings of Kuhnia eupatorioides, Silphium laciniatum, and Silphium terebinthinaceum were particularly hard hit, but all except the Kuhnia eventually recovered. The very early spring of 1945 was abnormally warm, but this had no evident influence on the development of the plants in this area since the temperature of the wet soil remained low.

Since in 1945 there was no spring burn, such as occurred accidentally over most of the prairie in 1944, the spring and early summer aspect of the prairie differed markedly from that of the preceding season. The most striking feature was the absence of a fresh green color and the prevalence of more subdued hues, accentuated by the extensive flowering of red top grass (Agrostis alba) over all the central portion of the area. In the sandier portions the persistence until fairly late in the season of dead overwintered plants of Aristida tuberculosa and Panicum implicatum in vast numbers also made for sombreness.

So far as could be judged quack grass flowered much less profusely in 1945 than in 1944, while the converse was true for red top. Whether there was an actual gain of red top at the expense of quack grass is questionable.

There were relatively few plants of ragweed (Ambrosia artemisiifolia) in 1945, as contrasted with the enormous numbers which

sprang up following the burn in 1944. A most noticeable feature was the vigorous early season development of the annual Erigeron ramosus in the drier central portion of the prairie, the number of flowering plants certainly being far in excess of 1944. This was followed later in the summer by a phenomenal abundance of profusely flowering plants of Gnaphalium polycephalum, likewise an annual. This latter occurred not only in the Arboretum, but throughout the countryside near Madison, and perhaps even more extensively. The reason for such a massive development of Gnaphalium is not apparent. The seed is small and, one would suppose, would not be viable over long periods, but it is difficult to imagine that there could have been a sufficient set and subsequent "take" of viable seed in 1944 to account for the almost solid stand of 1945.

The growth of Canada thistle in the central eastern portion of the prairie, while vigorous, did not seem to be spreading perceptibly beyond the bounds of 1944. On the other hand, large numbers of first year rosettes of the biennial field thistle, Cirsium discolor, came up in the wetter central and eastern parts of the prairie, and these will present a management problem when the plants come to maturity in 1946. While this plant is not undesirable in moderate numbers, in abundance it might become an established pest. It will probably be advisable to top most of these plants in 1946, at the time of flowering.

Adjacent to the Canada thistle mentioned above there was a most vigorous development of alsike (Trifolium hybridum) which was so great as to overshadow many of the smaller plants. A certain amount of alsike was noted in 1944, but it was insignificant beside the growth of 1945. There was also a considerable spread of Panicum virgatum in this section.

The small patch of untouched prairie in the southeastern corner also had a heavy stand of Gnaphalium polycephalum, and an extensive growth of Antennaria fallax preempted much of the ground space. Although no precise measurements were made, it seemed more abundant than in 1944. Of the many plants of Liatris spherioidea in this section decidedly fewer bloomed in 1945 than in 1944.

As indicated in another portion of this report, a great many seedlings and mature plants were set out on the prairie in 1945. The report on the development of these is being deferred until 1946 when it should be possible to determine the percentage of survival. Certain broadcast seedings and certain grass seed plots were set up in the late fall of 1945. These also will be reported on in 1946.

The listings which follow comprise brief accounts of the development and persistence of the plantings made on the prairie in 1943 and 1944, mostly in 1944. The numerals in parentheses which follow the Latin plant name indicate into which one of the numbered 168 subdivisions of the prairie the plant in question was moved. The common name of the plant is given in parentheses below the Latin name:

Andropogon furcatus (48, 49)
(big bluestem)

Of the 6 turfs of this plant and the 7 turfs of Sorghastrum nutans only 2 or 3 could be located and the identity of these was uncertain, since they did not flower.

Andropogon scoparius (59)
(little bluestem)

The 1 small turf that was set out could not be located, and presumably did not survive.

Blephilia ciliata (23)
(blephilia)

3 or 4 of the 6 transplants flowered. (Besides these, perhaps a dozen plants were observed growing naturally in Area 102. These were missed in the survey of 1944.)

Cacalia suaveolens (16)
(Halberd-leaved Indian plantain)

The 1 transplant came up, but did not flower in 1945.

Cacalia tuberosa (23, 40, 126)
(Indian plantain)

Of a total of 16 plants (4 set out in 1943) 9 bloomed in 1945. 3 of the 1943 transplants flowered, whereas none of them had bloomed in 1944, since they had probably been set back due to transplanting at flowering time. 4 of the 5 plants in Area 40 bloomed, but only 2 out of 7 in Area 126.

Cassia fasciculata (4, 44)
(large-flower sensitive-plant)

The transplants of this annual which bloomed quite well in 1944 failed to seed in, so it did not appear on the prairie in 1945.

Dodecatheon meadia (16)
(shooting-star)

Of 30 plants probably less than half will survive, due to an unfortunate choice of location in a spot where blue grass competition is too strong.

Eryngium yuccifolium (40)
(rattlesnake master)

All 11 transplants did well, although none flowered in 1945. A very satisfactory subject for transplantation.

Geum triflorum (15, 23, 25)
(old man's beard)

Of 18 plants dug on the Scuppernong Prairie in Waukesha Co. not more than half survived. This is perhaps to be accounted for by exceedingly unfavorable weather following transplanting. Of 28 plants obtained in the fall in Dane Co. all survived, although late in the summer of 1945 they were encountering considerable blue grass competition. It seems likely that these plants, if they once become well-established, will be able to compete successfully with blue grass, since their spreading basal rosettes are renewed very early in spring, and are closely appressed to the ground, tending to shade out the blue grass.

Ruhnia eupatorioides (26)
(false boneset)

The 1 medium-sized transplant of this did not survive. The taproot was cut at the time of digging.

Liatris ligulistylis (16, 23, 25, 31)
(blazing star)

The development of these plants continues mediocre and it would seem that the species is probably not destined to thrive in this situation. Of the original 35 plants only 7 or 8 flowered in 1945, while 14 or 15 additional non-flowering basal rosettes were located, some of them suffering severely from competition with Panicum virgatum or blue grass. A thing which may have worked against success with this plant is the fact that all the transplantings were made during flowering time, obviously the most unfavorable time for moving.

Liatris pycnostachya (30, 40)
(gayfeather)

40-odd flower stalks were produced (often several from a single plant), so that probably not more than 20 of the 96 transplants bloomed. However, many of those which did not bloom showed very good vegetative growth.

Liatris spherioidea (27, 58, 59)
(blazing star)

Only one of the plants from the Kettle Moraine flowered, and it was not, as had been hoped, a white one. In the case of 157 plants dug Sept. 25, 1944, when the lower portions of the plants were still green, the small flowering ratio was a decided disappointment. Not more than 8 or 10 bloomed, although it appeared that most of the ~~plants~~ plants were probably set back by being dug too early, and it seems likely they will do better in 1946. (In this connection of 24 rootstocks of this species dug in early spring of 1945, 16 produced 1 or more flower stalks in the same summer, possibly indicating that spring is the best season to move these)

Lilium michiganense (40)
(Turk's cap lily)

These failed utterly. One or two put up small shoots which died down later in the season.

Parthenium integrifolium (40)
(American feverfew)

The 1 large transplant, despite the cutting of the taproot at the time of digging, survived and made a good vegetative growth in 1945, but did not flower although it had done so in 1944. (It is of interest that another plant under observation, which was not transplanted in 1944 and which had bloomed strongly in that year, likewise failed to bloom in 1945. It was transplanted at the end of the 1945 season and it will be interesting to see whether or not it blooms in 1946, and also what the previous year's transplant will do)

Petalostemum purpureum (16)
(purple prairie clover)

3 rootstocks transplanted in Sept. 1944 all survived and produced leaves and flowers in 1945, although they suffered somewhat from blue grass competition. Further experience in spring transplantings of this species indicates that it is very hardy and resistant to extreme damage. It appears that it might be a favorable subject for root cuttings and it is proposed to try this in the spring of 1946.

Silphium terebinthinaceum (42)
(prairie dock)

4 of the 5 small plants (2 leaves) were located in 1945. They did not appear much larger, however. These plants were probably not seedlings, but developed from horizontal root extensions of mature plants. Therefore, it seems possible that they were damaged sufficiently to set them back in 1945.

Solidago speciosa (23, 59)
(goldenrod)

1 of the 3 plants was moved to the lower wetter portion of the prairie (area 23). Although it came up it apparently died down soon after, as it could not be located late in the season. The other 2 plants, in the drier location, survived, but were much stunted. Their further progress, or regression, will be followed in 1946. This species is evidently difficult to move and should be grown from seed or seedlings.

Sorghastrum nutans (48, 49)
(Indian grass)

see remarks on Andropogon furcatus.

Zigadenus elegans (25)
(no common name)

Of three transplants, 2 were located. Although one flowered, these plants did not seem to be thriving (the tops of both were chewed off by some animal early in the season) It seems doubtful that they will come up in 1946.

Zizia aptera (cordata) (23)
(heartleaf Alexanders)

Of 7 plants set out, 5 small and 2 medium sized, 4 were located in early spring. The 2 sizeable plants did very well, flowering and setting seed. Due to a heavy overgrowth of alsike, the smaller plants were lost track of later in the season, and 1946 should tell the story of their survival or death.