

THE GENUS BACCHARIS IN THE SOUTHWESTERN STATES OF  
OKLAHOMA, TEXAS, AND NEW MEXICO

BY

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Bachelor of Science

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1955

Submitted to the Faculty of the Graduate School  
of the Oklahoma State University  
in partial fulfillment of the  
requirements for the  
degree of  
MASTER OF SCIENCE  
August, 1960

JAN 3 1961

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OF OKLAHOMA, TEXAS, AND NEW MEXICO

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#### ACKNOWLEDGEMENTS

The writer wishes to thank Dr. U.T. Waterfall for the guidance, constructive criticism, and procurement of materials that has made this study possible.

The writer is indebted to Dr. W.W. Hansen and Dr. H.I. Featherly for their valuable suggestions and to the curators of the herbaria for the loan of their collections.

He also wishes to express his appreciation to the librarians of Oklahoma State University for their generous assistance in obtaining publications unavailable locally.

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## INTRODUCTION

The genus Baccharis is a member of the tribe Asterese of the family Compositae. It includes herbaceous perennials as well as woody species. The plants are dioecious with pistillate flowers bearing fertile achenes and staminate flowers being hermaphroditic with abortive ovaries.

Members of the genus are found in North and South America. The majority of the 20 species of Baccharis recorded from the United States occur in the southwest. Thirteen of these have been seen from Oklahoma, Texas, and New Mexico.

Gray's (18) Synoptical Flora of 1884 contains the last complete floristic treatment of the genus within the United States. Matuda (27) in 1957, published a treatment of Baccharis in Mexico while indices of the Baccharidinae have been published by Teodoro Luis (36, 37).

The elucidation of the genus Baccharis in the Oklahoma, Texas, and New Mexico area is the primary objective of this research. A key for the identification of the species is provided and specimen citations are given after species-descriptions.<sup>1</sup> The synonymy of the genus and species is discussed in the next section and also listed

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<sup>1</sup>Specimens cited include only mature flowering or fruiting plants.

under each species description.

Specimens were borrowed from the following herbaria which are cited by their standardized abbreviations (25): Gray Herbarium, GH; Oklahoma State University, OKLA; Southern Methodist University, SMU; University of Arizona, ARIZ; University of Oklahoma, OKL; and University of Texas, TEX.

## HISTORY

Baccharis became established by the description of six species in *Species Plantarum* (26). Due to collections by Berlandier, Douglas, and others, this number grew rapidly to the 225 enumerated by de Candolle (7).

The name Baccharis originally applied to some shrub dedicated to the wine god, Bacchus, and was later transferred to its present usage (10).

Ruiz and Pavon (33) described the genus Molina in 1794. Persoon (31) in 1807 transferred Molina to a section of the genus Baccharis, thus, by being lowered in rank, it became a synonym of Baccharis.

Baccharis halimifolia L. is the only one of the six species described by Linnaeus which is within the scope of this study (26). Most of the other species have been transferred to Gonyza, Brachylaena, or Pluchea (19). Gonyza halimifolia Desf. and Baccharis cuneifolia Moench were placed in the synonymy of B. halimifolia L. by Urban (40) in 1907.

Aplopappus ramulosus was described by de Candolle (7) in 1836. Gray (12) transferred ramulosus to the genus Linosyris and later transferred Linosyris to Baccharis (14). De Candolle (7) published in the same book the description of Baccharis pteronioides. B. ramulosa was referred to the synonymy of B. pteronioides by Gray (18) in 1884. In compliance with Article 57 of the International Rules of Botanical



Nomenclature, the correct name should be B. pteronioides DC. even though Aplopappus has page priority (25).

Molina viscosa was described by Ruiz and Pavon (34) in 1798, but this was later made a synonym of B. glutinosa by Persoon (31). B. viscosa, later transferred to Psiadia (20), was described by Lamarck (23) in 1783 and was listed by Persoon (31), therefore the specific epithet, viscosa, was obviously preoccupied at the time Persoon selected glutinosa. Sprengel, in Ersch and Gruber (9), gives Molina viscosa as a synonym of B. farinosa Pers. therefore, this also becomes a synonym of B. glutinosa. Blake (3, 35), who examined type material, gives the following additional synonyms: B. caerulescens DC., B. alamani DC., and B. longifolia DC.

Baccharis salicifolia was described by Nuttall (30) in 1841 but this was preoccupied by Persoon (31). Torrey and Gray (39) in 1842, changed the name to salicina.

A plant was described by Torrey and Gray (39) in 1842 as Linosyris texana. In Plantae Fendlerianae, Gray (11) transferred this to Baccharis. Buckley (5) described Aplopappus linearifolius in 1862, but the following year Gray (16) referred this to B. texana.

Baccharis thesioides H.B.K. has 2 synonyms, B. ptarmicaefolia DC. (17, 18) and B. sulcata DC. (3, 35).

Gray (13) described B. Wrightii var. pyrrhopappa but in later publications (17, 18) does not mention variety while Matuda (27) refers it to the synonymy of B. Wrightii var. Wrightii.

## TAXONOMIC CHARACTERISTICS

### Stem

The stems are striate-angled in all species but B. pteronioides and B. viminea which are minutely striate and terete. All are glabrous with the exception of B. brachyphylla which is hispid. B. pteronioides is the only prominently glandular-scabrous species.

### Inflorescence

The inflorescence varies from a widely spreading panicle to a pseudopanicle of corymbs. B. thesioides normally has a panicle while B. Bigelovii usually has a corymbose inflorescence. B. glutinosa differs by usually forming large, terminal pseudopanicles from the union of several smaller corymbs while B. viminea differs by having small corymbs terminating numerous lateral and terminal branches.

### Involucre

Involucre length is usually stable within species but varies interspecifically. Involucral shape is constant in most species, being hemispherical, campanulate, or narrowly cylindrical. In B. salicina the shape varies from hemispherical to narrowly cylindrical with the phyllaries widely spreading at maturity. The apices of the

outer phyllaries are usually obtuse and well rounded. The intermediate and inner phyllaries gradually narrow in width with their apices becoming acute or acuminate. The midrib regions or the apices of the phyllaries are herbaceous or stramineous to tawny. The margins of the phyllaries are scarious and in some instances are distinctly ciliate as in B. texana. In B. thesioides the phyllaries are loosely imbricated while in B. Emoryi they are closely imbricated and appressed.

#### Receptacle

The flat receptacle is pitted or nearly smooth and is naked except for fimbriate variants of B. Emoryi, B. salicina and B. halimifolia.

#### Corolla

The corolla of the pistillate flower is filiform and usually slightly enlarged at the base. The corolla of the staminate flower is filiform with the upper portion gradually or abruptly funnellform. The lobes of the pistillate corolla are small and linear, usually measuring less than .5 mm. long while the staminate corolla lobes are lanceolate and measure from 1-1.6 mm. long. The shape of the pistillate and staminate corollas respectively, are essentially the same but the length varies interspecifically.

#### Pappus

The pistillate pappus elongates in some species, while in others, little elongation occurs. The copious pappus in B. Wrightii and B. texana is many seriate, whereas in other species, it is 1 or 2 seriate

and less copious. The pappus is either rigid or flaccid and may be barbellate.

The staminate pappus is usually barbellate, uniseriate, plumosely tipped, and slightly exceeds the corolla. In B. thesioides however, the tip may be indistinctly plumose. A crisped condition is usually evident in some of the rigid bristles of each head.

#### Fruit

The achenes of B. brachyphylla are hispid but are glabrous in the other taxa. The achenes of B. Wrightii, B. texana, and B. pteronioides are slightly to conspicuously glandular-scabrous. The majority of the species may be separated into 2 groups: 4-6 ribbed achenes and 8-10 ribbed achenes. B. Wrightii is intermediate with 4-10 ribbed achenes. The achenes are generally whitish-yellow but in some species are brown or red. B. thesioides often has whitish-yellow and red achenes in the same head.

## RELATIONSHIPS

### Generic Concept

The generic concept has changed as more species have been described. Plants with heads containing a mixture of pistillate and hermaphroditic flowers have been transferred to Brachylaena, Conyza, or Pluchea while dioecious plants with either pistillate-fertile flowers or hermaphroditic-sterile flowers have remained within the genus (20, 1).

In 1794, Ruiz and Pavon (33) described Molina as dioecious plants bearing fertile-pistillate and sterile-hermaphroditic flowers. The generic concept was expanded when Persoon (31) made Molina a section under Baccharis. Bentham and Hooker (1) later delineated the genus to include only dioecious species.

Two hundred and seventy five species, all North and South American, had been described by the year 1873 (1).

### Related Genera

The dioecious state of Baccharis readily separates it from other genera within the Astereae. The nearest related genus in the United States appears to be Conyza. Conyza, as the genus is interpreted by Cronquist (6), has a head with a few central hermaphroditic flowers surrounded by filiform pistillate flowers with ligules short and

inconspicuous or absent. Archibaccharis and Heterothalamus, which occur in Mexico, Central and South America, are closely related to Baccharis and have separate staminate plants. They are separated from Baccharis by one being polygamous-dioecious with 2-nerved achenes and the other having pales half enclosing pistillate flowers (2).

## TAXONOMIC TREATMENT

Baccharis L. Sp. Pl. 1: 860. 1753; Molina Ruiz and Pavon, Fl. Per. Prod. III. t. 24. 1794.

Plants suffruticose or shrubby; glabrous or hispid; branchlets usually striate-angled or slightly striate and terete, smooth to glandular-scabrous; leaves subulate to obovate, alternate, crowded to sparse, entire to serrate or dentate, 1 to 3 nerved, sessile or may be petioled, leaves usually reduced within the inflorescence, sometimes to mere bracts; inflorescence paniculate, corymbose or racemosely arranged along the branches; pistillate involucre hemispherical to narrowly cylindrical; outer phyllaries ovate to lanceolate, inner phyllaries lanceolate to narrowly linear, obtuse to acuminate, usually scarious margined, midrib may or may not be evident; receptacle pitted to nearly smooth, naked or fimbriate, and flat; corolla filiform with 5 minute distinct lobes or teeth, yellowish-white to brown in color; style bifurcate, style-branches usually glabrous; achene 5 to 10 ribbed, yellow to reddish color, glabrous or hispid, smooth or glandular; pappus may greatly exceed or only equal the style, one to several series, flaccid or rigid; staminate involucre hemispherical to cylindrical; outer phyllaries ovate to lanceolate, inner phyllaries lanceolate to linear, obtuse to acuminate, usually scarious margined, midrib dilated, smooth, or absent; receptacle pitted to nearly smooth, naked or fim-

brillate, and flat; corolla filiform basally and either abruptly or gradually enlarged and funnelform, 5 lanceolate lobes, white to yellowish-brown in color; style clavellate or bifurcate, style-branches hispid; pappus not exceeding style, usually one series, usually rigid, scarcely to prominently plumosely tipped, bristles distinctly to indistinctly barbed, usually crisped; ovary abortive.

#### Key to Species

1. Reduced leaves of inflorescence obovate and entire . . . . .
  12. B. pilularis
1. Reduced leaves of inflorescence subulate to oblanceolate (if obovate, leaves not entire)
  2. Plants hispid . . . . . 1. B. brachyphylla
  2. Plants glabrous
    3. Branches terete, slightly striate, glandular-scabrous; heads appearing racemosely arranged on short lateral branches . . . . .
      2. B. pteronioides
    3. Branches striate-angled, essentially non-glandular-scabrous; heads not appearing racemosely arranged
      4. Leaves deciduous, branches usually naked when flowering; heads solitary, terminating elongated peduncles . . . . .
        16. B. sarothroides
    4. Leaves usually present when flowering; inflorescence usually paniculate or corymbose
      5. Pistillate pappus many seriate, rufous; achenes 3-5 mm. long, slightly to prominently glandular-scabrous
      6. Pistillate involucre usually 9 mm. long or less;



- phyllaries keeled with dilated midribs; majority of leaves  
more than 1 cm. long, margins undulate . . . . . 3. B. texana
6. Pistillate involucre 10-12 (9) mm. long; phyllaries flat to  
partially keeled; majority of leaves less than 1 cm. long,  
margins not undulate. . . . . 4. B. Wrightii
5. Pistillate pappus 1 or 2 seriate, white to sordid; achenes usually  
less than 3 mm. long, glabrous
7. Achenes 8-10 ribbed; pappus exceeding the corolla by 5 mm. or  
more
8. Pistillate involucre narrowly cylindrical, 7 mm. or more long,  
5 mm. or less wide . . . . . 15. B. Emoryi
8. Pistillate involucre hemispherical to campanulate, if 7 mm. or  
more in length the width is greater than 5 mm.
9. Leaves elliptic to rhomboid; involucre 4-6 mm. long . . . . .  
6. B. halimifolia
9. Leaves narrowly elliptic, linear or oblanceolate; involucre  
4-8 mm. long
10. Pistillate involucre 6 mm. or more long; leaves oblance-  
olate . . . . . 8. B. salicina
10. Pistillate involucre 5 mm. or less long; leaves narrowly  
linear to very narrowly elliptic
11. Pistillate corolla 2.0-2.3 mm. long; leaves 2-3 (4.5)  
cm. long, non-punctate with wrinkled leaf surfaces . . .  
14. B. angustifolia
11. Pistillate corolla 2.6-3.3 (2.3) mm. long; leaves 3-5  
(8) cm. long, usually densely punctate with smooth leaf  
surfaces . . . . . 7. B. neglecta

7. Achenes 4-5 ribbed; pappus exceeding the corolla by 4 mm. or less
12. Leaves oblong, irregularly incised to serrate . . . . .
9. B. Bigelovii
12. Leaves lanceolate, narrowly elliptic, linear or spatulate, not irregularly incised to serrate
13. Leaves lanceolate or narrowly elliptic, remotely serrate to nearly entire
14. Inflorescence a terminal corymb (may be united to form a terminal pseudopanicule); leaves 3-8 (11) cm. long, 1 (2) cm. wide, not crowded . . . . . 5. B. glutinosa
14. Inflorescence of small corymbs terminating numerous lateral branches; leaves 3-5 cm. long, .5 (1) cm. wide, usually crowded . . . . . 13. B. viminea
13. Leaves linear, lanceolate or spatulate, closely and evenly serrate or saliently incised to entire
15. Pistillate involucre 5 (5.5) mm. long; staminate involucre 5 mm. long; leaves linear to lanceolate, closely and evenly serrate . . . . . 10. B. thesioides
15. Pistillate involucre 4 (4.5) mm. or less long; staminate involucre 3 (4) mm. long; leaves linear to spatulate, upper half of blade prominently incised, forming distinct teeth, to entire . . . . . 11. B. Haywardii
1. Baccharis brachyphylla Gray, Pl. Wright. 2: 83. 1853.

Plants suffruticose, about 60 cm. tall, erect, slender; branches striate-angled, sparsely leaved; hispid; leaves linear, acute, sessile, less than 1 cm. long, 2 mm. wide or less, entire, 1-nerved, gradually reduced to subulate bracts in inflorescence; inflorescence an elongated

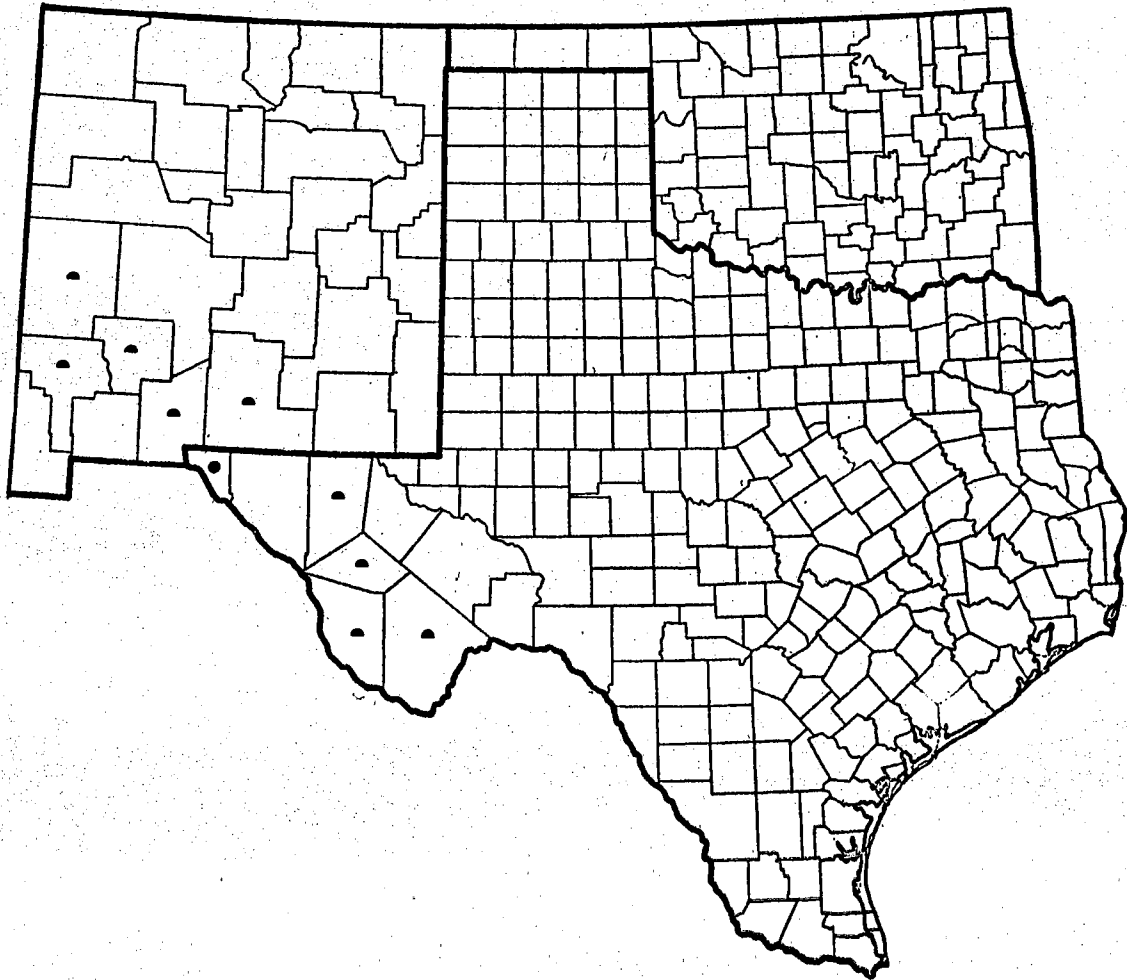


Fig. 1. Distribution of Baccharis brachyphylla (●) and B. pteronioides (◐).

panicle, appearing racemose, yet with several crowded heads to each lateral branch; heads 10-15 flowered; pistillate involucre campanulate, ca. 5 mm. long; phyllaries lanceolate, acute to acuminate, scarious margined with hispid, dark brownish-green midrib; receptacle flat, nearly smooth, naked; corolla filiform, ca. 1.5-2 mm. long, 5 truncate or triangular teeth; style exserted, as long as pappus, bifurcate; pappus in several series, rigid, and slightly barbellate, ca. 4 mm. long; achene 4-5 ribbed, 1 mm. (slightly immature) long, pubescent; staminate involucre campanulate, ca. 5 mm. long; phyllaries lanceolate, acuminate, scarious margined, with hispid, dark greenish-brown midrib; receptacle flat, nearly smooth, naked; corolla filiform with upper half dilated and funnellform, 5 lanceolate lobes; style usually bifurcate; pappus rigid, one series, plumosely tipped, ca. 4 mm. long; ovary abortive. Figure 1.

TYPE: Wright 1199, pistillate, collected in stoney soil between Conde's Camp and the Chiricahua Mountains, Arizona, September. The type was not seen.

Specimens examined: TEXAS: EL PASO COUNTY: Berkman and Tharp 46204, Indian Spring Canyon, Franklin Mts., July 29, 1946 (OKL, TEX); Turner 1295, infrequent, yellowish flowered, shrub-like plant in red sandy soil, 1 mile northeast of Fort Bliss, altitude 3700 feet, July 16, 1949 (SMU); Warnock 8208, rare perennial along Newman highway, sandy soil, 6 miles northeast of El Paso, altitude 3800 feet, August 31, 1948 (SMU).

2. Baccharis pteronioides DC. Prod. 5: 410. 1836; Aplopappus ramulosus DC. Prod. 5: 350. 1836; Linosyris ramulosa (DC.) Gray, Pl. Wright. 1: 97. 1852; B. ramulosa (DC.) Gray, Pl. Thurb. 301. 1855;

B. fasciculata Klatt, Leopoldina 20: 91. 1894. nomen nudum.

Shrub, branches terete, only slightly striate, glandular-scabrous; leaves fascicled, crowded, sessile, linear or spatulate with attenuate bases, entire to 5 toothed, larger leaves ca. 10 mm. (20) in length; heads racemosely arranged, 2-4 (8) mm. wide, terminating very short leafy branches; pistillate heads 15-20 flowered, involucre campanulate, ca. 5-6 (7) mm. long; phyllaries lanceolate-oblong, acute-obtuse, stramineous with margins scarious, green to brownish center; receptacle slightly alveolate, flat; corolla filiform, 3.6 to 5.3 mm. long, 5 lobed, irregularly toothed, erose, up to .5 mm. long; pappus ca. 8-10 mm. long, rigid, not exceeding styles over 3-4 (5) mm.; achenes ca. 1.8-2.6 mm. long, 4, 5, 6, or 8 ribbed, sparsely glandular with a few hairs; staminate heads 15-20 flowered, involucre hemispherical, ca. 4-5 mm. long; phyllaries loosely imbricated, lanceolate-oblong, acute-obtuse, scarious margined, green to brownish centers; receptacle slightly alveolate, flat; corolla with lower half of tube filiform, upper half enlarged and funnelform, about 4 mm. long, 5 lanceolate lobes ca. 1-3 mm. long; styles clavellate or may be parted, hispid; pappus about 4 mm. long, not greatly surpassing the style, plumosely tipped, crisped; ovary abortive. Figure 1.

TYPE: Berlandier 398, between Tampico and Real del Monte, Mexico.

A photograph of a specimen which was supposed to be the type was observed (GH). This specimen was labeled Humboldt 3981, New Mexico. The writer has been unable to explain this discrepancy (Figure 7).

Specimens examined: NEW MEXICO: CATRON COUNTY: Parker 2254, copious pappus in pistillate flowers, in dry canyons 4 miles west of Glenwood, 4560 feet elevation, June 2, 1935 (ARIZ, OKLA); DONA ANA

COUNTY: Wooton, June 7, 1903, collected in the Organ Mts. (ARIZ);  
Wooton, May 26, 1905, Organ Mts. (TEX); GRANT COUNTY: Maguire,  
Richards, Moeller 11417a, association, *Hilaria mutica*, *Prosopis*,  
*Gutierrezia*, on bank of wash, west slope, sandy clay loam, vicinity  
tank #8, Red Rock, May 16, 1935 (ARIZ); Maguire, Richards, Moeller  
11420, association, *Prosopis*, *Bouteloua*, *Gutierrezia*, *Quercus*, *Rhus*,  
north slope, gravelly sandy loam, vicinity of tank #2, Red Rock Camp,  
May 16, 1935 (ARIZ); Maguire, Richards, Moeller 11558, rocky wash  
slopes and bank, east exposure, with *Juniperus monosperma*, *Gutierrezia*,  
*Rhus*, *Prosopis*, 10 miles northeast of Red Rock, May 21, 1935 (ARIZ,  
GH); Metcalf 84, collected at Mangas Springs, 18 miles northwest of  
Silver City, altitude 4770 feet, May 23, 1903 (ARIZ, GH); OTERO COUNTY:  
Eggleston 14391, high rolls, Claude Johnson's pasture, Lincoln Forest,  
1800 meters, June 20-23, 1918 (GH); Rehder 423b, dry slopes, Sacramento  
Mts., altitude 5000 feet, August 24, 1916 (GH); Rehn and Viereck, May  
6, 1902, dry canyon, elevation 4600 feet, Sacramento Mts., Alamogordo  
(GH); SIERRA COUNTY: Metcalf 935, dry gravelly hills, collected in  
and around the south end of the Black Range, altitude 6600 feet,  
Kingston, May 25, 1904 (GH); COUNTY unknown: Wright 1400, 1852 (GH);  
Humboldt 3981, photograph (GH); TEXAS: BREWSTER COUNTY: Gory 2523,  
Marathon, April 20, 1928 (GH); Moore and Stevermark 3346, open rocky  
ridge, oak canyon, altitude 1370, Chisos Mts., July 4, 1931 (GH);  
Warnock 728, Pulliam Bluff, Chisos Mts., June 2, 1937 (TEX); Warnock  
9963, infrequent shrub, igneous soil along highway, 16 miles south of  
Alpine, altitude 4450 feet, May 11, 1951 (SMU); CULBERSON COUNTY:  
Waterfall 4418, in cracks among granite rocks on foothill of the  
Carrizo Mts., 2 miles west and 3/4 mile north of Van Horn, June 9, 1943

(ARIZ, GH, OKL); Waterfall 4522, cracks in limestone boulders on slope leading to peak, with oaks, cedars, and some pines, about 3 miles west of Pine Springs, June 13, 1943 (GH); JEFF DAVIS COUNTY: Allen 45, Limpia Canyon, April 23, 1915 (TEX); Cory 53547, plant shrubby, about 5 decimeters tall, frequent on roadside at base of hill, 12 and 1/3 miles northeast of Fort Davis, April 27, 1947 (SMU); Lundell and Lundell 10250, shrub, 3 feet high, in Limpia Canyon about 10 miles north of Fort Davis, Davis Mts., April 17, 1941 (SMU); Tracy and Earle 219, Limpia Canyon, April 25, 1902 (GH, TEX); Warnock and Churchill 7735, infrequent in Limpia Canyon at mouth of Wild Rose Pass, Kokernot Ranch, Davis Mts., altitude 5500 feet, April 6, 1948 (SMU); PRESIDIO COUNTY: Hinckley, April 1937, desert scrub, about 1/2 meter tall, dry slopes below dam of San Esteban Lake, altitude 1300 meters, Marfa (GH, TEX); Hinckley 3581, on rocky Antelope Mesa near edge of rimrock, about the middle of the south fence line, Ajax Simpson Ranch, altitude about 4900 feet, April 15, 1946 (GH); McKelvey 2020, near Shafter, April 26, 1931 (GH); COUNTY unknown: Reverchon, June 8, 1905, only specimen in bloom, sands, common, Sierra Blanco (SMU).

3. Baccharis texana (T. & G.) Gray, Pl. Fendl. 75. 1849; Linosyris texana T. & G., Fl. N. Amer. 2: 232. 1842; Aplopappus linearifolius Buckley, Proc. Acad. Nat. Sci. Philad. 13: 457. 1862.

Plants suffruticose to small woody shrub; 25-60 cm. tall; stems striate-angled; branched at base; upper branched only to produce wide corymbose inflorescence; heads solitary and terminating each peduncle; uppermost leaves subtending head are slightly scarious margined, ciliated; upper leaves alternate, usually punctate, may be crowded, sessile, linear, acute, undulate, about 10 mm. long, 1 mm. wide,

1-nerved; lower leaves alternate, punctate, sessile, linear to narrowly lanceolate, minutely undulate, 20-40 (50) mm. long, 2-4 mm. wide, 1-nerved; pistillate head about 20-30 flowered, involucre campanulate, 7-9 (10) mm. long; phyllaries lanceolate, acute to acuminate, keeled with midrib dilated, margins narrowly scarious, usually ciliate; receptacle flat, naked, pitted; corolla filiform, ca. 3.5-4.0 mm. long, truncate with 5 obscure, erose teeth, ca. .2 mm. long; style bifurcate; pappus 12 (11-13) mm. long, copious in several series, minutely antrorsely barbed; achene 3-4.5 mm. long, subglandular, 5-6 ribbed; staminate involucre campanulate, 6-7 mm. long; phyllaries lanceolate, acute or obtuse, keeled with midrib dilated, margins narrowly scarious and usually ciliate; receptacle flat, naked, pitted; corolla with a filiform tube, abruptly enlarged about half way up, ca. 5 mm. long, 5 lanceolate lobes, ca. 1.6-2.0 mm. long; style clavellate; pappus equal to the length of the corolla, usually plumosely tipped and crisped; ovary abortive. Figure 2.

TYPE: Torrey and Gray cite collections of two collectors, Drummond and Riddell. Two Drummond specimens have been seen and one probably should be selected as lectotype. However, since these are the only specimens that have been seen, perhaps another cited, unseen specimen may be more desirable. The two sheets observed would not make very desirable types because one was in poor shape while the other was with 5 separate branches from 3 other collections.

Specimens examined: NEW MEXICO: COUNTY unknown: Wright 1401, 1852 (GH); OKLAHOMA: CUSTER COUNTY: Waterfall 1629, growing in clay and shale on sandstone hillside, 3 miles south and 7 miles west of Clinton, August 12, 1939 (GH, OKL); JACKSON COUNTY: Waterfall 8361,



top of mesa, 6 miles east and 1 and  $\frac{1}{2}$  north of Eldorado, July 23, 1948 (OKL, OKLA, TEX); MURRAY COUNTY: Waterfall 6421, limestone ledge, 5 miles south and 1 mile west of Sulphur, November 30, 1945 (OKL); TEXAS: BROWN COUNTY: Palmer 13034, dry open ground, October 19, 1917 (GH, TEX); Palmer 26767, dry calcareous hills, near Brownwood, October 30, 1924 (GH); Palmer 29536, barren flats, argillaceous soil, near Brownwood, November 1, 1925 (GH); CALLAHAN COUNTY: Cory 58398, stems clustered, ascending to erect, about 2 decimeters high, a few plants disturbed by scraper in the making of a fireguard in a pasture, U. S. Highway 183, 4.2 miles south of Baird, September 29, 1950 (SMU); CAMERON COUNTY: Johnston 542194, felled brush on brown silty loam, levee of Resaca de la Gringa, latitude 26° 9', longitude 97° 20' 50", November 26, 1954 (SMU, TEX); Johnston 542364, yellowish buff soil of very fine sandy clay loam or silty clay loam, abundant, grassland on Yucca Island (Isle D), a clay dune in Laguna Madre, December 23, 1954 (TEX); Runyon 20, west Brownsville, December 1925 (GH); COMAL COUNTY: Dapprich 6180, New Braunfels (SMU); DALLAS COUNTY: Bush 1631, common on prairie, October 29, 1900 (GH); DUVAL COUNTY: Barkley 13951, north of Crestonia, September 19, 1943 (TEX); FRIO COUNTY: Barkley 13940, south of Frio State Park, September 11, 1943 (TEX); JACK COUNTY: Shinners 11924, under mesquite in pasture, silt and sandstone, forming bed from creeping rootstocks, 7 miles northeast of Jacksboro, October 9, 1949 (SMU); Shinners 11935, red-brown silt and limestone, steep eroding slope below highway, occasional, corollas yellowish white, anthers long-exserted, 10 miles southeast of Jacksboro on Fort Worth highway, October 9, 1949 (SMU); Shinners 11936, red-brown silt and limestone, steep eroding slope below highway, one plant, 10 miles

southeast of Jacksboro on Fort Worth highway, October 9, 1949 (SMU); KLEBERG COUNTY: Johnston 53,280,135, well-packed sandy soil, Santa Gertrudis Division of King Ranch, September 14, 1953 (TEX); MITCHELL COUNTY: Pohl 5134, shrub to 2 feet tall, flowers whitish, rocky redbed hill, 1 mile west of Colorado City, August 11, 1945 (SMU); PALO PINTO COUNTY: Hennen 520, sandy clay soil, roadside ditch occasional, 12½ miles south of Mineral Wells, September 25, 1949 (SMU); SAN PATRICIO COUNTY: Jones 644, on bluff overlooking Nueces Bay, also occasional along ravines and in open brushland, 8 miles southwest of Taft, October 11, 1951 (OKLA, SMU); Rogers 6641, along U. S. Highway 77, 2 miles north of Odem near Missouri Pacific Railroad, October 24, 1948 (TEX); Rogers 6647, frequent, flowers whitish, rays absent, along railroad about 4 miles northwest of Sinton, October 24, 1948 (TEX); Tharp 5643, Portland-Gregory, March 12, 1928 (TEX); SAN SABA COUNTY: Cory 58298, infrequent on roadside, stems bushy-branched, about 4.5 decimeters high, 3 and 2/3 miles west-northwest of San Saba, September 28, 1950 (SMU); SUTTON COUNTY: Cory, October 1932, near the Experiment Station, Sonora (GH); Gould 5726, in shade of oaks on grounds of A. & M. College Substation 14, 30 miles southeast of Sonora, elevation about 2200 feet, July 1, 1950 (SMU, TEX); TAYLOR COUNTY: Tolstead 7670, on rocky prairie in grassland, Camp Barkely, October 1, 1943 (SMU, TEX); UVALDE COUNTY: Palmer 13023, dry chaparral thickets, Montell, October 16, 1917 (GH, TEX); VAL VERDE COUNTY: Palmer 12958, dry open ground, in valley, Del Rio, October 10, 1917 (GH, TEX); COUNTY unknown: Lindheimer 624, Flora Texana exsiccata, 1847 (GH); Lindheimer 625, Flora Texana exsiccata, 1847 (GH, SMU); STATE unknown: COUNTY unknown: Wright 306, collected in expedition from western Texas to El Paso, New Mexico, May-

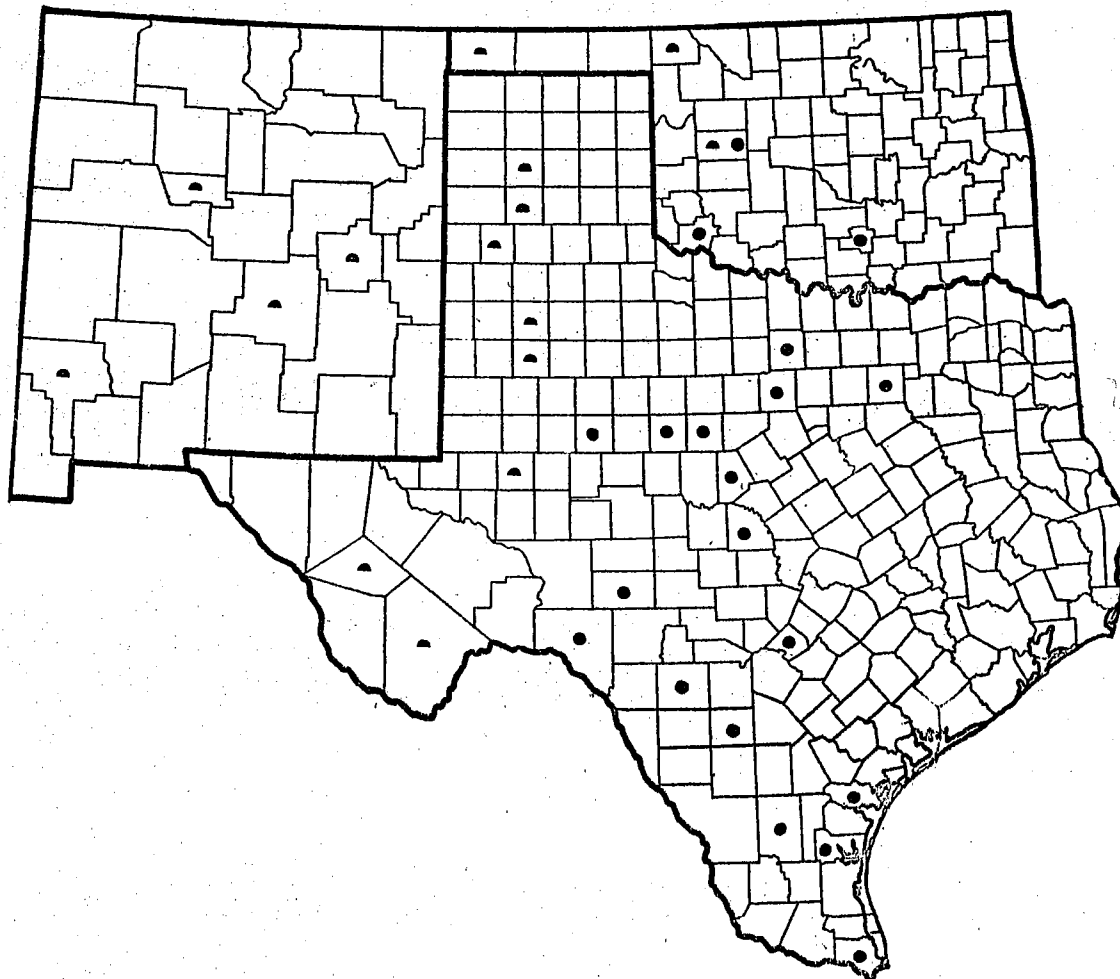


Fig. 2. Distribution of Baccharis texana (●) and B. Wrightii (◐).

October, 1849 (GH).

4. Baccharis Wrightii Gray, Pl. Wright. 1: 101. 1852; B. Wrightii Gray var. pyrrhopappa Gray, Pl. Wright. 2: 84. 1853.

Plants suffruticose; 10-75 cm. tall; glabrous; plants are slender and erect or short and freely branched; branchlets striate-angled; leaves alternate, punctate, sparse, sessile, linear or lanceolate with lower leaves oblanceolate to oblong, 10 (25) mm. or less long, 1-2 (7) mm. wide, upper leaves usually subulate with apices recurved, entire or with colorless serrations from a narrow colorless margin, 1-nerved; pistillate involucre hemispherical, 10 (9-12) mm. long; phyllaries lanceolate, acute or acuminate, green or brownish veined, margins scarious, erose; receptacle flat, naked and smooth; corolla filiform, 3.7-4.7 mm. long, 5 linear lobes, .3 mm. or less in length, may be truncate, erose, style exserted beyond corolla lobes, bifurcate; pappus copious, multiseriate, minutely antrorsely barbed, up to 15 mm. long, rufous; achene 4 (3-5) mm. long, glandular, 5-10 ribbed, transversely ridged; staminate involucre hemispherical, 8 (9) mm. long; phyllaries linear or lanceolate, with acute apices, margins slightly serrate to entire and scarious; receptacle flat, naked and smooth; corolla filiform, 4.6-5 mm. long, with upper half funnelform and gradually to abruptly enlarged, 5 lanceolate lobes about 1-1.6 mm. long; style clavellate, when exserted is bifurcate; pappus about equal to corolla length, plumosely tipped, crisped; ovary abortive. Figure 2.

TYPE: Charles Wright 307, staminate, Limpia valley, expedition from western Texas to El Paso, New Mexico, August, 1849 (GH). Figure 8.

Gray's (13) description was based upon Wright 307, a staminate

plant collected on Wright's first trip. The pistillate plant, Wright 1402, was collected on Wright's next trip and described by Gray (14) in the second part of *Plantae Wrightianae*.

Specimens examined: NEW MEXICO: BERNALILLO COUNTY: Palmer 31187, rocky plains and dry arroyos, near Albuquerque, June 21, 1926 (GH); Demaree 363, Palmer 31187, vicinity of Albuquerque, elevation about 5000 to 7000 feet, June 20, 1926 (SMU); DE BACA COUNTY: Pohl 5041, sandy mesquite grassland, La Lande, July 7, 1945 (SMU); GRANT COUNTY: Eastwood 8478, rare, only one clump seen, Silver City, May 8, 1919 (GH); Maguire, Richards, Mceller 11590, frequent, grass type, with Yucca, gentle slopes, gravelly clay loam, 20 miles west of Silver City, vicinity Highway 11, May 15, 1935 (GH); LINCOLN COUNTY: Eggleston 14444, Ruidoso Creek, Lincoln Forest, altitude 1700-2000 meters, June 25-26, 1918 (GH); Skehan 11, male flowers near Gray, altitude nearly 6000 feet, May 26, 1898 (GH); Skehan 14, female plant near Gray, altitude nearly 6000 feet, May 26, 1898 (GH); COUNTY unknown: Rothrock 93, McArchys Ranch, Wheeler Expedition, June, 1874 (GH); Green 24, near Santa Rita del Cobre, also on plains of upper Gila, 1877 (GH); Wright 1402, 1852 (GH); Wright 1403, 1852 (GH); OKLAHOMA: CIMARRON COUNTY: Waterfall 7460, in arroyo running up the northeast slopes of Black Mesa, 4 miles north of Kenton, July 9, 1947 (OKL, OKLA); Waterfall 7489, slopes, Black Mesa, 1 mile west and 1-2 miles south-southwest of Kenton, July 9, 1947 (OKL, OKLA, TEX); Waterfall 10763, valley 3-5 miles north of Kenton, May 30, 1952 (OKLA, SMU); HARPER COUNTY: Myers, June 1932, Buffalo (OKL); TEXAS COUNTY: Engleman 981, on shallow soil flat, west edge of Guymon, May 16, 1955 (OKL, OKLA); TEXAS: BREWSTER COUNTY: Cory 2591, west of Rosillos Mts., May 7, 1928 (GH); JEFF DAVIS

(REEVES) COUNTY: Tracy 87, Toyah Creek, April 21, 1902 (GH, TEX); Wright 307, Limpia valley, collected in expedition from western Texas to El Paso, New Mexico, May-October, 1849 (GH); LUBBOCK COUNTY: Demaree 7681, Landrews, Pearl Canyon, May 14, 1930 (GH, SMU); LUBBOCK (LYNN) COUNTY: Small and Wherry 12152, plains between Tahoka and Lubbock, April 29, 1925 (TEX); MIDLAND COUNTY: Tracy 7880, Midland, May 8, 1902 (GH, TEX); POTTER COUNTY: Reverchon 3285, prairies, very rare, May 31, 1902 (SMU); RANDALL COUNTY: Palmer 13883, dry open ground, plains, canyon, June 3, 1918 (GH).

5. Baccharis glutinosa (Ruiz & Pavon) Pers. Syn. Fl. 2: 425. 1807; Molina viscosa Ruiz & Pavon, Fl. Per. 1: 207, 208. 1798; B. farinosa Spreng. in Ersch and Gruber's Allgem. Encyc. 7: 27. 1821; B. Alamani DC. Prod. 5: 402. 1836; B. caerulescens DC. Prod. 5: 402. 1836; B. longifolia DC. Prod. 5: 402. 1836; B. pingraea Nutt. auct. non DC. in Trans. Amer. Philos. Soc. 7: 337. 1841; B. viscosa Kuntze, Rev. Gen. 1: 320. 1891.

Shrub, 1-3.5 meters tall, branchlets striate-angled; glabrous, glutinous; leaves alternate, punctate, sessile to indistinctly petioled, lanceolate or narrowly elliptic, tapering from middle to apex and base, usually uniformly serrate, nearly entire to prominently serrate (teeth of larger leaves usually 3-5 mm. apart), 30-80 (110) mm. long, 10 (20) mm. wide, distinctly 3 nerved; inflorescence a terminal corymb, often terminating several branches and forming a false panicle; pistillate heads 50 flowered or more; involucre hemispherical, ca. 4(4.5) mm. long; phyllaries ovate-lanceolate, obtuse (inner may be acute), stramineous, brown-purplish tipped; distinct midrib, margins scarious, erose; receptacle flat, nearly smooth, naked; corolla filiform, 2.0-2.3

mm. long, 5 narrow linear lobes, .2 mm. or less in length; style exerted, bifurcate; pappus in 1 series, flaccid, 4-5 mm. long; achene about 1 mm. long, glabrous, 5 ribbed; staminate heads 10-20 flowered; involucre campanulate, ca. 4 mm. long; phyllaries ovate-lanceolate, obtuse-acute, margins scarious, erose; receptacle flat, slightly pitted, naked; corolla filiform, upper half enlarged and funnellform, 3-4 mm. long, 5 lanceolate lobes, ca. 1.2 mm. long; style bifurcate and exerted; pappus 3-4 mm. long, plumosely tipped, crisped, not exceeding corolla lobes; ovary abortive. Figure 3.

TYPE: unseen.

Specimens examined: NEW MEXICO: DONA ANA COUNTY: Fosberg S3264, west bank of Rio Grande River, altitude 1150 meters, Lower Sonoran Zone, Las Cruces, July 24, 1930 (OKL); TEXAS: BREWSTER COUNTY: Mueller 8194, Chisos Mts., August 10, 1931 (TEX); Shinners 8749, slender willowy shrubs, 1-2 meters high with closely ascending branches, foliage viscid, flowers white, along stream, Chisos Mts., Big Bend National Park, near the Window, elevation about 4500 feet, August 4, 1946 (SMU); Shinners 8775, on gravelly road bank, slender virgate shrub, 2 meters tall, bark gray, flowers whitish, Chisos Mts., Big Bend National Park, in Green Gulch below The Pass, elevation about 5500 feet, August 5, 1946 (SMU); Warnock and Hinckley 7515, frequent shrub along the stream, Doubtful Canyon, Gage Estate, Del Norte Mts. about 25 miles south of Alpine, altitude 4300 feet, September 18, 1947 (SMU); Young, August 26, 1915, bank of Rio Grande (TEX); CAMERON COUNTY: Cory 51444, frequent on banks of Rio Grande, Brownsville, December 1, 1945 (SMU); Davis, summer 1941, southern part of county (TEX); Runyon 260, Brownsville, 1923 (TEX); Tharp, Palm Grove, November 30, 1940 (SMU); CULBERSON

COUNTY: McVaugh 7388, many stemmed shrub, 2 meters high, flowers white, low limestone hills, Guadalupe Canyon, elevation 1600 meters, east of Guadalupe Peak, Guadalupe Mts., July 14, 1945 (SMU); EL PASO COUNTY: Barkley 14558, sandy subsaline bottom near Rio Grande, 10 miles north of El Paso, September 23, 1944 (TEX); Warnock 5878, frequent shrub along highway, limestone soil, along water canals, 4 miles east of Fabens, altitude 3900 feet, May 31, 1947 (SMU); White 81, El Paso, October 21, 1911 (TEX); Whitehouse, September 27, 1931, El Paso (TEX); Whitehouse, December 1, 1931, Mt. Franklin (TEX); HUDSPETH COUNTY: Warnock 5896, common shrub along water canals, 4 miles east of Fort Hancock, altitude 3550, May 31, 1947 (TEX); Waterfall 4591, alluvial sand along Rio Grande, sand being stabilized by Tamarix, Salix, and Baccharis, McNary-Ft. Quitman levee road, June 18, 1943 (OKL); JEFF DAVIS COUNTY: Barkley and Mainland 147775, moist gravel and silt in mesophytic portion of Limpia Canyon near Fort Davis, October 1, 1944 (OKL, TEX); Palmer 30956, on gravel and shingle bars of creek, Davis Mts., shrubs 1-1.5 meters tall, June 16, 1926 (TEX); Strandtmann, August 23, 1941, Fort Davis, creek bottoms (TEX); Thorp 7440, Limpia Canyon, July 13, 1928 (TEX); Warnock 6573, common in Limpia Canyon, Davis Mts., 1 mile above Fort Davis, July 28, 1947 (TEX); Warnock 7956, common perennial in igneous soil along stream in Limpia Canyon, Davis Mts., altitude 5200 feet, July 4, 1948 (SMU, TEX); Warnock 21759, Fern Canyon, August 25, 1938 (TEX); PRESIDIO COUNTY: Hanson, August 7, 1919, common and abundant along Rio Grande, Redford (TEX); Hinckley 1606, common in the lower creek beds of the area, mouth of creek,  $1\frac{1}{2}$  miles north P Ranch on Rio Grande, west end of county, June 3, 1941 (SMU); Hinckley, July 29, 1941, creek bed near stratified



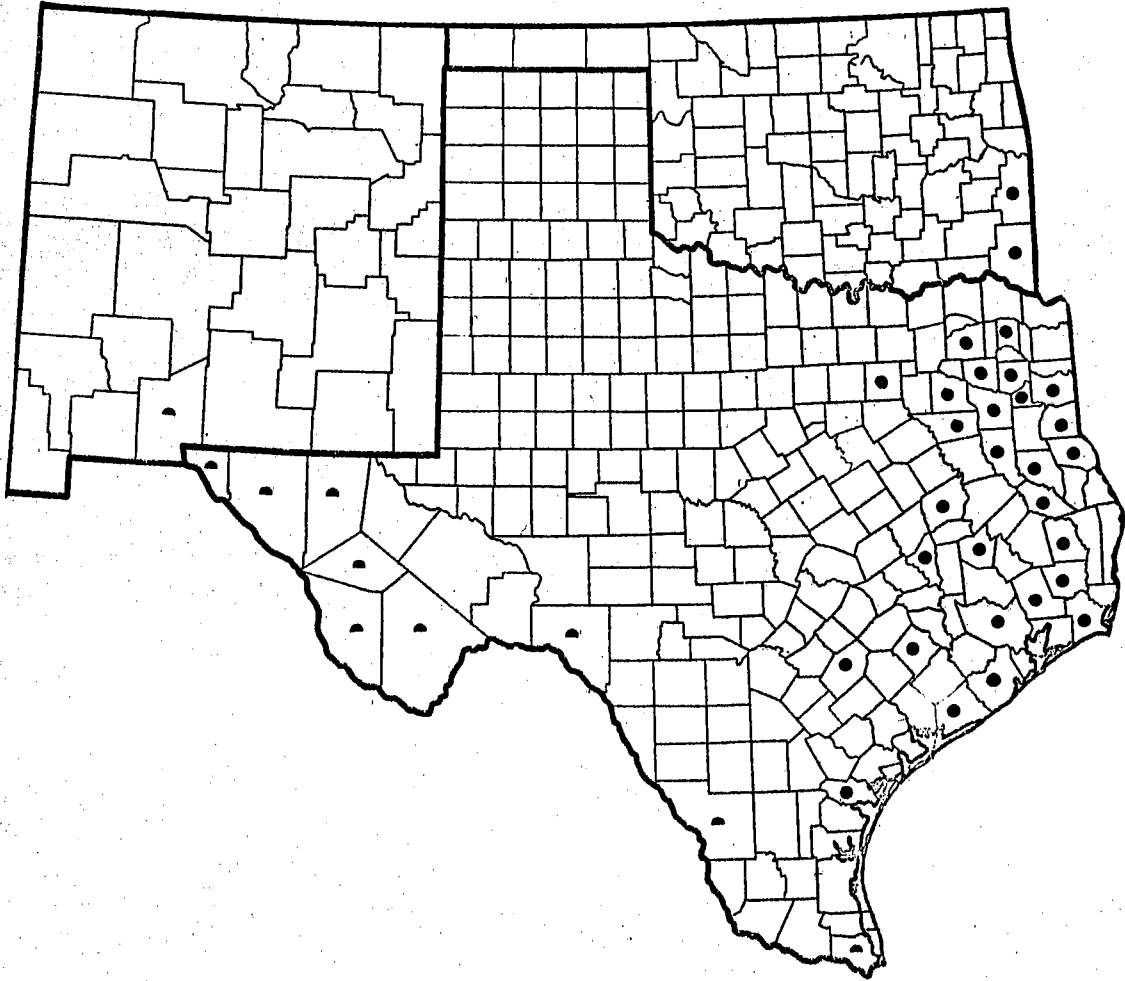


Fig. 3. Distribution of *Baccharis glutinosa* (▲) and *B. halimifolia* (●).

bluff,  $\frac{1}{2}$  mile south Musgrave Canyon, Tierra Vieja Mts. (TEX); Warnock 10215, frequent shrub in limestone soil on road from Marfa to Ruidosa in Pinto Canyon of the Chinati Mts., altitude 3500 feet, September 30, 1951 (SMU); York 48238, from the Rio Grande flood plain, about 5 miles northwest of Porvenir, July 7, 1948 (TEX); VAL VERDE COUNTY: Cory 38083, Rio Grande bottoms at Del Rio, August 16, 1941 (TEX); WEBB COUNTY: Barkley and Griffen 13933, sandy bank of Rio Grande near Laredo, September 19, 1943 (TEX).

6. Baccharis halimifolia L. Sp. Pl. 1: 860. 1753; B. cuneifolia Moench, Meth. Pl. 574. 1794; Conyza halimifolia Desf. Tabl. ed. 2. p. 114. 1815.

Shrub, up to 6 meters tall; branches striate-angled; glabrous; leaves alternate, punctate, distinctly petioled or sessile, elliptic to rhomboid or obovate, with acute, obtuse or rounded apices, cuneate to attenuate based, lower half of blade entire with upper half entire or with few to several teeth, upper leaves gradually reduced and becoming entire, larger leaves ca. 3-5 (7) cm. long, 2.2 (3) cm. wide, prominently 1-nerved with 2 lateral nerves extending from midrib above leaf base; inflorescence widely paniculate; head about 20 flowered; pistillate involucre campanulate, 5 (4-6) mm. long; phyllaries ovate-lanceolate, obtuse-acute, greenish-brown tipped, midrib not always distinct, scarious margined; receptacle flat or slightly convex, alveolate, naked; corolla filiform, ca. 3 (2.5-3.5) mm. long, 5 minute linear lobes, about .1 mm. long; style exserted, bifurcate; pappus in 2 series, flaccid, 10-12 (9-14) mm. long; achene 8-10 ribbed, 1.0-1.7 mm. long, glabrous; staminate head about 20 flowered; involucre hemispherical, 4 (4.5) mm. long; phyllaries ovate-lanceolate, obtuse-acute,

scarious margined; receptacle flat to convex, alveolate, fimbriate to naked; corolla filiform gradually enlarged and funnelform, ca. 3.0-3.5 mm. long, 5 lanceolate lobes, ca. 1.0 mm. long; style clavellate; pappus ca. 3-4 mm. long, crisped, plumosely tipped, flaccid; ovary abortive. Figure 3.

TYPE: no type was designated by Linnaeus.

Specimens examined: OKLAHOMA: LE FLORE COUNTY: Waterfall 15188, 15 feet tall, along small creek between hills covered with oaks and pines, 7 miles south of Heavener, October 11, 1958 (OKL, OKLA); McCURTAIN COUNTY: Ahshapanek, November 3, 1956, roadside along pine-savannah, between Idabel and Tom (OKL); Waterfall 9827, old field, 4 miles south of Idabel, October 21, 1950 (OKL, OKLA, SMU); Waterfall 12999, creek bottom,  $\frac{1}{2}$  mile south of Tom, October 13, 1956 (OKL, OKLA, TEX); TEXAS: ANGELINA COUNTY: Shiners 26777, fencerow by pine land, sandy loam, shrub 3 meters tall, also small leafy shoot from stump sprout, 5 miles northwest of Lufkin, November 10, 1957 (SMU); Shiners 26787, by small creek in pine-hardwood stand, silty clay loam, shrub 2 meters tall, 5.4 miles southeast of Zavalla, November 11, 1957 (SMU); BRAZORIA COUNTY: Cory 51040, a few shrubs in wooded area along a bayou, 11 miles south by west of Alvin, November 20, 1945 (SMU); BRAZOS COUNTY: Parks, October 5, 1946, College Station (TEX); Reeves 1253B, 4-5 miles north of Navasota, on Highway 6, probably planted, November 2, 1941 (OKLA); CHEROKEE COUNTY: Shiners 26775, fencerow in creek bottom, sandy loam, shrub 2.5 meters tall, 5.6 miles south-southeast of Jacksonville, November 10, 1957 (SMU); COLORADO COUNTY: Matthews, November 1932, Eagle (TEX); DALLAS COUNTY: Shiners 12920, blackland clay, one plant, apparently a weed, in clipped hedge of Ligustrum

japonicum, 1 meter high, Fitzhugh and Lakeside Drive, near Turtle Creek, Dallas, October 24, 1950 (SMU); GALVESTON COUNTY: Cory 51023, shrub usually 1.8 meters tall or less, frequent in old sandy fields and along roads, 12 miles southwest of High Island, November 20, 1945 (SMU); Cory 59227, infrequent at northern edge of coastal marsh, southern edge of High Island, young shrub, about 5.5 decimeters high, in fruit, November 25, 1951 (SMU); Nelson, November 15, 1941 (TEX); Shinners 16455, low sandy ground, shrub 1.8 meters high, broad and rounded, heads white, west side of Galveston, October 10, 1933 (SMU); Turner 1724, frequent shrub up to 5 feet tall in sandy-silt soil, 1 mile north of Texas City, November 25, 1949 (SMU); GREGG COUNTY: Shinners 25368, low sandy clay soil, fencerow, shrub 2 meters tall, corollas yellowish, 7.2 miles west-southwest of Longview, October 15, 1956 (SMU); GONZALES COUNTY: Goldsmith, October 18, 1940, Palmetto State Park (TEX); Tharp, Brady, and Barkley 13991, moor on the Soefje farm near Ottine, October 3, 1943 (TEX); HARDIN COUNTY: Cory 50765, frequent in swampy woods and in old fields, usually 1-1.5 meters tall, 1 and 3/4 miles northeast of Batson, November 13, 1945 (SMU); HARRIS COUNTY: Cory 50756, abundant in old fields and along highway ditches, 4 miles west of Liberty County line, November 12, 1945 (SMU); Fisher 40139, Houston, altitude 50 feet, October 29, 1940 (TEX); Fisher, October 27, 1929, collected at Houston, altitude 50 feet (TEX); Shinners 16522, prairie, black clay, rounded shrub 1 meter high, heads white, southwest side of Houston, October 12, 1953 (SMU); Traverse 224, open waste field, black clay with some shell fragments, shrub, flower dull yellow, sweet resinous odor, 2-5 feet tall, Post Oak Road at Richmond Avenue, southwest part of Houston, September 17, 1956 (SMU); Wheeler s n, October 10, 1954, clay soil,

north of Baytown (SMU, TEX); HARRISON COUNTY: Shinners 16769, low sandy fencerow, many-stemmed, rounded shrubs, 1.5-2.5 meters tall, staminate heads mostly past, 3.2 miles west of Marshall, October 31, 1953 (SMU); Shinners 26761, sandy ditch bank, shrub 1.7 meters tall, 8.4 miles east of Marshall, October 29, 1957 (SMU); HENDERSON COUNTY: Cory 53900, shrub, up to 5 or 6 meters tall, taller than usual, frequent in open woods along creek, 5 and 2/3 miles south-southeast of Athens, November 2, 1947 (SMU); Cory 53901, staminate shrub, 3-4 meters tall, less frequent than the pistillate plant, frequent in woods along creek, 5 and 2/3 miles south-southeast of Athens, November 2, 1947 (SMU); HOPKINS COUNTY: Strandtmann, November 8, 1941, low place east of Sulphur Springs (TEX); JACKSON COUNTY: Shinners 25262, bank of irrigation channel, silty clay, shrub 2 meters tall, 3.4 miles north-east of Edna, October 13, 1956 (SMU); JEFFERSON COUNTY: Cory 50947, shrub abundant along swales of coastal flat, 3 1/2 miles southwest of Port Arthur, November 18, 1945 (SMU); Galloway 1, on calcareous prairie, South Park, Beaumont, October 28, 1939 (SMU); LEON COUNTY: Hennen 543, sandy bed of small stream, frequent, shrub about 10 feet high, 5 miles southwest of Buffalo, October 2, 1949 (SMU); LIBERTY COUNTY: Shinners 25309, foot of railroad fill, sandy clay, shrub 1.8 meters tall, 2.8 miles southwest of Cleveland, October 14, 1956 (SMU); MATAGORDA COUNTY: Shinners 25298, fencerow, black clay, shrub 2 meters tall, 4.7 miles north of Bay City, October 13, 1956 (SMU); Shinners 25299, fencerow, black clay, shrub 2.5 meters tall, 4.7 miles north of Bay City, October 13, 1956 (SMU); NACOGDOCHES COUNTY: Tharp and Brown 53-6, Cushing, October 8-9, 1949 (TEX); PANOLA COUNTY: Reverchon 3297, bottoms, Beckville, October 9, 1902 (SMU); Shinners 25795, low sandy clay soil,

shrub 3 meters tall, south side of Tatum, November 3, 1956 (SMU); RUSK COUNTY: Grant 8498, swale, 2 miles north of Mt. Enterprise, December 25, 1941 (OKL); SAN PATRICIO COUNTY: Jones 1164, only one specimen noted, apparently same as No. 645, just outside the city limits of Aransas Pass, September 24, 1955 (SMU); SHELBY COUNTY: Shinners 22361, sandy clay roadside, shrub 1 meter tall, 1 mile west-northwest of Joaquin, October 10, 1955 (SMU); Shinners 25791, low sandy clay soil along highway, shrub 2 meters tall, 3 miles east of Tenaha, November 3, 1956 (SMU); Shinners 25792, low sandy clay ground along highway, shrub 2 meters tall, 3 miles east of Tenaha, November 3, 1956 (SMU); TITUS COUNTY: Shinners 25797, fencerow, low sandy clay soil, shrub 1.7 meters tall, southeast side of Mt. Pleasant, November 4, 1956 (SMU, TEX); Shinners 25798, fencerow, low sandy clay soil, shrub 1.7 meters tall, southeast side of Mt. Pleasant, November 4, 1956 (SMU, TEX); Whitehouse 17743, shrubs 8-10 feet high, alluvial soil near creek, 2.5 miles southeast of Mt. Pleasant, November 2, 1946 (SMU); TYLER COUNTY: Cory 59207, shrub about 12 decimeters high, a few plants at culvert over small creek at the county line, 1.2 miles south of Fred, November 23, 1951 (SMU); UPSHUR COUNTY: Moon 126, growing in moist soil, north edge of little cypress bottom on Gilmer to Ore City road, November 29, 1941 (TEX); VAN ZANDT COUNTY: Cory 58496, much branched shrub, this one about 15 decimeters high, frequent in creek bottom land,  $\frac{1}{2}$  mile west of Edom, October 27, 1950 (OKLA, SMU); Shinners 26833, sandy clay slope, shrub 2 meters tall, 3.2 miles southeast of Canton, November 14, 1957 (SMU); WALKER COUNTY: Cory 50661, frequent along small drainage course, south Huntsville, November 9, 1945 (SMU); WOOD COUNTY: Whitehouse 17593, branched shrubs, 5-10 feet high, sandy loam, low swampy grounds,

4½ miles east of Winnsboro on Highway 11, October 30, 1946 (SMU).

7. Baccharis neglecta Britton, *Illus. Fl.* 3: 394. 1898; B. angustifolia Gray, *suct. non Michx.* *Bost. Jour. Nat. Hist.* 6: 224. 1850.

Shrub with branchlets striate-angled; glabrous; leaves alternate, punctate, partially glutinous, narrowly linear or narrowly elliptic, acute, sessile, upper entire, lower entire to serrate, prominently 1-nerved, with an obscure lateral nerve on each side parallel with the margins, ca. 2-4 (5) mm. wide, lower 30-50 (80) mm. long, upper (within the inflorescence) reduced; panicles with some glomerules; pistillate head about 15-30 flowered; involucre campanulate, ca. 5 mm. long; phyllaries ovate or lanceolate, obtuse or acute, margins scarious, erose, green to reddish-brown tipped; receptacle flat, naked and pitted; corolla filiform, ca. 3 (2.5-3.3) mm. long, minutely 5 toothed, up to .3 mm. long; style exerted, style branches ca. 1 mm. in length; pappus 1-2 series, 8-10 (7-12) mm. long, exceeding style ca. 3-4 (1-8) mm.; achenes 1.1-1.3 mm. long, glabrous, 10 ribbed; staminate heads 10-15 flowered; involucre hemispherical to semihemispherical, ca. 4 (3.5) mm. long; phyllaries ovate-lanceolate, obtuse-acute, scarious margined, stramineous or green to reddish-brown tipped; receptacle flat, naked, and pitted; corolla gradually enlarging to funnelform throat, about 3 (2.7-3.3) mm. long, 5 lanceolate lobes about 1.0 mm. long; pappus not exceeding the style, plumosely tipped, crisped; ovary abortive.

Figure 4.

TYPE: none cited by Britton.

Much confusion has existed about the differences between B. angustifolia and B. neglecta. Before 1898, Texas specimens were

referred to B. angustifolia by Gray. In 1898, Britton (4) described B. neglecta as formerly being referred to B. angustifolia, and having the range in the south central United States. The description of B. neglecta does not contain clear cut ways of separating it from B. angustifolia. After examining specimens from Texas and the east coast, the writer has distinguished the two on the basis of B. angustifolia having pistillate corollas 2.0-2.3 mm. long, leaves 2-3 (4.5) cm. long, and non-punctate, wrinkled leaf surfaces while B. neglecta has pistillate corollas 2.6-3.3 (2.3) mm. long, leaves 3-5 (8) cm. long, and usually densely punctate, smooth leaf surfaces. On this basis, all specimens examined from Texas are B. neglecta and no specimens of B. angustifolia have been seen from the study area.

Specimens examined: TEXAS: BANDERA COUNTY: Shimmers 16908, rocky limestone slope, shrub 2 meters tall, 16.8 miles southeast of Bandera, November 4, 1953 (SMU); BASTROP COUNTY: Tharp, October 10, 1938, Bastrop (TEX); BEXAR COUNTY: Freeborn 98, valley, black soil near limestone hill, Bandera roadside northwest of San Antonio, October 23, 1942 (TEX); Parks, August 21, 1941, Apicultural Laboratory, San Antonio (SMU); Schulz 611, San Antonio, August 1921 (GH); Schulz 611, shallow gravel pit, 9 miles northwest of San Antonio, October 3, 1921 (TEX); BRAZOS COUNTY: Parmalee 8, shrub growing in oak savanah woodland, approximately 5 feet high, southeast of College Station, October 6, 1949 (TEX); BURNET COUNTY: Webster 1980, granite rock along the east shore of Inks Lake, October 31, 1948 (TEX); CAMERON COUNTY: Davis, summer 1941, southern most part of county (TEX); Runyon, October 1, 1923, Brownsville (TEX); Vines 442, shrub 4-6 feet



tall, growing in dry creek bed, Brownsville, September 1, 1941 (GH);  
 COMAL COUNTY: Lindheimer 885, Comanche Springs, New Braunfels,  
 September 1849 (OKL, SMU, TEX); DEWITT COUNTY: Riedel, September 6,  
 1941, western part of county (TEX); FAYETTE COUNTY: Gould 6684, shrub-  
 by tree about 15 feet tall, gray bark, 3 miles northeast of La Grange  
 on Highway 237, November 2, 1954 (SMU, TEX); Ripple 51-772, Muldoon,  
 October 2, 1950 (TEX); GILLESPIE COUNTY: Palmer 10867, along rocky  
 streams, Fredericksburg, October 1, 1930 (TEX); GONZALES COUNTY:  
Whitehouse 10267, Ottine Swamp, October 23, 1934 (SMU); HAYS COUNTY:  
Johnson 394, frequent in shallow, rocky soil, roadside between San  
 Marcos and Winberly, September 13, 1948 (TEX); Johnson 402, frequent  
 in shallow, rocky soil, roadside between San Marcos and Winberley,  
 September 13, 1948 (TEX); HILL COUNTY: Shinners 16708, hilltop fence-  
 row, Austin Chalk, shrub 3 meters high, 6 miles northeast of Hillsboro,  
 October 15, 1953 (SMU); HOOK COUNTY: Shinners 13813, rocky limestone  
 slope, virgate shrub 2 meters tall, occasional, heads creamy, northwest  
 wide of Comanche Peak, 5 miles south of Granbury, October 5, 1952 (SMU);  
 JACKSON COUNTY: Shinners 25263, shrub 2 meters tall, banks of irriga-  
 tion channel, silty clay, 3.4 miles northeast of Edna, October 13, 1956  
 (SMU); KARNES COUNTY: Johnson 1036, frequent in dry, sandy clay soil,  
 fallow field, 0.8 mile southeast of Runge, Highway 72, October 7, 1952  
 (SMU, TEX); KENEDY COUNTY: Johnston 53.280.147a, large caliche sand  
 flat near headquarters, Norias Division of King Ranch, September 27,  
 1953 (TEX); Johnston 53.280.147b, large caliche sand flat near head-  
 quarters, Norias Division of King Ranch, September 27, 1953 (TEX);  
 KENDALL COUNTY: Palmer 10835, along rocky branches, Boerne, September  
 27, 1916 (GH); KERR COUNTY: Cory 52425, branching shrub, about 3-4

meters tall, from pistillate plant, frequent in river bottoms, Guadalupe River, Kerrville, October 1, 1946 (SMU); Cory 52426, branching shrub, about 3-4 meters tall, this (staminate) plant usually not as tall as the pistillate, frequent in river bottoms, Guadalupe River, Kerrville, October 1, 1946 (SMU); Cory 50532, a few shrubs along Johnson Creek at Ingram, October 27, 1945 (SMU); KLEBERG COUNTY: Sinclair, summer 1940, Kingsville (TEX); McLENNAN COUNTY: Shimmers 16685, sandy bank of Brazos River, shrub 4 meters high, Waco, October 14, 1953 (SMU); Smith 1023, clay bank near Tehuacana Creek, Marlin highway, August 15, 1947 (TEX); PECOS COUNTY: Hinckley 4629, on Dryden-Sheffield road about 2-3 miles south of Sheffield, altitude 2300 feet, November 14, 1948 (SMU); PRESIDIO COUNTY: Hinckley 1309, moist river bank close to water, thorny thicket, altitude about 840, about 4 meters tall, Rio Grande between Ruidosa and Presidio, August 26, 1940 (GH); SAN PATRICIO COUNTY: Jones 347, a shrubby plant, sometimes 6 or more feet high, 7 miles south of Taft, growing in ravine, September 28, 1950 (SMU); STARR COUNTY: Johnston 53, 280, 146, moist sand at San Isidro, September 10, 1953 (SMU, TEX); TAYLOR COUNTY: Tolstead 7668, on banks of Elm Creek, near Buffalo Gap, September 21, 1943 (TEX); TRAVIS COUNTY: Innes 121A & 121B, among limestone boulders in creek bed, Barton Springs, Austin, October 17, 1940 (GH); Payton 63, infrequent in limestone soil, 7 miles north of Austin, October 24, 1944 (SMU, TEX); Tharp 48-446, Colorado River flood plain, Austin, October 10, 1948 (GH, OKLA, TEX); Warnock 45-55, plant easily 15 feet high, abundant on silty banks of Colorado River, Zilker Park, Austin, October 14, 1945 (GH, SMU, TEX); Warnock 45-60, infrequent on limestone slopes of Mt. Bonnell, 3 miles northwest of Austin, October 15, 1945 (OKLA, TEX); Warnock W1033,

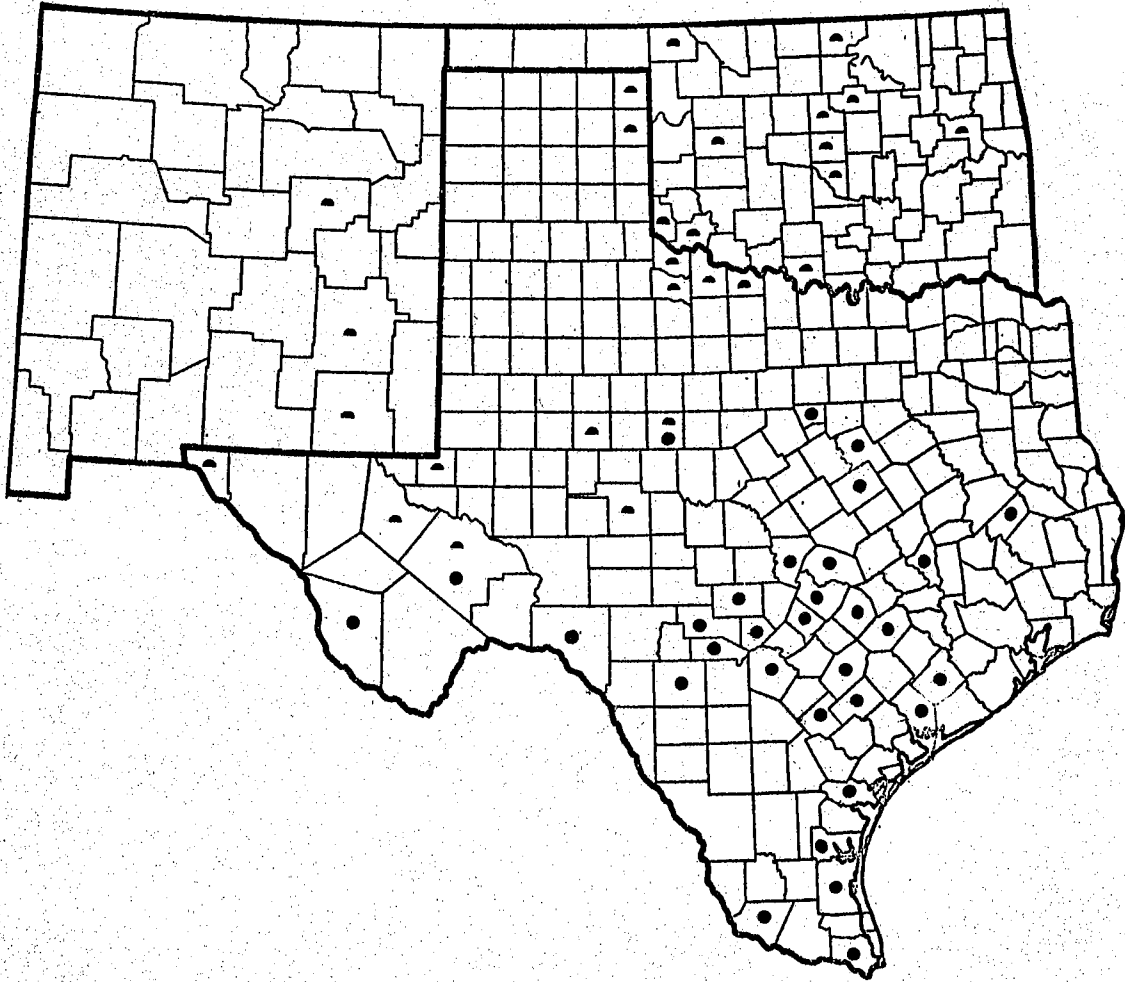


Fig. 4. Distribution of Baccharis neglecta (●) and B. salicina (▲).

frequent on limestone hills at Harthaven, October 6, 1944 (TEX); Young, October 25, 1913, above the spring, Barton Creek (TEX); TRINITY COUNTY: Daprich 7000, Trinity Bottoms, date unknown (SMU); UVALDE COUNTY: Cory 7555, Montell Creek, November 7, 1933 (GH); VAL VERDE COUNTY: Cory 15253, mouth of Devil's River, July 6, 1935 (GH); WHARTON COUNTY: Shimmers 25285, railroad embankment, silty clay, shrub 1.7 meters tall, 2.8 miles northeast of Louise, October 13, 1956 (OKLA); WILLIAMSON COUNTY: Shimmers 16853, hilltop pasture, limestone gravel and silty clay, abundant, virgately branched, shrubs 1.5-2 meters tall, 2.3 miles north of Leander, November 2, 1953 (SMU); COUNTY undetermined: Lindheimer 168, shrub, with stems of 1 inch thick, 5-9 feet high, gravelly banks of Cibolo, September 1849 (GH); Lindheimer 634, Flora Texana exsiccata, Fasc. IV, 1847-48 (GH, SMU); Lindheimer 635, Flora Texana exsiccata, Fasc. IV, 1847 (GH, SMU); Palmer 538, September 1879, to October 1880 (GH); Thurber 52, Sabine Creek, October 1850 (GH); STATE undetermined: Wright 302, collected in expedition from western Texas to El Paso, New Mexico, May-October, 1849 (GH); Wright 303, collected in expedition from western Texas to El Paso, New Mexico, May-October, 1849 (GH).

8. Baccharis salicina (Nutt.) T. & G. Fl. N. Amer. 2: 258. 1842; B. salicifolia Nutt. in Trans. Philos. Soc. new series. 7: 337. 1841.

Shrub with branchlets striate-angled; 45-105 cm. tall; glabrous; leaves alternate, nearly sessile, oblanceolate-oblong, obtuse-acute, serrate with salient distant teeth (approximately 5 mm. apart), 30-40 (60) mm. long, 4-8 (15) mm. wide, wider leaves distinctly 3-nerved; pistillate heads 25-30 flowered; involucre campanulate, 6 (8) mm. long; phyllaries ovate-lanceolate, obtuse-acute, reddish-brown tipped,

margins scarious, erose, spreading when mature; receptacle flat, naked and slightly pitted; corolla filiform, 3-4 mm. long, 5 minute linear lobes, up to .3 mm. long; style exerted beyond corolla lobes, bifurcate; pappus in 2 series, flaccid, up to 12 mm. long, forming a united ring when separating from achene; achenes 1.2-2.0 mm. long, glabrous, 8-10 ribbed; staminate involucre hemispherical, 4 (3.5-4.5) mm. long; phyllaries ovate-lanceolate, obtuse-acute, margins scarious, erose; receptacle flat, naked, pitted; corolla filiform with upper gradually funnelform, 3.3-4.3 mm. long, 5 linear lobes ca. 1 mm. long; style clavellate, exerted; pappus equal to corolla, plumosely tipped, 4 (3-4.5) mm. long, crisped; ovary abortive. Figure 4.

TYPE: not cited, but from banks of the Arkansas River.

Some specimens have characteristics of both B. salicina and B. Emorvi, but can be separated by the shape of the involucre. The involucre of B. Emorvi is narrowly cylindrical with the phyllaries appressed and not readily spreading out upon maturity.

Specimens examined: NEW MEXICO: CHAVES COUNTY: Rheder 351, shrub 3-6 feet, altitude 3300 feet, Roswell, August 16, 1916 (GH); EDDY COUNTY: Whitehouse 16875, low shrubs, 18-40 inches high, abundant, 1.4 miles north of Loving on Highway 285, September 17, 1946 (SMU); GUADALUPE COUNTY: Darrow and Haskell 3369, along Pecos River banks, Santa Rosa, October 8, 1945 (ARIZ); OKLAHOMA: CLEVELAND COUNTY: McClary, July 30, 1935, east of Norman (OKL); CUSTER COUNTY: Mericle 437, alluvial soil near Panther Creek, 8 miles northwest of Butler, date unknown (OKL); Mericle 731, prairie close to pond, 5 miles northwest Weatherford, Twp. Cedar, date unknown (OKL); Mericle 968, sandy soil near South Canadian River, 4 miles northeast of Thomas, Twp. Deer

Creek, date unknown (OKL); HARMON COUNTY: Waterfall 8323, valley of the Red River, 3 miles west and 7 south of Hollis, July 21, 1948 (OKL, OKLA); HARPER COUNTY: Waterfall 8627, along the Cimarron River near Highway 64, 20 miles east of Buffalo, August 21, 1948 (OKL, OKLA); JACKSON COUNTY: Stratton 304, sandy soil near North Fork of Red River, east of Headrick, August 5, 1927 (SMU); JEFFERSON COUNTY: Waterfall 9173, pasture, 14 miles south of Ringling, July 15, 1949 (OKL, OKLA); KAY COUNTY: Evans 92, loam soil, 3 miles west of Kaw City, August 8, 1937 (OKLA); LOGAN COUNTY: Keyser 6003, sandy river valley, near Guthrie, July 5, 1916 (OKL); MUSKOGEE COUNTY: Little, July 21, 1929 (OKL); OKLAHOMA COUNTY: Waterfall 2338, near pond, valley of North Canadian River, 5 feet tall, 3 miles west and  $1\frac{1}{2}$  miles north of Oklahoma City, August 5, 1940 (OKL); PAYNE COUNTY: Eakins 54, clay loam, 3 miles north and 1 mile west of Stillwater, August 18, 1937 (OKL); Stratton 4397, sandy soil near Cimarron River, 1 mile south of Perkins, August 9, 1938 (OKLA); TEXAS: EL PASO COUNTY: Cory 2595, July 18, 1928 (GH); FOARD COUNTY: Whitehouse 10791, in deep sand along Pease River, 15.2 miles south of Quannah on Highway 283, September 7, 1945 (SMU); Whitehouse 10795, in deep sand along Pease River, 15.2 miles south of Quannah, September 7, 1945 (SMU); HARDEMAN COUNTY: Whitehouse 10765, frequent along banks of Red River, east of Highway 283, 7.2 miles north of Quannah, September 7, 1945 (SMU); Whitehouse 10790, gyp soil along highway, rare locally, 14.2 miles south of Quannah on Highway 283, September 7, 1945 (SMU); HEMPHILL COUNTY: Reed 4005, Canadian Valley, September 5, 1934 (TEX); LIPSCOMB COUNTY: Wallis 5144, sandy valley of Wolf Creek,  $\frac{1}{4}$  mile north of Lipscomb on Texas Highway 305, July 16, 1957 (OKLA, SMU); MITCHELL COUNTY: Pohl 4412, bushes 2-6 feet tall,

rough broken land west of Colorado City, October 9, 1942 (SMU); PECOS COUNTY: Cory 6872, 1 mile northeast of Fort Stockton, September 5, 1933 (GH); REEVES COUNTY: Correll 13987, flowers white, shrub 5 feet tall, along canal, 2 miles west of Toyahvale, August 19, 1946 (SMU); TAYLOR COUNTY: Cory 2603, August 28, 1928 (GH); Cory 2606, August 28, 1928 (GH); TOM GREEN COUNTY: Cory 4864, Spring Creek, south of Tankersley, September 13, 1932 (GH); WARD COUNTY: Kiltz K-813, shrub 4 feet, on alkali flats, near Grandfalls, August 11, 1941 (GH); WICHITA COUNTY: Tharp 594, Red River above Burkburnett, July 17, 1921 (TEX); WILBARGER COUNTY: Whitehouse 10953, sand near pond, south bank of Red River, west of Highway 183,  $6\frac{1}{2}$  miles north of Oklaunion, date unknown (SMU); WINKLER COUNTY: Warnock 8785, shrub up to 6 feet tall, rooting in gyp soil surrounded by deep sand, 20 miles northwest of Monahans, altitude 2800 feet, June 7, 1950 (SMU); COUNTY unknown: Wright 304, collected in expedition from western Texas to El Paso, New Mexico, May-October, 1849 (GH).

9. Baccharis Bigelovii Gray, Torr. Bot. Mex. Bound. 84. 1859.

Low woody shrub, branchlets striate-angled; glabrous; leaves alternate, punctate, oblong-obovate, obtuse, cuneate with short petiole, irregularly incised to coarsely serrate, 3 (2-3.5) cm. long, 7 (3-15) mm. wide, 1-nerved, may be indistinctly 3-nerved; inflorescence a corymb, may be united so as to appear paniculate; pistillate involucre campanulate, 5 mm. long; phyllaries loosely imbricated, lanceolate, acute, scarious margined, green to brownish midrib; receptacle slightly alveolate, flat and naked; corolla filiform, 2-2.6 mm. long, minutely 5 toothed, ca. .2 mm. long; pappus minutely antrorsely barbed, slightly rigid, in 1 series, 3-4.5 mm. long, only slightly exceeding style;

mature achenes ca. 1.6 mm. long, yellow, brown or reddish in color, glabrous, 5 ribbed; staminate involucre campanulate, ca. 4-5 mm. long; phyllaries loosely imbricated, lanceolate, acute, scarious margined, erose, green to brownish midrib; receptacle slightly alveolate, flat, and naked; corolla filiform enlarging to funnelform throat, ca. 3.6 mm. long, 5 lanceolate lobes ca. 1.3 mm. long; pappus ca. 3.5 mm. long, not exceeding style, plumosely tipped, crisped; ovary abortive. Figure 5.

TYPE: the characters for this species were taken from several collections observed by Gray: "Wright (1200) male, Puerto de Paysano; Bigelow (both sexes), oak woods between Babocomori and Santa Cruz; Thurber". The leaf character was taken from Bigelow's specimens which were "much broader than in Wright's or Thurber's, more irregularly toothed or incised, and all obtuse, while those of Wright's are lanceolate or linear-lanceolate, and often acute" (38). The type specimen should be selected from the collections of Bigelow and Thurber. The type of inflorescence is not always distinct between B. Bigelovii and B. thesioides. The leaf shape and margins are quite distinct and are used to separate the two taxa in this treatment. On this basis, Wright 1200 is therefore referred to B. thesioides.

Specimens included 12 sheets from 10 collections: TEXAS: BREWSTER COUNTY: Cory 40483, 6 miles west of Alpine, Davis Mts., September 27, 1942 (TEX); Cory 40485, 6 miles west of Alpine, Davis Mts., September 27, 1942 (GH); Sperry T643, north Sunny Glenn Creek bed, October 9, 1938 (GH); JEFF DAVIS COUNTY: Barkley 14T826, in rich loam and lava rock of Limpia Canyon near Fort Davis, October 2, 1944 (OKLA); Barkley 14T834, in rich loam and lava rock of Limpia Canyon near Fort Davis, October 2, 1944 (TEX); Hinckley, Pine Canyon, Mt. Livermore, September



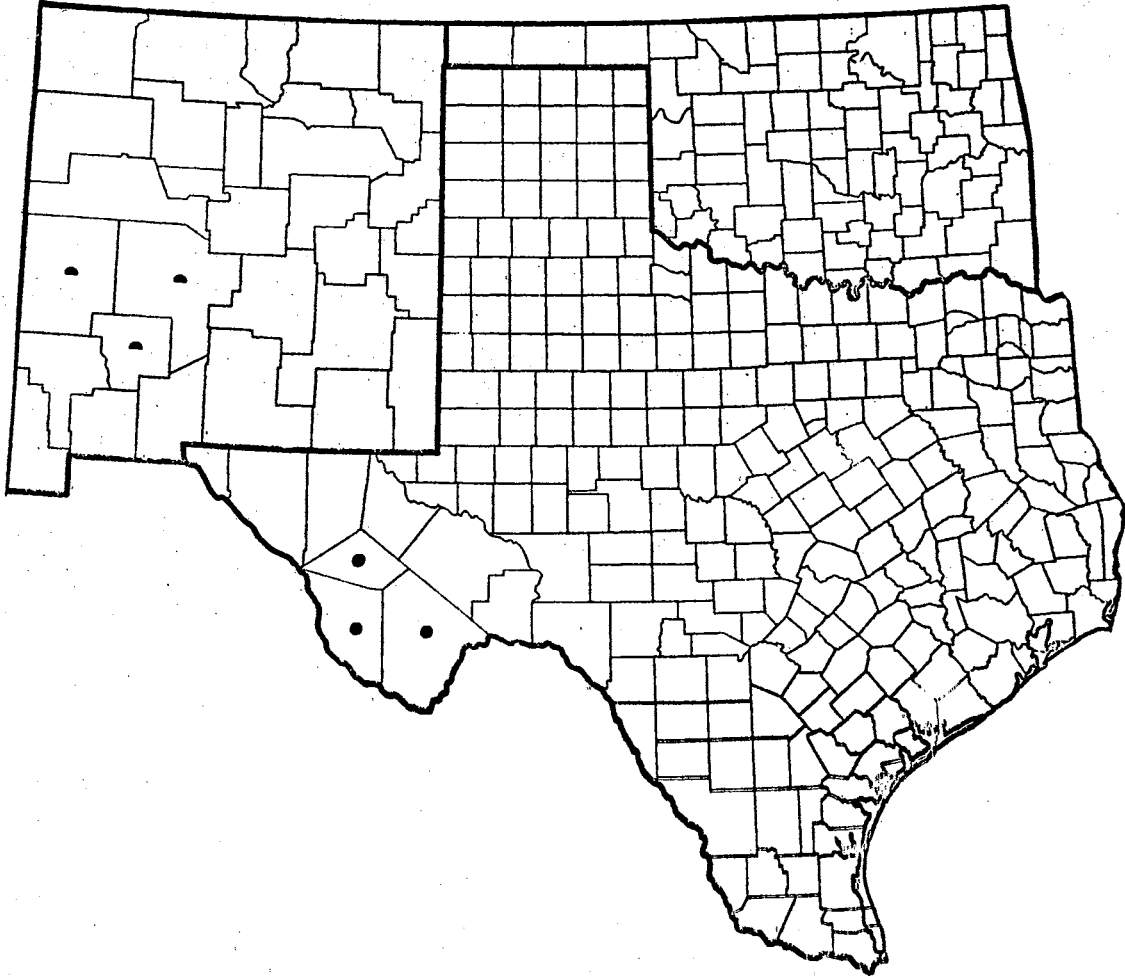


Fig. 5. Distribution of Baccharis birelovi (●) and B. thesioides (■).

2, 1935 (TEX); Palmer 32166, dry rocky ground in valley of Limpia Creek near Fort Davis, October 10, 1926 (GH, TEX); Turner 8143, infrequent low shrub, Little Aguya Canyon below Indian Painting, August 23, 1948 (TEX); Young, September 12, 1919, Davis Mts. (TEX); PRESIDIO COUNTY: Hinckley 46949, infrequent in Tigna Canyon, on northside of the Chinati Mts. on Woods Ranch, 18 miles northwest of Shafter, altitude 5300 feet, November 10, 1946 (TEX).

10. Baccharis thesioides H.B.K. Nov. Gen. et Sp. 4: 48. 1820; B. ptarmicaefolia DC. Prod. 5: 419. 1836; B. sulcata DC. Prod. 5: 419. 1836.

Suffruticose, 30-55 cm. tall, branchlets striate-angled; glabrous; slightly glutinous; leaves punctate and alternate, linear or lanceolate with acute apices, leaf base attenuate and sessile, usually evenly and closely serrate, 30-40 mm. long, 5 mm. wide, 1-nerved; inflorescence corymbose to elongated panicle; pedicels glandular; pistillate head about 30 flowered; involucre campanulate, about 5 mm. long; phyllaries rather loosely imbricated, lanceolate, obtuse, margins scarious, erose, green or brownish center; receptacle slightly alveolate, flat, and naked; corolla filiform, 2.3-3 mm. long, truncate and erose to irregularly lobed, .2 mm. long; pappus 4.3-5.5 mm. long, slightly rigid, minutely antrorsely barbed, 1 (2) series; achenes ca. 2.3 mm. long, glabrous, 5 ribbed; staminate head 20-30 flowered; involucre campanulate, ca. 5 mm. long; phyllaries loosely imbricated, lanceolate with obtuse or acute apices, green to brownish midribs, margins scarious, erose; receptacle slightly alveolate, flat and naked; corolla filiform enlarging to funnelform throat 3.8-5.3 mm. long, 5 lanceolate lobes each ca. 1.6 mm. long; pappus 4-4.3 mm. long, slightly to conspicuously

plumosely tipped, crisped; ovary abortive. Figure 5.

TYPE: no specimens were cited in the original description.

Wright 1200 was observed by Gray (14) in 1853 with the comment "I should refer this rather to B. thesoides, but the bristles of the pappus are clavellate-thickened above".

Specimens examined had a pappus that was either conspicuously or inconspicuously plumose at the apices. The leaf shape and margins are therefore utilized as key characters.

Specimens examined: NEW MEXICO: SOCORRO COUNTY: Metcalf 585, collected in the Mogollon Mts., on or near the west fork of the Gila River, altitude 8000, August 23, 1903 (ARIZ); SIERRA COUNTY: Metcalf 1423, growing among boulders, 7500 feet altitude, Carpenter Creek, September 26, 1904 (GH); CATRON COUNTY: Rusby, October 1881, shady hillsides, Mangas Springs (GH); COUNTY unknown: Wright 1200, 1851 (GH).

11. Baccharis Haywardi Gray, Syn. Fl. N. Amer. 1 (2): 224. 1884.

Suffruticose, 15-70 cm. tall with branchlets striate-angled; glabrous; glutinous; leaves alternate, small with plant appearing sparsely leaved, sessile, spatulate to narrowly linear, up to 4 cm. long, 3 mm. wide, upper margins irregularly incised to form teeth up to 2 mm. long or maybe entire (if entire, leaves are spatulate), saliently 1-nerved, upper leaves bractiform; inflorescence widely paniculate; pistillate involucre campanulate, 4 (4.5) mm. long; heads pedunculate from leaf axils; phyllaries oblong or lanceolate with obtuse or acuminate apices, green or brownish midribs, margins scarious and slightly erose; receptacle flat, naked and nearly smooth; corolla filiform, ca. 2.8 mm. long, truncate or with 5 lobes up to .3 mm. long; pappus up to 4 mm. long, in one series, rigid, and minutely antrorsely barbed;

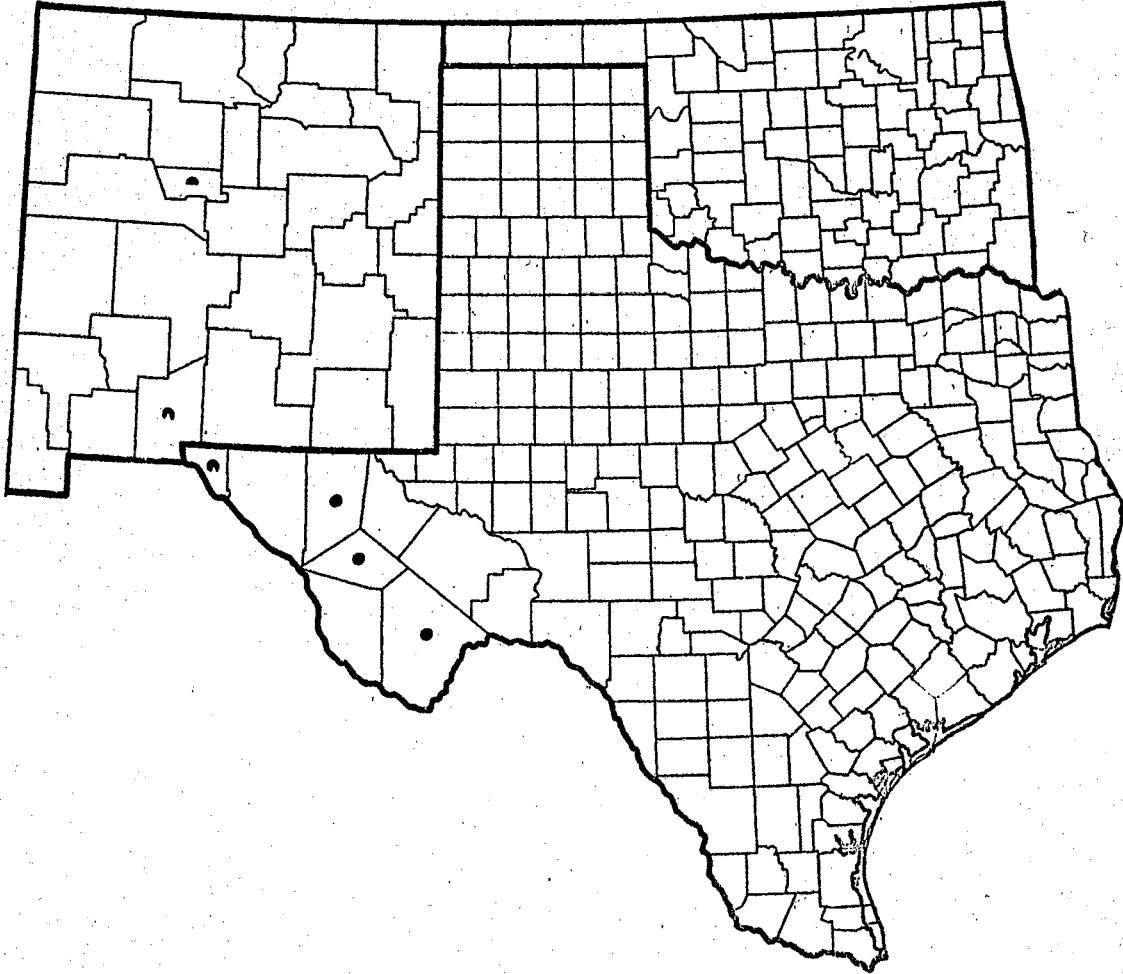


Fig. 6. Distribution of Baccharis Havardi (●),  
B. pilularis (-), and B. viminea (●).

achene ca. 2.3 mm. long; glabrous, 5 nerved; staminate involucre semicampanulate, 3 mm. long; phyllaries oblong or lanceolate with obtuse or acute apices, green or brownish midribs, margins scarious; receptacle flat, naked, nearly smooth; corolla 3 mm. long, filiform and abruptly funnelform with 5 lobes ca. 1.1 mm. long; pappus nearly 3 mm. long, rigid, plumosely tipped, and minutely, antrorsely barbed; ovary abortive. Figure 6.

TYPE: not seen; collected by Havard in the Guadalupe Mountains of western Texas.

Specimens from Glass Mountains have spatulate leaves that are remotely toothed to entire.

Specimens examined: TEXAS: BREWSTER COUNTY: Correll 13655A, small shrubby plant, on rocky slope of Mt. Emory, in Basin, Chisos Mts., August 5, 1946 (SMU); Correll 13693, flowers yellow and white, rock crevices near summit of Mt. Emory, Chisos Mts., August 7, 1946 (SMU); Mueller 8192, Chisos Mts., August 14, 1931 (GH, SMU, TEX); Mueller 32008, Chisos Mts., talus, July 25, 1932 (TEX); Mueller, July 26, 1932, Chisos Mts., (GH, TEX); Warnock W280, infrequent on rocky upper slopes of Baldy Peak, Glass Mts., July 13, 1940 (GH, SMU, TEX); Warnock W280, abundant locally among dense underbrush near top in rocky limestone soil of Baldy Peak, Glass Mts., July 13, 1940 (GH); Warnock and Churchill 6949, frequent low perennial, west limestone slopes of Gilliland Peak, Glass Mts., altitude 5400 feet, August 29, 1947 (SMU); Warnock 7088, infrequent on igneous boulders at Boot Spring, Chisos Mts., altitude 7500 feet, September 2, 1947 (SMU); CULBERSON COUNTY: Shimmers 9061, north-facing slopes, limestone and silt, common, corollas cream color, anthers yellow, Pine Springs Canyon, Guadalupe Mts., elevation about

5700 feet, August 15, 1946 (SMU); Warnock and Turner 191, infrequent in limestone soil, Pine Top Mt., altitude 8200 feet, September 16, 1948 (SMU); Warnock 9425, frequent perennial, limestone soil below Pratt Lodge, McKittrick Canyon, Guadalupe Mts., altitude 5000 feet, 1950 (SMU); Warnock 12019, infrequent low perennial in South McKittrick Canyon, top of Guadalupe Mts., J.C. Hunter Ranch, altitude 8000 feet, September 5, 1954 (SMU); Waterfall 5269, calcareous soil on limestone foothills of Guadalupe Mts., among scattered scrub oaks, 5 miles north-east of Pine Springs, July 22, 1943 (ARIZ, GH, OKL, SMU, TEX);

Whitehouse 17131, flowers greenish-white, Pine Spring Canyon near first bend above camp, Guadalupe Mts., September 23, 1946 (SMU); Whitehouse 17132, shrubby-based perennial, corolla white, Guadalupe Mts., Pine Springs Canyon near lower bend, September 23, 1946 (SMU); JEFF DAVIS COUNTY: Young August 16, 1916, Davis Mts. (TEX).

12. Baccharis pilularis DC. Prod. 5: 407. 1836.

Shrub, branchlets striate-angled; glabrous; leaves alternate, punctate and partially glutinous, oblong to elliptic, apices rounded with abruptly attenuate base, subsessile, 1.5 cm. long or less, 6 mm. wide, prominently 1-nerved; pistillate inflorescence elongated, paniculate with short lateral branches terminating either in solitary heads or in sessile to pedicellate glomerules; heads about 50 or more flowered; involucre campanulate, up to 7 mm. long, phyllaries ovate or lanceolate, obtuse or acute; margins scarious, erose, green to purplish tipped; receptacle flat, alveolate with several subulate bracts from 1-1.5 mm. long; corolla filiform, 4 mm. long with 5 linear lobes; pappus 7 mm. long, 1-2 seriate; achenes immature, 1 mm. long, 8-10 ribbed, glabrous.

Figure 6.

TYPE: "in California legit cl. Douglas", unseen.

Only one specimen was observed: NEW MEXICO: BERNALILLO COUNTY:  
Dittmer, Isleta marshes, Isleta, May 12, 1952 (SMU).

13. Baccharis viminea DC. Prod. 5: 400, 401. 1836.

Shrub, lateral branches woody and terete, striate, becoming herbaceous and striate-angled; glabrous; glandular; leaves crowded, alternate, punctate, leaf base attenuate to acute forming a rather distinct petiole, narrowly elliptic, tapering acutely at both ends, entire to minutely serrate, 3-5 cm. long, 5 (10) mm. wide, 1 nerved with 2 indistinct lateral nerves narrowly paralleling margin; inflorescence of small corymbs terminating numerous lateral branches; pistillate heads 50 flowered or more, involucre campanulate to semihemispherical, 4 mm. (immature) long; phyllaries ovate to lanceolate, obtuse to acute, stramineous to brown-purplish tipped, scarious margined, erose; receptacle flat, smooth, and naked; corolla filiform, 5 small lobes; pappus in single series; achene glabrous; staminate heads about 20 flowered; involucre broadly hemispherical, ca. 3 mm. long, up to 5 mm. wide; phyllaries ovate to lanceolate, obtuse to acute, scarious margined, erose; receptacle flat, naked and smooth; corolla filiform with upper enlarged and funnelform, 5 lanceolate lobes; pappus 3 mm. long, plumose-ly tipped, crisped; ovary abortive. Figure 6.

TYPE: not seen, collected by Douglas in California.

This species has not been previously reported from New Mexico. Kearney and Peebles (21) give the range as southwestern Utah and western Arizona to California.

Specimens examined: NEW MEXICO: DONA ANA COUNTY: Parker 1958, patch near edge of waterfall, Organ Mountains, Modoc Canyon, 16 miles

northeast of State College, altitude 4800, April 15, 1934 (OKLA);  
County undetermined: Whitehouse 8449, Globe Springs, April 17, 1932  
(TEX); TEXAS: EL PASO COUNTY: Cory 3543, sewage disposal plant, April  
24, 1930 (GH).

14. Baccharis angustifolia Michx. Fl. Bor. Amer. 2: 125. 1803;  
B. salicina Gray, auct. non Nutt. Pl. Wright. 1: 101. not of Pl.  
Wright. 2.

All sheets labeled B. angustifolia Michx. from Texas have been  
referred to B. neglecta Britton.

15. Baccharis Emoryi Gray, in Torr. Bot. Mex. Bound. 83. 1859;  
B. salicina Rothr. auct. non Nutt. Wheeler Rept. 6: 156. 1878; B.  
pilularis Nutt. auct. non DC. Trans. Amer. Philos. Soc. new series.  
7: 337. 1841.

All specimens previously identified as B. Emoryi Gray from the  
area of study have been referred to B. salicina (Nutt.) T. & G.

16. Baccharis sarothroides Gray, Proc. Amer. Acad. Sci. new  
series. 9: 211. 1882.

No specimens were seen from the area studied. This species is  
included in the keys because of the previous reports of Wootton and  
Standley (41) from New Mexico.



## SUMMARY

The genus Baccharis is represented by 14 species in Oklahoma, Texas, and New Mexico. One of these, B. sarothroides, was not seen while 2 other species previously recorded, B. angustifolia and B. Emoryi, are referred to other species. Evidence indicates B. angustifolia and B. Emoryi are not found within the area of study.

Four species occur in Oklahoma (B. halimifolia, B. salicina, B. texana, B. Wrightii), 7 in New Mexico (B. glutinosa, B. pilularis, B. pteronioides, B. salicina, B. thesioides, B. viminea, B. Wrightii), while 11 are found in Texas (B. Bigelovii, B. brachyphylla, B. glutinosa, B. halimifolia, B. Havardi, B. neglecta, B. pteronioides, B. salicina, B. texana, B. viminea, B. Wrightii).

The study includes an indented dichotomous key, descriptions of the species, synonymy, specimen citations, distribution maps, and illustrations of selected specimens.

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## PLATE I

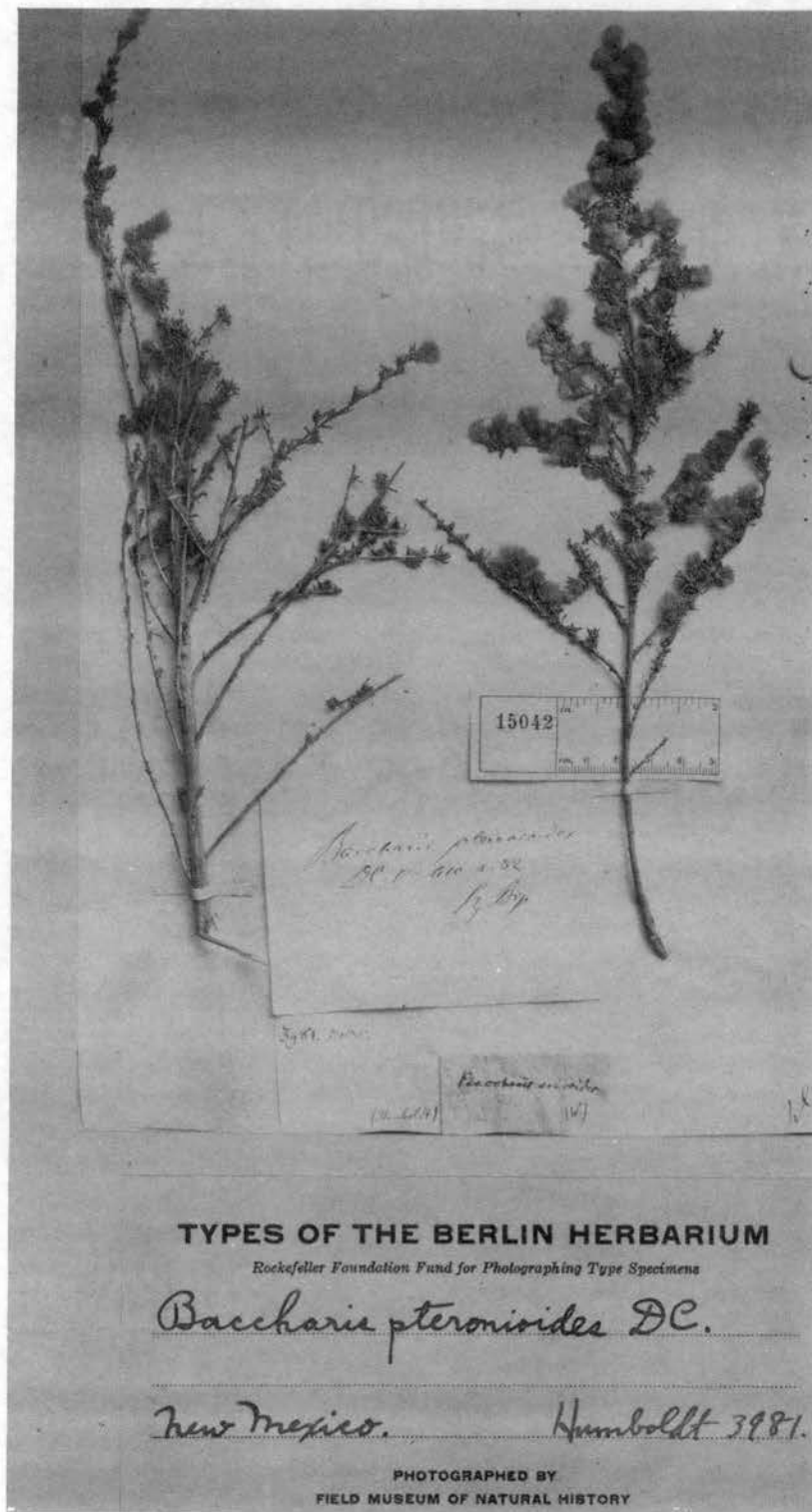


Fig. 7. Photograph of the Type of *Baccharis pteronioides* DC

## PLATE II

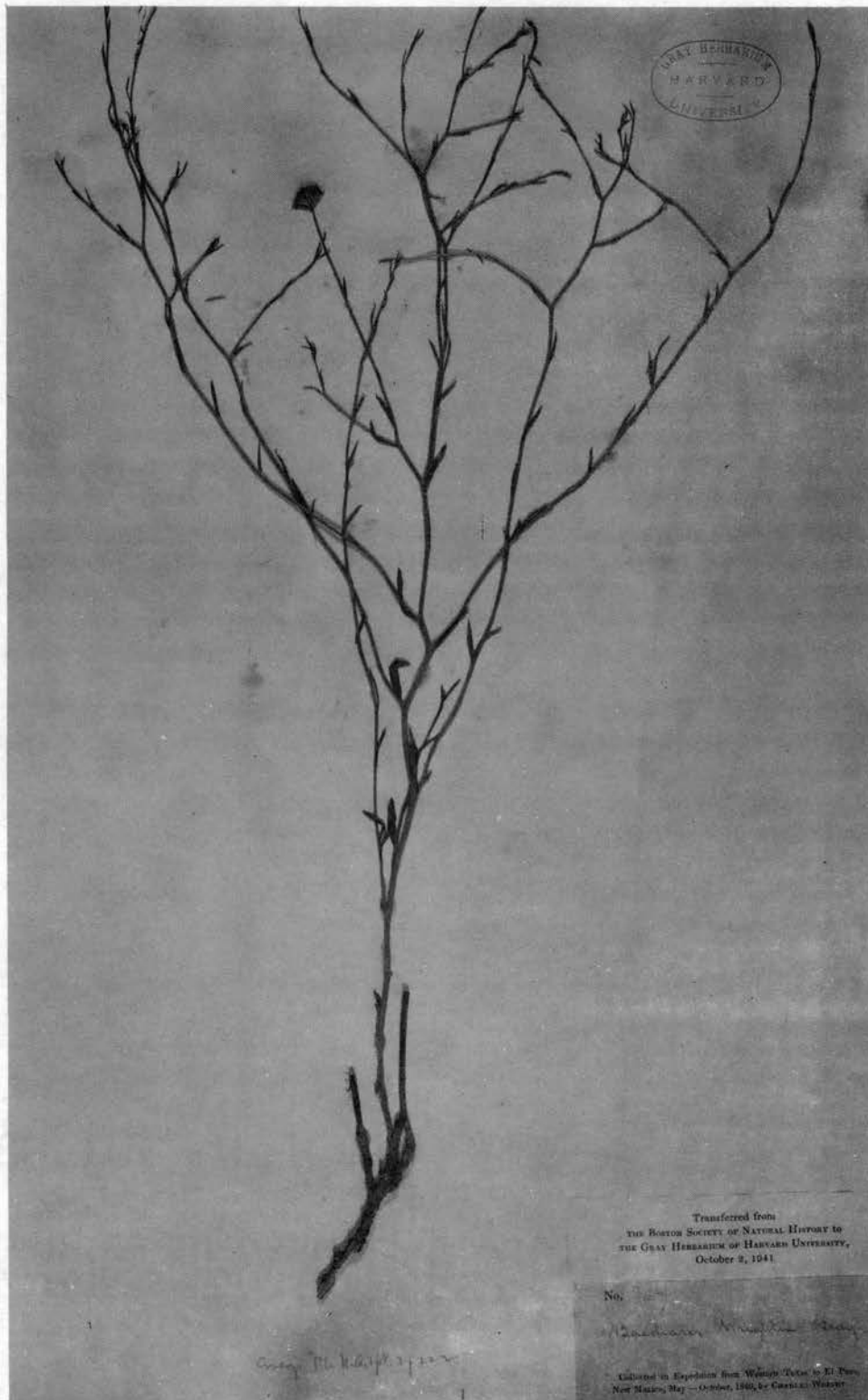


Fig. 8. Type of Baccharis Wrightii Gray

VITA

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