THE GENUS RHYNCHOSIA (FABACEAE) IN ALABAMA

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ABSTRACT

The genus *Rhynchosia* (Fabaceae), commonly known as snout bean, is recognized as consisting of five species and no infraspecific taxa in Alabama. The most common species are *R. tomentosa*, *R. reniformis*, and *R. difformis*. The least common species are *R. cytisoides* and *R. minima*. Dichotomous keys and descriptions were generated based on morphological features of the vegetative and reproductive structures of the more than 400 specimens studied during this project. Data for the county-level distribution maps were compiled entirely from herbaria vouchers. *Phytologia* 91(1):3-17, (April, 2009).

KEY WORDS: Fabaceae, Leguminosae, Rhynchosia, Alabama

*Rhynchosia* Loureiro, commonly known as snout bean, is a member of the legume family Fabaceae (Leguminosae), subfamily Papilionoideae, tribe Phaseoleae, subtribe Cajaninae (Lackey 1981). The genus consists of approximately 200 species and occurs in both the eastern and western hemisphere in warm temperate and tropical regions (Grear 1978). Fourteen species and two infraspecific taxa of *Rhynchosia* have been reported from the United States (NatureServe 2005). Of these, ten species and one infraspecific taxon have been reported from the southeastern United States (Isely 1990).

Vail (1899) revised the genus for the taxa occurring in the United States. She recognized 16 taxa but used the genus *Dolicholus* Medikus and listed *Rhynchosia* as a synonym. For the next 60 years, the names *Dolicholus* and *Rhynchosia* were both used in the literature. It was not until 1959 when, under the provisions of the International Code of Botanical Nomenclature, *Rhynchosia* was conserved against *Dolicholus* (Rickett and Stafleu 1959).
In the only comprehensive revision of the New World species of *Rhynchosia*, Grear (1978) solved many of the problems of nomenclature, taxonomy and distribution with which previous workers had dealt.

**METHODS**

The data for the distribution maps were gathered from more than 400 specimens deposited in the herbaria of Troy University (TROY), Auburn University (AUA), The University of Alabama (UNA), The University of South Alabama (USAM), Jacksonville State University (JSU), University of North Alabama (UNAF), Smithsonian Institution (US), 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 Grear (1978) and Isely (1990); however, measurements were taken from the specimens studied and incorporated into the descriptions if they differed. Illustrations of *Rhynchosia cytisoides* (Bertoloni) Wilbur and *R. minima* (Linnaeus) de Candolle are by the first 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 concepts established by Isely (1990) and Weakley (2007). Morphological measurements were then made from selective specimens of each group.

**RESULTS**

Five species and no infraspecific taxa of *Rhynchosia* have been documented from Alabama. Based on herbarium specimens, the most common species are *R. tomentosa* (Linnaeus) Hooker & Arnott (48 counties), *R. reniformis* de Candolle (24 counties), and *R. difformis* (Elliott) de Candolle (16 counties). The least common species are *R.*
cytisoides (Bertoloni) Wilbur (8 counties) and \textit{R. minima} (Linnaeus) de Candolle (2 counties).

**TAXONOMIC TREATMENT OF \textit{RHYNCHOSIA}**

\textit{Rhynchosia} Loureiro, Fl. Cochinch. 425, 460. 1790. nom. cons.


\textit{Austerium} Poit. ex DC., Prodr. 2: 385. 1825. nom. nudum.


\textit{Nomismia} Wight & Arnott, Prodr. 1: 236. 1834.

\textit{Cyanospermum} Wight & Arnott, Prodr. 1: 259. 1834.

\textit{Pitcheria} Nuttall, Jour. Acad. Phila. 7: 93. 1834.


\textit{Phaseolus} subgenus \textit{Rhynchosia} Eaton & Wright, N. Amer. Bot. 353. 1840.


\textit{Walpersia} Meissn. ex Krauss, Flora 27: 357. 1844.


\textit{Leucoceryllum} Piper, Jour. Wash. Acad. 14: 363. 1924.

\textit{Leucopterum} Small, Man. S. E. Fl. 713. 1933.

Roots perennial. Stems herbaceous, trailing, twining, or erect, simple or branched, glabrous to pubescent. Leaves unifoliate or pinnately trifoliate; petioles 1-90 mm long; leaflets entire, elliptic to rhomboid, 10-70 mm long, glabrous to pubescent, glandular punctuate
with yellow, dome-shaped, resin glands. Inflorescence pseudoracemes, axillary or short terminal; peduncles 1-90 mm long. Calyx 2.5-12.0 mm long; corolla yellow, some with purple to brown veins, 4-10 mm long; stamens 10, diadelphous (9 + 1); styles glabrous; ovaries glabrous to pubescent; ovules 1-2. Fruits 10-20 mm long, dehiscent, short and broad, asymmetrically ovate to oblong to falcate-oblong, laterally compressed, short-beaked, glandular-punctate, pubescent.

KEY TO THE ALABAMA SPECIES OF RHYNCHOSIA

1. Leaves unifoliate, upper ones rarely trifoliate...........1. *R. reniformis*
1. Leaves trifoliate, lower ones rarely unifoliate ..........................2
2. Corolla exceeding calyx.................................................................3
2. Corolla shorter than or equal to calyx...........................................4
3. Plants erect; flowers single (-3) in leaf axils............2. *R. cytisoides*
3. Plants trailing or twining; flowers in racemes.............3. *R. minima*
4. Plants erect; calyx 6-9 mm long; lower leaflet surface grayish tomentose.................................................................4. *R. tomentosa*
4. Plants trailing, twining, semi-erect; calyx 8-12 mm long; lower leaflet surface villose..........................5. *R. difformis*


[Figure 1a]

*Trifolium simplicifolium* Walter, Fl. Carol. 184. 1788.
*Glycine reniformis* Pursh, Fl. Amer. Sept. 486. 1814, nom. illegit.


Rhynchosia tomentosa (Linnaeus) Hooker & Arnott var. monophylla (Michaux) Torrey & A. Gray, Fl. N. Amer. 1: 284. 1838.

Rhynchosia tomentosa (Linnaeus) Hooker & Arnott, var. intermedia Torrey & A. Gray, Fl. N. Amer. 1: 285. 1838.


Rhynchosia intermedia (Torrey & A. Gray) Small, Man. S.E. Fl. 715. 1933.


Roots perennial. Stems erect, simple or branched, villous. Leaves 4-6, unifoliate, upper one rarely trifoliate; petioles 20-45 mm long; leaflets reniform or subcordate, 25-50 mm long, strigose above, hirsute beneath, especially along the veins. Inflorescence short and subsessile; peduncles 5-20 mm long. Calyx 7-10 mm long, lobes longer than tube; corolla yellow, 6.0-9.5 mm long, subequal to calyx. Fruits shortly oblong or elliptic-oblong, 12-18 mm long, villous especially along the sutures.

Habitat and distribution in Alabama: dry woods, sandhills, fields and roadsides; throughout the southern half of the state (Figure 1b).


2. *Rhynchosia cytisoides* (Bertoloni) Wilbur, Rhodora 64: 60. 1962. [Figure 1c]


*Pitcheria galactoides* Nuttall var. *parvifolia* Torrey & A. Gray, Fl. N. Amer. 1: 286. 1838.


Roots perennial. Stems erect, branched, glabrous to villous. Leaves trifoliate; petioles 1-4 mm long; leaflets ovate to elliptic, 10-20 mm long, finely strigose above, puberulent beneath. Inflorescence 1(-3) flowered; peduncles 1-3 mm long. Calyx 5-7 mm long, lobes equal or short than tube; corolla yellow with purple veins, 7-10 mm, equal or longer than calyx. Fruits oblong, 12-20 mm long, puberulent.

Habitat and distribution in Alabama: dry open woods, sandy pinehills; extreme southern part of state (Figure 1d).

Specimens examined. Baldwin County: Diamond 16587, 26 June 2006 (TROY). Covington County: Kral 33652, 5 October 1968

![Figure 1e](image)


*Rhynchosia punctata* de Candolle, Prodr. 2: 385. 1825.

*Rhynchosia rhombifolia* (Willdenow) de Candolle var. *timoriensis* de Candolle, Prodr. 2: 386. 1825.


Roots perennial. Stems trailing or twining, branched, glabrous to puberulent or villous. Leaves trifoliate; petioles 5-90 mm long; leaflets broadly ovate-acuminate to rhomboid, 10-35 mm long, glabrous to villous, gland dotted. Inflorescence 5-15 flowered; peduncles 10-90
mm long. Calyx 2.5-3.0 mm long, longest lobes equal or longer than tube; corolla yellow with purple or brown veins, 4-8 mm, longer than calyx. Fruits oblong-ovate to flacate, 10-20 mm long, villous.

Habitat and distribution in Alabama: disturbed pinelands; known from two historical collections in south Alabama (Figure 1f).


4. **Rhynchosia tomentosa** (Linnaeus) Hooker & Arnott, Companion Bot. Mag. 1: 23. 1835. [Figure 2a]

*Trifolium erectum* Walter, Fl. Carol. 184. 1788.
*Rhynchosia erecta* (Walter) de Candolle, Prodr. 2: 384. 1825.
*Glycine caroliniana* Sprengel, Syst. Veg. 3: 197. 1826.

Roots perennial. Stems erect, branched, densely villous. Leaves trifoliate, lower one rarely unifoliate; petioles 15-50 mm long; leaflets broadly ovate to elliptic, 35-70 mm long, densely puberulent or tomentose above, tomentose below. Inflorescence axillary, 10-30 mm
long, and short terminal, 7-15 mm long; peduncles 5-15 mm long. Calyx 5-9 mm long, lobes longer than tube; corolla yellow, 5-10 mm, equal or short than calyx. Fruits ovate-oblong to broadly oblong, 15-20 mm long, hirsute and puberulent.

Habitat and distribution in Alabama: dry woodlands, sandhills, woodland borders, rich woodlands; scattered throughout the state (Figure 2b).


[Figure 2c]

_Glycine tomentosa_ Linnaeus var. _volubilis_ Michaux, Fl. Bor.-Amer. 2: 63. 1803.


_Rhynchosia tomentosa_ (Linnaeus) Hooker & Arnott var. _volubilis_ (Michaux) Torrey & A. Gray, Fl. N. Amer. 1: 284. 1838.


_Rhynchosia lewtonii_ (Vail) Small, Man. S.E. Fl. 714. 1933.

Roots perennial. Stems trailing, twining, rarely semi-erect, simple or branched, strigose or hirsute. Leaves trifoliate, lower one rarely unifoliate; petioles 20-50 mm long; leaflets suborbicular to elliptic, 25-50 mm long, glabrous to strigose above, villose below. Inflorescence axillary, 10-20 mm long; peduncles 5-15 mm long. Calyx 8-12 mm long, lobes longer than tube; corolla yellow, 8-10 mm, equal or short than calyx. Fruits ovate-accumulate to broadly oblone, 12-20 mm long, puberulent and villous.
Habitat and distribution in Alabama: mixed and deciduous woodlands, sandhills, old fields and roadsides; throughout southeast Alabama and widely scattered in the northern one-half of the state. (Figure 2d).


DISCUSSION

In Alabama, *Rhynchosia*, is a common genus of open, dry woodlands, savannahs, prairie openings, fields and roadsides. The taxa can normally be recognized by a combination of conspicuously glandular foliage, yellow corolla, and 1-2 seeded pods.

Both Alabama collections of *Rhynchosia tomentosa* (Linneaeus) de Candolle are historical. Charles Mohr made the Autauga County collection in July 1869 and the Mobile County collection in July 1870. It is possible that this species has been extirpated from the state. However, a collection by James Burkhalter in September 1987 from Escambia County, Florida, documents the continued presence of the species immediately adjacent to Alabama.

Of the 146 herbarium specimens of *Rhynchosia tomentosa* (Linneaeus) Hooker & Arnott that were studied during this project, all were the typical variety. The second variety, *R. tomentosa* var. *mollissima* (Elliott) Torrey & Gray is known from Florida, Georgia and
South Carolina. In Florida, it has been reported from Leon County, which is approximately 100 km southeast of Houston County, Alabama. Because of the proximity of the Florida collection to Alabama, this taxon possibly occurs in the southeastern section of the state. The typical variety has persistent stipules, several axillary inflorescences, 1-3 cm long and an occasional short terminal raceme. Variety *mollissima* differs from the typical variety by having caducous stipules and a single, strongly exerted, terminal inflorescence 5-20 cm long.

*Rhynchosia michauxii* Vail is another taxon that possibly occurs in the southern tier of Alabama counties. Although this taxon has not been reported from state, it does occur in Okaloosa County, Florida, which is immediately south of Covington and Escambia Counties.

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**LITERATURE CITED**


Figure 1. a) illustration of *Rhynchosia reniformis*, b) distribution of *R. reniformis*, c) illustration of *R. cytisoides*, d) distribution of *R. cytisoides*, e) illustration of *R. minima*, f) distribution of *R. minima*
Figure 2. a) illustration of *Rhynchosia tomentosa*, b) distribution of *R. tomentosa*, c) illustration of *R. difformis*, d) distribution of *R. difformis*. 