Taxonomic Status of Rhynchosia diversifoliia var. Prostrata (Fabaceae)

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TAXONOMIC STATUS OF *RHYNCHOSIA DIVERSIFOLIIA* VAR. *PROSTRATA* (FABACEAE)

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Abstract: *Rhynchosia diversifolia* var. *prostrata*, sensu Grear (1978), is elevated to specific status where it is given a new name, **Rhynchosia bicentrica**, **nom.** and **stat. nov.**, there being an earlier *R. prostrata*. Reasons for the elevation are provided, along with maps showing its amphitropical distribution.

Keywords: Fabaceae, *Rhynchosia*, *R. bicentrica*, *R. diversifolia*, *R. senna*, Mexico.

Preoccupation with the identification of the Mexican species of *Rhynchosia* resulted in a previous paper (Turner, 2011) which recognized *R. texana* as an amphitropical taxon occurring in both North America and South America. Grear (1978) and Fortunato (1983) also recognized the inter-continental distribution of the latter but preferred to treat these as but varieties of an expanded *R. senna*; so treated the correct varietal name becomes *R. senna* var. *texana* (T. & G.) M.C. Johnston. When treated as a more restricted bicentric species the name becomes *R. texana* T. & G.

In Grear's study, and that of Fortunato, I was surprised to note that they also recognized another amphitropical disjunct, namely *Rhynchosia diversifolia* var. *prostrata* Burkart, the latter typified by material from Argentina, but also occurring in Brazil, Uruguay and, surprisingly, northeastern Mexico (Nuevo Leon and Tamaulipas). Intuition and preliminary examination of the materials concerned led me to believe that the relatively rare Mexican specimens might represent a novel taxon, but after examining material of the taxa concerned, I concluded, like both Grear and Fortunato, that the variety does have a bicentric distribution (Figs. 1, 2) and, as with *R. texana*, I prefer to treat this at the specific level:

Rhynchosia bicentrica B.L. Turner, nom. and stat. nov.

Based upon *Rhynchosia diversifolia* var. *prostrata* Burkart in Cabrera, Fl. Prov. Buenos Aires 4: 628. 1967. Not *Rhynchosia prostrata* Brandegee (1908).

The species is named for its amphitropical or bicentric distribution, occurring both north and south of the New World Tropics. In South America the taxon is relatively common. In Mexico it is relatively rare, having been collected at only three sites as listed in Grear's treatment (by *Berlandier 3131,* "River de l'aronsara near de Galian," May 1834 [at least 5 sheets mounted], and *Mueller & Mueller 501,* in 1933 [4 sheets], both from the vicinity of Monterrey, and a single sheet from the vicinity of San Jose, Tamaulipas, "Mesa de Tierra." *Bartlett 10468,* 19 Jul 1930). So far as known, no subsequent collections have been assembled from the area, in spite of much collecting by recent professionals.

In my taxonomic assessment of the above taxon, I examined material from all of the Mexican sites examined by Grear (as noted in the above), and numerous sheets from South America (LL-TEX), also examined by the latter worker. Among the sheets examined, I found no morphological evidence to suggest that natural hybrids between the two taxa might be occurring, although the occasional intermediate might be expected in regions of overlap. In short, I agree with Grear that the varietal taxon, like

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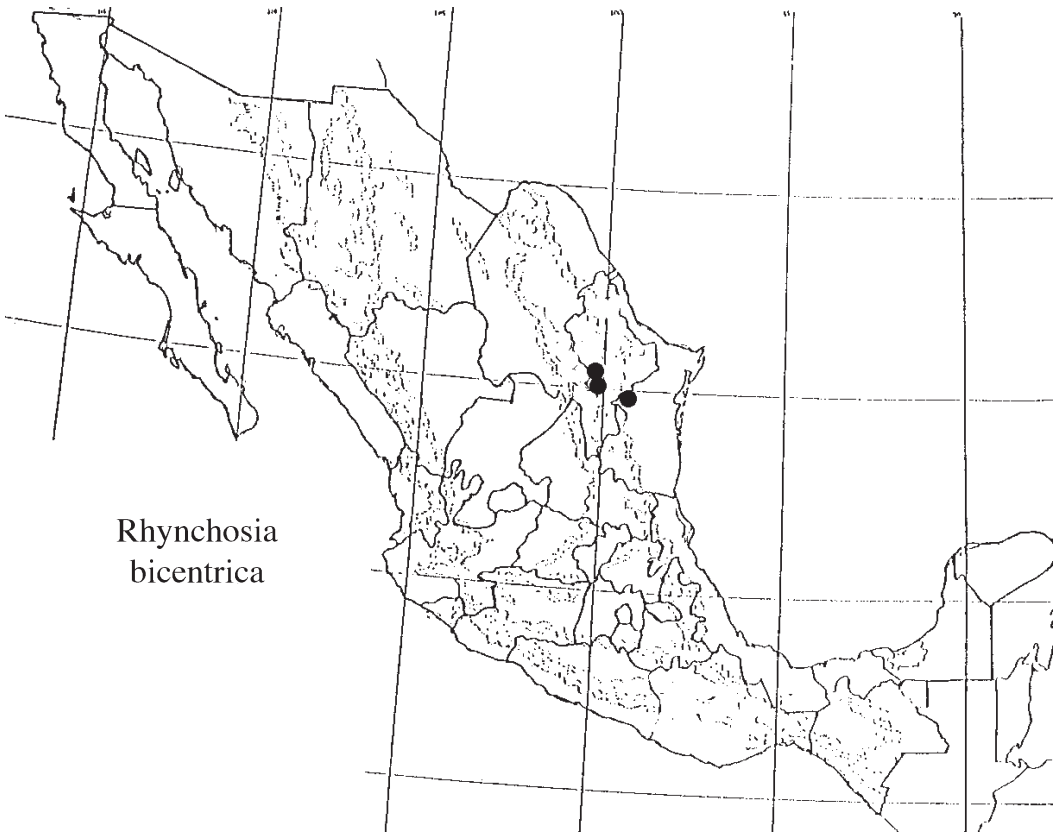

FIG. 1. Distribution of *Rhynchosia bicentrica* in North America.

R. texana, has a bicentric distribution. Much of my conviction stems from the comments of Grear, who notes:

The characters used to divide *Rhynchosia diversifolia* into two varieties are given in Grear's key [p. 90]:

1. Stems erect or ascending; mature leaflets usually variable in size and shape on same stem and not gland-dotted or sparsely so above only; South America . . . . . 21a. *R. diversifolia* var. *diversifolia*
1. Stems prostrate; mature leaflets more uniform in in size on same stem and densely gland-dotted above and beneath; Mexico (Nuevo Leon, Tamaulipas) and South America . . . . . 21b. *R. diversifolia* var. *prostrata*

Grear notes further [p. 91]:

> The typical variety never has prostrate stems and has leaflets varying widely in shape and size on the same stem. **No intermediates are found where the two varieties are sympatric in South America** [emphasis mine].

Like the typical variety, *Rhynchosia diversifolia* var. *prostrata* is most closely related to *R. senna* and exhibits essentially the same kind of disjunct distribution as shown by *R. senna* var. *angustifolia* [= *R. texana*] in Mexico and South America. Although the occurrence in Mexico is restricted, the explanation for the amphitropical distribution of *R. senna* var. *angustifolia* applies to this case as well.

Rhynchosia diversifolia var. *diversifolia* has often been confused with *R. senna* var. senna, as indicated by the synonymy of the former. Where sympatric they appear to hybridize to some degree. Nevertheless, they are strikingly different in fruit and leaflet characters and the occasional cross is rare.

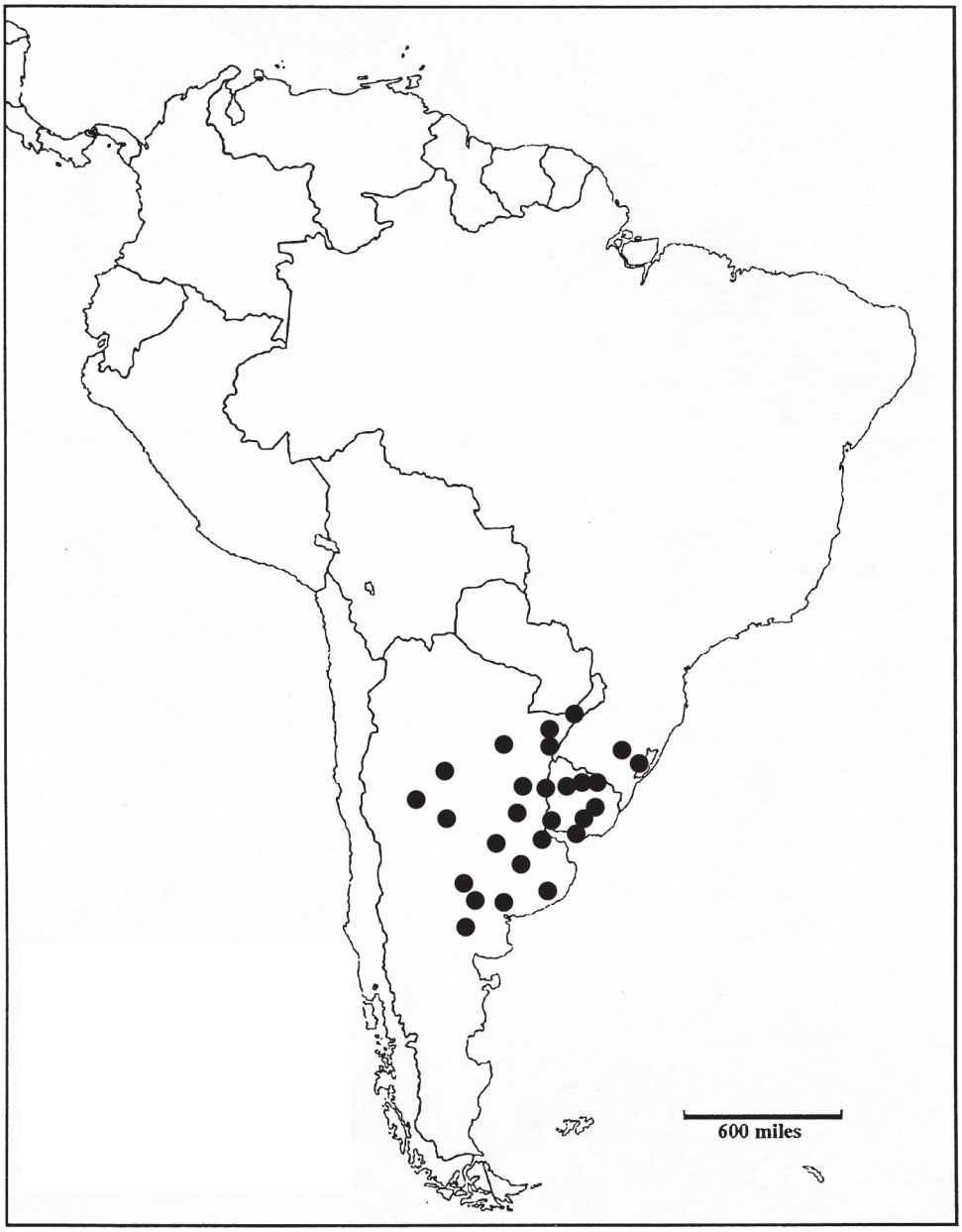

FIG. 2. Distribution of *Rhynchosia bicentrica* in South America.

Each retains it own peculiarities in areas of sympatry.

It should be emphasized that Grear, accepted the rare hybrid within the *Rhynchosia senna* complex, but in areas of sympatry within the *R. diversifolia* complex could not account for a single intermediate, hence my acceptance of var. *prostrata* as a distinct species, *R. bicentrica.* No doubt my long-time familiarity with hybrid populations of legume species in Texas and elsewhere (e.g., *Baptisia* spp., Turner, 1963) has colored my thinking, but I believe my biological intuition as to the specific status of the taxon concerned is sound.

Fortunato (1983) provided a somewhat more expanded, detailed, key to the two varieties of *Rhynchosia diversifolia,* but did not take issue with Grear's comments regarding the lack of intermediates in regions of sympatry, nor did she cite specimens suggestive of such contamination.

Indeed, Burkart (1987), in his exceptional treatment of *Rhynchosia* for Entre Rios, Argentina provided an excellent illustration of the varieties concerned, the differences between them quite striking. He noted further that Furtunato (1983) called to the fore (from among many sheets examined) only two specimens examined by her that seemed to be intermediate in habit, but had all the other characters that defined var. *prostrata.* In short, to my knowledge, no one has found a true intermediate between the taxa concerned, in spite of the fact they are sympatric over a large region, are represented by numerous collections in herbaria, and have been examined by several exceptional scholars of the complex.

Distribution of *Rhynchosia bicentrica* on the two continents is shown in Figs. 1 and 2, this mostly based upon specimens at LL-TEX, and the distribution maps provided by Grear; the latter worker also provided a distribution map for *R. diversifolia* (his Fig. 13).

Finally, one of the reviewers of the present paper suggested that I might best summarize my paper with the following:

> "*Rhynchosia diversifolia* var. *diversifolia* and *R. diversifolia* var. *prostrata*, as defined by Grear and Fortunato, are broadly sympatric in South America and, according to these two authors, are usually (although perhaps not always) quite distinguishable. According to my personal concept of the botanical variety, two varieties cannot be sympatric except in marginal zones in which morphological intergradation must occur, and thus conclude that the two taxa must be treated as species." I can buy that statement, in this instance, without hesitation.

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Guy Nesom kindly reviewed the paper and offered helpful criticisms. My colleague, Tom Wendt, offered critical comments, which proved helpful to my taxonomic thinking. I am grateful to the following herbaria for the loan of specimens: GH, LL-TEX, MICH.

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