CASTANEA 73(1): 46–69. MARCH 2008

The Genera *Desmodium* and *Hylodesmum* (Fabaceae) in Alabama

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ABSTRACT Twenty species of *Desmodium* and three species of *Hylodesmum* occur in Alabama. Of these, all are native except *D. tortuosum*, which is introduced from tropical America. The most common species are *D. paniculatum* and *H. nudiflorum*. The least common species are *D. floridanum* and *D. fernaldii*. *Desmodium ochroleucum*, which has a global rank of G2G3 and a state rank of S2, was known from seven extant populations from five counties in 2003. Results from this study identified four additional populations from Butler, Monroe, Montgomery, and Wilcox Counties, all of which are county records. Dichotomous keys and descriptions were generated based on morphological features of the vegetative and reproductive structures of the more than 1,000 specimens studied during this project. Data for the county-level distribution maps were compiled entirely from herbaria vouchers.

INTRODUCTION *Desmodium* Desvaux consists of approximately 300 species, and with the exception of Europe, has a nearly worldwide distribution (Isely 1990). Fifty species and six infraspecific taxa of *Desmodium* have been reported from the United States (NatureServe 2005). Of these, twenty-six species and three infraspecific taxa have been reported from the southeastern United States (Isely 1990).

Based on morphological characteristics, Ohashi and Mill (2000) proposed to split 14 species out of *Desmodium* and place them in the newly described genus *Hylodesmum*. In Alabama, three species, *Desmodium glutinosum* (Muhl. ex Willd.) Wood, *D. nudiflorum* (L.) DC., and *Desmodium pauciflorum* (Nutt.) DC., are affected by this proposal. More recently, Raveill et al. (2005) using chloroplast DNA analyzed two of these three species, *D. glutinosum* and *D. nudiflorum*, and found that they are closely related to each other but differ from 13 other North American species of *Desmodium* that were also examined. In the past, these three species, when recognized in the genus *Desmodium*, have been placed in series *Americana* (Schubert 1950a, 1950b) or section *Podocarpium* (Isely 1951).

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Received May 8, 2007; Accepted December 12, 2007.

Phylogeny

Desmodium is a member of the legume family Fabaceae (Leguminosae), subfamily Papilionoideae, tribe Desmodieae, subtribe Desmodiinae (Bailey et al. 1997). Sampling within the Desmodieae has not been extensive and therefore it is unknown if this tribe is a monophyletic lineage (Wojciechowski 2003). Although the absence of the chloroplast *rpl2* intron helps to define the tribe (Bailey et al. 1997), molecular studies by Doyle (1994) and Wojciechowski (2003) suggest an affinity with the tribe Phaseoleae.

Conservation Biology

Desmodium ochroleucum M.A. Curtis ex Canby was designated a Category-2 candidate for listing as endangered or threatened under 16 U. S. C. 1531 et seq., the Endangered Species Act amended in 1988. Although the Category-2 rank, which included taxa for which ''proposing to list as threatened or endangered is possibly appropriate, but for which sufficient data on biological vulnerability and threats are not currently available to support proposed rules'' was discontinued by the United States Fish and Wildlife Service (1996), this taxon remains a ''species of concern'' to the Fish and Wildlife Service, but this ranking has no formal status. The Alabama Natural Heritage Program (2003) ranked this taxon as a ''species to be monitored'' and assigned it a global rank of G2G3

(15 to 20 occurrences) in its 11 state range across the Southeast and Mid-Atlantic Regions of the United States (Schotz 2003). In Alabama, this taxon has been reported from nine populations (seven extant) in seven counties (five with extant populations) and the Alabama Natural Heritage Program assigned it a state rank of S2 (6 to 20 occurrences) making it vulnerable to extirpation from the state (Schotz 2003).

METHODS Geographical data used to generate the county-level distribution maps were compiled entirely from the more than 1,000 herbarium specimens analyzed during this study. In addition to the specimens deposited in the Troy University Herbarium (TROY), specimens were obtained on loan from the following herbaria: Auburn University (AUA), Jacksonville State University (JSU), University of Alabama (UNA), University of North Alabama (UNAF), University of South Alabama (USAM), and Vanderbilt University (VDB), which is located at the Botanical Institute of Texas (BRIT) in Fort Worth.

The dichotomous keys are modifications of Isely (1990) and Weakley (2007); however, all measurements are based on morphological features of the vegetative and reproductive structures of the plants analyzed during this study. Descriptions for each taxon are based on Isely (1990); however measurements were taken from the specimens studied and incorporated into the description if they differed. Illustrations of *Desmodium fernaldii* B.G. Schub., *D. nuttallii* B.G. Schub., *D. tenuifolium* Torr. & A. Gray, and *D. tortuosum* (Sw.) DC., are by the author. All other illustrations are from Britton and Brown (1913). The lists of specimens examined are limited to one record from each county.

Herbarium specimens were initially divided into groups based on overall morphological similarity and the species concept established by Isely (1990) and Weakley (2007). Morphological measurements were then made from selective specimens of each group.

RESULTS Twenty species and no infraspecific taxa of *Desmodium* and three species and no infraspecific taxa of *Hylodesmum* occur in Alabama. Of these, all are native except *D. tortuosum* (Sw.) DC., which is introduced from tropical America (Isely 1990). The most common species of *Desmodium* are *D. paniculatum* (L.) DC. (39 counties), and *D. ciliare* (Muhl. ex Willd.) DC. (35 counties). The least common species are *D. floridanum* (3 counties), *D. fernaldii* B.G. Schub. (4 counties), and *D. sessilifolium* (Torr.) Torr. & A. Gray (6 counties). The most common species of *Hylodesmum* is *H. nudiflorum* (L.) H. Ohashi & R.R. Mill (37 counties) and the least common species is *H. pauciflorum* (Nutt.) H. Ohashi & R.R. Mill (17 counties).

KEY TO THE GENERA

1. Calyx bracteolate, lower calyx lobes equal to or longer than the calyx tube; stipe of fruits less than 5 mm long, less than 3 times as long as the calyx, lower margin of fruits not incised to the upper suture between segments; stamens diadelphous . . . . . *Desmodium*
1. Calyx ebracteolate, all calyx lobes shorter than calyx tube; stipe of fruits 6–20 mm long, 3 or more times longer than calyx, lower margin of fruits incised to the upper suture between segments; stamens monodelphous . . . . *Hylodesmum*

TAXONOMIC TREATMENT OF *DESMODIUM*

Desmodium Desv., J. Bot. Agric. 1:122. 1813. nom. cons.

Meibomia Heist. ex Fabr., Enum. 168. 1759. nom. rejic.

Pleurolobus J. St.-Hil., Nouv. Bull. Soc. Philom. III. 192. 1812. nom. rejic.

Perennial roots. Stems herbaceous to woody, erect, spreading or prostrate. Leaves pinnately trifoliate; petioles 1–100 mm; stipules persistent or deciduous; leaflets entire, linear to broadly ovate or rhomboid. Inflorescence a pseudoraceme, simple or branched, terminal or axillary in prostrate species. Flowers single, white to purple; pedicels 2–18 mm long; calyx campanulate, 1.5–5.0 mm high, lobes equal or slightly longer than tube; stamens 10, diadelphous (9 + 1); pistils stipitate; ovaries 1 to 7 ovules. Fruit a loment, separated into 1–7 flat, oblong, uncinate-puberulent, 1-seeded segments; stipes 1–5 mm.

KEY TO THE ALABAMA SPECIES OF *DESMODIUM*

1. Terminal leaflets less than 10 mm wide, more than 4 times longer than

wide, thick and strongly reticulate . . . . . Key A
1. Terminal leaflets more than 10 mm wide, or less than 4 times longer than wide, thin and not reticulate 2
2. Stems trailing, vine-like . . . . . Key B
2. Stems erect of strongly ascending, not vine-like 3
3. Stipules persistent, conspicuous, 4–20 mm long . . . . . Key C
3. Stipules early deciduous, 2–8 mm long . . . . . Key D

Key A

1. Petioles 0.5–3.0 mm long; leaflets 5–10 mm wide, pubescent below, trichomes spreading on abaxial midrib . . . . . 1. *D. sessilifolium*
1. Petioles 3–15 mm long; leaflets 2–5 (–8) mm wide, glabrous to inconspicuously pubescent below, trichomes appressed or ascending on abaxial midrib 2
2. Fruit segments convex along the upper margin . . . . 2. *D. tenuifolium*
2. Fruit segments flat to concave along the upper margin . . . . 3. *D. strictum*

Key B

1. Stipules lanceolate to linear; petioles less than 15 mm long; terminal leaflets less than 25 mm long . . . . . 4. *D. lineatum*
1. Stipules ovate; petioles more than 15 mm long; terminal leaflets more than 25 mm long 2
2. Leaflets 0.9–1.2 times longer than wide; corolla blue-purple, 9–11 mm long; fruits uncinate pubescent over entire surface, segments 4.5–6.3 mm long . . . . . 5. *D. rotundifolium*
2. Leaflets 1.2–1.9 times longer than wide; corolla white to yellow, 7–8 mm long; fruits uncinate pubescent only along sutures, segments 7–10 mm long . . . . 6. *D. ochroleucum*

Key C

1. Fruit segments 3–5 mm long, equally rounded above and below; calyx 2.0–2.2 mm long . . . . . 7. *D. tortuosum*
1. Fruit segments 5–11 mm long, sinuate above and notched below; calyx 3–5 mm long 2
2. Corolla 6–7 mm long; fruit segments 2–4, 5–7 mm long . . 8. *D. floridanum*
2. Corolla 8–13 mm long; fruit segments 4–6, 6.5–11.0 mm long 3
3. Upper stems glabrous or uncinate pubescent; pedicels 4–8 mm long; fruit segments 9–11 mm long . . . 9. *D. cuspidatum*
3. Upper stems densely spreading pilose and uncinate pubescent; pedicels 8–13 mm long; fruit segments 6.5–10.0 mm long. . . . . 10. *D. canescens*

Key D

1. Fruit segments 1–4, rounded below 2
1. Fruit segments 3–5, primarily obtusely angled below 6
2. Leaflets ash-gray below; corolla 6–7 mm long; fruit segments 3–4 . . . . . 11. *D. nuttallii*
2. Leaflets green to yellow-green below; corolla 3.5–6.0 mm long; fruit segments 1–3 3
3. Leaflets 3–6 times as long as wide . . . . . 12. *D. ciliare*
3. Leaflets 1–3 times as long as wide . . 4
4. Terminal leaflets longer and narrower than lateral leaflets; middle stems sparse to densely uncinate pubescent . . . . . 13. *D. obtusum*
4. Terminal leaflets similar in length and width to lateral leaflets; middle stems glabrous to pilose (occasionally mixed with uncinate pubescence) 5
5. Stems pilose; leaflets glabrous to subappressed pubescent; petioles less than 10 mm . . . . . 12. *D. ciliare*
5. Stems glabrous to sparsely uncinate pubescent; leaflets glabrous with a few scattered trichomes; petioles more than 10 mm . . . . . 14. *D. marilandicum*
6. Leaflets densely villous below; stems densely pubescent (uncinate or non-uncinate) 7
6. Leaflets glabrous to moderately appressed villose below; stems glabrous, pilose or uncinate pubescent 8
7. Leaflets 1.5–2.0 times as long as wide; fruits curved, 2–4 segments, each 4–5 mm long . . . . . 11. *D. nuttallii*

7. Leaflets 1.0–1.5 times as long as wide; fruits straight, 3–6 segments, each 5–8 mm long . . . . . 15. *D. viridiflorum*
   8. Bracts (subtending clusters of 2–3 flowers) usually villous; plants villous; fruits incurved, 2–4 segments, each 4–5 mm long . . 11. *D. nuttallii*
   8. Bracts (subtending clusters of 2–3 flowers) not villous; plants glabrous, villous or pilose; fruits nearly straight, 3–5 segments, each 4.0–8.5 mm long 9
9. Corolla 8–10 mm long; pedicels 10–18 mm long; stems glabrous; leaflets glabrous, distinctly pale beneath . . . . . 16. *D. laevigatum*
9. Corolla 6–8 mm long; pedicels 3–12 mm long; stems glabrous or pubescent; leaflets pubescent beneath (at least on the veins), green or slightly pale beneath 10
   10. Leaflets glabrous beneath, except for uncinate pubescence on the veins; stems and petioles glabrous or uncinate pubescent . . . . . 17. *D. fernaldii*
   10. Leaflets strigose beneath to subappressed villous, and sometimes also uncinate pubescent; stems and petioles glabrous, pilose or uncinate pubescent 11
11. Leaflets 2–8 times longer than wide, glabrous to scattered appressed pubescences below, glabrous or scattered appressed pubescences above; mid-stems glabrous or scattered uncinate pubescent . . . . . 18. *D. paniculatum*
11. Leaflets 1.5–3.0 times longer than wide, pilose below, uncinate or scattered appressed pubescence above; mid-stems pilose or with uncinate pubescence 12
   12. Stems and petioles densely to scantily pilose . . . . . 19. *D. perplexum*
   12. Stems and petioles densely to scantily uncinate . . . . . 20. *D. glabellum*

1. *Desmodium sessilifolium* (Torr.) Torr. & Gray, Fl. N. Amer. 1:363. 1840. [Figure 1a]

   Hedysarum sessilifolium Torr., In: M.A. Curtis, Boston J. Nat. Hist. 1:123. 1837.
   Meibomia sessilifolia (Torr.) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 0.5–3.0 mm long; stipules subulate, deciduous; leaflets narrowly elliptic to linear-lanceolate, 40–80 mm long, 5–10 mm wide. Inflorescence terminal, branched. Corolla pale pink to reddish purple; pedicels 2–5 mm long; calyx 2.0–2.4 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 2–3, each 4.5–6.0 mm long, straight to convex above, rounded below.

Habitat and distribution in Alabama: dry upland woods, old fields and roadsides; widely scattered in the southern half of the state (Figure 1b).

Specimens examined. Cleburne County: *Spaulding 11537*, 10 October 2002 (JSU). Conecuh County: *Kral 37478*, 22 September 1969 (VDB). Lee County: *Rogers 83*, 1 April 1963 (AUA). Madison County: *Threlkeld 845*, 14 August 1996 (JSU). Pike County: *Moore 377-69*, 24 July 1969 (AUA). Sumter County: *Kral 46895*, 30 May 1972 (VDB).

2. *Desmodium tenuifolium* Torr. & A. Gray, Fl. N. Amer. 1:363. 1840. [Figure 1c]

   Hedysarum sessilifolium Torr. var. *angustifolium* Torr., In: M.A. Curtis, Boston J. Nat. Hist. 1:123. 1837.
   Meibomia tenuifolia (Torr. & A. Gray) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 3–10 mm long; stipules linear, deciduous; leaflets linear to oblong, 30–70 mm long, 3–13 mm wide. Inflorescence terminal, branched. Corolla pink; pedicels 6–10 mm long; calyx 1.5–2.0 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 1–3, each 3.5–5.0 mm long, convex above, rounded below.

Habitat and distribution in Alabama: mesic woods, marshes, swamps; scattered in the eastern and southwestern sections of the state (Figure 1d).

Specimens examined. Baldwin County: *Mohr s.n.*, September 1883 (UNA). Cleburne County: *Rutland 1513*, 11 September 1995 (AUA). Coosa County: *Rutland 1335*, 10 September 1975 (AUA). Dale County: *Diamond 14662*, 2 September 2004 (TROY). Elmore County: *Bedwell 303*, 11 October 1973 (AUA). Etowah County: *Kral 76815*, 3 August 1989 (VDB). Geneva County: *MacDonald 12224*, 4 October

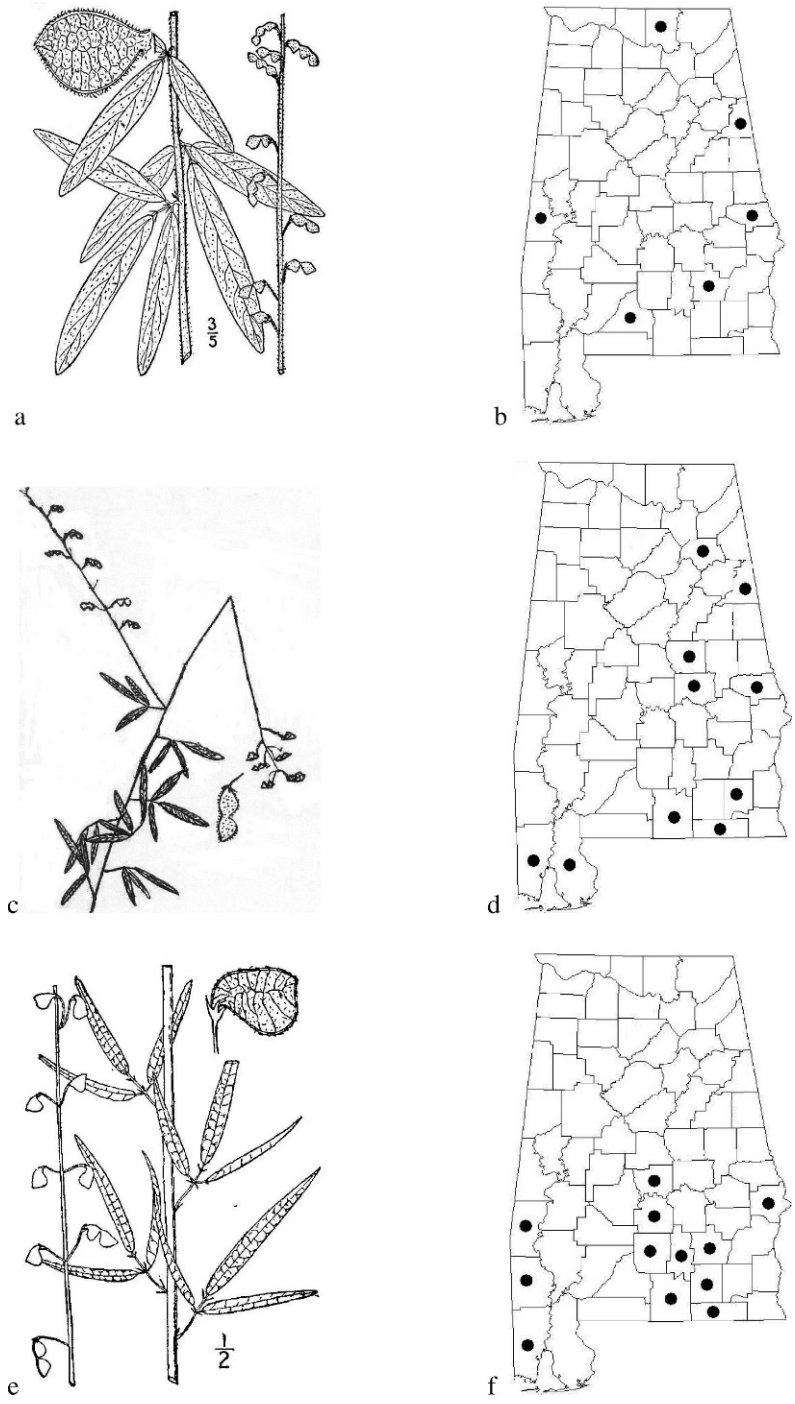

Figure 1. a) illustration of *Desmodium sessilifolium*, b) distribution of *D. sessilifolium*, c) illustration of *D. tenuifolium*, d) distribution of *D. tenuifolium*, e) illustration of *D. strictum*, f) distribution of *D. strictum*.

1998 (VDB). Lee County: *Flournoy 9*, 28 September 1973 (AUA). Mobile County: *Lelong 3765.3*, 18 September 1967 (USAM). Russell County: *Kral 44201*, 17 September 1971 (VDB).

3. *Desmodium strictum* (Pursh) DC., Prodr. 2:329. 1825. [Figure 1e]

Hedysarum strictum Pursh, Fl. Amer. Sept. 483. 1814.

Meibomia stricta (Pursh) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 5–15 mm long; stipules linear, deciduous; leaflets linear to oblong, 30–80 mm long, 3–7 mm wide. Inflorescence terminal, branched. Corolla pink or purple; pedicels 5–10 mm long; calyx 1.5–2.0 mm high, lobes equal or slightly longer than tube. Fruits minutely sinuate above, notched below; segments 1–3, each 4.5–5.5 mm long, concave above, rounded below.

Habitat and distribution in Alabama: dry woodlands and sandhills; scattered in the southern half of the state (Figure 1f).

Specimens examined. Autauga County: *Kral 33576*, 4 October 1968 (VDB). Butler County: *Kral 63039*, 14 October 1987 (VDB). Choctaw County: *Kral 37158*, 20 September 1969 (VDB). Coffee County: *Kral 41683*, 12 October 1970 (VDB). Covington County: *Kral 33665*, 5 October 1968 (VDB). Crenshaw County: *Diamond 11472*, 18 October 1998 (TROY). Geneva County: *Kral 33796*, 6 October 1968 (VDB). Lee County: *Kirkland 120*, 17 July 1971 (AUA). Lowndes County: *Gunn 1135*, 6 September 1982 (AUA, UNA, VDB). Mobile County: *Rogers 1892-B*, 11 October 1969 (VDB). Pike County: *Hall 130*, 21 August 2000 (TROY). Washington County: *Kral 37266*, 21 September 1969 (VDB).

4. *Desmodium lineatum* DC., Prodr. 2:330. 1825. [Figure 2a]

   Hedysarum lineatum Michx., Fl. Bor.-Amer. 2:72. 1803.
   Meibomia lineata (DC.) Kuntze, Revis. Gen. Pl. 1:196. 1891.
   Meibomia lineata (DC.) Kuntze var. *polymorpha* Vail, Bull. Torrey Bot. Club 19:109. 1892.
   Meibomia arenicola Vail, Bull. Torrey Bot. Club 23:139. 1896.
   Meibomia arenicola Vail var. *polymorpha* (Vail) Vail, In: Small, Fl. S.E. U.S. 636. 1903.
   Meibomia polymorpha (Vail) Small, Man. S.E. Fl. 733. 1933.

Perennial roots. Stems herbaceous, procumbent. Leaves alternate, pinnately trifoliate; petioles 5–15 mm long; stipules lanceolate to linear, deciduous; leaflets broadly ovate, 15–25 mm long, 13–25 mm wide. Inflorescence terminal and axillary, simple or branched. Corolla purple, occasionally white; pedicels 6–12 mm long; calyx 1.9–2.1 mm high, lobes equal or slightly longer than tube. Fruits deeply sinuate above, notched below; segments 2–4, each 4–5 mm long, convex above, rounded below.

Habitat and distribution in Alabama: dry woodlands, sandhills, old fields; scattered in the southern half of the state, rare in the northern half (Figure 2b).

Specimens examined. Autauga County: *Echols 113*, 28 October 2006 (TROY). Baldwin County: *Lelong 11650*, 11 October 1980 (USAM). Barbour County: *Kral 62929*, 12 October 1978 (VDB). Conecuh County: *Diamond 12689*, 29 September 2001 (TROY). Coosa County: *Rugel s.n.*, September 1943 (VDB). Crenshaw County: *Diamond 11122*, 21 September 1997 (AUA). Dale County: *Woods & Diamond 8234*, 15 September 2000 (TROY). Elmore County: *Hansen 2000-83*, 19 September 2000 (AUA). Henry County: *Kral 37994*, 18 October 1969 (VDB). Houston County: *MacDonald 7787*, 25 September 1994 (JSU, VDB). Lee County: *Kral 44275*, 17 September 1971 (VDB). Mobile County: *Lelong 4157*, 5 October 1967 (USAM). Pike County: *Holmes 64*, 24 September 1996 (TROY). St. Clair County: *Kral 37934*, 17 October 1969 (VDB). Washington County: *Kral 37308*, 21 September 1969 (VDB).

5. *Desmodium rotundifolium* DC., Prodr. 2:330. 1825. [Figure 2c]

   Hedysarum rotundifolium Michx., Fl. Bor.-Amer. 2:72. 1803.
   Desmodium rotundifolium Michx. var. *glabratum* A. Gray, Manual, ed. 5. 135. 1867.
   Meibomia rotundifolia (DC.) Kuntze, Revis. Gen. Pl. 1:197. 1891.
   Meibomia michauxii Vail, Bull. Torrey Bot. Club 23:140. 1896.
   Desmodium rotundifolium Michx. forma *glabratum* (A. Gray) B.G. Schub., Rhodora 52:138. 1950.

Perennial roots. Stems herbaceous, prostrate. Leaves alternate, pinnately trifoliate; petioles 15–50 mm long; stipules subamplexicaul, ovate, persistent; leaflets broadly ovate, 25–55 mm long, 15–60 mm wide. Inflorescence axillary, simple or branched. Corolla blue-purple; pedicels 6–15 mm long; calyx 2.5–4.0 mm high, lobes equal or slightly longer than tube. Fruits crenate above,

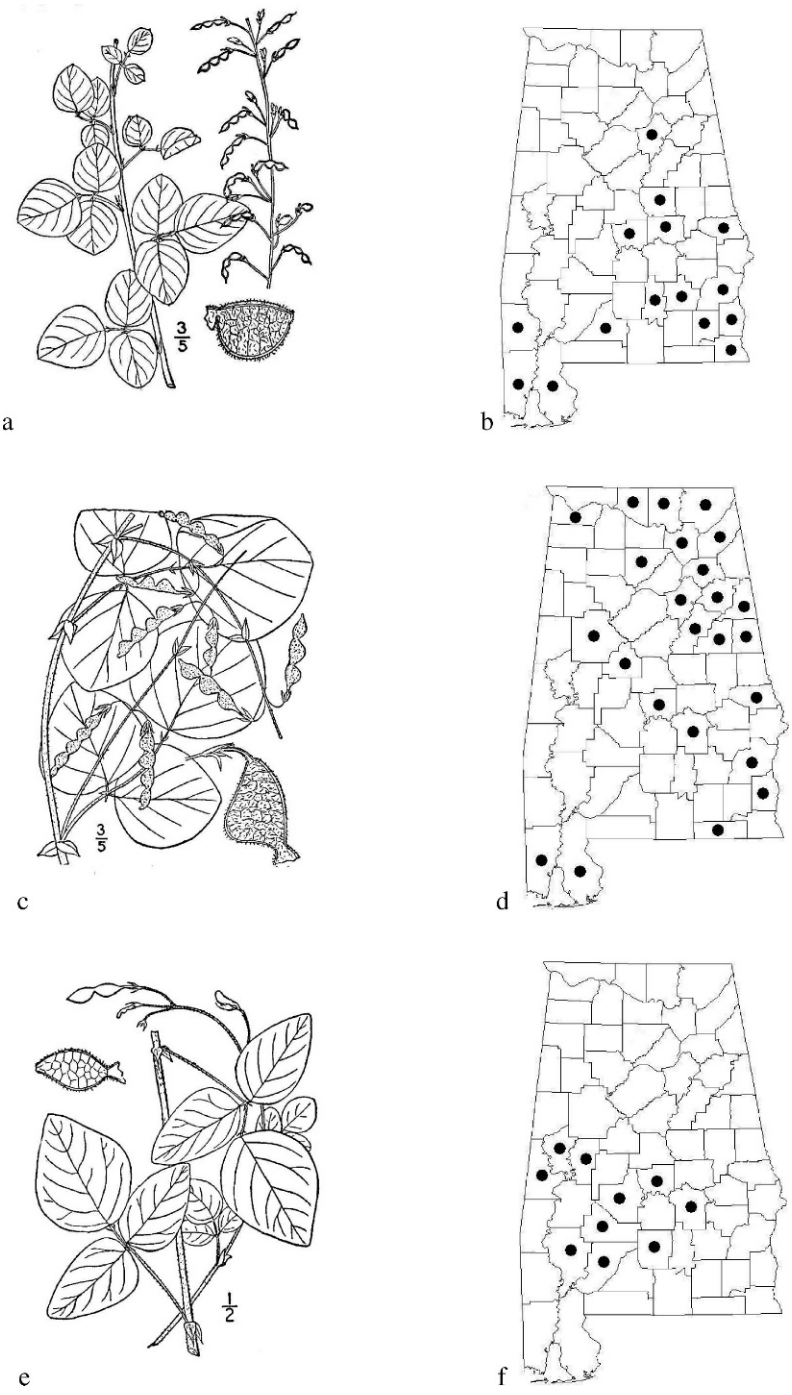

Figure 2. a) illustration of *Desmodium lineatum*, b) distribution of *D. lineatum*, c) illustration of *D. rotundifolium*, d) distribution of *D. rotundifolium*, e) illustration of *D. ochroleucum*, f) distribution of *D. ochroleucum*.

notched or deeply crenate below; segments 3–6, each 4.5–6.3 mm long, convex above and below, uncinate pubescent over entire surface.

Habitat and distribution in Alabama: open woodlands; scattered throughout the state, less common in western counties (Figure 2d).

Specimens examined. Autauga County: *Kral 62577*, 24 August 1978 (VDB). Barbour County: *MacDonald 11424*, 10 June 1998 (VDB). Bibb County: *Kral 73843*, 1 June 1987 (VDB). Butler County: *Diamond 12710*, 30 September 2001 (JSU, TROY). Calhoun County: *Hruska & Whetstone 1405*, 31 July 1996 (JSU). Clay County: *Ballard & Dobson 2801*, 14 June 1993 (JSU). Cleburne County: *Spaulding 11537*, 1 September 2002 (TROY, UNA, VDB). Colbert County: *Kral 77006*, 29 August 1989 (VDB). Cullman County: *Wolf s.n.*, 1 August 1908 (AUA). DeKalb County: *Kral 51027*, 9 August 1973 (VDB). Etowah County: *Hodge et al. 3510*, 4 September 1994 (JSU). Geneva County: *MacDonald 11395*, (VDB). Henry County: *Kral 87644*, 14 August 1998 (VDB). Jackson County: *Whetstone et al. 4530*, 5 August 1994 (JSU). Lee County: *Jones 83*, 2 September 1959 (AUA). Limestone County: *Whetstone 18115*, 29 June 1996 (JSU). Marshall County: *Spaulding 4066*, 30 May 1993 (JSU). Mobile County: *Mohr s.n., s.d.* (UNA). Montgomery County: *Kral 89554*, 8 May 2000 (VDB). Randolph County: *Nixon et al., 2954*, 21 September 1986 (JSU). St. Clair County: *Whetstone et al., 12093*, 3 September 1982 (JSU). Talladega County: *Ballard & Ballard 5510*, 15 June 1995 (JSU). Tuscaloosa County: *Hoener 1283*, 14 September 1975 (UNA).

6. *Desmodium ochroleucum* M.A. Curtis ex Canby, Proc. Acad. Nat. Sci. Philadelphia 16:17. 1864. [Figure 2e]

   Meibomia ochroleuca (M.A. Curtis ex Canby) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, prostrate. Leaves alternate, pinnately trifoliate; petioles 15–50 mm long; stipules subamplexicaul, deltate, persistent; leaflets ovate, 25–60 mm long, 24–58 mm wide. Inflorescence axillary or terminal, simple or branched. Corolla white to yellow; pedicels 10–15 mm long; calyx 3–4 mm high, lobes equal or slightly longer than tube. Fruits crenate above, notched below; segments 3–5, each 7–10 mm long, rounded below, uncinate pubescent only along the sutures.

Habitat and distribution in Alabama: roadsides and fields; rare, central and western sections of the state, associated with the Black Belt Region (Figure 2f).

Specimens examined. Autauga County: *Gunn 1016*, 13 August 1982 (AUA, UNA, VDB). Butler County: *Diamond 18540*, 12 October 2007 (TROY). Clarke County: *Schotz 1861*, 20 September 2001 (UNA). Dallas County: *Schotz 1859*, 12 September 2001 (UNA). Greene County: *Thomas et al. 1067*, 20 June 1967 (UNA). Hale County: *Schotz 1860*, 12 September 2001 (UNA). Monroe County: *Diamond 18357*, 27 September 2007 (TROY). Montgomery County: *Diamond 14709*, 19 September 2004 (TROY). Sumter County: *Schotz 1534*, 13 August 1997 (UNA). Wilcox County: *Schotz 1557*, 21 September 1997 (UNA).

7. *Desmodium tortuosum* (Sw.) DC., Prodr. 2:332. 1825. [Figure 3a]

   Hedysarum purpureum Mill., Gard. Dict., ed. 8. 1768.
   Hedysarum tortuosum Sw., Prodr. 107. 1788.
   Meibomia tortuosa (Sw.) Kuntze, Revis. Gen. Pl. 1:198. 1891.
   Meibomia purpurea (Mill.) Vail, In: Small, Fl. S.E. U.S. 639. 1903.
   Desmodium purpureum (Mill.) Fawc. & Rend., Fl. Jamaica 4:36. 1920.

Perennial roots. Stems herbaceous, erect. Leaves alternate, pinnately trifoliate; petioles 15–40 mm long; stipules ovate-acuminate to lanceolate-aristate, semipersistent; leaflets ovate or ovate-lanceolate, 30–100 mm long, 20–45 mm wide. Inflorescence axillary or terminal, simple or branched. Corolla lavender; pedicels 10–15 mm long; calyx 2.0–2.2 mm high, lobes equal or slightly longer than tube. Fruits equally crenate above and below; segments 3–7, each 3.0–3.5 mm long, rounded above and below.

Habitat and distribution in Alabama: introduced from Tropical America, open disturbed areas, roadsides and fields; primarily in the southern half of the state but scattered in the north-central section (Figure 3b).

Specimens examined. Baldwin County: *Kral 41038*, 2 September 1970 (AUA, VDB). Barbour County: *Kral 36798*, 2 September 1969 (VDB). Bullock County: *Diamond 13576*, 12 August 2002 (TROY). Clarke County: *Maddox 58*, 10 September 1975 (AUA). Coffee County: *Martin 840*, 8 August 2000 (TROY). Conecuh County: *Diamond 12814*, 21 October 2001 (TROY). Covington County: *Diamond 14878*, 7 November 2004 (TROY). Crenshaw County: *Diamond 12695*,

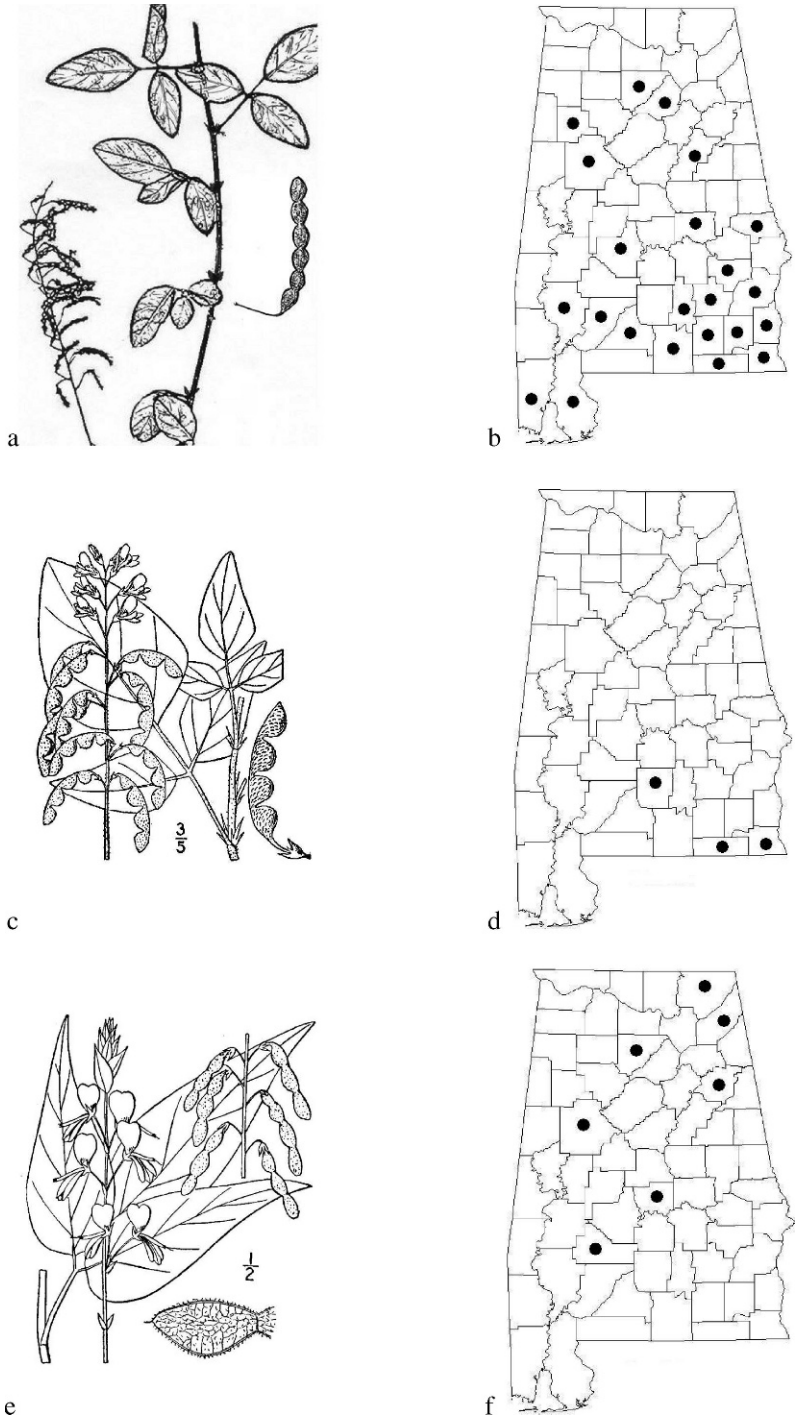

Figure 3. a) illustration of *Desmodium tortuosum*, b) distribution of *D. tortuosum*, c) illustration of *D. floridanum*, d) distribution of *D. floridanum*, e) illustration of *D. cuspidatum*, f) distribution of *D. cuspidatum*.

30 September 2001 (TROY). Cullman County: *W.W. 1713*, 31 August 1920 (AUA). Dale County: *Kral 79186*, 26 June 1991 (VDB). Dallas County: *Kral 32858*, 22 August 1968 (VDB). Elmore County: *Rebois 133*, 5 August 1969 (AUA). Fayette County: *Moore s.n.*, 23 October 1954 (AUA). Geneva County: *Diamond 14879*, 8 November 2004 (TROY).

Henry County: *Kral 31944*, 24 July 1968 (VDB). Houston County: *Diamond 14653*, 2 September 2004 (TROY). Lee County: *Davis & Ward s.n., s.d.* (AUA). Mobile County: *Deramus 734*, 26 August 1965 (UNA). Monroe County: *Jones 242*, 29 August 1960 (AUA). Pike County: *Holmes 227*, 30 July 1996 (TROY). Talladega County: *Rutland 978*, 28 July 1975 (AUA). Tuscaloosa County: *Glenboski 64, s.d.* (UNA).

8. *Desmodium floridanum* Chapm., Fl. South. U.S. 102. 1860. [Figure 3c]

   Meibomia floridana (Chapm.) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, occasionally basally clustered, pinnately trifoliate, occasionally lower ones unifolate; petioles 20–40 mm long; stipules lanceolate, persistent; leaflets broadly ovate or rhomboid, 30–70 mm long, 25–60 mm wide. Inflorescence simple or branched. Corolla purple; pedicels 5–8 mm long; calyx 3.0–3.5 mm high, lobes equal or slightly longer than tube. Fruits straight or curved, sinuate above, notched below; segments 2–4, each 5–7 mm long, convex above, rounded below.

Habitat and distribution in Alabama: pine or pine-oak woodlands, roadsides and fields; uncommon, southeastern section (Figure 3d).

Specimens examined. Butler County: *Moore 782*, 20 August 1970 (AUA). Geneva County: *Kral 53449*, 25 June 1974 (VDB). Houston County: *Kral 86881*, 14 October 1996 (VDB).

9. *Desmodium cuspidatum* (Muhl. ex Willd.) DC. ex Loud., Hort. Brit. 309. 1830. [Figure 3e]

   Hedysarum grandiflorum Walt., Fl. Carol. 185. 1788, non Pallas, 1773.
   Hedysarum cuspidatum Muhl. ex Willd., Sp. Pl. 3:1198. 1802.
   Hedysarum bracteosum Michx., Fl. Bor.-Amer. 2:73. 1803.
   Desmodium bracteosum (Michx.) DC., Prodr. 2:329. 1825.
   Desmodium bracteosum (Michx.) DC. var. *cuspidatum* (Muhl. ex Willd.) DC., Prodr. 2:329. 1825.
   Desmodium grandiflorum DC., Prodr. 2:338. 1825.
   Meibomia bracteosa (Michx.) Kuntze, Revis. Gen. Pl. 1:195. 1891.
   Meibomia grandiflora (DC.) Kuntze, Revis. Gen. Pl. 1:196. 1891.
   Meibomia longifolia (Torr. & A. Gray) Vail, Bull. Torrey Bot. Club 23:140. 1892.
   Pleurolobus grandiflorus (DC.) MacMill., Metasp. Minnesota Valley 321. 1892.
   Desmodium bracteosum (Michx.) DC. var. *longifolium* (Torr. & A. Gray) B.L. Rob., Rhodora 10:34. 1908.
   Meibomia cuspidata (Muhl. ex Willd.) Schindl., Repert. Spec. Nov. Regni Veg. 20:140. 1924.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 30–60 mm long; stipules lanceolate, semipersistent; leaflets ovate to ovate-lanceolate, 50–100 mm long, 23–35 mm wide. Inflorescence branched. Corolla purple; pedicels 4–8 mm long; calyx 3–4 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 4–6, each 9–11 mm long, slightly convex above, angled below.

Habitat and distribution in Alabama: open mesic woods, less common in dry woodlands; widely scattered in the central and northeastern sections (Figure 3f).

Specimens examined. Autauga County: *Gunn 1165*, 7 September 1982 (AUA, UNA, VDB). Calhoun County: *Mohr s.n.*, 19 September 1892 (UNA). Cullman County: *Wolf s.n.*, 14 September 1917 (AUA). DeKalb County: *Mohr s.n.*, September 1898 (UNA). Jackson County: *Henderson 491*, 31 August 1981 (AUA). Tuscaloosa County: *Thomas 1834*, 23 September 1968 (UNA). Wilcox County: *Gunn 1247*, 8 September 1982 (AUA).

10. *Desmodium canescens* (L.) DC., Prodr. 2:328. 1825. [Figure 4a]

    Hedysarum canescens L., Sp. Pl. 748. 1753.
    Desmodium aikinianum L.C. Beck, Bot. North Middle States. 84. 1833.
    Desmodium canadense (L.) DC. var. *hirsutum* Hook., Companion Bot. Mag. 1:22. 1835.
    Desmodium canescens (L.) DC. var. *villosissimum* Torr. & A. Gray, Fl. N. Amer. 1:365. 1840.
    Hedysarum aikinii Eaton, Man. Bot., ed. 7. 325. 1836.
    Hedysarum scaberrimum Elliott, Sketch Bot. S. Carolina 2:217. 1824.

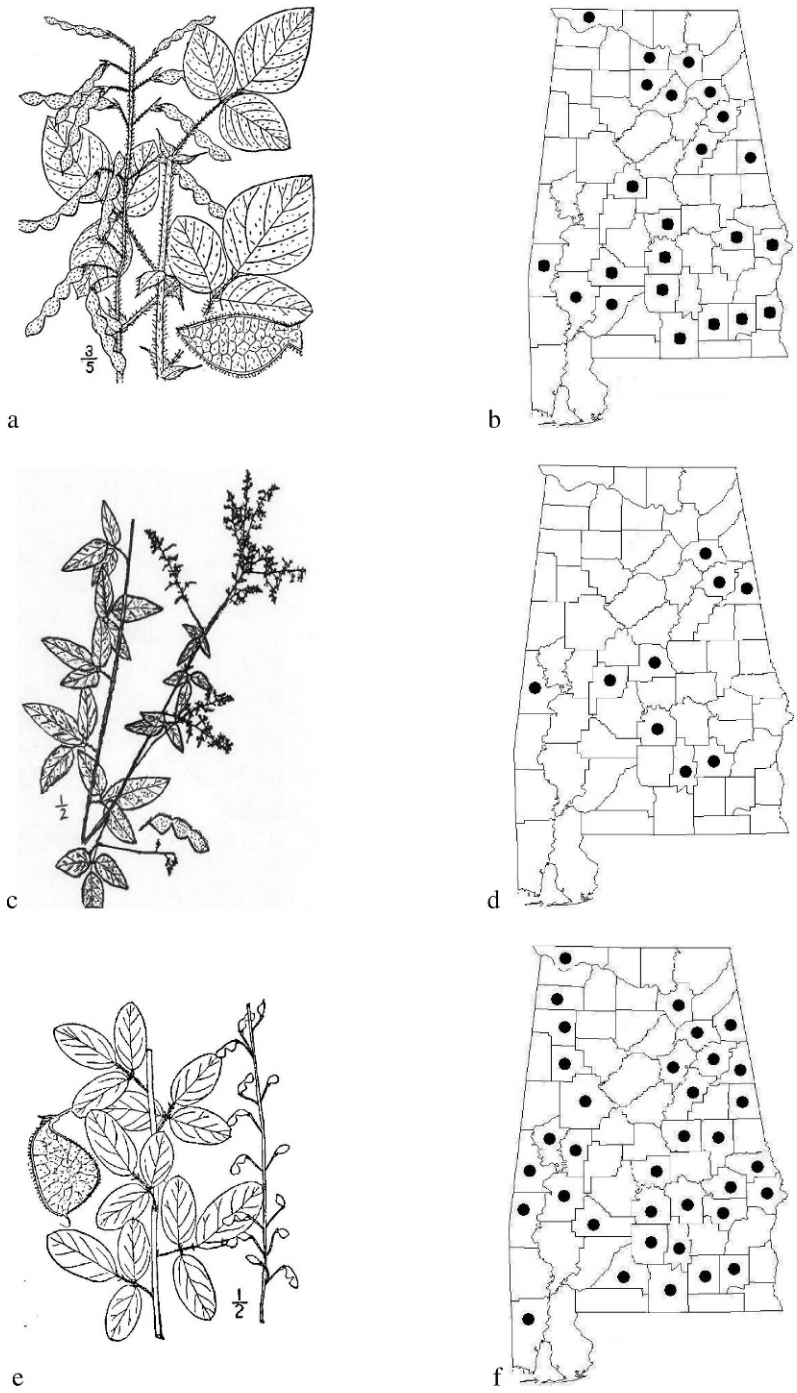

Figure 4. a) illustration of *Desmodium canescens*, b) distribution of *D. canescens*, c) illustration of *D. nuttallii*, d) distribution of *D. nuttallii*, e) illustration of *D. ciliare*, f) distribution of *D. ciliare*.

Meibomia canescens (L.) Kuntze, Revis. Gen. Pl. 1:195. 1891.

Meibomia canescens (L.) Kuntze var. *hirsuta* (Hook.) Vail, Bull. Torrey Bot. Club 19:111. 1892.

Pleurolobus canescens (L.) MacMill., Metasp. Minnesota Valley 320. 1892.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 40–100 mm long; stipules deltate

to ovate-lanceolate, persistent; leaflets ovate, 50–100 mm long, 25–70 mm wide. Inflorescence terminal, branched. Corolla purple; pedicels 8–12 mm long; calyx 3–5 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 4–6, each 6–10 mm long, convex above, angled below.

Habitat and distribution in Alabama: open dry woodlands, thickets and roadsides; scattered in the southern and northern sections, less common in western counties (Figure 4b).

Specimens examined. Autauga County: *Kral 62576*, 24 August 1978 (VDB). Bibb County: *Sesser 1526*, 9 June 1977 (AUA). Blount County: *Keener 384*, 6 September 1997 (UNA). Butler County: *Moore 782*, 2 August 1970 (VDB). Calhoun County: *Kral 86614*, 23 August 1996 (VDB). Choctaw County: *Crouch 1181*, 26 August 1994 (AUA, VDB). Clarke County: *Whetstone et al. 18781*, 13 September 1997 (JSU). Coffee County: *Martin 266*, 1 October 1999 (TROY). Covington County: *Wilbur 95*, 21 October 1982 (AUA). Cullman County: *Wolf s.n.*, 9 October 1897 (AUA). Dale County: *Pennington 907*, 17 July 2000 (TROY). Etowah County: *Hodge & Spaulding 3256*, 27 August 1994 (JSU). Henry County: *Moore 536-69*, 24 September 1969 (AUA). Lauderdale County: *Mair s.n.*, 18 September 1984 (UNAF). Lowndes County: *Gunn 1109*, 6 September 1982 (AUA, UNA, VDB). Macon County: *Owens 89*, 30 July 1969 (AUA). Marshall County: *Kral s.n.*, 3 August 1974 (VDB). Monroe County: *Whetstone et al. 18522*, 12 September 1997 (JSU). Morgan County: *Kral 56555*, 18 September 1975 (VDB). Randolph County: *Nixon & Bryant 4391*, 14 October 1988 (TROY). Russell County: *DiPietro 510*, 25 August 1994 (VDB). Talladega County: *Mohr s.n.*, September 1877 (UNA). Wilcox County: *Gunn 1290*, 9 September 1992 (AUA).

11. *Desmodium nuttallii* (Schindl.) B.G. Schub., Rhodora 52:142. 1950. [Figure 4c]

    Meibomia nuttallii Schindl., Repert. Spec. Nov. Regni Veg. 23:354. 1927.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 10–30 mm long; stipules subulate, deciduous; leaflets ovate to narrowly ovate, terminal one normally the largest, 20–80 mm long, 15–70 mm wide. Inflorescence terminal, branched. Corolla pink or purple; pedicels 4–10 mm long; calyx 2–3 mm high, lobes equal or slightly longer than tube. Fruits incurved, sinuate above, notched below; segments 2–4, each 4–5 mm long, convex above, rounded or angled below.

Habitat and distribution in Alabama: open woodlands, fields and roadsides; widely scattered in the central and northeast-central sections (Figure 4d).

Specimens examined. Calhoun County: *Wear s.n.*, 18 July 1992 (UNAF). Chilton County: *Kral 52331*, 9 October 1973 (VDB). Cleburne County: *Kral 44172*, 16 September 1971 (VDB). Crenshaw County: *Diamond 12703*, 30 September 2001 (TROY). Etowah County: *Spaulding 7194*, 20 August 1994 (JSU). Lowndes County: *Diamond 14734*, 30 September 2004 (TROY). Perry County: *Diamond 8893*, 17 October 1993 (AUA). Pike County: *Diamond 12725*, 30 September 2001 (TROY). Sumter County: *Kral 37176*, 20 September 1969 (VDB).

12. *Desmodium ciliare* (Muhl. ex Willd.) DC., Prodr. 2:327. 1825. [Figure 4e]

    Hedysarum barbatum Walter, Fl. Carol. 184. 1788, non Linnaeus 1753.
    Hedysarum ciliare Muhl. ex Willd., Sp. Pl. 3:1196. 1802.
    Meibomia ciliaris (Muhl. ex Willd.) S.F. Blake, Bot. Gaz. 78:275. 1924.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 10–50 mm long; stipules subulate, deciduous; leaflets broadly ovate to elliptic-ovate, 13–30 mm long, 9–20 mm wide. Inflorescence terminal, branched. Corolla lavender-purple; pedicels 3–8 mm long; calyx 1.5–2.0 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 1–3, each 4–5 mm long, convex above, rounded below.

Habitat and distribution in Alabama: xeric open woodlands, fields and roadsides; common throughout the state (Figure 4f).

Specimens examined. Autauga County: *Gunn 687*, 14 June 1982 (AUA, UNA, VDB). Bullock County: *Diamond 14175*, 18 August 2003 (TROY). Butler County: *Diamond 12705*, 30 September 2001 (TROY). Calhoun County: *Whetstone et al. 12225*, 9 September 1982 (JSU). Cherokee County: *Kral 37792*, 9 October 1969 (VDB). Choctaw County: *Kral 37158*, 20 September 1969 (VDB). Cleburne County: *Kral*

44167, 16 September 1971 (VDB). Coffee County: *Martin 970*, 18 March 2000 (TROY). Conecuh County: *Diamond 11142*, 18 October 1997 (TROY). Coosa County: *Rutland 1429*, 10 September 1975 (AUA). Covington County: *Kral 38130*, 20 October 1969 (VDB). Crenshaw County: *Diamond 10510*, 8 September 1999 (TROY). Dale County: *Rundell 240*, 10 June 1997 (TROY). Etowah County: *Hodge & Spaulding 3099*, 20 August 1994 (JSU). Fayette County: *Moore s.n.*, 23 October 1954 (AUA). Franklin County: *Kral 32927*, 7 September 1968 (VDB). Greene County: *Kral 44449*, 20 September 1971 (VDB). Hale County: *Maginness 52*, 17 July 1965 (UNA). Lauderdale County: *Mair s.n.*, 15 October 1984 (UNAF). Lee County: *Arner s.n.*, 17 August 1956 (AUA). Lowndes County: *Diamond 14733*, 30 September 2004 (TROY). Macon County: *Stevens 70*, 5 September 1973 (AUA). Marengo County: *Kral 38590*, 7 October 1968 (VDB). Marion County: *Kral 39011*, 18 September 1969 (VDB). Marshall County: *Spaulding 3149*, 25 September 1992 (VDB). Mobile County: *Lelong 7313*, 5 October 1973 (USAM). Montgomery County: *Diamond 12736A*, 4 October 2001 (TROY). Randolph County: *Nixon 2907*, 16 September 1986 (JSU). Russell County: *Diamond 14814*, 17 October 2004 (TROY). St. Clair County: *Kral 37935*, 17 October 1969 (VDB). Sumter County: *Spaulding 12047*, 24 August 2003 (TROY). Talladega County: *Rutland 931*, 28 August 1975 (AUA). Tallapoosa County: *Haniter s.n.*, 6 October 2001 (TROY). Tuscaloosa County: *Hoener 1193*, 17 November 1974 (UNA). Wilcox County: *Diamond 12774*, 14 October 2001 (JSU, TROY).

13. *Desmodium obtusum* (Muhl. ex Willd.) DC., Prodr. 2:329. 1825. [Figure 5a]

    Hedysarum obtusum Muhl. ex Willd., Sp. Pl. 3:1190. 1802.
    Hedysarum rigidum Elliott, Sketch Bot. S. Carolina 2:215. 1823.
    Desmodium rigidum (Elliott) DC., Prodr. 2:330. 1825.
    Meibomia rigida (Elliott) Kuntze, Revis. Gen. Pl. 1:198. 1891.
    Meibomia obtusa (Muhl. ex Willd.) Vail, Bull. Torrey Bot. Club 19:115. 1892.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 3–12 mm long; stipules deltate to subulate, deciduous; leaflets elliptic ovate to lanceolate, terminal one typically longer and narrower, 30–70 mm long, 11–22 mm wide. Inflorescence terminal, branched. Corolla white to pink-purple; pedicels 4–10 mm long; calyx 1.5–2.5 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 2–3, each 3–5 mm long, convex above, rounded below.

Habitat and distribution in Alabama: open woodlands, along streams and roadsides; scattered throughout the state (Figure 5b).

Specimens examined. Autauga County: *Gunn 1162*, 7 September 1982 (AUA, UNA). Baldwin County: *Kral 29798*, 10 September 1976 (VDB). Blount County: *Keener 1066*, 21 June 1998 (JSU, UNA). Calhoun County: *Kral 37749*, 9 October 1969 (VDB). Cherokee County: *Henderson 508*, 1 September 1981 (AUA). Cleburne County: *Rutland 1580*, 11 September 1975 (AUA). Conecuh County: *Diamond 11140*, 18 October 1997 (TROY). Coosa County: *Rutland 1318*, 10 September 1975 (AUA). Covington County: *Kral 33663*, 5 October 1968 (VDB). Crenshaw County: *Diamond 12781*, 14 October 2001 (TROY). Cullman County: *Wolf s.n.*, 1 September 1904 (AUA). Dale County: *Diamond 13699*, 6 October 2002 (JSU, TROY, UNA, VDB). DeKalb County: *Mohr s.n.*, 12 September 1898 (UNA). Escambia County: *Kral 33843*, 10 July 1963 (VDB). Etowah County: *Spaulding 8125*, 10 October 1995 (VDB). Fayette County: *Moore s.n.*, 23 October 1954 (AUA). Hale County: *Williams 132*, 25 September 1965 (UNA). Jackson County: *Brodeur & Whetstone 1190*, 13 August 1998 (JSU). Lauderdale County: *Boer s.n.*, 22 September 1989 (UNAF). Lee County: *Kral 44260*, 17 September 1971 (VDB). Mobile County: *Kral 29691*, 10 August 1967 (VDB). Montgomery County: *Diamond 12742*, 4 October 2001 (TROY). Pike County: *Diamond 12721*, 30 September 2001 (TROY). Randolph County: *Nixon 2025*, 11 October 1985 (JSU). Russell County: *Kral 44202*, 17 September 1971 (VDB). St. Clair: *Whetstone et al. 12091*, 3 September 1982 (JSU). Sumter County: *Kral 37167*, 20 September 1969 (VDB). Talladega County: *Mohr s.n.*, 1896 (UNA). Tuscaloosa County: *Hoener 1282*, 14 September 1975 (UNA). Walker County: *Kral 49717*, 4 October 1972 (VDB). Wilcox County: *Gunn 1260*, 9 September 1982 (AUA, VDB). Winston County: *Kral 37010*, 18 September 1969 (VDB).

14. *Desmodium marilandicum* (L.) DC., Prodr. 2:328. 1825. [Figure 5c]

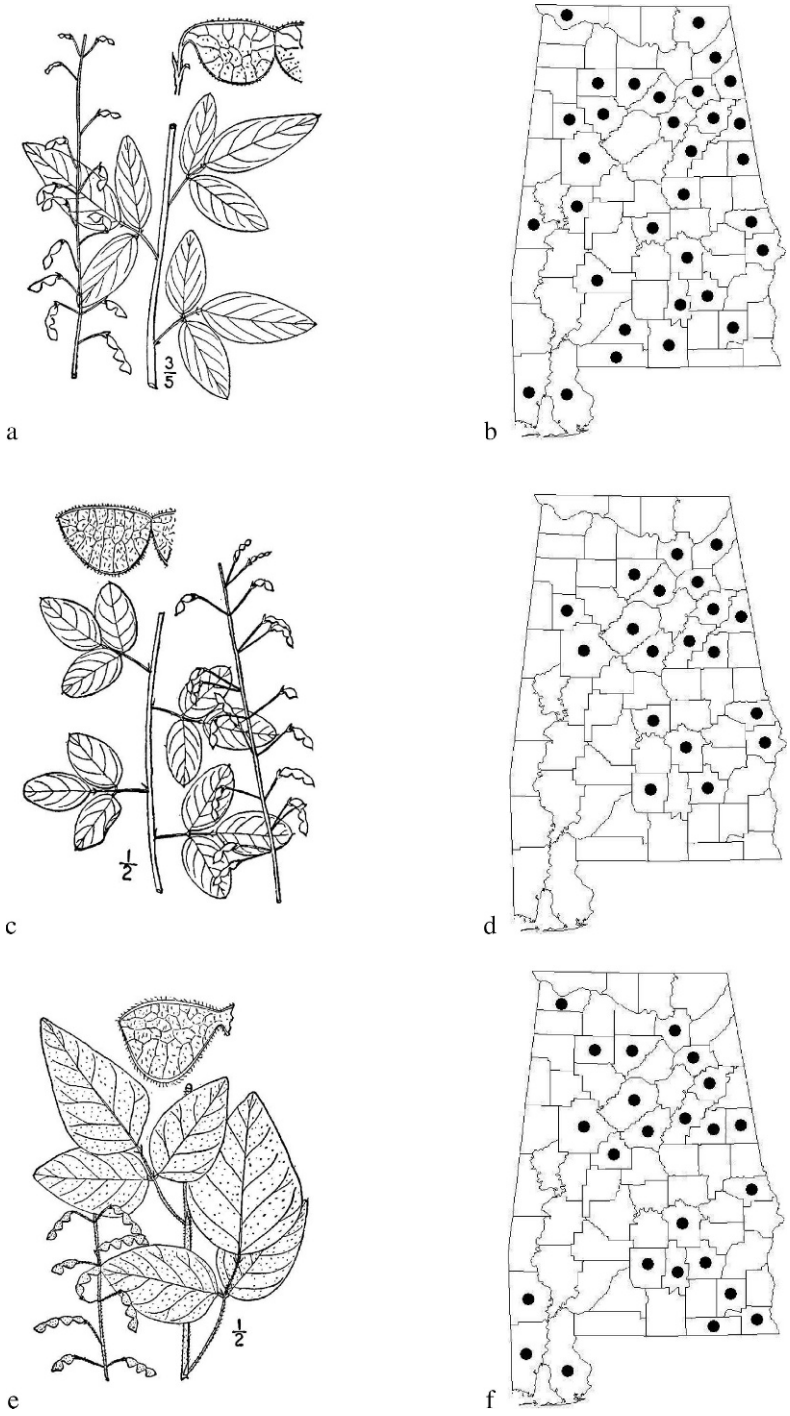

Figure 5. a) illustration of *Desmodium obtusum*, b) distribution of *D. obtusum*, c) illustration of *D. marilandicum*, d) distribution of *D. marilandicum*, e) illustration of *D. viridiflorum*, f) distribution of *D. viridiflorum*.

Hedysarum marilandicum L., Sp. Pl. 748. 1753.

Meibomia marilandica (L.) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 1.0–2.5 mm long; stipules subulate, deciduous; leaflets broadly ovate to

elliptic-ovate, 15–35 mm long, 8–20 mm wide. Inflorescence terminal, branched. Corolla lavender to red-violet; pedicels 8–15 mm long, filiform; calyx 1.8–2.0 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 2–3, each 3.5–4.5 mm long, convex above, rounded below.

Habitat and distribution in Alabama: dry, open woodlands, old fields and roadsides; north-central and south-central sections, less common in western counties (Figure 5d).

Specimens examined. Autauga County: *Kral 33577*, 4 October 1968 (VDB). Blount County: *Kral 68974*, 21 September 1982 (VDB). Butler County: *Kral 63034*, 14 October 1978 (VDB). Calhoun County: *Mohr s.n.*, 19 September 1892 (UNA). Cleburne County: *Spaulding 11627*, 22 September 2002 (JSU, TROY). Clay County: *Whetstone12755*, 9 October 1982 (JSU). Cullman County: *Wolf s.n.*, 9 October 1915 (AUA). DeKalb County: *Whetstone et al. 15624*, 7 September 1986 (JSU). Etowah County: *Hodge-Spaulding & Spaulding 4398*, 10 October 1995 (JSU). Fayette County: *Moore s.n.*, 23 October 1954 (AUA). Jefferson County: *Radford & Whetstone 7169*, 17 October 1975 (JSU). Lee County: *Little 78*, 9 October 1971 (AUA). Marshall County: *Spaulding 2754*, 28 August 1992 (JSU). Montgomery County: *Diamond 12738*, 4 October 2001 (TROY). Pike County: *Kral 52207*, 24 September 1973 (VDB). Russell County: *Diamond 14821*, 17 October 2004 (TROY). Shelby County: *Spaulding 9438*, 12 October 1996 (JSU). Talladega County: *Kral 37901*, 17 October 1969 (VDB). Tuscaloosa County: *Hoener 1159*, 3 November 1974 (UNA).

15. *Desmodium viridiflorum* (L.) DC., Prodr. 2:329. 1825. [Figure 5e]

    Hedysarum viridiflorum L., Sp. Pl. 748. 1753.
    Meibomia viridiflora (L.) Kuntze, Revis. Gen. Pl. 1:197. 1891.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 20–50 mm long; stipules deltate, deciduous; leaflets broadly ovate to rhombic, 50–140 mm long, 40–110 mm wide. Inflorescence terminal, branched. Corolla pink to purple; pedicels 3–9 mm long; calyx 2–3 mm high, lobes equal or slightly longer than tube. Fruits straight, sinuate above, notched below; segments 3–6, each 4–9 mm long, straight or convex above, angled below.

Habitat and distribution in Alabama: open woodlands, old fields and roadsides; scattered throughout the state (Figure 5f).

Specimens examined. Baldwin County: *Moore s.n.*, 14 May 1955 (AUA). Bibb County: *Bordeur & Whetstone 1486*, 25 September 1998 (JSU). Butler County: *Diamond 12777*, 12 September 2001 (TROY). Clay County: *Ballard 5056*, 28 September 1994 (JSU). Cleburne County: *Ballard & Dobson 571*, 28 August 1992 (JSU). Colbert County: *Kral 44046*, 14 September 1971 (VDB). Crenshaw County: *Diamond 11456*, 11 October 1998 (TROY). Cullman County: *Wolf s.n.*, 26 September 1917 (AUA). Dale County: *Diamond 13648*, 2 September 2002 (JSU, TROY, VDB). Etowah County: *Hodge & Spaulding 3216*, 21 August 1994 (JSU). Geneva County: *Kral 36735*, 2 September 1969 (VDB). Houston County: *Spaulding 11587*, 2 September 2002 (JSU). Jefferson County: *Sessler 1892*, 25 September 1977 (AUA). Lee County: *Moore s.n.*, 5 October 1954 (TROY). Marshall County: *Spaulding 3092*, 14 September 1992 (JSU). Mobile County: *Lelong 3828.3*, 5 October 1967 (USAM). Montgomery County: *Rankin s.n.*, 21 June 1967 (AUA). Pike County: *Hall 187*, 3 July 2000 (TROY). Randolph County: *Nixon 1390*, 11 October 1985 (JSU). Shelby County: *Whetstone & Ballard 3017*, 20 July 1993 (JSU). Talladega County: *Ballard & Dobson 3305*, 6 September 1994 (JSU). Tuscaloosa County: *Hoener 1200*, 16 November 1974 (UNA). Washington County: *Kral 37299*, 21 September 1969 (VDB). Winston County: *Spaulding et al. 6376*, 17 September 1994 (JSU).

16. *Desmodium laevigatum* (Nutt.) DC., Prodr. 2:329. 1825. [Figure 6a]

    Hedysarum laevigatum Nutt., Gen. N. Amer. Pl. 2:109. 1818.
    Desmodium laevigatum (Nutt.) DC. var. *monophyllum* A.W. Wood, Class-Book Bot., ed. 1861. 308. 1861.
    Meibomia laevigata (Nutt.) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 20–60 mm long; stipules ovate-lanceolate, deciduous; leaflets ovate, 35–75 mm long, 15–45 mm wide. Inflorescence terminal, branched. Corolla lavender to purple; pedicels 10–18 mm long; calyx 3–

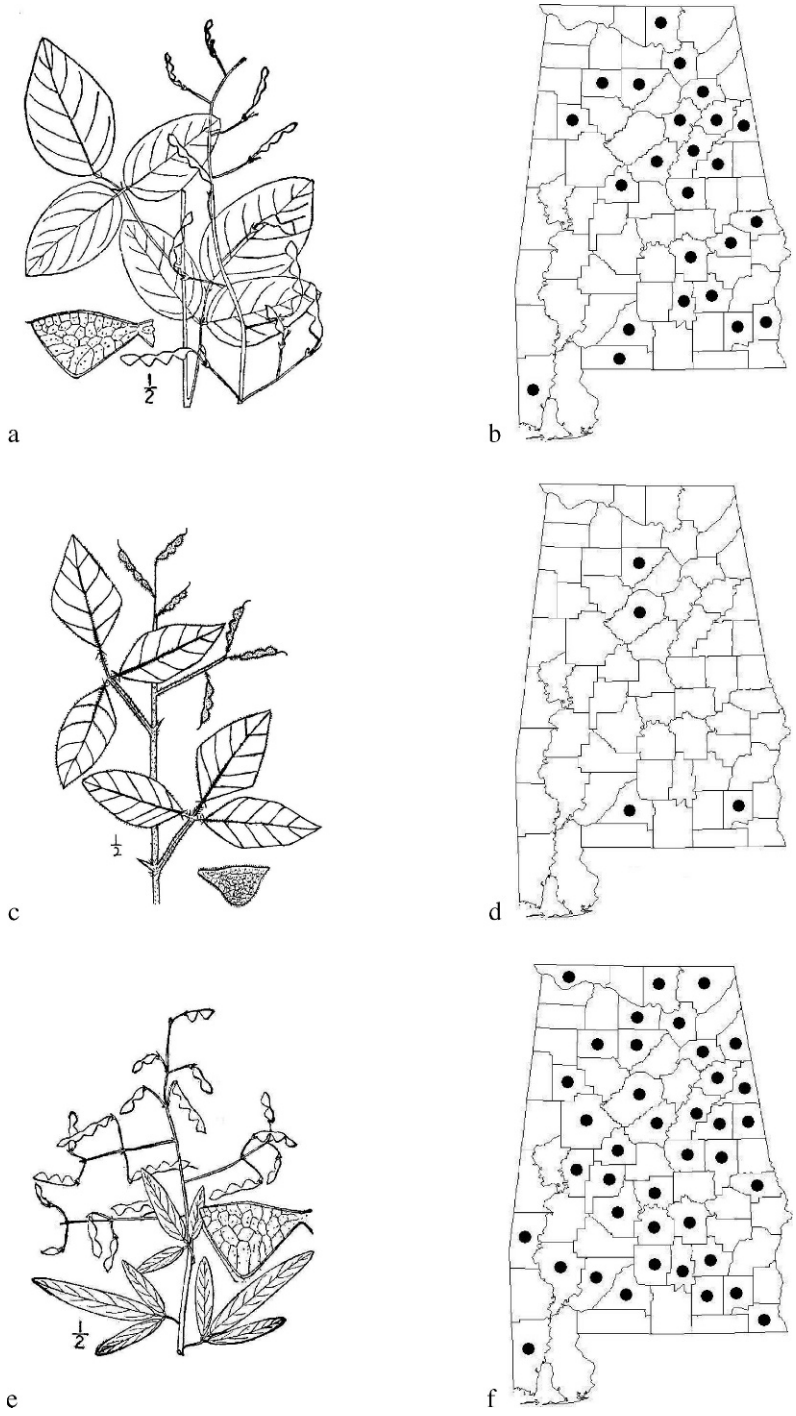

Figure 6. a) illustration of *Desmodium laevigatum*, b) distribution of *D. laevigatum*, c) illustration of *D. fernaldii*, d) distribution of *D. fernaldii*, e) illustration of *D. paniculatum*, f) distribution of *D. paniculatum*.

4 mm high, lobes equal or slightly longer than tube. Fruits straight, sinuate or linear above, notched below; segments 3–5, each 4–8 mm long, convex above, angled or rounded below.

Habitat and distribution in Alabama: open woodlands, old fields and roadsides; scattered throughout the state, less common in western counties (Figure 6b).

Specimens examined. Bibb County: *Beckett 389*, 17 October 1979 (AUA). Calhoun County: *Mohr s.n.*, September 1898 (UNA). Clay County: *Ballard 5063*, 28 September 1994 (JSU). Cleburne County: *Spaulding 11627*, 22 September 2002 (JSU, TROY, UNA). Conecuh County: *Diamond 11128*, 27 September 1997 (TROY). Coosa County: *Rutland 1107*, 2 September 1975 (AUA). Crenshaw County: *Diamond 11472*, 18 October 1998 (TROY). Cullman County: *Wolf s.n.*, 17 September 1917 (AUA). Dale County: *Woods & Diamond 8242*, 15 September 2000 (TROY). Escambia County: *Kral 33843*, 7 October 1968 (AUA). Etowah County: *Spaulding 8601*, 31 August 1996 (JSU). Fayette County: *Moore s.n.*, 23 October 1964 (AUA). Henry County: *MacDonald 12386*, 25 October 1998 (UNA, VDB). Lee County: *Kral 44270*, 17 September 1971 (VDB). Macon County: *Eichlin s.n.*, 10 August 1967 (AUA). Madison County: *Cook s.n.*, 15 October 1989 (UNAF). Marshall County: *Spaulding 3102*, 14 September 1992 (JSU). Mobile County: *Lelong 3829*, 5 October 1967 (USAM). Montgomery County: *Diamond 12737A*, 4 October 2002 (TROY). Pike County: *Diamond 12726*, 30 September 2002 (TROY). Shelby County: *Boehm & Bessey 137*, 17 September 1996 (JSU). St. Clair County: *Kral 37936*, 17 October 1969 (AUA, VDB). Talladega County: *Mohr s.n.*, September 1893 (UNA). Winston County: *Spaulding et al. 6422*, 18 September 1994 (JSU).

17. *Desmodium fernaldii* B.G. Schub., Rhodora 52:147. 1950. [Figure 6c]

Perennial roots. Stems herbaceous, ascending to erect. Leaves alternate, pinnately trifoliate; petioles 20–40 mm long; stipules deltate, deciduous; leaflets ovate, 30–90 mm long, 20–45 mm wide. Inflorescence terminal, unbranched or branched. Corolla purple; pedicels 4–9 mm long; calyx 2–3 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 2–5, each 4–8 mm long, convex above, angled below.

Habitat and distribution in Alabama: open woodlands, sandhills, old fields and roadsides; uncommon, north-central and southeastern sections (Figure 6d).

Specimens examined. Conecuh County: *Kral 88905*, 25 September 1999 (VDB). Cullman County: *Wolf s.n.*, 19 September 1917 (AUA). Dale County: *Kral 54775*, 8 October 1974 (VDB). Jefferson County: *Kral 33596*, 4 October 1968 (VDB).

18. *Desmodium paniculatum* (L.) DC., Prodr. 2:329. 1825. [Figure 6e]

Hedysarum paniculatum L., Sp. Pl. 749. 1753.
Desmodium dillenii Darl., Fl. Cestr., ed. 2. 414. 1837.
Desmodium paniculatum (L.) DC. var. *angustifolium* Torr. & A. Gray, Fl. N. Amer. 1:364. 1840.
Desmodium paniculatum (L.) DC. var. *pubens* Torr. & A. Gray, Fl. N. Amer. 1:364. 1840.
Desmodium pubens (Torr. & A. Gray) M.J. Young, Fl. Texas 233. 1873.
Meibomia dillenii (Darl.) Kuntze, Revis. Gen. Pl. 1:195. 1891.
Meibomia paniculata (L.) Kuntze, Revis. Gen. Pl. 1:198. 1891.
Meibomia paniculata (L.) Kuntze var. *pubens* (Torr. & A. Gray) Vail, Bull. Torrey Bot. Club 19:112. 1892.
Meibomia paniculata (L.) Kuntze var. *angustifolia* (Torr. & A. Gray) Vail, Bull. Torrey Bot. Club 19:112. 1892.
Pleurolobus dillenii (Darl.) MacMill., Metasp. Minnesota Valley 320. 1892.
Pleurolobus paniculatus (L.) MacMill., Metasp. Minnesota Valley 320. 1892.
Meibomia angustifolia (Torr. & A. Gray) Kearney, Bull. Torrey Bot. Club 20:481. 1893.
Meibomia paniculata (L.) DC. var. *chapmanii* Britton, Mem. Torrey Bot. Club 5:204. 1894.
Meibomia paniculata (L.) DC. var. *obtusa* (Desv.) Schindl., Repert. Spec. Nov. Regni Veg. 22:282. 1926.
Meibomia pubens (Torr. & A. Gray) Rydb., Brittonia 1:92. 1931.
Meibomia chapmanii Small, Man. S.E. Fl. 734. 1933.
Desmodium paniculatum (L.) DC. var. *epetiolatum* B.G. Schub., Rhodora 52:153. 1950.
Desmodium paniculatum (L.) DC. var. *typicum* B.G. Schub., Rhodora 52:152. 1950.
Desmodium paniculatum (L.) DC. var. *dillenii* (Darl.) Isely, Amer. Midl. Naturalist 49:927. 1953.

Perennial roots. Stems herbaceous, ascending, spreading or erect. Leaves alternate,

pinnately trifoliate; petioles 20–50 mm long; stipules subulate, deciduous; leaflets lanceolate to narrowly oblong, 30–70 mm long, 8–18 mm wide. Inflorescence terminal, branched. Corolla lilac to purple; pedicels 5–15 mm long; calyx 2–3 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, angled below; segments 3–5, each 4–7 mm long, convex above, angled below.

Habitat and distribution in Alabama: open woodlands, thickets, old fields and roadsides; common, scattered throughout the state (Figure 6f).

Specimens examined. Autauga County: *Gunn 1193*, 7 September 1982 (AUA). Bibb County: *Brodeur & Whetstone 16641*, 25 September 1998 (TROY). Butler County: *Diamond 12778*, 9 September 2001 (TROY). Calhoun County: *Lawler et al. s.n.*, 25 September 1976 (TROY). Cherokee County: *Kral 37791*, 9 October 1969 (VDB). Choctaw County: *Higginbotham et al. 226*, 13 September 1997 (JSU). Clarke County: *Whetstone et al. 18751*, 13 September 1997 (JSU). Clay County: *Ballard 221*, 14 June 1992 (JSU). Cleburne County: *Whetstone & Cochis 10167*, 23 August 1980 (JSU). Coffee County: *Martin 996*, 20 October 2000 (TROY). Conecuh County: *Diamond 9959*, 23 September 1995 (AUA). Coosa County: *Rutland 1118*, 2 September 1975 (AUA). Crenshaw County: *Diamond 12695*, 30 September 2001 (TROY). Cullman County: *Wolf s.n.*, 25 September 1917 (AUA). Dale County: *Woods & Diamond 8241* 15 September 2000 (TROY). Dallas County: *Gunn 1216*, 8 September 1982 (AUA, UNA). Etowah County: *Hodge & Spaulding 3222*, 27 August 1994 (JSU). Fayette County: *Moore 488*, 23 October 1954 (AUA). Hale County: *Thomas 2444*, 30 September 1969 (UNA). Houston County: *MacDonald 5411*, 6 September 1992 (VDB). Jackson County: *Whetstone & Wayner 6664*, 17 August 1975 (JSU). Jefferson County: *Kral 33634*, 4 October 1968 (VDB). Lauderdale County: *Thompson 1583*, 18 September 1984 (UNAF). Lee County: *EuDaly 47* 24 June 1972 (AUA). Lowndes County: *Diamond 14736*, 30 September 2004 (TROY). Madison County: *Kral 71586*, 14 September 1984 (VDB). Marshall County: *Spaulding 3088*, 11 September 1992 (JSU). Mobile County: *Lelong 4732*, 23 September 1968 (USAM). Monroe County: *Whetstone et al. 18475*, 12 September 1997 (JSU). Montgomery County: *Diamond 12743*, 4 October 2001 (TROY). Morgan County: *Spaulding 9225*, 15 September 1996 (JSU). Perry County: *Sessler 591*, 8 September 1976 (AUA). Pike County: *Diamond 12660*, 9 September 2001 (TROY, VDB). Randolph County: *Nixon & Bryant 438B*, 14 October 1988 (TROY). Shelby County: *Sessler 400*, 26 August 1976 (AUA). Talladega County: *Whetstone & Snow 10292*, 26 August 1980 (JSU). Tallapoosa County: *Hunter s.n.*, 6 October 2001 (TROY). Tuscaloosa County: *Hoener 1253*, 13 July 1975 (UNA). Winston County: *Spaulding 6421*, 18 September 1994 (JSU).

19. *Desmodium perplexum* B.G. Schub., Rhodora 52:154. 1950. [Figure 7a]

Perennial roots. Stems herbaceous, ascending, spreading or erect. Leaves alternate, pinnately trifoliate; petioles 20–50 mm long; stipules subulate, deciduous; leaflets narrowly to broadly ovate, 30–80 mm long, 20–50 mm wide. Inflorescence terminal, branched. Corolla lavender to purple; pedicels 3–7 mm long; calyx 2–3 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched below; segments 2–5, each 4.5–8.5 mm long, convex above, angled below.

Habitat and distribution in Alabama: open woodlands, old fields and roadsides; scattered throughout the state (Figure 7b).

Specimens examined. Bibb County: *Sessler 714*, 16 September 1976 (AUA). Bullock County: *Diamond 14158*, 11 September 2003 (JSU, TROY, UNA). Butler County: *Diamond 12710*, 30 September 2001 (TROY). Calhoun County: *Morh s.n.*, 1982 (UNA). Cherokee County: *Kral 43809*, 3 September 1971 (VDB). Choctaw County: *Crouch 1142*, 24 August 1994 (AUA). Cleburne County: *Rutland 1803*, 12 September 1975 (AUA). Conecuh County: *Diamond 12690*, 29 September 2001 (TROY). Coosa County: *Rutland 1386*, 10 September 1975 (AUA). Crenshaw County: *Diamond 11445*, 11 October 1998 (TROY). Cullman County: *Wolf s.n.*, 22 September 1917 (AUA). Dale County: *Rundell 354*, 9 October 1997 (TROY). DeKalb County: *Mohr s.n.*, 5 September 1898 (UNA). Etowah County: *Atkinson & Landers 1957*, 1 October 1976 (JSU). Franklin County: *Winstead 3964*, 29 September 1986 (UNAF). Greene County: *Lelong 10053*, 29 October 1977 (USAM). Hale County: *Maginness 74*, 6

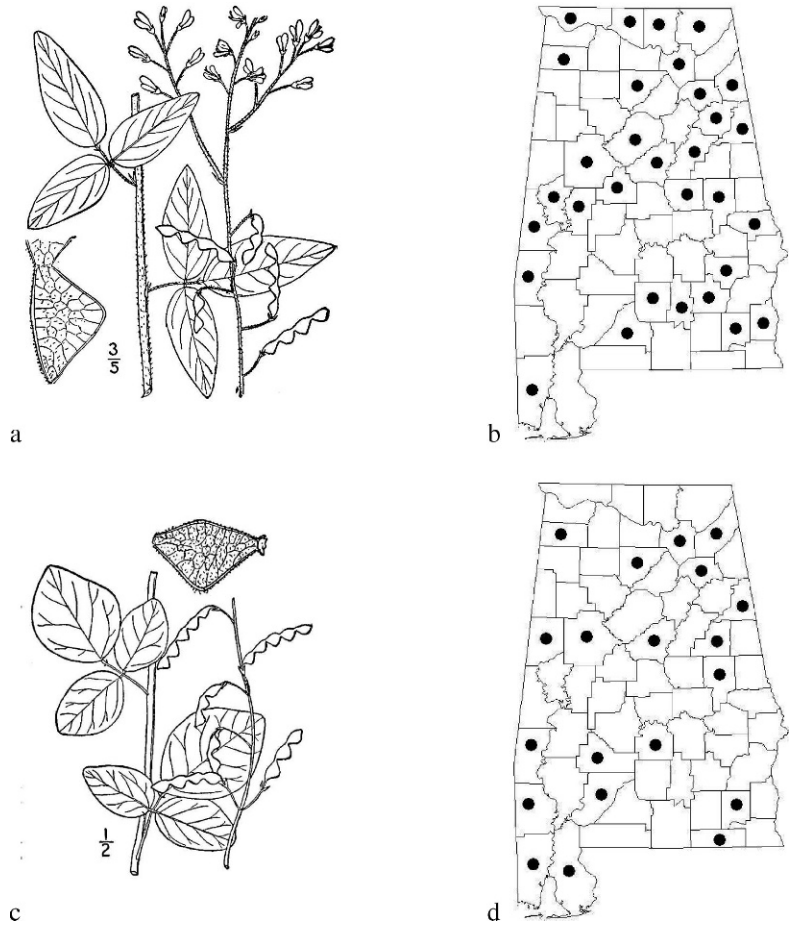

Figure 7. a) illustration of *Desmodium perplexum*, b) distribution of *D. perplexum*, c) illustration of *D. glabellum*, d) distribution of *D. glabellum*.

September 1965 (UNA). Henry County: *Kral 37981*, 18 October 1969 (VDB). Jackson County: *Kral 43856*, 3 September 1971 (VDB). Jackson County: *Spaulding et al. 6294*, 11 September 1994 (JSU). Jefferson County: *Whetstone et al. 12449*, 17 October 1983 (JSU). Lauderdale County: *Cruce 1571*, 7 October 1985 (UNAF). Lee County: *Earle s.n.*, October 1896 (UNA). Limestone County: *Kral 68988*, 21 September 1982 (VDB). Madison County: *Spaulding et al. 6245*, 11 September 1994 (JSU). Marshall County: *Spaulding 832*, 9 September 1991 (JSU). Mobile County: *Mohr 356., s.d.* (UNA). Montgomery County: *Mohr s.n.*, 13 July 1890 (UNA). Pike County: *Diamond 12662*, 9 September 2001 (JSU, TROY, VDB). Shelby County: *Sessler 644*, 16 September 1976 (AUA). Sumter County: *Thomas 1172*, 9 September 1967 (UNA). Talladega County: *Rutland 957*, 28 August 1975 (AUA). Tallapoosa County: *Haniter s.n.*, 6 October 2001 (TROY). Tuscaloosa County: *Hoener 1290*, 1 September 1975 (UNA).

20. *Desmodium glabellum* (Michx.) DC., Prodr. 2:329. 1825. [Figure 7c]

    Hedysarum glabellum Michx., Fl. Bor.-Amer. 2:73. 1803.
    Meibomia glabella (Michx.) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, ascending, spreading or erect. Leaves alternate, pinnately trifoliate; petioles 20–50 mm long; stipules subulate, deciduous; leaflets narrowly ovate or ovate-lanceolate to broadly ovate or rhombic, 20–80 mm long, 10–35 mm wide. Inflorescence terminal, branched. Corolla lilac to purple; pedicels 5–10 mm long; calyx 2–3 mm high, lobes equal or slightly longer than tube. Fruits sinuate above, notched

below; segments 2–5, each 4–8 mm long, convex above, angled below.

Habitat and distribution in Alabama: woodlands, stream banks, old fields and roadsides; widely scattered throughout the state (Figure 7d).

Specimens examined. Baldwin County: *Lelong 9981*, 21 October 1977 (USAM). Choctaw County: *Crouch 1146*, 24 August 1994 (AUA). Clay County: *Ballard 5064*, 28 September 1994 (JSU). Cleburne County: *Bessey 294*, 11 September 1982 (JSU). Cullman County: *Wolf s.n.*, 25 September 1917 (AUA). Dale County: *Pennington 140*, 14 September 1999 (TROY). DeKalb County: *Ballard & Dobson 841*, 18 September 1992 (JSU). Etowah County: *Hodge & Spaulding 3455*, 3 September 1994 (JSU). Franklin County: *Kral 25510*, 23 August 1966 (VDB). Geneva County: *Kral 44341*, 18 August 1971 (VDB). Lowndes County: *Diamond 14760*, 30 September 2004 (TROY). Marshall County: *Whetstone & Reynolds 15712*, 20 September 1986 (JSU). Mobile County: *Lelong 4722*, 20 September 1968 (USAM). Monroe County: *Whetstone et al. 18531*, 12 September 1997 (JSU). Pickens County: *Kral 48790*, 5 October 1972 (VDB). Shelby County: *Boehm & Bussey 125*, 17 September 1986 (JSU). Tallapoosa County: *Barger & Tenaglia 378*, 6 September 2006 (TROY). Tuscaloosa County: *Hoener 1187*, 12 November 1974 (UNA). Washington County: *Kral 37310*, 21 September 1969 (VDB). Wilcox County: *Gunn 1253*, 8 September 1982 (AUA).

TAXONOMIC TREATMENT OF *HYLODESMUM*

Hylodesmum H. Ohashi & R.R. Mill, Edinburgh J. Bot. 57:171–188. 2000.

Hedysarum L., Sp. Pl. 749. 1753. ex parte.
Desmodium Desv., J. Bot. Agric. 1:122. 1813. nom. cons., pro parte.
Meibomia Heist. ex Fabr., Enum. 168. 1759. nom. rejic.
Pleurolobus J. St.-Hil., Nouv. Bull. Soc. philom. III. 192. 1812. nom. rejic.

Perennial roots. Stems herbaceous, erect or spreading. Leaves pinnately trifoliate; petioles 50–90 mm long; stipules linear, deciduous; leaflets entire, ovate to broadly ovate, 32–110 mm long, 25–100 mm wide. Inflorescence a pseudoraceme, terminal, simple or branched. Flowers single, white, pink or purple; pedicels 2–20 mm long; calyx campanulate, 1.5–2.5 mm high, lobes shorter that tube; stamens 10, monodelphous; pistils stipitate; ovaries 2 to 5 ovules. Fruit a loment, separated into flat, 2–5 oblong, uncinate-puberulent, 1-seeded segments; stipes 6–20 mm.

KEY TO THE ALABAMA SPECIES OF *HYLODESMUM*

1. Flowering and fruiting stems leafless; pedicels 10–20 mm long; fruit stipe 10–20 mm . . . . . 21. *H. nudiflorum*
1. Flowering and fruiting stems with leaves; pedicels 2–10 mm long; fruit stipe 6–9 mm 2
   2. Leaves clustered or subverticillate just beneath the inflorescence; leaflets strongly acuminate; inflorescence 3–8 dm long; corolla pink to purple . . . . . 22. *H. glutinosum*
   2. Leaves alternate, scattered along the stem; leaflets acute to slightly acuminate; inflorescence 1–2 dm long; corolla white . . . 23. *H. pauciflorum*

21. *Hylodesmum nudiflorum* (L.) H. Ohashi & R.R. Mill, Edinburgh J. Bot. 57:171–188. 2000. [Figure 8a]

    Hedysarum nudiflorum L., Sp. Pl. 749. 1753.
    Desmodium nudiflorum (L.) DC., Prodr. 2:330. 1825.
    Meibomia nudiflora (L.) Kuntze, Revis. Gen. Pl. 1:197. 1891.
    Pleurolobus nudiflorus (L.) MacMill., Metasp. Minnesota Valley 321. 1892.

Perennial roots. Stems herbaceous, erect, dimorphic; sterile stems with 4–6 leaves; fertile stems developing from sterile stems just below ground level. Leaves alternate, pinnately trifoliate; petioles 50–90 mm long; stipules linear, deciduous; leaflets ovate, 50–110 mm long, 30–65 mm wide. Inflorescence terminal, branched. Corolla pink to white; pedicels 10–20 mm long; calyx 1.5–2.5 mm high, lobes shorter than tube. Fruits sinuate above, incised to upper suture below; segments 2–4, each 7.5–8.0 mm long, concave above, rounded below; stipes 10–20 mm.

Habitat and distribution in Alabama: rich mesic woodlands, slopes and ravines; throughout the state, less common in the southwestern counties (Figure 8b).

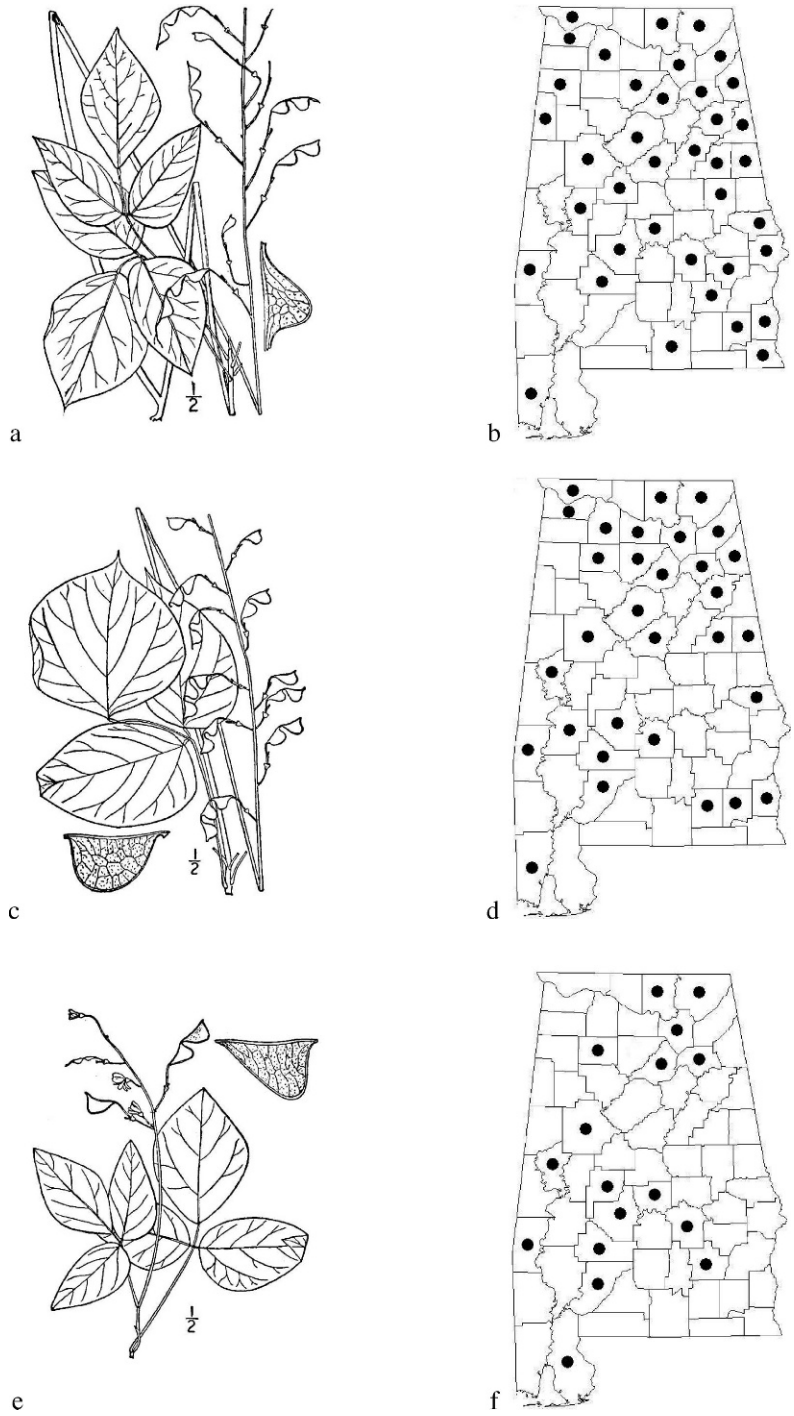

Figure 8. a) illustration of *Hylodesmum nudiflorum*, b) distribution of *H. nudiflorum*, c) illustration of *H. glutinosum*, d) distribution of *H. glutinosum*, e) illustration of *H. pauciflorum*, f) distribution of *H. pauciflorum*.

Specimens examined. Autauga County: *Kral 54364*, 6 October 1974 (VDB). Bibb County: *Spaulding 11926*, 28 June 2003 (JSU, TROY). Blount County: *Keener 267*, 26 July 1997 (JSU, UNA). Bullock County: *Diamond 13625*, 20 August 2002 (TROY, VDB). Calhoun County: *Haynes 7501*, 25 July 1919 (UNA). Cherokee County: *Kral 31747*, 21 July 1968 (VDB).

Choctaw County: *Kral 65579*, 30 June 1980 (VDB). Clay County: *Bussey 768*, 19 July 1983 (JSU). Cleburne County: *Whetstone & Snow 10276*, 26 August 1980 (JSU). Colbert County: *Henderson 313*, 30 July 1981 (AUA). Covington County: *MacDonald 13215*, 16 July 1999 (VDB). Cullman County: *Smith 350*, May 1883 (UNA). Dale County: *Diamond 5981*, 19 July 1989 (AUA). Dallas County: *Gunn 822* 17 June 1982 (AUA). DeKalb County: *Demaree 5277*Ş 7 August 1965 (VDB). Etowah County: *Hodge & Spaulding 2783*, 16 July 1994 (JSU). Hale County: *Diamond 14025*, 15 July 2003 (TROY). Henry County: *Diamond 5235*, 17 July 1988 (AUA). Houston County: *GJG 1253*, 10 August 1969 (VDB). Jackson County: *Kral 36547*, 29 August 1969 (VDB). Jefferson County: *Bessey & Davenport 1671*, 22 August 1985 (JSU). Lamar County: *Kral 33048*, 8 September 1968 (VDB). Lauderdale County: *Herren 1576*, 15 July 1969 (UNAF). Lawrence County: *Pitcock s.n.*, 15 July 1973 (UNAF). Lee County: *Owen 91*, 8 July 1973 (AUA). Madison County: *Threlkeld 838*, 13 August 1996 (JSU). Marion County: *Kral 35419*, 11 July 1969 (VDB). Marshall County: *Spaulding 2302*, 12 July 1992 (JSU). Mobile County: *Shelton 770*, 8 July 1976 (USAM). Montgomery County: *Owens 90*, 2 August 1969 (AUA). Pike County: *Diamond 9296*, 13 August 1994 (AUA). Randolph County: *Nixon et al. 2782*, 19 August 1986 (JSU). Russell County: *Kral 94282*, 31 July 2003 (TROY). Shelby County: *Sessler 1724*, 19 July 1977 (AUA). Tallapoosa County: *Hutto 381*, 25 June 1974 (AUA, VDB). Tuscaloosa County: *Chermock s.n.*, 5 July 1952 (UNA). Wilcox County: *s.n.*, 16 August 1973 (VDB).

22. *Hylodesmum glutinosum* (Muhl. ex Willd.) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57:171–188. 2000. [Figure 8c]

    Hedysarum glutinosum Muhl. ex Willd., Sp. Pl. 3:1198. 1802.
    Hedysarum acuminatum Michx., Fl. Bor.-Amer. 2:72. 1803.
    Desmodium acuminatum (Michx.) DC., Prodr. 2:329. 1825.
    Desmodium glutinosum (Muhl. ex Willd.) Wood, Class-Book Bot. 120. 1845.
    Meibomia acuminata (Michx.) S.F. Blake, Bot. Gaz. 78:277. 1924.

Perennial roots. Stems herbaceous, erect. Leaves in subverticillate or closely alternate clusters, pinnately trifoliate; petioles 30–80 mm long; stipules linear, deciduous; leaflets broadly ovate, acuminate, 32–100 mm long, 25–100 mm wide. Inflorescence terminal, branched. Corolla pink to purple; pedicels 3–6 mm long; calyx 1.7–2.2 mm high, lobes shorter than tube. Fruits straight or sinuate above, incised to upper suture below; segments 2–3, each 7.5–9.5 mm long, concave above, rounded below; stipes 7–9 mm.

Habitat and distribution in Alabama: rich mesic woodlands, slopes and ravines; throughout the state, less common in the central and southern counties (Figure 8d).

Specimens examined. Blount County: *Keener 1226*, 1 July 1998 (UNA). Calhoun County: *Johnson s.n.*, 9 June 1967 (UNAF). Cherokee County: *Cunningham s.n.*, 15 July 1967 (AUA). Choctaw County: *Crouch 995*, 6 June 1994 (AUA). Clay County: *Ballard et al. 2949*, 12 July 1993 (JSU). Coffee County: *Martin 747*, 8 June 2000 (TROY). Colbert County: *Sims s.n.*, 27 June 1973 (UNAF). Cullman County: *Kral 35376*10 July 1969 (UNA, VDB). Dale County: *Diamond 13258*, 4 June 2000 (JSU, TROY, UNA, VDB). Dallas County: *Gunn 811*, 17 June 1982 (AUA). DeKalb County: *Atkinson et al. 328*, 15 June 1974 (JSU). Etowah County: *Hodge & Spaulding 2641*, 12 June 1994 (JSU). Greene County: *Thomas 2395*, 13 August 1969 (VDB). Henry County: *MacDonald 11303*, 28 May 1998 (VDB). Jackson County: *Ballard 7468*, 30 August 1997 (JSU). Jefferson County: *Sessler 1643*, 23 June 1977 (AUA, VDB). Lauderdale County: *Lee 64*, 13 July 1972 (UNAF). Lawrence County: *Kral 31690*, 20 July 1968 (AUA). Lee County: *Owen 89*, 8 July 1973 (AUA). Lowndes County: *Gunn 776*, 16 June 1982 (AUA, VDB). Madison County: *Spaulding et al. 6228*, 11 September 1994 (JSU). Marengo County: *Henderson 150*, 8 June 1981 (AUA). Marshall County: *Spaulding 2301*, 12 July 1992 (JSU). Mobile County: *Moore s.n., s.d.* (UNA). Monroe County: *Diamond 1425*, 3 August 1985 (AUA). Morgan County: *Whetstone 8343*, 10 June 1976 (JSU). Randolph County: *Nixon et al. 2665*, 17 August 1976 (JSU, UNA). Shelby County: *Demaree 50644*, 28 June 1964 (VDB). Tuscaloosa County: *Brooks 180*, 17 June 1966 (UNA). Wilcox County: *Diamond 1778*, 11 September 1985 (AUA). Winston County: *Ballard & Dobson 3117*, 6 August 1993 (JSU).

23. *Hylodesmum pauciflorum* (Nutt.) H. Ohashi & R.R. Mill, Edinburgh J. Bot. 57:171–188. 2000. [Figure 8e]

Hedysarum pauciflorum Nutt., Gen. N. Amer. Pl. 2:109. 1818.
Desmodium pauciflorum (Nutt.) DC., Prodr. 2:330. 1825.
Meibomia pauciflora (Nutt.) Kuntze, Revis. Gen. Pl. 1:198. 1891.

Perennial roots. Stems herbaceous, erect or spreading. Leaves alternate, pinnately trifoliate; petioles 30–70 mm long; stipules linear, deciduous; leaflets ovate, acute, 40–80 mm long, 25–55 mm wide. Inflorescence terminal, simple or branched. Corolla white; pedicels 2–10 mm long; calyx 1.4–1.8 mm high, lobes shorter than tube. Fruits sinuate above, incised to upper suture below; segments 1–3, each 9–10 mm long, concave above, rounded below; stipes 6–9 mm.

Habitat and distribution in Alabama: rich mesic woodlands, slopes and ravines; widely scattered throughout the state (Figure 8f).

Specimens examined. Autauga County: *Gunn 914*, 14 July 1982 (AUA, VDB). Baldwin County: *Lelong 5452*, 7 July 1970 (USAM). Blount County: *Keener 1218*, 11 July 1998 (JSU, UNA). Choctaw County: *Crouch 1018*, 21 June 1994 (AUA). Dallas County: *Gunn 768*, 16 June 1982 (AUA, VDB). Etowah County: *Hodge & Spaulding 3255*, 27 August 1994 (JSU). Greene County: *Thomas 2395*, 13 August 1969 (AUA). Jackson County: *Spaulding et al. 6279*, 11 September 1994 (JSU). Madison County: *Kral 43345*, 15 July 1974 (VDB). Marshall County: *Spaulding 2404*21 July 1992 (JSU). Monroe County: *O'Halloran 165*, 1 June 1982 (AUA, VDB). Montgomery County: *Kral 54482*, 7 October 1974 (VDB). Perry County: *Sessler 620*, 8 September 1976 (AUA). Pike County: *Kral 52208*, 24 September 1973 (VDB). Tuscaloosa County: *Horn 900*, 14 September 1985 (UNA). Wilcox County: *Gunn 859*, 23 June 1982 (JSU). Winston County: *Kral 44980*, 7 October 1971 (VDB).

DISCUSSION Both *Desmodium* and *Hylodesmum* are common components of Alabama's flora. Several species of *Desmodium* are difficult to distinguish without reproductive structures, especially mature fruits, which are not present until late in the growing season. For example, *D. nuttallii* (Schindl.) B.G. Schub. and *D. viridiflorum* (L.) DC. are very similar vegetatively and require mature fruits for positive identification. The fruits of *D. nuttallii* are curved and each segment is 4–5 mm long. *Desmodium viridiflorum* has straight fruits with segments 5–8 mm long. Another difficult complex is two of the three trailing or vine-like species, *D. lineatum* DC. and *D. ochroleucum* M.A. Curtis ex Canby. Both of these taxa, which can have white flowers and ovate to broadly ovate leaflets that can be glabrous, are also difficult to separate without mature fruits. The fruits of *D. lineatum* have uncinate pubescence throughout, while the uncinate pubescence of *D. ochroleucum* is restricted to the sutures. Recently, Krings (2004) and Raveill (2006) published manuscripts which distinguish these taxa based on vegetative characteristics, especially types of pubescences on the stems and leaves. Both of these works are very useful, especially early in the season when reproductive structures are not present; however, a combination of vegetative and reproductive characteristics provide the most reliable identification.

This is the first treatment from the southeastern United States to recognize the genus *Hylodesmum*. Traditionally, the three Alabama species of *Hylodesmum* have been placed in the genus *Desmodium* (Small 1933; Isely 1990; Weakley 2007). However, earlier authors recognized that they differed from the remaining North American species of *Desmodium* and placed them in series *Americana* (Schubert 1950a, 1950b) or section *Podocarpium* (Isely 1951). The proposal by Ohashi and Mill (2000) to place these three species in their newly described genus *Hylodesmum* based on large flat seeds which lack a rim-aril around the hilum, shallowly obtriangular articles, stipitate and deeply notched fruits which have uncinate pubescence exclusively, monodelphous stamens, lax-flowered pseudoracemes, and, ebracteolate calyx has recently been reinforced by chloroplast DNA data. The trnL-trnF region of the chloroplast of two of the three species, *H. glutinosum* and *H. nudiflorum*, along with 13 North American species of *Desmodium* were examined. The resulting clade which was distinguished by 47 sites with 100% bootstrap support showed the that two species of *Hylodesmum* are closely related to each other with a long branch to the remaining species of *Desmodium* (Raveill et al. 2005).

Desmodium ochroleucum has a global rank of G2G3 and a state rank of S2 due to the small number of populations and the threats to its habitats (Schotz 2003). Additionally, this taxon was a former candidate for listing as endan-

gered or threatened by the United States Fish and Wildlife Service but never gained national protection. In 2003, extant populations were known from five counties and seven locations in Alabama. Results from this study have identified four additional populations, one each in Butler, Monroe, Montgomery and Wilcox Counties. In Alabama, this species displays a narrow ecological amplitude and is restricted to well-drained, permeable soils of the Black Belt and Red Hills of south-central Alabama. Both of these physiographic provinces are similar in topography and vegetation.

ACKNOWLEDGMENTS The author thanks the curators of the various herbaria who loaned specimens. The molecular data to support the segregation of *Desmodium* and *Hylodesmum* provided by Dr. Jay Raveill is appreciated. The comments of editor, Dr. Alan S. Weakley, and, two reviewers, Dr. Robert L. Wilbur and Alfred Schotz, are greatly appreciated. This research was supported by Troy University faculty development grants.

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