

**SYSTEMATIC REASSESSMENT OF THE NORTH AMERICAN
PHYSALIS VIScosa COMPLEX (SOLANACEAE)****Billie L. Turner**Plant Resources Center
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The North American elements of *Physalis viscosa* are reassessed taxonomically. *Physalis cinerascens* var. *spatulifolia* (Torr.) J.R. Sullivan, a dune sand taxon of Gulf Coastal Texas and closely adjacent Mexico, is elevated to specific rank as ***Physalis spathulifolia* (Torr.) B.L. Turner, stat. nov.** Its closest morphological relationship appears to be with the similar Gulf Coastal dune species (*P. angustifolia* and *P. walteri*) of Louisiana, Mississippi, Alabama and Florida. *Physalis mollis* var. *variovestita* is treated as ***P. cinarescens* var. *variovestita* (Waterfall) B.L. Turner, comb. nov.**, since the latter is allopatric with var. *cinerascens* and the two grade one into the other. Distribution maps of the several taxa are provided, along with an abbreviated key to the taxa concerned. *Phytologia* 93(2): 260-269 (August 1, 2011)

RESUMEN

Se revisa la taxonomía de los elementos norteamericanos de *Physalis viscosa*. *Physalis cinerascens* var. *spatulifolia* (Torr.) J. R. Sullivan, una planta de las dunas arenosas de la costa del Golfo en Texas y Tamaulipas se eleva a nivel de especie como ***Physalis spathulifolia* (Torr.) B. L. Turner, stat. nov.** Morfológicamente, parece cercana a *P. angustifolia* y *P. walteri*, que se desarrollan en la costa del Golfo en dunas costeras de los estados de Louisiana, Mississippi, Alabama y Florida. *Physalis mollis* var. *variovestita* se transfiere como variedad de

P. cinerascens, proponiéndose la nueva combinación de *P. cinerascens* var. *variovestita* (Waterfall) B.L. Turner, **comb. nov.**, dado que es alopátrica con *P. cinerascens* var. *cinerascens* y las dos se intergradan. Se presentan mapas de distribución de los diferentes taxa, y se incluye una clave abreviada de los taxa tratados.

KEY WORDS: *Physalis*, *P. angustifolia*, *P. cinerascens*, *P. mollis*, *P. spathulifolia*, *P. viscosa*, *P. walteri*, Texas, dune sands

Sullivan (1985) provided a detailed systematic study of the *Physalis viscosa* complex in which five species were recognized, largely based upon biogeographical and experimental crossing data: 1. *P. viscosa* (confined to South America), 2. *P. angustifolia*, 3. *P. cinerascens* (with 2 varieties), 4. *P. mollis* (with 2 varieties) and 5. *P. walteri*. Both *P. cinerascens* and *P. mollis* occur in Texas and possess populations that occur along the Gulf Coastal region; coastal populations of the former, heretofore treated as a var. of *P. cinerascens*, are treated at specific rank; populations of the latter, heretofore treated at the specific level, or as a variety of *P. mollis*, are treated as a variety of the widespread, closely adjacent, *P. cinerascens*, with which it intergrades.

A review of the taxonomy of the group is presented below, along with justifications for the nomenclature provided. Distribution maps for all of the North American taxa of the *P. viscosa* complex are provided.

Key to the North American taxa of the *P. viscosa* complex:

1. Leaves glabrous or nearly so.....***P. angustifolia***
1. Leaves pubescent.....(2)
 2. Under surfaces of mid-stem and upper leaves densely white-tomentose, the vestiture mostly obscuring the surface of blade.....***P. mollis***
 2. Under surfaces of mid-stem and upper leaves mostly moderately to sparsely pubescent, the vestiture not usually obscuring the surface of the blades.....(3)

3. Anthers equal to or shorter than mature filaments.....**P. walteri**
3. Anthers 1.5 times as long as mature filaments, or longer.....(4)
 4. Leaf margins to some extent undulate to dentate; corollas reflexed when fully opened; widespread, south-central USA to southern Mexico.....**P. cinerascens**
 4. Leaf margins entire; corollas not reflexed when fully opened; coastal dune sands of Texas w Louisiana and n Mexico.....**P. spathulifolia**

PHYSALIS ANGUSTIFOLIA Nutt., J. Acad. Nat. Sci. Phila. 7: 113.

1834. **Fig. 1**

Physalis viscosa subsp. *maritima* var. *elliottii* (Kunze) Waterfall f.
glabra Waterfall 1958

Sullivan (1985) cited a number of representative specimens, most of these shown in Fig. 1. He also noted that, "This species hybridizes with *P. walteri* in peninsular Florida, and populations can be found in this state that exhibit intermediate morphology," which seems to be the case.

PHYSALIS CINERASCENS (Dunal) Hitchc., Spring Fl. Manhattan
32: 1894. **Fig. 2**

Physalis viscosa var. *sinuadentata* Schlecht. 1846

Physalis pensylvanica var. *cinerascens* Dunal 1852

Physalis curassavica L. var. *sinuadentata* (Schlecht.) Dunal 1852

Physalis mollis var. *cinerascens* (Dunal) A. Gray 1875

Physalis mollis var. *parviflora* Rydb. 1896

Physalis saltillensis Fernald 1900

Physalis viscosa var. *cinerascens* (Dunal) Waterfall 1958

Physalis viscosa var. *yucatanensis* Waterfall 1967

This is a widespread, highly variable, interior species, occurring on various substrates, either calcareous or sandy. It is typified by material from northeastern, Tamaulipas, Mexico. Sullivan (1985) recognized two infraspecific taxa within the complex: var. *cinerascens* and var. *spathulifolia*. We have elevated the latter to specific rank in the present paper.

We do, however, recognize a weakly differentiated, var. *variovestita*, as follows:

PHYSALIS CINERASCENS VAR. VARIOVESTITA

(WATERFALL) B.L. Turner, **comb. nov.** **Fig. 3**

Based upon *Physalis variovestita* Waterfall, Rhodora 60: 137. 1958.

Physalis mollis var. *variovestita* (Waterfall) Sullivan 1985

Sullivan (1985) comments that *variovestita* is similar to *Physalis mollis* Nuttall in morphology and flavonoid chemistry, and the two produce fertile hybrids. However, *variovestita* is recognizable because of the combination of abundant glandular hairs that are short-dendritic and long articulated, and the dark, indistinct spots in the corolla throat.

Variety *variovestita* occurs on mostly interior deep sandy soils of southern Texas and intergrades with typical var. *cinerascens* near regions of contact (but not, in our opinion, with the more northeastern *P. mollis*). This is well attested to by annotations of Waterfall and Turner on specimens at LL-TEX. Indeed, the type of *variovestita* (from Rockport, Aransas Co, Texas) is somewhat intermediate between the two taxa [assuming typical populations of the glandular-pubescent populations are best represented in Brooks and Kenedy counties, as is our surmise]. Regardless, var. *variovestita* does not appear to grade into *P. mollis* as suggested by Sullivan's classification, although the occasional glandular hairs are found intermixed with forked hairs in many interior populations of both *P. mollis* and *P. cinerascens*, these presumably the result of interspecific hybridizations with yet other taxa, as well noted by Menzel (1960). Many such specimens were annotated by Waterfall as intergrades between *P. cinerascens* and *P. variovestita*.

PHYSALIS MOLLIS Nutt., Trans. Amer. Philos. Soc. 5(n.s.): 194.

1837. **Fig. 4**

Physalis viscosa subsp. *mollis* (Nutt.) Waterfall var. *mollis* Waterfall

This taxon is an interior species, usually confined to deep sandy soils of mostly forested areas in the regions shown in Fig. 2. It is partially sympatric with *P. cinerascens* and hybridization between the two taxa can be expected. Sullivan (1985) treated the taxon as having two infraspecific taxa: var. *variovestita* and var. *mollis*; on

biogeographical grounds, we treat the former as a variety of *P. cinerascens* in the present paper, while Waterfall treated it at the specific level.

PHYSALIS SPATHULIFOLIA (Torr.) B.L. Turner, **stat. nov. Fig. 5**

Based upon *Physalis lanceolata* var. *spathulifolia* Torr. in Emory, Rep. U. S. and Mexican Bound. Surv. 2, part 1: 153. 1859.

Physalis viscosa var. *spathulifolia* (Torr.) A. Gray

Physalis cinerascens var. *spathulifolia* (Torr.) Sullivan

This taxon has all of the earmarks of a biological species since it is confined to a consistant habitat (dune sands along the Gulf Coast) and does not appear to intergrade with its presumed closest, largely allopatric relative, *P. cinerascens*.

All of the known collections of this taxon occur along the immediate Gulf Coast in dune sands, except for a single collection from Colorado Co., Texas (*Carr 19226, TEX*) which was reportedly obtained on the "W side of San Bernard River floodplain, ca 0.5 mi S to SSE of mouth of Coushatta Creek, where it occurs "on deep well drained coarse sand." The plant appears to be typical of the species and is perhaps introduced there from a coastal site.

PHYSALIS WALTERI Nutt., J. Acad. Nat. Sci. Phila. 7: 112. 1834.

Fig. 6.

Physalis elliotii Kunze 1847

Physalis maritima M.A. Curtis 1849

Physalis viscosa var. *maritima* (M.A. Curtis) Rydb. 1896

Physalis viscosa subsp. *maritima* (M.A. Curtis) Waterfall var. *maritima* f. *maritima* 1958

Physalis viscosa subsp. *maritima* (M.A. Curtis) Waterfall f. *latifolia*
Waterfall

Physalis viscosa subsp. *maritima* (M.A. Curtis) Waterfall var. *elliottii*
(Kunze) Waterfall f. *elliottii*

According to Sullivan (1985), this species hybridizes with *P. angustifolia* in peninsular Florida, and individuals can be found in this or that population that exhibit intermediate morphology such as broadly ovate, glabrous leaves, etc.

ACKNOWLEDGEMENTS

Distribution maps are based upon specimens on file at LL-TEX, MEXU, and specimens cited by Sullivan in her published study, these supplemented with records reported by the USDA (when deemed appropriate).

LITERATURE CITED

- Menzel, M.Y. 1960. What is *Physalis variovista*? *Rhodora* 62: 117-121.
Sullivan, J.R. 1985. Systematics of the *Physalis viscosa* Complex
(Solanaceae). *Syst. Bot.* 10: 426-444.
Waterfall, U.T. 1958. A taxonomic study of the genus *Physalis* in North
America north of Mexico. *Rhodora* 60: 107-114, 128-142.

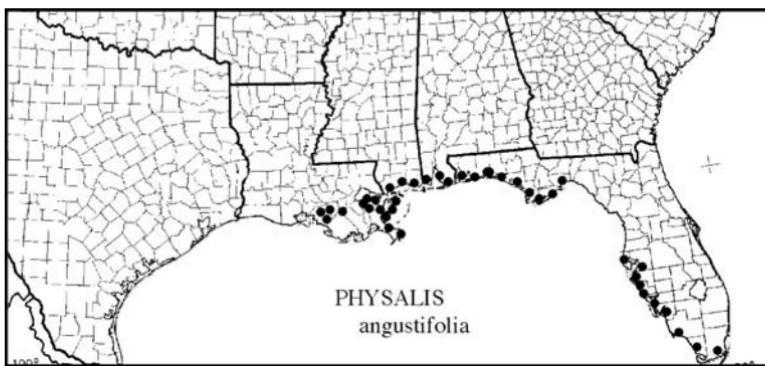


Fig. 1. Distribution of *P. angustifolia*.

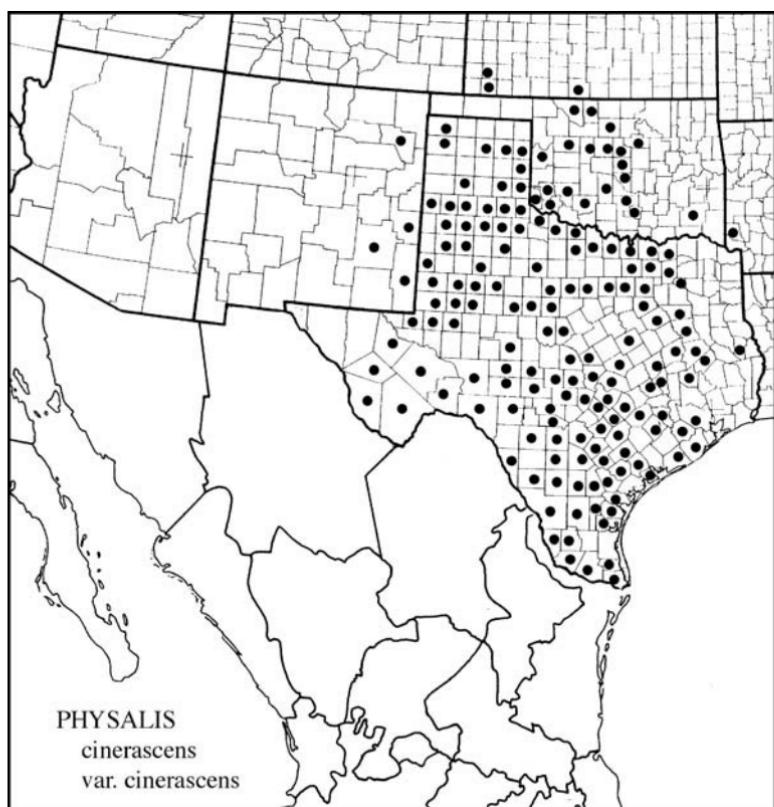


Fig. 2. Distribution of *P. cinerascens* var. *cinerascens*.

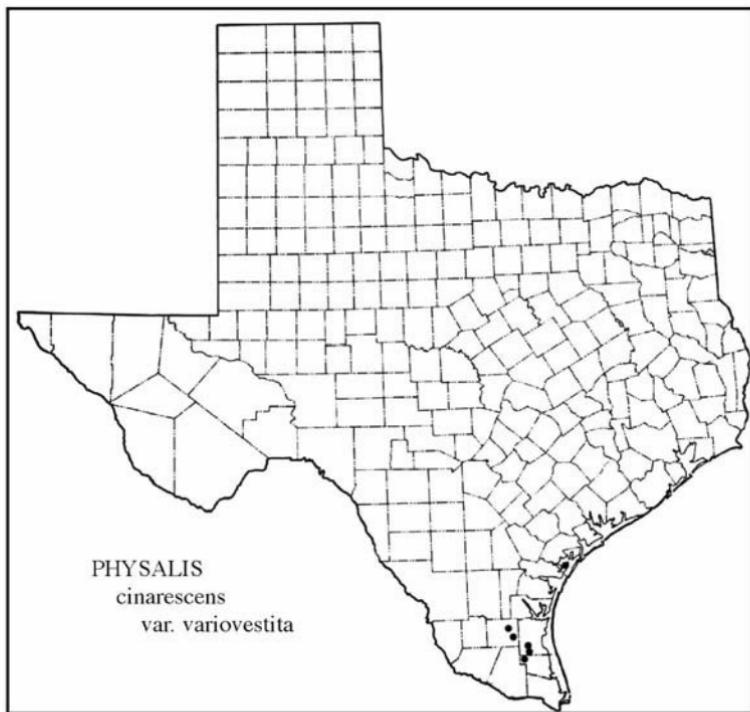


Fig. 3. Distribution of *P. cinerascens* var. *variovestita*.

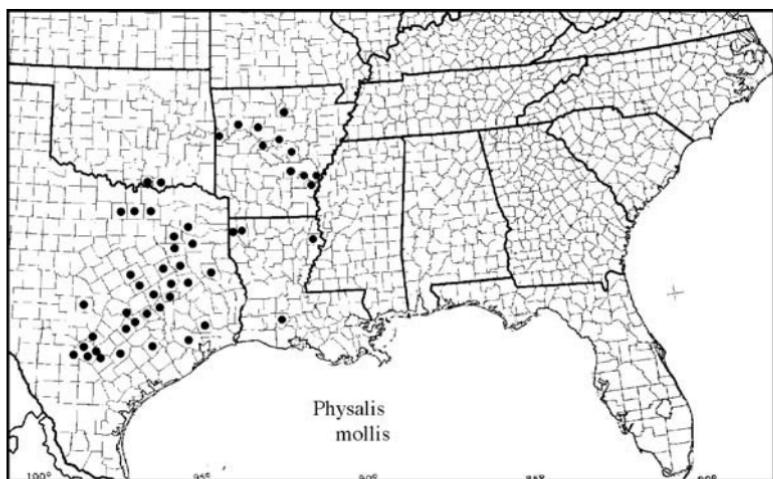


Fig. 4. Distribution of *Physalis mollis*.

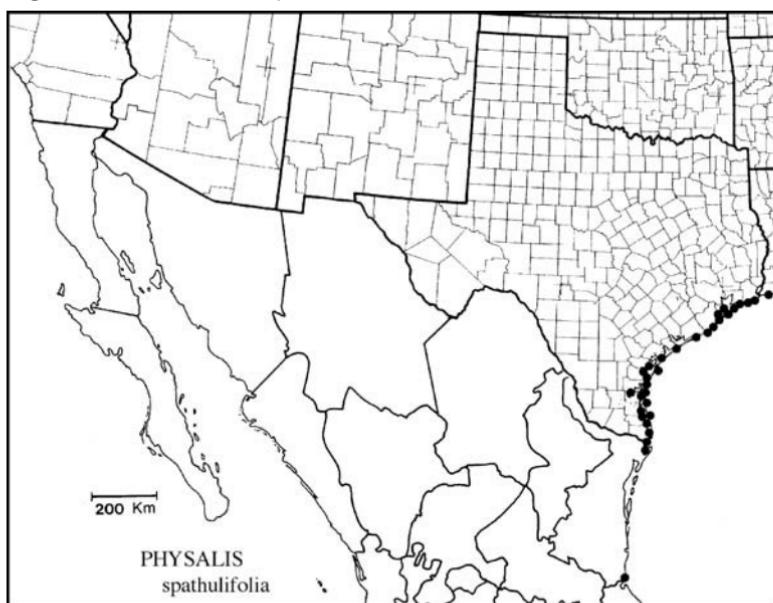


Fig. 5. Distribution of *P. spathulifolia*.



Fig. 6. Distribution of *P. walteri*.