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Taxonomy, Taxa Richness, and Distribution of the Tribes Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae (Fabaceae) in Northeastern Mexico

Eduardo Estrada Castillón [1], Gilberto Ocampo [2,*], María Leticia Torres-Colín [3], Arturo Mora-Olivo [4], George Sebastian Hinton [5], David Balderas González [1], Israel Yerena Yamallel [1], Renata Aide Valdes Alameda [1], Maritza Gutiérrez Gutiérrez [1], Homero Garate Escamilla [1], Emanuel Molina Marchan [1] and Luis Gerardo Rubio Pequeño [4]

[1] Facultad de Ciencias Forestales, Universidad Autónoma de Nuevo León, Linares 67700, Nuevo León, Mexico; aeduardoestradac@prodigy.net.mx (E.E.C.); davidbalglz@gmail.com (D.B.G.); jose.yerenaym@uanl.edu.mx (I.Y.Y.); renatavalameda@gmail.com (R.A.V.A.); maritza.gutierrezgtr@uanl.edu.mx (M.G.G.); hgaratesc@uanl.edu.mx (H.G.E.); emanuel.molinam@uanl.edu.mx (E.M.M.)
[2] Centro de Ciencias Básicas, Universidad Autónoma de Aguascalientes, Aguascalientes 20100, Aguascalientes, Mexico
[3] Instituto de Biología, Universidad Nacional Autónoma de México, Ciudad de México 04510, Mexico; lety@ib.unam.mx
[4] Instituto de Ecología Aplicada, Universidad Autónoma de Tamaulipas, Ciudad Victoria 87000, Tamaulipas, Mexico; amorao@uat.edu.mx (A.M.-O.); luisgerardoes@live.com.mx (L.G.R.P.)
[5] GBH Herbarium, Rancho Aguililla, Saltillo 25000, Coahuila, Mexico; gshinton@gmail.com
* Correspondence: gilberto.ocampo@edu.uaa.mx

Abstract

Background: Although there is a compendium of species diversity for the Flora of North America, including the Fabaceae, many legume species were excluded. Therefore, this study fills this information gap and updates the systematics and nomenclature of this group in accordance with the new changes proposed by the LPWG. Objective: To update the taxonomy and to document the species richness and endemism of the tribes Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae (Fabaceae) in northeastern Mexico. Methods: The study is based primarily on the botanical specimens collected by some of the authors during the last 45 years and the review of national and international herbaria, where legumes from northeastern Mexico are deposited. Results: Richness—A total of 7 tribes, 22 genera, and 69 species of legumes were recorded, and distributed as follows: Desmodieae (four genera, 29 species; Millettieae, three genera, nine species); Psoraleeae (two genera, four species); Robinieae (five genera, eight species); Sesbanieae (one genus, two species); Sophoreae (four genera, seven species), and Trifolieae (three genera, nine species). Endemism—A total of 15 of the 69 species recorded in the northeastern region are endemic to Mexico (22%). Five of the seven tribes under study have endemic taxa in the northeastern part of the country: Desmodieae (two species), Robinieae (two species), Sophoreae (three species), and Trifolieae (one species). *Desmodium* is the genus with the highest number of endemic species (4), followed by *Dermatophyllum* with two species. Conclusions: The diversity of legume species in the studied tribes in northeastern Mexico is high; almost a quarter of the species studied are endemic to this region. Therefore, it is necessary and a priority to create policies and appropriate practical measures for the conservation of the ecosystems where these taxa thrive.

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1. Introduction

Currently, the Fabaceae is subdivided into six subfamilies [1], among which the Papilionoideae is notable for its high diversity of tribes, genera, and species. The Papilionoideae consists of approximately 28 tribes [2], although this number varies due to new research, including nomenclatural transfers among tribes and the recognition of new ones, such as Adinobotryeae and Glycyrrhizeae [3], Astragaleae [4], among others. Approximately 20 of these tribes are found in Mexico. In this study, we focus on the tribes Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae.

The tribe Desmodieae comprises approximately 30 genera and around 530 species [5]. In Mexico, the Desmodieae is rich in species in the southern part of the country, especially in Chiapas [6] and the Novo Galicia region [7]. The four genera of this tribe that are present in Mexico are also found in the northeastern part of the country; some of its species are endemic to this region, especially some species of *Desmodium*, a genus that thrives in multiple ecosystems.

The tribe Millettieae is mainly distributed in tropical and subtropical regions and has around 45 genera and 914 species [7]. Of the 45 genera that comprise this tribe, only six of these are recorded in Mexico and three are distributed in the northeastern part of Mexico. *Lonchocarpus* and *Tephrosia* stand out among the most diverse, although with limited species richness in this region because of their preference for tropical and subtropical climates [8,9]. The tribe Psoraleeae, widely distributed around the globe, comprises six genera and 185 species [10]. Several genera are widely distributed in Mexico [11], such as *Orbexilum* and *Pediomelum*, and most species inhabit cool or cold climates.

The tribe Robinieae is a group of American plants with 11 genera and 72 species [12]. Eight genera are found throughout Mexico and almost half of them extend their range into the northeastern part of the country. Although *Coursetia* is a genus with high species richness in Mexico, it is scarce in the northeastern part of the country, as is the case with other genera of this tribe such as *Genistidium*, *Gliricidia*, *Peteria*, and *Robinia*. The ecological niches inhabited by the species of this tribe are contrasting: *Genistidium* and *Peteria* have species dependent on soils with high calcium carbonate content; *Gliricidia* typically thrives in tropical areas and *Robinia* grows in mountainous, typically cold, regions.

The tribe Sesbanieae comprises a single genus with approximately 60 species [13]. Species of the tribe in the northeastern region are generally found near water bodies, in disturbed areas.

The tribe Sophoreae has 45 genera and ca. 398 species [14]. This tribe is easily recognized in the field because of the presence of its free stamens. More than half of the genera present in Mexico are distributed in the northeast of the country (*Dermatophyllum*, *Myrospermum*, and *Sophora*) and most of them have endemic species in this region, restricted to particular ecosystems.

The tribe Trifolieae comprises six genera and ca. 485 species [15], most of which belong to the genus *Trifolium*. This is the only genus of the tribe that is native to the Americas [15], while all *Medicago* and *Melilotus* species in Mexico are non-native.

The main novelty and importance of this study lies in the fact that, although Fabaceae have been considered in the Flora of North America [16], many species found in Mexico have not been included in this work. In addition, the species richness of the Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae in northeastern

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Mexico is not well known. Therefore, this study aims to fill the information gaps still present in previous floristic treatments. Similarly, the most recent nomenclatural and phylogenetic changes in the Fabaceae are considered here, updating the taxonomy of all studied tribes and including the most recent and relevant information for the conservation of the regional biodiversity.

2. Materials and Methods

2.1. Study Area

The study area includes three Mexican states, Coahuila, Nuevo León, and Tamaulipas, that cover an area of 306,000 km^2 [17–19] (Figure 1). Predominant climates in this region correspond to type A (tropical) in low plains, in the southern region of the study area, B (dry) in the central and northern portion of the study area, C (temperate) in the high plains and low mountains, and E (cold) in the highest peaks of the area, above 3500 m [17–19]. The relief is made up of four physiographic provinces: (1) the Great Plain of North America (200–450 m a.s.l.; northern part); (2) the Sierras and Plains of the North (300–900 m a.s.l.; northern part); (3) the Northern Gulf Coastal Plain (200–450 m a.s.l.; central portion of Nuevo León and Tamaulipas); and (4) the Sierra Madre Oriental (750–3650 m a.s.l.; regions with highest peaks in northeastern Mexico). The Northern Gulf Coastal Plain and the Great Plain of North America mainly houses desert scrub communities (Tamaulipas Thorn Scrub and Piedmont Scrub) where many legumes (Fabaceae) standout such as *Chamaecrita greggii*, *Ebenopsis ebano*, *Eysenhardtia texana*, *Havardia pallens*, *Mariosousa coulteri*, *Neltuma glandulosa*, *N. laevigata*, *Senegalia greggii*, *Vachellia rigidula*, and *Vachellia farnesiana* as well as others such as *Agave Lechuguilla* (Asparagaceae), *Amyris texana* (Rutaceae), *Celtis pallida* (Cannabaceae), *Condalia hookeri* (Rhamnaceae), *Forestiera angustifolia*, *Guaiacum angustifolium* (Zygophyllaceae), *Leucophyllum frutescens* (Scrophulariaceae), *Sidedroxylon celastrinum* (Sapotaceae), and *Zanthoxylum fagara* (Rutaceae) [20]. The province of the Sierra Madre Oriental includes two variants, the dry and mesic scrub communities.

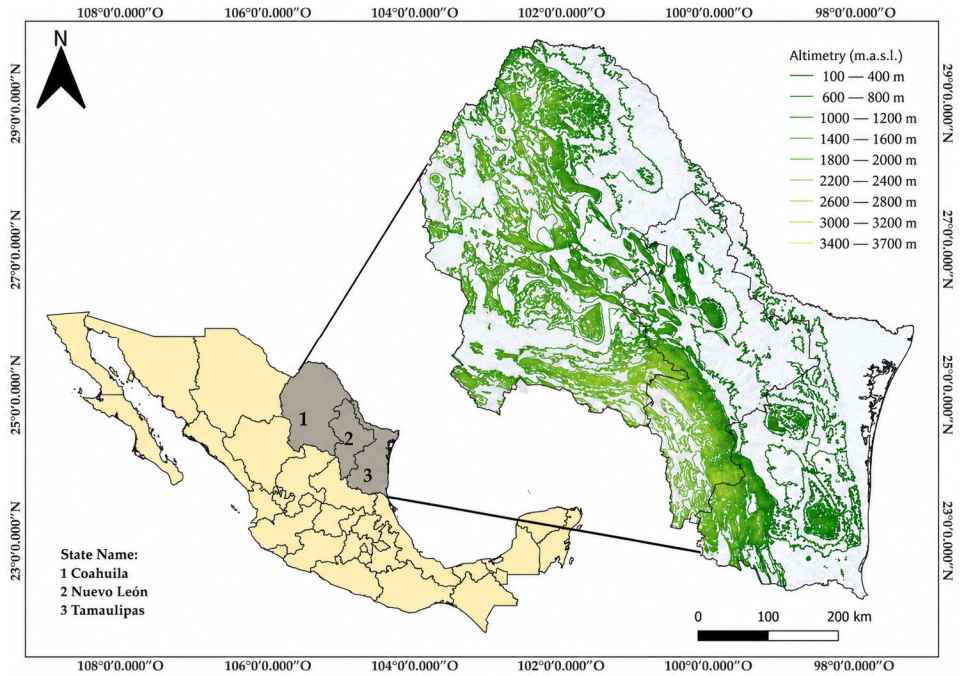

Figure 1. Northeastern Mexico, which includes the states of Coahuila, Nuevo León, and Tamaulipas. The map was generated using ArcGIS version 10.8.2 (ESRI, Redlands, CA, USA). The administrative boundaries and digital elevation model (DEM) data were obtained from the geospatial data cloud (http://www.gscloud.cn) (accessed on 15 August 2026).

The high plains (1400–1800 m a.s.l.) are characterized by a desert scrubland (dry) that houses low, unarmed or thorny shrubs, succulents, halophytic and gypsophilous plants, as well as rosetophyllous shrubs, where *Larrea tridentata* (Zygophyllaceae), *Flourensia cernua* (Asteraceae), different species of *Agave*, *Dasylirion*, and *Nolina* (Asparagaceae), Cactaceae (*Opuntia*), Poaceae (*Muhlenebergia villiflora*), Frankeniaceae (*Frankenia gypsophila*), and Amaranthaceae (*Atriplex*) stand out. The mesic and cool area (1700–3650 m a.s.l.) include oak, oak-pine, and oak-conifer forests where the presence of Betulaceae (*Carpinus*, *Ostrya*), Cornaceae (*Cornus*), Cupressaceae (*Cupressus*, *Juniperus*), Fagaceae (*Quercus*), Juglandaceae (*Carya*, *Juglans*), Pinaceae (*Pinus*, *Abies*, *Pseudotsuga*, *Picea*), Rosaceae (*Crataegus*), and Taxaceae (*Taxus*) are common [20].

2.2. Herbarium Material

The specimens stored in Mexican herbaria (ANSM, CFNL, MEXU, HUAA, and UAT) [21] were consulted. High-resolution photographs from MEXU and the SEINet Portal Network [22] were studied. In addition, some of the authors' personal collections were examined, which in several cases cover more than 40 years of collections in the region. The specimens cited as "examined material" met the criteria of being correctly identified and verified by the authors; a total of 498 botanical specimens covering all tribes and the entire geographic extent of the study area were examined. All species were identified and confirmed by the authors.

2.3. Bibliography and Databases

The scientific literature published in specialized journals was consulted. The JSTOR platform (JSTOR Global Plants) [23], Tropicos website (Tropicos.org, accessed on 23 March 2026) [24], and the book *Order out of Chaos* [25] were consulted for type specimen information. The POWO [26] (Plants of the World Online) platform was consulted for species synonymy and to assess the agreement among these synonyms and those published in specialized monographs. The symbol "!" found in the representative material examined and type specimen sections indicates that the type of specimen was studied by the authors. Regarding the designation of nomenclatural type specimens for names published in the 19th century, only a single specimen is cited in the original description; therefore, that specimen is considered the holotype.

2.4. Dichotomous Identification Keys

To facilitate plant species identification within each tribe, dichotomous keys at genus and species level were elaborated. Where possible, the clearest and least technical terminology was used for pairwise comparisons within the keys. Morphological measurements were obtained by the authors; when the specimens were unavailable, published morphological measurements for the species were taken from the literature.

2.5. Taxonomic Treatment

The most recent changes in botanical taxonomy and nomenclature were incorporated, following the classification proposed by LPGW [1]. POWO is followed to solve nomenclatural aspects such as homonymy and heteronymy, although most of the synonymy is based on published monographs. When the list of synonyms was extensive, only the homotypic synonyms were included. Tribes, genera, and species are organized in alphabetical order. Type specimen details for each genus and species were included along with their synonyms. A brief morphological description was added for each taxon, highlighting the key features that distinguish them from others. An additional herbarium material list was included, as well as a distribution section that describes whether the species is endemic to the northeastern part of Mexico, to the country, or if it has a wide distribution range,

along with the vegetation types where they occur. The criteria for determining species endemism in the study area were based on the information from all botanical specimens studied, herbarium databases, and records found in the scientific literature.

3. Results

3.1. Species Richness of Tribes Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae in Northeastern Mexico

The seven tribes considered in this study include 22 genera and 69 species (Table 1). It shows the comparisons among tribes and genera, species richness, distribution patterns, and the main ecological associations where they are found.

Table 1. Comparisons of species richness among tribes and genera, distribution patterns, and the main ecological associations where they occur in northeastern Mexico.

Tribe	Number of Genera	Number of Species	Distribution Pattern	Ecological Associations
Desmodieae	4	29	Pantropical and subtropical	Scrublands, low deciduous forest, tropical forest, oak–pine forest, and rain forest
Millettieae	3	9	Pantropical and subtropical with mild incursion	Mainly in low deciduous forests, tropical deciduous forests, and secondary vegetation
Psoraleeae	2	4	Disjunct distribution, occurring primarily in temperate and subtropical regions of Africa, North and South America, Eurasia, and Australia.	Desert scrub, pine-oak forests, and tropical deciduous forests
Robinieae	5	9	Found primarily in the Americas, ranging from the southwestern United States, Mexico, Central America, and the Caribbean to the Andes in South America	Highly diversified in semi-arid zones with desert scrub
Sesbanieae	1	2	Cosmopolitan distribution	Primarily recorded in riparian communities or flood-prone areas of lowland tropical forests, as well as in secondary vegetation.
Sophoreae	4	7	Subtropical and tropical, across both hemispheres, in the Americas, Africa, Asia, and Oceania	Tropical deciduous forest, desert scrub, oak and pine forests
Trifolieae	3	9	Temperate Mediterranean regions of the Northern Hemisphere and subtropical areas; highly diverse in the Mediterranean and Western Asia	Mainly in temperate pine-oak forests, high-mountain grasslands, and secondary vegetation.

According to the general distribution patterns of the different tribes, these are found in practically all the major plant communities or biomes of the planet, as is the case with Sesbanieae, a cosmopolitan tribe. However, certain preferences for diverse climatic patterns are also observed, where they thrive with higher species richness. Desmodieae, Millettieae, and Sophoreae stand out for their preference for tropical and subtropical climates in both hemispheres, where the *Desmodium* and *Tephrosia* are particularly noteworthy for their rich diversity. The distribution of the genera of these tribes covers practically all the

plant communities of the northeastern region of Mexico, inhabiting mostly subtropical scrublands, subtropical forest, evergreen forest, and cloud forests, with some species also reaching mesic and cool areas dominated by oak–pine forest. The tribe Robinieae is notable for its association with semi-arid habitats and a predominance of shrub species adapted to these ecosystems. This tribe is present in almost all arid zones of North and South America. In North America, the genera *Coursetia*, *Genistidium*, *Gliricidia*, and *Peteria* stand out, all following the same distribution pattern and inhabiting the arid and semi-arid regions of northeastern Mexico. Some of these species are restricted to specific soils, particularly those with high calcium carbonate and gypsum content, as is the case with species of *Genistidium* and *Peteria*, respectively. The tribe Psoraleeae exhibits a disjunct, almost cosmopolitan distribution. Various genera are found on different continents, primarily inhabiting mesic or cool areas in the Americas and extending to subtropical climates on other continents. This ecological breadth has allowed them to colonize virtually all the planet's major biomes. They are especially common in desert scrublands, pine-oak forests, and tropical deciduous forests. In our region, their distribution is limited to semi-arid and cool zones, inhabited by desert scrublands and oak–pine forests, at higher elevations, above 1600 m. For instance, the dominance of *Desmodium* and the relatively high richness observed in certain tribes should be further interpreted in relation to ecological factors, habitat availability, and historical biogeographic patterns. The Trifolieae tribe presents the same general distribution pattern not only in the USA, but also in Mexico and in northeastern Mexico; its species are predominant in high plains, above 1400 m, are frequent in mountain grasslands and secondary vegetation, in areas with direct and indirect anthropogenic disturbance, especially along roadsides. Table 2 shows the number of taxa in the world, in Mexico, and in the northeastern part of the country that belong to the tribes under study.

Table 2. Number of taxa in the world, in Mexico, and in the northeastern part of the country that belong to the tribes Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae.

Tribe and Genera	Species in the World	Species in Mexico	Species in NE Mexico
Desmodieae			
1. *Desmodium*	178 [27]	80 [5]	24
2. *Hylodesmum*	18 [28]	1 [5]	1
3. *Lespedeza*	48 [27]	3 [5]	3
4. *Grona*	50 [27]	1 [5]	1
Millettieae			
5. *Lonchocarpus*	160 [8]	94 [29]	2
6. *Piscidia*	7 [30]	4 [29]	1
7. *Tephrosia*	400 [9]	47 [29]	6
Psoraleeae			
8. *Orbexilum*	9 [11]	1 [11]	1
9. *Pediomelum*	29 [11]	5 [11]	3
Robinieae			
10. *Coursetia*	38 [12]	19 [12]	3
11. *Genistidium*	1 [31]	1 [31]	1
12. *Gliricidia*	5 [32]	3 [29]	2
13. *Peteria*	4 [33]	3 [33]	2
14. *Robinia*	4–7 [34]	2 [34]	1

Table 2. *Cont.*

Tribe and Genera	Species in the World	Species in Mexico	Species in NE Mexico
Sesbanieae			
15. *Sesbania*	55–85 [35]	5 [29]	2
Sophoreae			
16. *Dermatophyllum*	5 [36]	4 [37]	3
17. *Myrospermum*	2 [38]	2 [38]	1
18. *Sophora*	50 [39]	2 [39]	2
19. *Styphnolobium*	9 [40]	6 [40]	1
Trifolieae			
20. *Medicago*	83 [15]	3 [41]	3
21. *Melilotus*	18–20 [42]	3 [41]	2
22. *Trifolium*	280 [43]	14 [29]	4

3.2. Endemism

3.2.1. Endemism of Tribes and Species

A total of 15 of the 69 species found in the study area are endemic to Mexico, accounting for 22%. Five of the six tribes have endemic species in the northeastern part of the country. These species are included within 10 genera, so nearly half of the genera in the six tribes under study have at least one species endemic to Mexico. Each of the tribes Millettieae, Psoraleeae, Robinieae, and Sophoreae includes at least two genera with species endemic to Mexico. Sesbanieae is the only tribe that does not have any endemic species for the country. *Desmodium* is the genus with the highest number of endemic species (4) among these tribes, followed by *Dermatophyllum* (2). Each of the remaining genera has only one species endemic to the country (Table 3). Of the total number of endemic species in Mexico, eight are exclusive to northeastern Mexico, representing 53% of the total; the rest are distributed in other states. Most of the endemic species are found in the Mexican Plateau and the Sierra Madre Oriental. Five endemic species are found in the arid zones of Coahuila and Nuevo León, within the Chihuahuan Desert, growing in calcareous and gypsum soils. The oak and coniferous forests of the Sierra Madre Oriental harbor about half of the endemic species. Deciduous forests and cloud forests have few endemic species, as well as the subalpine meadow that is found at the highest peaks of the northeastern region, such as the Cerro El Potosí (3650 m a.s.l.).

Table 3. Endemism of the Fabaceae (Papilionoideae) tribes Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae in northeastern Mexico. Distirbution restrictions in northeastern Mexico, potential vulnerability in northeastern Mexico and plant communities where the species are commonly found.

Tribe/Region	Endemic to Mexico	Endemic to NE Mexico	Distribution Restrictions in NE Mexico	Potential Vulnerability in NE Mexico	Habitat
Desmodieae	*Desmodium leptoclados*, *D. polystachyum*, *D. subrosum*	*D. schusteri*	Specific plant communities mix, oak–pine forest and cloud forest, and location, only in southeastern state of Nuevo León.	Overgrazing and trampling due to excessive domestic livestock, frequent fires, and illegal logging of forests.	Oak–pine forest
		D. subrosum	Specific plant communities, desert scrublands and dwarf-oak vegetation, arid and dry climate.	Potentially overgrazing, falling of associated species (*Nolina cespitifera*) for broom making, excessive trampling by humans.	Oak–pine forest

Table 3. *Cont.*

Tribe/Region	Endemic to Mexico	Endemic to NE Mexico	Distribution Restrictions in NE Mexico	Potential Vulnerability in NE Mexico	Habitat
Milletieae	*Lonchocarpus hidalgensis* *Tephrosia foliolosa*				
Psoraleeae	*Orbexilum melanocarpum* *Pediomelum palmeri*				
Robinieae		*Coursetia insomnifolia*	Small and isolated populations.	Domestic livestock grazing, human effects from breaking branches of individuals.	Desert scrubland
		Peteria glandulosa	Small and isolated populations. Soil type (gypsum)	Excessive grazing by goats and trampling of plants by the excess of goats.	Desert scrubland
Sophoreae		*Dermatophyllum purpusii*,	Small and isolated populations.	Domestic livestock grazing, habitat destruction due to the illegal extraction of cacti.	Desert scrubland
		D. juanhintonianum	Small population, few individuals, soil type and arid climate.	Domestic livestock grazing, human activity effects, excessive trampling and habitat destruction due to the illegal extraction of cacti.	Desert scrubland
		Myrospermum sousanum	Small and isolated populations.	Falling trees and the effects of machinery for road and urban infrastructure construction.	Desert scrubland; oak–pine forest
Trifolieae		*Trifolium schneideri*	Microendemic, state of Nuevo León, altitude (3650 m a.s.l.).	Domestic livestock grazing, removal of plants by trampling by humans, livestock and car tires through tourism activities, and cyclical fires in the area.	Subalpine grassland

3.2.2. Distribution of Endemic Species in Different Ecosystems in Mexico and Northeastern Mexico

Some of the species under study are widely distributed in the country, which suggests that they are not currently in danger of extinction. This is the case of *Desmodium leptoclados*, *D. subsessile*, *Lonchocarpus hidalgensis*, *Orbexilum melanocaprum*, *Pediomelum palmeri*, and *Tephrosia foliolosa*. In addition, these species are found in places with a variety of land reliefs, elevation ranges and plant communities. Other endemic species have smaller distribution areas, restricted to one or two states; however, they are distributed across different altitudinal gradients and inhabit several plant communities in diverse ecosystems. *Peteria glandulosa* has a wider distribution, from northeastern Mexico to Puebla; however, it is characterized by its preference for the desert scrub of the Mexican Plateau and grows almost exclusively in soils with high gypsum content.

Myrospermum sousanum is endemic to Nuevo León and its distribution is more restricted in terms of surface area; it is found in the Tamaulipan thornscrub, piedmont scrub, and transitions with oak forest, at ca. 1000 m a.s.l. Endemic species with restricted distributions are undoubtedly those that depend on the stability of their ecosystem to survive. The arid zones of Nuevo León and Coahuila are characterized by a high number of endemic species, many of them inhabiting specific ecosystems where, in addition to the arid climate, the soil type plays an important role that influences their presence. *Desmodium subrosum* and *Coursetia insomnifolia* inhabit desert scrublands with predominantly calcareous soils and have a distribution restricted to just a few hectares. Their populations are relatively isolated and far from human settlements or the direct and indirect anthropogenic effects that could affect them; therefore, to date, their populations remain relatively stable. *Dermatophyllum juanhintonianum* and *D. purpusii*, for instance, inhabit specific ecosystems. The first species lives in gypsum soils in southern Nuevo León, in very small areas; although these populations are relatively isolated, they are few and influenced by domestic live-

stock, affected through trampling and browsing. The second species is found in southern Coahuila and northern Zacatecas, in small, relatively isolated populations; however, these are also subject to human impact from trampling and browsing by domestic goats and cattle in adjacent places. *Desmodium schusteri*, a species endemic to the central part of the state of Nuevo León, is restricted to the oak-pine forest. Although its distribution is restricted to a single ecosystem, its extent is relatively large, ca. 100–120 km long, where it is associated with different groups of plants, geographical reliefs, and climatic gradients, which allows survive in disturbed areas.

The highest peaks of northeastern Mexico harbor a diverse array of species. Of the tribes considered in this study, the only endemic species found above 3600 m a.s.l.is *Trifolium schneideri*, which occupies the subalpine meadow in a small area of no more than 3 ha. This species inhabits the summit of Cerro El Potosí, which, along with the adjacent zones, is subject to cyclical fires; the last one occurred in 1998, when the populations of *Pinus culminicola*, an endemic species, were reduced to less than 40% of their original surface area. In this same place, some scattered individuals of *T. schneideri* can still be found (e.g., 27-IV-2026, *E. Hernández*, *s.n.*, CFNL), a species that can be considered to be in great danger of extinction, because the area is subject to a strong impact of overgrazing and trampling by cattle, and some plants are additionally crushed by cars that bring visitors to the area.

3.3. Taxonomic Treatment

Tribe Desmodieae (Benth.) Hutch., Gen. Fl. Pl. 1: 477–478. 1964.

Herbaceous, annual or perennial, shrubs or, less frequently, trees. Stems erect, prostrate, or climbing. Indumentum with simple, hooked, and glandular trichomes. Leaves pinnate 3(−9) or 1-foliolate. Stipules lateral, free or amplexicaul, entire or divided. Inflorescences in racemes, panicles, or rarely heads or fascicles, terminal and axillary. Flowers bisexual, zygomorphic, bilaterally symmetrical, generally subtended by two series of bracts and occasionally bracteoles. Calyx with four to five fused sepals or 2-labiate. Corolla white, pink, purple, or lilac, with five petals. Stamens 10, monadelphous or diadelphous. Gynoecium 1-several ovules. Fruits in loment with one or more articles, dehiscent or indehiscent. Seeds one per article.

The tribe includes 30 genera and 530 species distributed in tropical, subtropical, and temperate regions of the world [5]. In northeastern Mexico, *Desmodium*, *Grona*, *Hylodesmum*, and *Lespedeza* are found.

This study contributes to all the nomenclatural updates within the tribe, where *Grona* is separated from *Desmodium*. For the first time, dichotomous keys are presented to identify all the genera and species of the tribe Desmodieae in northeastern Mexico. The dichotomous key for identifying the species of the genus *Desmodium* stands out because it is one of the most complex genera in terms of species determination, not only in Mexico but worldwide.

1A.	Stems without uncinate trichomes; stipels absent; fruit usually with one article	***Lespedeza***
1B.	Stems with uncinate trichomes; stipels present; fruit with two or more articles	2
2A.	Leaves generally 3-foliolate, whorled; inflorescence terminal; fruits long-stipitate, ventral margin with a very deep incision near the dorsal margin between the articles	***Hylodesmum***
2B.	Leaves 3-foliolate or unifoliolate leaves, alternate; inflorescence axillary and terminal; fruits sessile or shortly stipitate, constricted on both margins or the ventral margin straight	3
3A.	Secondary bracts present; inflorescences in racemes or panicles	***Desmodium***
3B.	Secondary bracts absent; inflorescences in fascicles	***Grona***

Desmodium Desv., J. Bot. 1: 122. 1813. *Cyclomorium* Walp. Repert. Bot. Syst. 2: 890. 1843. *Meibomia* Heist. ex Fabr., Enum. Meth. Pl.: 168. 1759. nom. rej. *Nephromeria* (Benth.) Schindl., Repert. Spec. Nov. Regni Veg. 20: 281. 1924. *Nicolsonia* DC., Prodr. 2: 325. 1825.

Nissoloides M.E. Jones Contr. W. Bot. 18: 135. 1933. *Sagotia* Duchass. & Walp., Linnaea 23: 737. 1851. *Tropitoma* Raf., New Fl. 2: 19. 1837.

Type: *Desmodium scorpiurus* (Sw.) Desv.

Herbaceous annuals or perennials, or shrubs. Stems erect, prostrate, or rarely climbing, with smooth, striated, or grooved, when woody, with conspicuous or inconspicuous lenticels, provided with hooked, hairy, canescent, strigose, or glabrescent trichomes, occasionally with adventitious roots. Leaves alternate, generally 3-foliolate, rarely 1–5-foliolate. Stipules persistent or deciduous, free or amplexicaul, erect, antrorse or retrorse, puberulent, canescent, or glabrous, generally ciliate. Flowers in racemes or panicles, terminal and axillary. Primary bracts present, deciduous or persistent. Secondary bracts present, generally deciduous. Calyx shortly campanulate or tubular, 2-labiate, upper lip bilobed, nearly entire or slightly bifid, lower lip 3-dentate, with 2 lateral teeth and one central tooth. Corolla pink, lilac, purple, or white. Banner obovate, ovate, oblong, or elliptic, slightly clawed. Wings generally oblong, clawed, fused to the keel. Keel with clawed petals, partially fused distally. Stamens 10, monadelphous or diadelphous. Ovary sessile or stipitate, with 2 or more ovules. Fruits in loment, indehiscent or dehiscent (in *D. angustifolium*), flat, folded, or spiraled, upper margin straight, sinuate, or crenate, lower margin dentate or crenate, with 1–10 elliptic, orbicular, oblong, transversely rhombic articles, provided with uncinate or glabrescent trichomes, or occasionally ciliate on the surface and margins, membranous or coriaceous, sessile or shortly stipitate.

Genus with 178 species worldwide [27], distributed in tropical and temperate regions. In Mexico, it is represented by approximately 80 species [5], of which 24 are found in the Northeast region.

1A.	Leaves unifoliolate	2
1B.	Leaves 3-foliolate	3
2A.	Leaflet oblong, ovate to narrowly ovate, 2.5–5 times longer than wide, 1–3 cm wide	*D. psilophyllum*
2B.	Leaflet linear, 10 or more times longer than wide, 2–5 mm wide;	*D. schusteri*
3A.	Shrubs	**4**
3B.	Herbaceous, prostrate, erect or procumbent	5
4A.	Stems becoming glabrous; stipules persistent; leaflets obovate or orbicular, upper surface generally brown, lower surface pale	*D. orbiculare*
4B.	Stems strigose; stipules deciduous; leaflets ovate or elliptic, upper and lower surfaces greenish	*D. cinereum*
5A.	Herbs with adventitious root development; stamens diadelphous	6
5B.	Herbs without adventitious root development, stamens monadelphous	7
6A.	Corolla white; pedicels 1 cm long, loment stipitate, with 6 articles	*D. affine*
6B.	Corolla lilac; pedicels less than 1 cm long; loment sessile, with 8 articles	*D. incanum*
7A.	Plants erect	8
7B.	Plants prostrate or procumbent	13
8A.	Pedicels completely retrorse in fruit	*D. strobilaceum*
8B.	Pedicels not retrorse in fruit, commonly ascending or diffuse	9
9A.	Loments with folded articles	*D. polystachyum*
9B.	Loments with unfolded articles, all extended and flat	10
10A.	Stipules amplexicaul	11
10B.	Stipules free to the base	12
11A.	Stems densely hairy; leaflets hairy on the margin; loment stipitate	*D. hirsutum*
11B.	Stems uncinate-hispid; leaflets not ciliate on the margin; loment sessile	*D. tortuosum*
12A.	Leaflets ovate-lanceolate; articles 4–6, with unequal margins, the upper sinuate, the lower dentate	*D. caripense*
12B.	Leaflets elliptic; articles 6–8, both margins crenate	*D. hartwegianum*
13A.	Articles sinuate or crenate on both margins	14
13B.	Articles unequal on the margins, the upper one sinuate and the lower one dentate or crenate	20

14A.	Prostrate herbs; stems densely hairy	*D. molliculum*
14B.	Procumbent herbs; stems glabrescent, hispid, canescent, or with uncinate hairs	15
15A.	Flowers two per node	16
15B.	Flowers 3-more per node	17
16A.	Stems densely canescent; stipules deciduous; flowers with retrorse pedicels in fruit	*D. sericophyllum*
16B.	Stems uncinate-pubescent; stipules persistent; flowers with ascending pedicels, not retrorse in fruit	*D. grahamii*
17A.	Leaflets linear or lanceolate	*D. subrosum*
17B.	Leaflets elliptic, ovate, or rhombic	18
18A.	Stipules auriculate at the base, amplexicaul; loments sinuate on both margins	*D. scorpiurus*
18B.	Stipules not auriculate at the base, free; loments crenate on both margins	19
19A.	Articles orbicular up to 4 mm diameter, all densely hirsute	*D. retinens*
19B.	Articles broadly rhombic, 4–5 mm diameter, the terminal one usually glabrous	*D. neomexicanum*
20A.	Stems uncinate, pubescent or hispid; corolla lilac, purple, or white	21
20B	Stems glabrescent; corolla purple	23
21A.	Leaflets variegated on the upper surface, along the midrib	*D. prehensile*
21B.	Leaflets not variegated on the upper surface	22
22A.	Procumbent herbs; leaflets up to 7 cm, nearly sessile; corolla lilac	*D. subsessile*
22B.	Erect herbs; leaflets up to 12 cm, long-petiolate, corolla white (very rarely pink)	*D. lindheimeri*
23A.	Stems grooved; leaflets 4–8 cm, glabrous; loments with 8–10 articles	*D. intortum*
23B.	Stems striate; leaflets 2–3.5 cm, hirsute or glabrescent; loments with 4–5 articles	*D. leptoclados*

Desmodium affine Schltdl. Linnaea 12: 312–313. 1838.

Type: Mexico. Veracruz, Hacienda de la Laguna, VIII-1829, *C.J.W. Schiede s.n.* (Lectotype: HAL0051031!, isolectotype: HAL0051030!). Lectotype designated by Lima et al., Phytotaxa 169: 20. 2014.

Distinguishing features: Herbaceous, stoloniferous. Stems striated, erect, or procumbent, 20–30 cm long, developing adventitious roots, hooked, pilose or glabrescent. Stipules persistent, free, triangular, 0.6–1 × 0.2 cm, ciliate. Leaves 3-foliolate, petioles 3.5–5.5 cm, grooved, pilose. Leaflets ovate, terminal one 3.2–7.3 × 2.2–4.8 cm, the lateral ones 3–7.8 × 1.4–3.5 cm, broadly ovate, glabrescent on both surfaces. Primary bracts deciduous, 1.5 × 0.2 mm, triangular, ciliate. Secondary bracts deciduous, 1.6 × 0.4 mm, linear-triangular, uncinate-puberulent. Pedicels diffuse, 0.9 to 1 cm long. Flowers 6 mm long. Corolla white. Stamens diadelphous. Ovary 6-ovulate. Loment stipitate with 4–6 articles, the body flattened with the upper margin sinuate and thickened, the lower margin crenate, articles 6.2–6.7 × 3–3.5 mm, uncinate.

Morphologically like *D. incanum* but differs from it by its white flowers and loment with up to 6 articles.

Representative examined material: Tamaulipas: 25-VIII-50, *A.J. Sharp 50207* (MEXU); 25-VIII-50, *A.J. Sharp 50300* (MEXU); 22-VIII-50, *A.J. Sharp 50340* (MEXU); 29-IX-96, *C. Ramos 130* (MEXU); 15-XI-96, *C. Ramos 158* (MEXU); 16-XI-96, *C. Ramos 159* (MEXU); 19-VI-85, *L. Hernández 1470* (MEXU).

Distribution: Mexico, Central America to South America. Widely distributed in Mexico. In the northeast region of the country, it is found in riparian vegetation, tropical deciduous forests in ecotone with oak forests, and in cloud forest, 1000 and 1524 m a.s.l.

Desmodium caripense (Kunth) G. Don, Gen. Hist. 2: 292. 1832. Basionym: *Hedysarum caripense* Kunth, Nov. Gen. Sp. 6: 523. 1824. *Meibomia caripensis* (Kunth) Kuntze, Revis Gen. Pl. 1: 197. 1891.

Type: Venezuela. Cumuna, Bordones, *A.J.A. Bonpland* & *F.W.H.A. Humboldt 422* (Holotipo: P00679161!).

Distinguishing features: Herbaceous. Stems erect, 25–70 cm long, sulcate, glabrescent. Stipules deciduous, free, lanceolate, 5 × 1.2 mm, glabrescent on both surfaces. Leaves 3-foliolate, petioles 2.5–5 cm, grooved, pilose. Leaflets ovate-lanceolate, the distal one 4–7.8 × 1.4–3.2 cm, the lateral ones 3–6.5 × 1.2–2.4 cm, ovate-lanceolate. Inflorescences

in terminal racemes, 1.5–26 cm long, two flowers per node. Primary bracts deciduous, 3.5–4 × 1 mm, nearly triangular, ciliate. Secondary bracts deciduous, 1.4–1.7 × 0.2 mm, linear-triangular. Pedicels ascending, 0.9–1 cm. Flowers 8–9 mm long. Corolla pink. Stamens monadelphous. Ovary with 6 ovules. Loment flattened, stipitate, articles with unequal margins, the upper one sinuate, the lower one dentate, articles 4–6, transversally rhombic, 7–8.5 × 4–4.5 mm, densely uncinate.

Representative examined material: Nuevo León: 8-X-2004, *E. Estrada 19140* (CFNL); 1-X-2011, *E. Estrada 21115* (CFNL); 30-IX-2006, *E. Estrada 19978* (CFNL); 1-X-2011, *E. Estrada 21171* (CFNL); 15-V-86, *E. Estrada 425* (CFNL, MEXU); 2-VII-00, *E. Estrada 11667* (CFNL, MEXU); 22-IX-01, *E. Estrada 13081* (CFNL, MEXU); 10-XI-01, *E. Estrada 13230a* (MEXU); 11-XI-01, *E. Estrada 13243* (MEXU); 21-08-04, *E. Estrada 16631* (MEXU); 2-X-93, *G.B. Hinton 28831* (MEXU); 4-X-08, *J.A. Encina 2302* (MEXU); 9-X-1992, *J.A. Villarreal 6813* (TEX); 8-XI-98, *T. Kajita 98110806* (MEXU); 7-IX-78, *W.G. D'Arcy 11792* (MEXU). Tamaulipas: 24-VIII-50, *A.J. Sharp 50153* (MEXU); 19-X-96, *C. Ramos 157* (MEXU); 8-X-91, *E. Estrada 2145* (MEXU); 24-IX-99, *E. Estrada 11002* (MEXU); 24-09-99, *E. Estrada 11011* (MEXU); 24-IX-99, *E. Estrada 11082* (MEXU); 24-IX-99, *E. Estrada 11116* (MEXU); 6-X-00, *E. Estrada 13164* (MEXU); 6-X-00, *E. Estrada 13172* (MEXU); 19-IX-71, *F.G. Medrano 3583* (MEXU); 10-X-89, *F.G. Medrano 17211* (MEXU); 23-IX-94, *G.B. Hinton 24890* (MEXU); 9-IX-1990, *G.L. Nesom 7464* (TEX); 21-X-81, *J.L. Ramos 35* (MEXU); 22-VII-89, *J. Mora 52* (MEXU); 28-IX-84, *S. Rodríguez 145* (MEXU); 28-IX-84, *S. Rodríguez 150* (MEXU).

Distribution: Widely distributed, from Mexico to northern South America. In northeastern Mexico, present in Nuevo León and Tamaulipas, inhabiting several plant communities, like Tamaulipan thorn scrub, piedmont scrub, oak forest, pine forest, tropical deciduous forest, and cloud forest. Commonly known as "pega ropa", 360–2010 m a.s.l.

Desmodium cinereum (Kunth) DC., Prodr. 2: 330. 1825. Basionym: *Hedysarum cinereum* (Kunth) DC., Prodr. 2: 330. 1825. *Meibomia cinerea* (Kunth) Standl., Contr. U.S. Natl. Herb. 23: 487. 1922. *Desmodium luteocanescens* M.E. Jones, Contr. W. Bot. 15: 127. 1929.

Type: México, Mescala, *A.J.A. Bonpland* & *F.W.H.A. Humboldt s.n* (Holotype: P00679165!).

Distinguishing features: Shrub up to 1.5 m tall. Stems erect, striate with lenticels, pilose. Stipules deciduous, free, ovate-attenuate, 6–8 mm, hairy on both surfaces. Leaves 3-foliolate, petioles 1.5–3 cm, striated, hairy. Leaflets ovate to elliptic, the distal one 3–3.6 × 1.8–2 cm, adaxially and abaxially greenish, the lateral ones 2.3 × 1.2 cm, ovate or elliptic. Inflorescences in axillary or terminal panicles, 11–15 cm long. Primary bracts deciduous, 2 × 0.3 mm, triangular, ciliate. Secondary bracts deciduous, 0.9–1 × 0.2 mm, linear-triangular, glabrescent. Pedicel ascending, 1–3 mm long. Flowers 3–5 per node, 6–7 mm long. Corolla pinkish. Stamens monadelphous. Loments stipitate, flattened, crenate in both margins, articles 5–8, elliptic, 4–5 × 4–8 mm, pilose.

A very rare shrub in the region, 3–5 flowers per node with pink corolla.

Representative examined material: Tamaulipas: 5-III-1960, *M.C. Johnston 5197* (MEXU).

Distribution: Mexico, El Salvador, and Honduras. Very rare in the northeastern region, recorded only in the southern region of the state of Tamaulipas (Municipality of Ocampo), in the Sierra of Tamalave (Sierra de Nicolás Pérez), low deciduous forest, 650 m a.s.l.

Desmodium grahamii A. Gray, Smithsonian Contr. Knowl. 5(6): 48. 1853. Basionym: *Desmodium parryi* Hemsl., Diagn. Pl. Nov. Mexic.: 46. 1880. *Meibomia grahamii* (A. Gray) Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Meibomia parryi* (Hemsl.) Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Type: United States, New Mexico, 1851, *C. Wright 1015* (Holotype: GH00053742. Isotypes: GH00112142! K000297174! MO-277058! NYP02142500! PH00010789!).

Distinguishing features: Herbaceous. Stems commonly procumbent or prostrate, sometimes erect, 30–50 cm tall, grooved, uncinate. Leaves 3-foliolate, petioles 1.5–3 cm,

grooved, becoming glabrous. Stipules persistent, free, lanceolate, 4–8 × 1–2 mm, glabrous on both surfaces, ciliate. Leaflets oblong to ovate, the terminal one 2.5–6 × 1.6–3.2 cm, the lateral ones 1.8–5 × 1.1–2.9 cm, oblong or ovate, generally brownish on the upper surface, strigose on both surfaces. Inflorescences in axillary and terminal racemes, 12–29.5 cm long with 2 flowers per node. Primary bracts deciduous, 5–6 × 1.7–2.5 mm, ovate, becoming glabrous on both surfaces. Secondary bracts deciduous, 3 × 2 mm, linear-triangular, hirsute adaxially, glabrous abaxially. Pedicels ascending, 9–9.5 mm. Flowers 2 per node, 8.5 mm long. Corolla purple. Stamens monadelphous. Ovary 8-ovate. Loments stipitate, flattened, with both margins crenate, articles 6–7, elliptic, 5–6 × 4–4.5 mm, uncinate.

Representative examined material: Coahuila: 15-IX-04, *J.A. Encina 1179* (ANMS; MEXU); 1-IX-07, *J.A. Encina 2048* (ANSM; MEXU); 26-VIII-92, *J. Valdés 2195* (MEXU); 5-IX-86, *J.A. Villarreal 3430* (MEXU); 15-IX-93, *J.A. Villarreal 7382* (MEXU); 3-VIII-73, *J. Henrickson 11769* (MEXU); 6-VIII-73, *J. Henrickson 11993* (MEXU); 28-IX-73, *J. Henrickson 13644* (MEXU); 5-VIII-76, *J. Henrickson 15141* (MEXU); 5-VIII-76, *J. Henrickson 15234* (MEXU); 1-X-93, *M.A. Carranza 1731* (MEXU). Nuevo León: 27-VII-1990, *E. Estrada 1902* (CFNL, TEX-LL); 28-VIII-1991, *Hinton* et al. *21279* (TEX-LL); *Hinton* et al. *19182* (TEX-LL); 21-IX-1994, *G. Nesom 7463* (TEX-LL); 13-VII-1989, *E. Estrada 1606* (CFNL, TEX-LL); ejido Santa Rosa, 4.1 mi S of Iturbide, loma La Bandera, 25-VI-1987, *E. Estrada 1119* (CFNL); 25-VI-1987, *E. Estrada 1281* (CFNL, TEX-LL). Tamaulipas: 21-IX-94, *G. Nesom 7463* (MEXU); 6-VIII-41, *L.R. Standford 719* (MEXU).

Distribution: Southern USA, from Arizona to Texas, extending to Mexico, from Baja California to Chiapas and Yucatán. In the study area, found in desert scrublands, oak forest, oak pine forest, deciduous forest, conifer forest, and cloud forest, 730–2600 m a.s.l.

Desmodium hartwegianum Hemsl., Biol. Cent.-Amer., Bot. 1(3): 279–280. 1879. Basionym: *Meibomia hartwegiana* (Hemsl.) Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Desmodium hartwegianum* var. *typicum* B.G. Schub., Contr. Gray Herb. 135: 91. 1941.

Type: Mexico, *K.T. Hartweg 56* (Holotype: K000081816! Isotype: GH00053767!, NY00007657! NY00007658!).

Distinguishing features: Herbaceous. Stems erect, striated, uncinate-pilose. Stipules persistent, free, ovate-attenuate, 6 × 2 mm, long-ciliate. Leaves 3-foliolate, petioles 1.5–6.5 mm, striated, hairy, and hooked. Leaflets elliptic, the terminal one 6–7 × 1.3–2 cm, the lateral ones 4–5 × 1–1.3 cm, elliptic, glabrous on both surfaces. Inflorescences in terminal racemes, 23–25 cm long. Primary bracts deciduous, 5–5.5 × 2.5–3 mm, ovate-awned, ciliate. Secondary bracts deciduous, 3.1 × 0.3 mm, lanceolate, ciliate. Pedicels diffuse, up to 1 cm. Flowers two per node. Corolla pink. Stamens monadelphous. Ovary with 8 ovules. Loments stipitate, flattened, with both margins crenate, articles 6–8, elliptic, 4 × 3.5–3.7 mm, uncinate.

Representative examined material: Nuevo León: 22-VI-34, C.*H. Muller 1150* (MEXU); 29-VIII-89, *E. Estrada 1647* (MEXU).

Distribution: Mexico, Guatemala, and Honduras. In northeastern Mexico, inhabiting oak forest and oak-pine forest, 1500–1700 m a.s.l.

Desmodium hirsutum M. Martens Galeotti, Bull. Acad. Roy. Sci. Bruxelles 10: 186. 1843. Basionym: *Meibomia hirsuta* (M. Martens & Galeotti) Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Type: México, Veracruz, dans les savanes et bois de Zacuapan et Mirador, *H.G. Galeotti 3275* (Lectotype: BR000000989407! Isolectotype: BR000000989411 K000081820 P00697755). Lectotype designated by Lima et al., Phytotaxa 169: 102. 2014.

Distinguishing features: Herbaceous. Stems grooved, commonly 1–2 m tall, erect, densely pilose. Stipules persistent, clasping, surrounding or embracing part of the stem at the base, 2 × 1.2 cm, glabrous, long-ciliate. Leaves 3-foliolate, petioles 7.5–8 cm, striate,

uncinate-pilose. Leaflets ovate oblong, the terminal one 12 × 4.5–5 cm, the lateral ones 8.7–9 × 3.3–4.8 cm, ovate-oblong, glabrescent on both surfaces. Inflorescences in axillary and distal panicles up to 24.5 cm long. Primary bracts deciduous, 4.7 × 0.7 mm, lanceolate, ciliate. Secondary bracts deciduous, 1.2 × 0.1 mm, linear, ciliate. Pedicels ascending, 7 mm. Flowers two per node, 6 mm long. Corolla lilac. Stamens monadelphous. Ovary 6-ovuled. Loments stipitate, flattened, both margins crenate, articles 6–7, transversely rhombic, 3 × 2–3 mm, pulverulent.

Species cited for years as a synonym of *Desmodium distortum* [7,44], but in 2014, it was recognized as a distinct species [45].

Representative examined material: Tamaulipas: 2-X-02, *J. Pérez 15156* (MEXU).

Distribution: Apparently distributed in disjunct populations, northeast (Tamaulipas) and central Mexico (Mexico City and adjacent states) and in Guatemala. It is a rare species in northeastern Mexico, recorded only in southern Tamaulipas, within the El Cielo Biosphere Reserve, in lowland deciduous forest, 800 m a.s.l.

Desmodium incanum DC., Prodr. 2: 332. 1825. Basionym: *Hedysarum incanum* Sw., Prodr. 107. 1788. nom. cons. Prop., non *Hedysarum incanum* Thunb. 1784. *Aeschynomene incana* (Sw.) G. Mey., Prim. Fl. Esseq.: 245. 1818. *Meibomia adscendens* var. *incana* (Sw.) Kuntze, Revis. Gen. Pl. 1: 195. 1891. *Meibomia incana* (Sw.) Vail, Bull. Torrey Bot. Club 19: 118. 1892.

Type: Jamaica, Hispaniola, *O. Swartz s.n.* (Holotype: S13-17611!).

Distinguishing features: Herbaceous. Stems procumbent or prostrate, striated, 35–40 cm tall, hairy or glabrescent, developing adventitious roots. Stipules persistent, partially fused basally, 6–7.5 × 2 mm, glabrescent. Leaves 3-foliolate, petioles 1–2 cm, grooved, uncinate. Leaflets ovate, the distal one 4–7.5 cm long, the lateral ones 3–5 × 1.5–2 cm, ovate, glabrescent on both surfaces. Inflorescences in axillary and terminal racemes, 11–18 cm long. Primary bracts deciduous, 1.5 × 0.3 mm, lanceolate, uncinate-puberulent adaxially, glabrous abaxially. Secondary bracts deciduous, 0.7 × 0.2 mm, lanceolate, ciliate. Pedicels diffuse, 6 mm long. Flowers two per node, 5 mm long. Corolla lilac. Stamens diadelphous. Ovary with 8 ovules. Loments flattened, sessile, the upper margin sinuate, the lower margin crenate, articles 5–6, transversely elliptic, 4–4.2 × 2.5–2.8 mm, uncinate.

Desmodium incanum can be confused with *D. affine*; however, the former has shorter pedicels and lilac-colored flowers. *Desmodium affine* has pedicels 1 cm long and white flowers.

Representative examined material: Nuevo León: 6-V-02, *E. Estrada 14587* (MEXU). Tamaulipas: 24-VII-96, *C. Ramos 160* (MEXU); 13-V-82, *F.G. Medrano 12534* (MEXU); 27-IV-85, *J. Jiménez 48* (MEXU); 19-VI-85, *L. Hernández 1472* (MEXU); 25-II-49, *R.T. Clausen 492-7* (MEXU); 23-III-84, *S. Rodríguez 22* (MEXU); 13-VI-84, *S. Rodríguez 48* (MEXU).

Distribution: Widely distributed in America, southeastern USA, throughout Mexico and extending to South America. Introduced in Africa and Madagascar. In northeastern Mexico, recorded in riparian vegetation, oak forest, and deciduous tropical forest, 360–800 m a.s.l.

Desmodium intortum (Mill.) Urb., Symb. Ant. 8(1). 292. 1920. Basionym: *Hedysarum intortum* Mill., Gard. Dict. ed. 8. n° 11. 1768. *Meibomia intorta* (Mill.) S.F. Blake, Bot. Gaz. 78: 286. 1924. *Desmodium intortum* (Fawc. & Rendle, Fl. Jam. 4:34. 1920, nom illeg.; *Hedysarum trigonum* Sw., Prodr. Veg. Ind. Occ.:107. 1788. *Desmodium trigonum* (Sw.) DC., Prodr. 2: 332. 1825. *Desmodium sonorae* A. Gray Smithsonian Contr. Knowl. 5: 47. 1853. *Meibomia sonorae* (A. Gray) Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Type: Jamaica, 1731, *W. Houston s.n.* (Holotipo: BM000931657!).

Distinguishing features: Herbaceous. Stems erect, up to 1.20 m tall, grooved, glabrescent. Leaves 3-foliolate. Stipules persistent, free, triangular, 3.5–4 × 1–2 mm, glabrous. Petioles 0.6–4 cm, grooved, hairy. Terminal leaflet 5–8 × 3–3.5 cm, lateral ones 4–6.5 × 2–3.3 cm, ovate, glabrous. Inflorescences in axillary and terminal racemes, 11–25 cm. Flowers two per

node. Primary bracts persistent, 5–8.5 × 2.5–3 mm, ovate-apiculate, glabrous. Secondary bracts deciduous, 3 × 0.3 mm, lanceolate, glabrous. Pedicels diffuse, 3.5–7 mm. Flowers 1 cm. Corolla purple. Stamens monadelphous. Ovary with 10 ovules. Loment flattened, stipitate, upper margin sinuate, lower margin dentate, articles 8–10, transversely rhombic, 4 × 2.5 mm, uncinate.

Representative examined material: Nuevo León: 2-X-86, *E. Estrada 720* (MEXU); 18-IX-91, *E. Estrada 2115* (MEXU). Tamaulipas: 21-IX-82, *F.G. Medrano 14152* (MEXU).

Distribution: Southwestern USA (Arizona), throughout Mexico, extending to Central America and central South America (Colombia, Bolivia, Ecuador, Peru, and Galapagos Islands), introduced in Africa and India. In northeastern Mexico with scarce presence, recorded in oak-pine forest, 1000–1550 m a.s.l.

Desmodium leptoclados Hemsl., Diagn. Pl. Nov. Mexic. 3: 44. 1880. Basionym: *Meibomia leptoclada* (Hemsl.) Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Meibomia pinetorum* Rose & J.H. Painter, Bot. Gaz. 40: 144. 1905. *Desmodium pinetorum* (Rose & J.H.Painter) Greenm., Publ. Field Mus. Nat. Hist., Bot. Ser. 2: 332. 1912.

Type: México, Zimapán, *T. Coulter s.n.* (Holotype: K000081825!).

Distinguishing features: Herbaceous. Stems 25–35 cm long, basally branched, prostrate, striate, sparsely uncinate or glabrescent. Stipules persistent, free, lanceolate, 3.5–4 × 0.5–1 mm, glabrous on both surfaces. Leaves 3-foliolate. Leaflets ovate to elliptic, the terminal one 2.2–3.5 cm × 1.5–2.7 cm, the lateral ones 2–3 × 1–2.5 cm, ovate or elliptic, hirsutulous on the upper surface, glabrescent on the lower surface. Inflorescences in axillary or terminal racemes, 11–38 cm long. Primary bracts deciduous, 3 × 1 mm, ovate-acuminate, glabrous on both surfaces, ciliate. Secondary bracts deciduous, 2 × 0.5 mm, lanceolate, glabrescent on both surfaces, ciliate. Pedicels ascending, 1.2–1.5 cm long. Flowers two per node, 0.8 cm long. Corolla purple. Stamens monadelphous. Ovary 6-ovulate. Loment short stipitate, flattened, the upper margin sinuate, the lower margin dentate, articles 4–6, transversely rhombic, 6–6.5 × 4–4.2 mm, uncinate.

Representative examined material: Nuevo León: 25-X-03, *E. Estrada 15827* (MEXU); 25-X-03, *E. Estrada 15849* (MEXU); 25-X-03, *E. Estrada 15850* (MEXU); 25-X-03, *E. Estrada 15854* (MEXU); 25-X-03, *E. Estrada 15862* (MEXU); 25-X-03, *E. Estrada 15875* (MEXU); 6-XI-98, *T. Kajita 98110608* (MEXU); 7-XI-98, *T. Kajita 98110701* (MEXU). Tamaulipas: 25-VIII-94, *G.B. Hinton 24664* (MEXU).

Distribution: Endemic to Mexico, widely distributed from Chihuahua to Tamaulipas, extending south to Chiapas. Rare in northeastern Mexico; recorded in oak-pine forest and *Abies* forest in the study area, 1600–2400 m a.s.l.

Desmodium lindheimeri Vail, Bull. Torrey Bot. Club 18(4): 120. 1891. Basionym: *Meibomia lindheimeri* (Vail) Vail, Bull. Torrey Bot. Club 19: 111. 1892.

Type: United States, Texas, New Braunfels, XI-1850, *F.J. Lindheimer 499* (Syntype: MO-277116, NY00007637!, US00002041); México, Caracol Mts, 1880, *E. Palmer 246* (Syntype: YU0666647!); México, Mts. near Cardenas, VIII-1890/X-1890, *C.G. Pringle 3289* (Syntype: BKL00004953!, CM1011, F0059168F!, GH00053773!, JE00004940!, MEXU00030006!, MIN1000820!, NDG27155!, NY00007663!, S13-12477!).

Distinguishing features: Herbaceous. Stems erect, 50–120 cm tall, angled, sparsely uncinate-pulverulent. Stipules deciduous, free, lanceolate, 3.5–7 × 1 mm, sericeous adaxially, glabrous abaxially. Leaves 3-foliolate. Leaflets rhombic, the terminal one 4.5–12 × 3–7.5 cm long, the lateral ones 3.5–9 × 2.5–4.6 cm, rhombic, pulverulent on both surfaces. Inflorescences in axillary and terminal panicles, 12–40 cm long. Primary bracts deciduous, 6.6–7.8 × 2.5–3 mm, ovate-acuminate, hooked-pulverulent adaxially, glabrous abaxially. Secondary bracts deciduous, 1–2 × 0.4–0.8 mm, lanceolate, becoming glabrescent on both surfaces. Pedicels ascending, 5–6.5 cm long. Flowers two per node, 1 cm long.

Corolla commonly white, rarely pink. Stamens monadelphous. Ovary with 7 ovules. Loment stipitate, flattened, the upper margin sinuate, the lower margin dentate, articles 6, ovate, ca. 8.5–9.5 × 0.6–0.7 cm, uncinate marginally.

Representative examined material: Coahuila: 3-XI-05, *J.A. Encina 1576* (MEXU); 18-IX-99, *J.A. Villarreal 8749* (MEXU); 18-IX-99, *J. Henrickson 22578* (MEXU); 14-VIII-86, *J. Valdés 260* (MEXU); 24-VIII-75, *T. Wendt 1313* (MEXU); 6-IX-76, *T. Wendt 1610* (MEXU); 6-IX-76, *T. Wendt 1618* (MEXU). Nuevo León: 25-IX-86, *E. Estrada 691* (MEXU); 25-IX-86, *E. Estrada 693* (MEXU); 2-X-86, *E. Estrada 714* (MEXU); 10-XI-01, *E. Estrada 13217* (MEXU); 25-X-03, *E. Estrada 15828* (MEXU); 4-V-04, *E. Estrada 16084* (MEXU); IX-80, *E. Villanueva 7* (MEXU); 4-X-08, *J.A. Encina 2302a* (MEXU); 2-X-77, *J.G. Moya 7* (MEXU); 23-X-77, *J.G. Moya 10* (MEXU); 2-IX-37, *S.S. White 153* (MEXU); 25-X-96, *T. Kajita 96102506* (MEXU); 6-XI-98, *T. Kajita 98110604* (MEXU); 8-XI-98, *T. Kajita 98110802* (MEXU). Tamaulipas: 16-IX-96, *C. Ramos 142* (MEXU); 06-X-00, *E. Estrada 13169* (MEXU); 23-IX-74, *F.G. Medrano 7430* (MEXU); 16-IX-76, *F.G. Medrano 9648* (MEXU); 17-IX-76, *F.G. Medrano 9750* (MEXU); 21-IX-84, *F.G. Medrano 14146* (MEXU); 24-VIII-94, *G.B. Hinton 24654* (MEXU); 21-IX-94, *G.B. Hinton 24812* (MEXU); 21-IX-94, *G. Nesom 7462* (MEXU); 13-X-87, *L. Hernández* 2195 (MEXU); 28-IX-85, *O.L. Briones 2022* (MEXU).

Distribution: Southeastern USA (Texas), north and central Mexico, Chihuahua to Tamaulipas, extending south to Querétaro and Guanajuato. Found in desert scrublands, abundant in piedmont scrub, oak forest and oak-pine forest, 430–1700 m a.s.l.

Desmodium molliculum (Kunth) DC., Prodr. 2: 331. 1825. Basionym: *Hedysarum molliculum* Kunth, Nov. Gen. Sp. 6: 519. 1823 (1824). *Desmodium mexicanum* S. Watson, Proc. Amer. Acad. Arts 23: 271. 1888. nom. illeg. hom. *Meibomia mollicula* (Kunth) Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Type: Amérique Tropical, *A.J.A. Bonpland*, *F.W.H.A. Humboldt*, *s.n.* (Holotype: P00659980!).

Distinguishing features: Herbaceous. Stems prostrate, striated, densely pilose. Stipules persistent, free, ovate, 3.5–7 × 2 mm. Leaves 3-foliolate, petiole 1.5–3.5 cm long. Leaflets orbicular, the terminal one 2.2–4.5 × 3–5.5 cm, the lateral ones 2–3 × 1.5–2.5 cm, orbicular, uncinate-pulverulent on the upper surface, hairy on the lower surface. Inflorescences in axillary racemes, 10–12 cm long. Primary bracts deciduous, 4.5–5 × 2–3 mm, ovate, hairy adaxially, glabrous abaxially. Secondary bracts deciduous, 1–1.4 × 0.1 mm, linear, ciliate. Pedicels ascending, 8 mm long. Flowers two per node, 8–9 mm long. Corolla pink or pinkish. Stamens monadelphous. Ovary with 6 ovules. Loment stipitate, flattened, both margins crenate, articles 4–6, transversely elliptic, 5–5.5 × 4–4.5 mm, uncinate.

Easily recognized by its orbicular or sub-orbicular leaflets and its prostrate habit.

Representative examined material: Nuevo León: 23-VII-86, *E. Estrada 584* (MEXU); 30-VII-02, *E. Estrada 15115* (MEXU); 25-X-03, *E. Estrada 15873* (MEXU). Tamaulipas: 13-X-87, *L. Hernández 2197* (MEXU); 28-IX-85, *O.L. Briones 2044* (MEXU).

Distribution: Mexico, Central America to South America (from Colombia and Venezuela to Bolivia, Ecuador, and Peru). In the study area, recorded in piedmont scrub, oak-pine forest, conifer forest, 670–2300 m a.s.l.

Desmodium neomexicanum A. Gray, Smithsonian Contr. Knowl. 3(5): 53. 1852.

Type: United States, Texas, El Paso, East of El Paso, X-1849, *C. Wright 141*, Holotype: GH00053745!. Isotype: BM001024560!; GH00105342!; K000297160!; US00002061!).

Distinguishing features: Herbaceous. Stems erect up to 70 cm tall or prostrate, grooved, uncinate-pulverulent, much branched basally. Stipules persistent, free, linear-triangular, 3.5–6.5 × 1–1.5 mm, glabrescent on both surfaces. Leaves 3-foliolate, petiole 1–3 cm long. Leaflets obovate, the terminal one 1.5–3.5 × 1–1.5 cm, the lateral ones 1.3–3 × 0.5–1.5 cm, obovate, hooked on both surfaces. Inflorescences in axillary racemes, 5–15 cm long. Primary bracts persistent, 4.5–4.8 × 0.8–1 mm, ovate-acuminate, glabrescent

on both surfaces. Persistent secondary bracts, 3.5 × 0.2 mm, linear, becoming glabrescent on both surfaces. Pedicels ascending 1–1.5 cm. Flowers 3–4 per node, 4 mm long. Corolla pink to lilac. Stamens monadelphous. Ovary with 5 ovules. Loment sessile, flattened, both margins crenate, articles 4–5, widely rhombic, 4–5 × 3.5–4 mm, uncinate-pulverulent, the distal article commonly glabrate.

Representative examined material: Coahuila: 19-IX-73, *J. Henrickson 13225* (MEXU). Nuevo León: 15-VI-89, *E. Estrada 1513* (MEXU); 28-VI-34, *F.W. Pennell 17062* (MEXU); 3-IV-49, *R.T. Clausen 7563* (MEXU). Tamaulipas: 24-IX-76, *F.G. Medrano 9972* (MEXU); 23-IX-84, *F.G. Medrano 14168* (MEXU).

Distribution: Southern USA (Arizona, New Mexico, and Texas), throughout Mexico, except Veracruz, Tabasco, Chiapas and the Yucatan Peninsula, also in Guatemala, extending south to Peru and Bolivia in South America. In the study area, commonly in piedmont scrub, oak forest and oak-pine forest, 450–2600 m a.s.l.

Desmodium orbiculare Schltdl., Linnaea 12: 311. 1838. Basionym: *Meibomia orbicularis* (Schltdl.) Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Type: México, in solo calcareo ad aquas calidas Grande, Regla, *C. Ehrenberg s.n.* (Holotype: HAL0051040!; Isotype: HAL0051039!).

Distinguishing features: Shrub. Stems up to 5 m tall, striate, uncinate-pulverulent or glabrescent, lenticels present. Stipules persistent, free, lanceolate, 1.6 × 0.5 mm, hirsute adaxially, glabrous abaxially. Leaves 3-foliolate, petiole 1.5–2.5 cm long. Leaflets obovate to elliptic, the terminal one 1.5–3 × 1–2 cm, the lateral ones 0.8–2.7 × 0.6–1.5 cm, obovate or elliptic, strigose on both surfaces. Inflorescences in axillary and terminal panicles, 8–13 cm long. Primary bracts persistent, 1.5–1.8 × 0.3–0.5 mm, ovate-acuminate, uncinate-pulverulent adaxially, glabrescent abaxially. Secondary bracts persistent, 0.6 × 0.1 mm, linear-triangular, ciliate. Pedicels ascending, 5 mm long. Flowers 3–4 per node, 1 cm long. Corolla lilac or purple. Stamens monadelphous. Ovary with 5 ovules. Loment stipitate, flattened, both margins crenate, articles 4–5 orbicular, 6.5 × 5 mm, uncinate-pulverulent.

Representative examined material: Tamaulipas: 10-XI-95, *C. Ramos 55* (MEXU); 20-IX-76, *F.G. Medrano 9906* (MEXU); 22-IX-76, *F.G. Medrano 9956* (MEXU).

Distribution: Mexico, Nicaragua, Colombia, and Venezuela. In the study area, recorded in pine forest and cloud forest, 890–1400 m a.s.l.

Desmodium polystachyum Schltdl., Linnaea 12: 321–322. 1838. Basionym: *Desmodium brachystachyum* Schltdl., Linnaea 12: 321. 1838. *Meibomia polystachya* Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Type: México, Hac. De la Orduña, VIII-1829, *C.J.W. Schiede s.n.* (Holotype: HAL0051294!; Isotype: 0107633!).

Distinguishing features: Herbaceous. Stem erect, 1.7 m tall, striate, uncinate-pilose to glabrescent. Stipules persistent, lanceolate, 5 × 2 mm. Leaves 3-foliolate, petiole 1–3 cm long. Leaflets ovate to elliptic, the terminal one 5–6 × 3–4.3 cm, lateral ones 3–4.7 × 2–4 cm, ovate or elliptic. Inflorescences in terminal panicles, 40 cm long. Primary bracts deciduous, 1.5 × 0.2 mm, linear, ciliate. Secondary bracts deciduous, 0.5 × 0.1 mm, linear, ciliate. Pedicels ascending, 1.5–2 mm long. Flowers three per node, 4 mm long. Corolla pink. Stamens monadelphous. Ovary with 6 ovules. Loment stipitate, folded both margins crenate, articles 5–6, overlapped one on top of the other, 1.5–2.2 × 1.5–2 mm, hirsute.

Representative examined material: Tamaulipas: 11-X-57, *R.L. Dressler 2361* (MEXU).

Distribution: Mexico and Honduras. In the study area, recorded only in the southern part of the state of Tamaulipas (Aldama municipality) at the Sierra de Tamaulipas, oak forest, ≈800–1200 m a.s.l.

Desmodium prehensile Schltdl., Linnaea 12: 315. 1838. Basionym: *Meibomia prehensilis* (Schltdl.) Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Type: Mexico, prop. Jalapa, VIII-1828, *C.J.W. Schiede s.n.* (Holotype: HAL0051017!).

Distinguishing features: Herbaceous. Stems procumbent, 60 cm tall, striate, uncinate-hispid. Stipules caducous, free, 2–3 × 1.2–1.4 mm, ovate-attenuate. Leaves 3-foliolate, petiole 2–3 cm long. Leaflets elliptic, the terminal one 6–6.8 × 2–2.2 cm, lateral ones 4–5.6 × 1.5–2 cm, elliptic, occasionally variegated on the midrib, and lateral ones strigose on both surfaces. Inflorescences in axillary and terminal racemes, 14–20 cm long. Primary bracts deciduous, 5–7.5 × 1.2–1.5 mm, ovate-acuminate, pilose adaxially, glabrous abaxially. Secondary bracts deciduous, 0.7 × 0.2 mm, linear-triangular, ciliate. Pedicels ascending, 8 mm long. Flowers two per node, 0.7 cm long. Corolla purple. Stamens monadelphous. Ovary with 9 ovules. Loment stipitate, flattened, the upper margin sinuate, lower one dentate (when immature, their margins curve or curl upwards (involute)), articles 7–8, transversely rhombic, 3–4 × 2–3 mm, uncinate.

Representative examined material: Nuevo León: 2-X-86, *E. Estrada 711* (CFNL, MEXU); 30-VII-02, *E. Estrada 15121* (CFNL, MEXU).

Distribution: Mexico to Central America and extending to Venezuela and Colombia. In the study area, recorded only in the mountains in the central region of the state of Nuevo León, oak forest and oak-pine forest, 850–1500 m a.s.l.

Desmodium psilophyllum Schltdl., Linnaea 12 (3): 310. 1838. Basionym: *Meibomia psilophylla* (Schltdl.) Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Meibomia wrightii* (A. Gray) Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Meibomia psilophylla* var. *wrightii* (A.Gray) Vail, Bull. Torrey Bot. Club 23: 141. 1896.

Type: México, cuesta grande de Chiconquiaco, IX-1829, *C.J.W. Schiede s.n.* (Holotipo: HAL0051036!).

Distinguishing features: Herbaceous. Stems erect to procumbent, branched basally, 30–60 cm tall, striate, uncinate or glabrescent. Stipules persistent, 2.5–4 × 0.5–0.8 mm, glabrate. Leaves 1-foliolate, petiole 0.3–1.5 cm long. Leaflet oblong to widely ovate, 3.5–7.6 × 1.5–4 cm, ovate to widely ovate, adaxially glabrous, abaxially hirsute in the midvein and secondary ones. Inflorescences in terminal racemes, 7.5–22 cm long. Primary bracts deciduous, 1.5 × 0.2 mm, almost triangular, ciliate. Secondary bracts deciduous, 1.6 × 0.1 mm, linear-triangular. Pedicles ascending, 3–5 mm long. Flowers three per node, 4.5 mm long. Corolla lilac. Stamens monadelphous. Ovary with 6 ovules. Loment stipitate, the upper margin sinuate, the lower one crenate, articles 5–6, transversely elliptic 5–6 × 3.5 mm, uncinate.

Representative examined material: Coahuila: 21-VIII-36, E.G. *Marsh 565* (MEXU); 18-IX-36, E.G. *Marsh 963* (MEXU); 15-IX-04, *J.A. Encina 1179* (MEXU); 15-IX-93, *J.A. Villarreal 7388* (MEXU); 6-VIII-76, *J. Henrickson 14989* (MEXU); 13-VIII-76, *J. Henrickson* 15334 (MEXU); 28-IX-80, *J. Henrickson* 18677b (MEXU); 1-IX-07, *S.G. Gómez 502* (MEXU); 23-VIII-75, *T. Wendt 1252* (MEXU). Nuevo León: 25VIII-03, *C.G. Pringle 11415* (MEXU); 10-XI-01, *E. Estrada 13239* (MEXU); 30-IX-77, *J.G. Moya 6* (MEXU); 13-IV-49, *R.T. Clausen 7565* (MEXU); 19-III-87, *S. Ginzbarg 633* (MEXU);25-X-96, *T. Kajita 96102509* (MEXU); 8-XI-98, *T. Kajita 98110805* (MEXU). Tamaulipas: 27-VIII-52, *A.J. Sharp 52137* (MEXU); 15-IX-96, *C. Ramos 29* (MEXU, UAT); 25-VII-96, *C. Ramos 115* (MEXU, UAT); 23-IX-74, *F.G. Medrano 7427* (MEXU); 10-X-89, *F.G. Medrano 17212* (MEXU); 11-X-89, *F.G. Medrano 17228* (MEXU); 23-IX-94, *G.B. Hinton 24907* (MEXU, UAT); 24-VIII-98, *G.B. Hinton 24655* (MEXU); 17-VI-87, *G. Nesom 6151* (MEXU, UAT); 23-IX-94, *G. Nesom 7498* (MEXU); 5-X-68, *H. Puig 3254* (MEXU); 26-V-94, *J. Martínez 31* (MEXU, UAT); 13-X-87, *L. Hernández 2198* (UAT); 22-V-88, *L. Hernández 2241* (MEXU); 2-VI-86, *M. Martínez 1102* (UAT); 1-IX-07, *S.G. Gómez 502* (MEXU); 13-XII-03, *S. Zamudio 12693* (MEXU); 7-8-X-93, *T.F. Patterson 7337* (MEXU).

Distribution: Southwestern USA (Arizona and Texas), north of Mexico, extending southwards to Hidalgo, Puebla, and Chiapas. In the study area, frequent in piedmont

scrub, oak forest, oak-pine forest, low deciduous forest, cloud forest, and evergreen forest, 300–2600 m a.s.l.

Desmodium retinens Schltdl., Linnaea 12 (3): 311. 1838. Basionym: *Desmodium wislizeni* Engelm. ex A. Gray, Smithsonian Contr. Knowl. 3: 53. 1852. *Meibomia retinens* Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Desmodium wislizeni* var. *venulosum* M.E. Jones, Contr. W. Bot. 12: 13. 1908.

Type: México, Pr. Regla, *C.A. Ehrenberg 695* (Holotype: HAL0051035!).

Distinguishing features: Herbaceous. Stems procumbent, up to 50 cm tall, striate, sparsely uncinate. Stipules persistent, free, linear-triangular or lanceolate, 2.5–3 × 1 mm, glabrescent on both surfaces. Leaves 3-foliolate. Leaflets oblong to elliptic, the terminal one 1–2.5 × 0.5–1.5 cm, the lateral ones 1–2 × 0.6–1 cm, oblong or elliptic, glabrescent on both surfaces. Inflorescences in axillary and terminal racemes, 10–40 cm long. Primary bracts persistent, 3–4.5 × 1 mm, lanceolate, ciliate. Persistent secondary bracts, 1–2.5 × 0.2–0.3 mm, linear-triangular, uncinate, pulverulent. Pedicels diffuse, 1–1.2 cm long. Flowers three per node, 5 mm long. Corolla lilac. Stamens monadelphous. Ovary 5-ovulate. Loment short stipitate, flattened, both margins crenate, articles 3–5, orbicular, 3–4 × 2.5–3.8 mm, hirsute.

Representative examined material: Nuevo León: 1934, *C.H. Mueller 493* (MEXU); 1-VI-86, *E. Estrada 485a* (MEXU); 16-IV-01, *E. Estrada 12396* (MEXU); 23-VII-02, *E. Estrada 15097* (MEXU); 25-X-03, *E. Estrada 15829* (MEXU); 25-X-03, *E. Estrada 15845* (MEXU); 08-X-04, *E. Estrada 19215* (MEXU); 25-X-82, *J. Grimes 2336* (MEXU); 6-XI-98, *T. Kajita 98110607* (MEXU). Tamaulipas: 24-IX-85, *M. Yañez 593* (MEXU).

Distribution: Southwestern USA (Arizona), almost all of Mexico, except Veracruz, Tabasco, Chiapas, and the Yucatán Peninsula, also in Guatemala. In the study area, it has been found in Nuevo León and Tamaulipas, piedmont scrub, oak forest and oak-pine forest, 450–2450 m a.s.l.

Desmodium schusteri (Schindl.) Standl. Publ. Field Mus. Nat. Hist., Bot. Ser. 11: 160. 1936. Basionym: *Meibomia schusteri* Schindl., Repert. Spec. Nov. Regni Veg. 20: 146. 1924.

Type: Mexico, Sierra Madre above Monterrey, 25-VIII-1903, *C.G.Pringle 11415* (not seen). Isotypes: GH00065191!, US00002081!; US00997170!).

Distinguishing features: Herbaceous. Stems branched and woody basally, ascending or erect, up to 70 cm tall. Stipules free, caducous, lanceolate, 2.3 × 0.3 mm. Stipels setaceous, 1–2 mm long. Leaves 1-foliolate, petiole 3–6 mm long. Leaflet linear, 4–12.6 × 0.4–0.7 cm (often narrower). Inflorescences in axillary and terminal racemes, 7–20 cm long. Flowers three per node, 5–5.7 mm long. Stamens monadelphous. Ovary with 5 ovules. Fruit stipitate, stipe 1–2 mm long, glabrous, both margins crenate, articles 4–5, transversely elliptic, 4–6 × 2.8–3.5 mm.

Representative examined material: Nuevo León: 23-VI-89, *E. Estrada 1634* (CFNL, MEXU); 10-XI-01, *E. Estrada 13239* (CFNL, MEXU); 30-VII-02, *E. Estrada 15103* (CFNL, MEXU); 30-VII-02, *E. Estrada 15141* (CFNL, MEXU); 25-IX-04, *E. Estrada 18926* (CFNL, MEXU); IX-80, *E. Villanueva 6* (MEXU); 3-VIII-94, *G.B. Hinton 24615* (MEXU); 06-X-05, *J.A. Encina 1541* (MEXU); 20-VI-84, *J.A. Villarreal 2739* (MEXU); 28-X-82, *J. Grimes 2369* (MEXU); 19-III-87, S. *Ginzbarg 633* (MEXU). Tamaulipas: 11-X-89, *F.G. Medrano 17228* (MEXU); 3-VI-90, *F.G. Medrano 17373* (MEXU); 24-VIII-94, *G.B. Hinton 24655* (MEXU).

Distribution: Apparently endemic to Nuevo León, in oak, oak-pine and cloud forest communities, 600–2000 m a.s.l.

Desmodium scorpiurus (Sw.) Desv., J. Bot. Agric. 1: 122. 1813. Basionym: *Hedysarum scorpiurus* Sw., Prodr. Veg. Ind. Occ.: 107. 1788. *Meibomia scorpiurus* (Sw.) Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Desmodium parviflorum* M. Martens & Galeotti, Bull. Acad. Roy. Sci. Bruxelles 10: 185. 1843. *Nissoloides cylindrica* M.E. Jones, Contr. W. Bot. 18: 135. 1933.

Type: Jamaica, *O.P. Swartz s.n.* (Lectotipo: S-R-2774!; isolectotipos: B-W13825-010!, G-DC, LD1263645!). Lectotype designated by Schubert, Fl. of Panama. Part V. Family 83. Leguminosae. Ann. Missouri Bot. Gard. 67: 656. 1980.

Distinguishing features: Herbaceous. Stems procumbent or prostrate, striate, branched from base, uncinate-pilose. Stipules persistent, auriculate and clasping the stem basally, oblique-ovate, 1.8–2 × 1.6–1.8 mm, hirsute adaxially, glabrescent abaxially. Leaves 3-foliolate, petiole 1–3 cm long. Leaflets elliptic to ovate-elliptic, the terminal one 1.5–3 × 1–1.7 cm, the lateral ones 1.5–2.7 × 1–1.4 cm, elliptic or ovate-elliptic, appressed-pilose on the upper surface, glabrescent on the lower surface. Inflorescences in axillary racemes, 8–9 cm long. Primary bracts persistent, 2 × 0.8–1.5 mm, lanceolate, glabrescent on both surfaces. Secondary bracts persistent, 1–1.5 × 0.2 mm, lanceolate, glabrescent. Pedicels, 3–5 mm long, ascending. Flowers 3–4 per node, 4–6 mm long. Corolla lilac or white. Stamens monadelphous. Ovary 8-ovulate. Loment sessile, flattened, both margins sinuate, articles 6–8, transversely elliptic, 4–5 × 1.5–1.7 mm, uncinate.

Representative examined material: Tamaulipas: 24-IX-95, *C. Ramos 42* (MEXU); 27-IX-1959, *M.C. Johnston 4071A* (MEXU); 3-IV-2024, *E. Estrada 26158* (CFNL).

Distribution: Southwestern USA (Arizona), throughout Mexico, to northern and central South America. Introduced in Africa, India, Australia, and New Guinea. In the study area, on the seashore, in coastal dunes, tropical deciduous forest, and oak forest, 0–1300 m a.s.l.

Desmodium sericophyllum Schltdl., Linnaea 12: 317–319. 1838. Basionym: *Meibomia sericophylla* (Schltdl.) Kuntze, Revis. Gen. Pl. 1: 197. 1891.

Type: Mexico, in sylvis prope San Andres, *C.J.W. Schiede s.n.* (Lectotype: HAL0050828!). Lectotype designated by McVaugh, Fl. Novo-Galiciana 5: 487. 1987.

Distinguishing features: Herbaceous. Stems procumbent up to 55 cm tall or prostrate, grooved, densely canescent. Stipules caducous, free, ovate-attenuate, 0.9 × 2 mm, canescent adaxially, glabrescent abaxially. Leaves 3-foliolate, petiole 2–3 cm long, sulcate and canescent. Leaflets ovate to elliptic, terminal one 3.5–5 × 2.6–3.2 cm, the lateral ones 3.5 × 2.5 cm, ovate or elliptic, hirtellous on the adaxial surface, canescent on the abaxial surface. Inflorescences in axillary and terminal racemes, 34 cm long, Primary bracts deciduous, 1–1.5 × 0.3 cm, ovate-aristate, canescent adaxially, glabrous abaxially. Secondary bracts deciduous, 2.5 × 0.3 mm, linear, ciliate. Pedicels descending (retrorse in fruit), 3–5 mm. Flowers two per node, 7–9 mm long. Corolla lilac. Stamens monadelphous. Ovary 9-ovulate. Loment stipitate, flattened, with both margins crenate, articles 7–8, elliptic, 4–4.5 × 3 mm, uncinate.

Representative examined material: Tamaulipas: 28-VI-92, *E. Estrada 2416*, *J. Fairey* (CFNL, MEXU).

Distribution: Mexico, Central America to northern South America (Colombia, Venezuela, and Ecuador). Rare in the study area, recorded only in the state of Tamaulipas, adjacent to the political border with Nuevo León, oak-pine forest, 1500–1800 m a.s.l.

Desmodium strobilaceum Schltdl., Linnaea 12: 316. 1838. Basionym: *Meibomia strobilacea* (Schltdl.) Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Desmodium sericophyllum* Schltdl. var. *strobilaceum* (Schltdl.) N. Zamora, Novon 10: 179. 2000.

Type: Mexico, prop. Jalapa, VIII-1828, *C.J.W. Schiede 210* (Holotype: HAL0051018!).

Distinguishing features: Herbaceous. Stems erect, grooved, 70–75 cm tall, appressed-sericeous. Stipules caducous. Leaves 3-foliolate. Leaflets elliptic, the terminal one 5.3–6.4 × 2.3–2.5 cm, lateral ones 4.2–4 × 1.7–2.7 cm, elliptic, glabrescent on both surfaces. Inflorescences in axillary and terminal racemes, 19.5 cm long. Primary bracts deciduous, 1.2–1.4 × 3.5–4.5 mm, ovate-lanceolate, glabrescent on both surfaces. Secondary bracts deciduous. Pedicels descending (retrorse in fruit), 3.5–4.5 mm. Flowers two per node,

ca. 1 cm long. Corolla lilac. Stamens monadelphous. Ovary 8-ovulate. Loment sessile, flattened, both the upper and the lower margins crenate, articles 8, elliptic (immature).

Representative examined material: Tamaulipas: 14-X-1957, *R.L. Dressler 2403* (MEXU).

Distribution: Mexico and Central America (Salvador, Guatemala, Honduras, and Nicaragua). In the study area, recorded only in the southern part of the state of Tamaulipas (Municipality of Aldama) at the Sierra de Tamaulipas, oak forest, rare, 900–1500 m a.s.l.

Desmodium subrosum G.L. Nesom, Phytologia 75(5): 385–387. 1993 (1994).

Type: México, Zacatecas, near Concepción del Oro, 11/14-VIII-1904, *E. Palmer 288* (Holotype: not seen. Isotype: MO-126249!).

Distinguishing features: Herbaceous. Stems procumbent up to 50 cm tall, much-branched basally, striate, sparsely pubescent with uncinate hairs or glabrescent. Stipules persistent, lanceolate. Leaves 3-foliolate, petiole 1 cm long. Leaflets linear or linear-lanceolate, terminal leaflet 1.8–3.5 × 1–1.8 cm, strigose abaxially or appressed strigose-pilose on both surfaces. Inflorescences in axillary and terminal racemes, 3–28 cm long. Primary bracts deciduous, 1.8 × 0.5 mm, lanceolate, ciliate. Secondary bracts persistent, 1–1.2 × 0.2 mm, lanceolate. Pedicels ascending, 5–10 mm long. Flowers two per node, ca. 2 mm long. Corolla white or pink. Stamens monadelphous. Ovary 4-ovulate. Loment stipitate, flattened or biconvex, with both margins crenate, articles 3–4, transversely elliptic, 4.5–4.7 × 3 mm, glabrous.

Desmodium subrosum is easily recognized by its linear leaflets and its tiny flowers, less than 3 mm long. No other *Desmodium* species in northeastern Mexico has this combination of morphological characteristics.

Representative examined material: Nuevo León: 18-VI-72, *F. Chiang 7963* (MEXU); 21-VII-2006, *E. Estrada 19926* (CFNL).

Distribution: Endemic to Mexico, in the high plains of the Chihuahuan Desert. Recorded in the political border between Zacatecas and Nuevo León, in desert scrublands and dwarf-oak vegetation, 1850–2500 m a.s.l.

Desmodium subsessile Schltdl., Linnaea 12: 319. 1838. Basionym: *Meibomia subsessilis* (Schltdl.) S.F. Blake, Bot. Gaz. 78(3): 283. 1924. Non *Desmodium subsessile* C.B. Rob & Seaton, Proc. Amer. Acad. Arts 28: 118. 1893, nom illeg. homonym. post.

Type: Mexico, prope Regla, 1831–18391, *C.A. Ehrenberg 696* (Holotype: HAL0050827!).

Distinguishing features: Herbaceous. Stems procumbent, ca. 1 m tall, striate, hispid. Stipules persistent, free, lanceolate-acuminate, 5–8 × 1–1.5 mm, hirsute adaxially, glabrous abaxially. Leaves 3-foliolate, almost sessile, petiole 1–5 mm long, shorter than rachis. Leaflets ovate, the terminal one 3.5–7 × 0.8–2 cm, the lateral ones 3.5–7 × 1.2–2 cm, strigose on both surfaces. Inflorescences in axillary and terminal racemes, 17–39 cm long. Primary bracts deciduous, 5.5–6 × 1.5–1.8 mm, ovate, ciliate. Secondary bracts deciduous, 2 × 0.3–0.5 mm, oblanceolate, glabrescent. Pedicels ascending, 6 mm long. Flowers two per node, 9 mm long. Corolla lilac. Stamens monadelphous. Ovary 6-ovulate. Loment stipitate, flattened, the upper margin sinuate, the lower margin dentate, articles 5–6, transversely rhombic, 4–4.5 × 3.8–4 mm, uncinate.

Easily recognized by its procumbent habit and subsessile leaves. The length of the leaflets and that of the rachis are much longer than the petiole.

Representative examined material: Coahuila: 15-IX-04, *J.A. Encina 1212* (MEXU); 1-IX-07, *S.G. Gómez 460* (MEXU). Nuevo León: 8-XI-87, *E. Estrada 1074* (CFNL, MEXU); 25-X-03, *E. Estrada 15835* (CFNL, MEXU); 25-X-03, *E. Estrada 15883* (CFNL, MEXU); 6-XI-98, *T. Kajita 98110611* (MEXU). Tamaulipas: 20-IX-76, *F.G. Medrano 9900* (MEXU); 23-IX-84, *F.G. Medrano 14180* (MEXU); 18-VIII-85, *M. Yáñez 379* (MEXU); 7-VII-85, *P. Hiriart 966* (MEXU).

Distribution: Endemic to Mexico, widely distributed throughout the country in scrublands, oak forests, oak-pine forests, and conifer forests. In northeastern Mexico, distributed mainly in oak forest and oak-pine forest, 780–2000 m a.s.l.

Desmodium tortuosum (Sw.) DC., Prodr. 2: 332. 1825. Basionym: *Hedysarum tortuosum* Sw., Prodr. Veg. Ind. Occ.: 107. 1788. *Meibomia tortuosa* (Sw.) Kuntze, Revis. Gen. Pl. 1: 198. 1891. *Hedysarum purpureum* Mill., Gard. Dict. ed. 8. n°6. 1768. *Desmodium purpureum* (Mill.) Fawc. & Rendle, Fl. Jamaica 4: 36. 1920, *non D. purpureum* Hook. & Arn. 1832. *Desmodium stipulaceum* DC., Prodr. 2: 330. 1825. *Hedysarum stipulaceum* Sessé & Moc ex DC. Prodr. 2: 330. 1825. *Meibomia stipulacea* (DC.) Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Type: Jamaica, *O.P. Swartz s.n.* (Holotype: S13-17770! Isotype: S-R-2776!).

Distinguishing features: Herbaceous or subshrub. Stems erect, up to 3.2 m tall, striate, uncinate-hispid or glabrescent. Stipules persistent, amplexicaul, broadly ovate, 1–1.7 × 0.5–0.8 cm, ciliate. Leaves 3-foliolate, petiole 3–4 cm long, sulcate, sparsely uncinate. Leaflets elliptic to ovate, the terminal one 3–10 × 1.5 cm, the lateral ones 1–3.5 × 1–3 cm, elliptic or ovate, sparsely hooked-puberulent on the upper surface, pilose or hooked-puberulent on the lower surface. Inflorescences in axillary or terminal racemes, 13–25 cm long. Primary bracts deciduous, 3–4.5 × 1 mm, ovate-acuminate, glabrescent on both surfaces. Secondary bracts deciduous, 1.2–1.7 × 0.2 mm, linear, glabrous on both surfaces. Pedicels ascending 0.9–1.2 cm. Flowers 2–3 per node, 6 mm long. Corolla pink. Stamens monadelphous. Ovary with 6 ovules. Loment sessile, flattened (curled up when immature), both margins crenate (involute and revolute when immature), articles 5–6, transversely elliptic or transversely rhombic (when immature), 3.5–3.8 × 3 mm, uncinate-pulverulent.

Representative examined material: Nuevo León: 15-V-86, *E. Estrada 428* (CFNL, MEXU); 20-V-86, *E. Estrada 553a* (MEXU); 03-IV-02, *E. Estrada 13482* (CFNL, MEXU); 8-XI-98, *T. Kajita 98110803* (MEXU). Tamaulipas: 18-X-96, *C. Ramos 125* (MEXU); 23-X-91, *E. Estrada 2189* (CFNL, MEXU); 5-X-08, *E. Martínez 40695* (MEXU); 12-X-02, J. *Pérez 15558* (MEXU); 12-X-57, *R.L. Dressler 2370* (MEXU).

Distribution: Widely distributed, from the Southern USA (Arizona and Texas), throughout Mexico, Central America, and South America (down to northern Argentina), introduced in Africa and Asia. In the study area, it is widely distributed in piedmont scrub, on humid mountain slopes with dense vegetation and oak forest, 570–1600 m a.s.l.

Grona Lour, Fl. Cochinch.: 459. 1790. *Perrottetia* DC., Ann. Sci. Nat. (Paris) 4: 95. 1825. *Nicolsonia* DC., Prodr. 2: 325. 1825. *Nicholsiana* Span, Companion Bot Mag. 1: 346. 1836. *Sagotia* Duchass. & Walp., Linnaea 23(6): 737–739. 1851. *Desmodium* sect. *Sagotia* (Duchass. & Walp.) Benth., Pl. Jungh 2: 222. 1852. *Desmodium* sect. *Nicolsonia* (DC.) Benth., Pl. Jungh 2: 222. 1852. *Desmodium* subgen. *Sagotia* (Duchass & Walp.) Baker, Fl. Brit. India 2(4): 173. 1876.

Type: *Grona heterocarpos* (L.) H. Ohashi & K. Ohashi, J. Jap. Bot. 93: 112. 2018.

Herbaceous, perennial. Stems erect, procumbent or prostrate, striate, pilose, sericeous or glabrescent, sometimes with adventitious roots. Stipules commonly persistent, free, pulverulent or glabrous, commonly ciliate. Stipules persistent, ciliate. Leaves alternate, 3-foliolate, rarely 1- or 5-foliolate. Leaflets oblong, obovate or elliptic, chartaceous or coriaceous, the terminal one generally the longest. Inflorescences in short axillary or terminal racemes or fascicles. Primary bracts present, early deciduous, ciliate or glabrous. Secondary bracts absent. Flowers with the calyx campanulate, bilabiate, the upper one thinly or deeply divided in two-thirds of its length, the lower one 3-toothed, with teeth almost equal in shape and size. Corolla pink, white or lilac. The banner obovate, ovate, or elliptic, slightly clawed. Wings oblong, clawed, joined to the keel. Keel with clawed petals, partially fused distally. Stamens diadelphous. Ovary sessile. Ovules two or more. Fruits sessile, in indehiscent loment, flat, with the upper margin slightly thickened and almost straight, lower margin thickened, wavy or slightly constricted between the articles,

articles 3–5, square, oblong or elliptic, with hooked- or short-pilose trichomes, only on the margins, coriaceous.

Asian genus of 50 species [27], segregated from *Desmodium* [46]. In Mexico, there are both introduced and naturalized species; one taxon is recognized for the northeastern part of the country.

Grona triflora (L.) H. Hohashi & K. Ohashi. J. Jap. Bot. 93(2): 117. 2018. Basionym: *Hedysarum triflorum* L., Sp. Pl. 749. 1753. *Aeschynomene triflora* (L.) Poir., Encycl. 4: 451. 1798. *Pleurolobus triflorus* (L.) J. St.-Hil., Nouv. Bull. Sci. Soc. Philom. Paris 3: 192. 1812. *Sagotia triflora* (L.) Duchass. & Walp., Linnaea 23: 738. 1850. *Nicolsiana triflora* (L.) Griseb., Abh. Königl. Ges. Wiss. Göttingen 7: 202. 1857. *Meibomia triflora* (L.) Kuntze, Revis. Gen. Pl. 1: 197. 1891.

Type: "Habitat in India". RCN: 5505. Lectotype: Herb. Hermann 3: 48, No. 289 (BM-000594690). Lectotype designated by Fawcett & Rendle, Fl. Jamaica 4: 75. 1920.

Distinguishing features: Herbaceous. Stems prostrate, forming dense, carpet-like colonies, branched basally, pilose or glabrescent. Hojas 3-foliolate, petiole 0.5–1 cm long. Stipules ovate, 3.5–4 × 1–1.5 mm, glabrate. Leaflets widely obovate, the terminal one 8–1 × 0.5–0.9 cm long, the lateral ones 4–8 × 4–8 mm, glabrescent adaxially, pilose abaxially. Inflorescences axillary, fasciculate, 1–1.5 cm long. Bracts 3.5 × 1–2 mm, ovate, acuminate, glabrous. Flowers 2–4 per fascicle. 2–3 mm long. Corolla lilac. Stamens diadelphous. Ovary 5-ovulate. Loment with both sinuate margins, articles 3–5, squared, 2.5–3.5 × 2.5–3.5 mm, densely uncinate.

Representative examined material: Tamaulipas: 9-I-98, *A. Mora-Olivo 6692* (MEXU); 20-VIII-95, *C. Ramos 40* (MEXU); 29-IX-94, *R. López 284* (MEXU).

Distribution: Introduced and naturalized species in Mexico, recorded in several Mexican states such as Guerrero, Jalisco, Nayarit, Oaxaca, Puebla, Querétaro, San Luis Potosí, Sinaloa, Veracruz. In the study area, it is very scarce, collected in the Reserva de la Biosfera El Cielo (municipality of Gómez Farías), recorded from induced and overgrazed grasslands in the ejido San José.

Hylodesmum H. Ohashi & R.R. Mill, Edinburg J. Bot. 57(2): 173. 2000. *Podocarpium* (Benth.) Y. C. Yang and P. H. Huang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 4: 4. 1979. nom. illegit. *Desmodium podocarpum* DC. *Verdesmum* H. Ohashi and K. Ohashi, J. Jap. Bot. 87: 301. 2012, syn. nov. *Verdesmum hentyi* (Verdc.) H. Ohashi and K. Ohashi. *Desmodium hentyi* Verdc.

Type: *Hylodesmum podocarpum* (DC.) H. Ohashi and R. R. Mill, Edinburgh J. Bot. 57: 181. 2000.

Herbaceous, perennial. Root tuberous or sometimes woody. Stems erect or climbing, striate with uncinate or straight hairs. Stipules persistent, erect or retrorse. Stipels deciduous, ciliate. Leaves verticillate, rarely some leaves alternate in the same plant, commonly 3-foliolate, rarely unifoliolate. Inflorescences in terminal racemes or panicles. Primary bracts persistent or deciduous. Secondary bracts caducous. Flowers 2 or more per node, pink, purple or white. Calyx widely campanulate, 5-lobed, upper lip fused except apically, bifid, lower lip 3-toothed, the teeth shorter than the tube. Corolla pink, rarely white. Banner suborbicular or widely obovate, slightly unguiculate. Wings oblong, lobed basally, fused to the keel. Keel straight, wider than the wings, unguiculate basally. Stamens monadelphous. Ovary stipitate, 2–5 ovulate. Loment long stipitate, flattened, indehiscent, with the upper margin straight or slightly undulate, the ventral margin with a very deep incision near the dorsal between the articles, articles 1–5, obliquely depressed or sub-quadrangulate, uncinulate–pulverulent, coriaceous.

Genus with disjunct distribution between Asia and North America, with 18 species [28], most of them in East Asia, of which 3 are recorded in North America, and 1 located in northeastern Mexico.

Hylodesmum glutinosum (Muhl. ex Willd.) H. Ohashi & R.R. Mill, Edinburgh J. Bot. 57(2): 177. 2000. Basionym: *Hedysarum glutinosum* Muhl. ex Willd., Sp. Pl. 3(2): 1198. 1802. *Desmodium glutinosum* (Muhl. ex Willd.) Alph. Wood. Class-book Bot. 2: 129. 1845.

Type: "Habitat in America boreali" (Holotype: B-Willd. 13821-010).

Distinguishing features: Herbaceous. Stems erect, up to 1 m tall, striate, scarcely uncinulate-pulverulent or glabrescent. Stipules persistent, free, 8–12 mm. Hojas 3-foliolate, petiole 3.5–11 cm long, sulcate, uncinate-pulverulent. Leaflets widely ovate, the terminal one 4–8.5 × 2.7–6.2 cm, the lateral ones 2.5–6 × 2–4.2 cm. Inflorescences terminal, arising from a whorl of leaves, 16–53 cm long. Primary bracts deciduous, 2–3.5 × 0.6 mm, lanceolate, uncinate. Secondary bracts deciduous, 0.7 × 0.3 mm. Pedicles diffuse, 0.6–1 cm long. Flowers two per fascicle, 8.5 mm long. Corolla pink or rarely white. Stamens monadelphous. Ovary 4-ovulate. Fruit long stipitate, with a deep incision near the dorsal margin between the articles, articles 1–4 obliquely depressed or sub-quadrangulate, 0.8–1 × 0.4–0.6 cm, glabrate.

Representative examined material: Nuevo León: 21-VIII-91, *E. Estrada 2092* (CFNL, MEXU); 25-IX-04, *E. Estrada 18891* (CFNL, MEXU); 9-IX-92, *T.F. Paterson 7142* (MEXU); 25-X-96, *T. Kajita 96102511* (MEXU). Tamaulipas: 25-VIII-95, *C. Ramos 24* (MEXU); 8-VIII-72, *F.G. Medrano 4325* (MEXU); 2-VI-90, *F.G. Medrano 17353* (MEXU); 23-IX-94, *G. Nesom 7497* (TEX-LL); 25-VI-83, *R. Torres 3133* (MEXU).

Distribution: Eastern Canada and USA, extending to Mexico from Nuevo León and Tamaulipas to Querétaro, Hidalgo, Puebla, San Luis Potosí, and Veracruz. In the study area, it is commonly found in oak forest, oak-pinus forest, and cloud forest, 850–1600 m a.s.l.

Lespedeza Michx., Fl. Bor.-Amer. 2: 70–71. 1803.

Type: *Lespedeza sessiliflora* Michx.

Herbaceous, perennial or shrubs. Stems erect, striate, branched, with lignified roots, procumbent or crawling, pubescent (never uncinate) or glabrescent. Stipules commonly persistent, free, ciliate. Stipels, persistent, ciliate. Leaves 3-foliolate. Leaflets, sessile or subsessile. Inflorescences in axillary or rarely in capitule-like racemes, panicles, sometimes some reduced to fascicles. Flowers paired, chasmogamous and cleistogamous present. The chasmogamous ones have a calyx campanulate, 5-lobed; corolla pinkish-purple, white, or yellowish, its banner broadly obovate to orbicular, shortly clawed; the wings and keel petals long clawed. Stamens 10, diadelphous; ovary stipitate, and commonly with only one ovule. The cleistogamous flowers are often in fascicles, enclosed in the calyx, with a reduced corolla and reduced stamens. The fruits are stipitate, simple, indehiscent, compressed, elliptic-ovate, or suborbicular loment, appressed-pubescent, villous, or glabrescent. The cleistogamous fruits are smaller, clustered at the base of the peduncle, sessile.

This genus comprises 48 species [27] distributed in Asia and eastern North America. The three species recorded in northeastern Mexico belong to the subgenus *Lespedeza* [47], which is restricted to North America.

1A.	Stems erect or prostrate, initially simple or rod-shaped, generally branched distally; racemes shorter or nearly equal to the underlying leaves; flowers distal, clustered at the apex of the peduncle	***L. virginica***
1B.	Stems prostrate, weakly ascending or spreading, often branched along most of their length; racemes longer than the underlying leaves; flowers not clustered at the tips of the peduncle	2
2A.	Stems silky or glabrescent; leaflets elliptical, membranous, greenish abaxially	***L. repens***
2B.	Stems appressed-pulverulent or hairy; leaflets obovate, chartaceous, abaxially grayish	***L. texana***

Lespedeza repens (L.) W.P.C. Barton, Comp. Fl. Philadelph. 2: 77. 1818. Basionym: *Hedysarum repens* L., Sp. Pl. 2: 749. 1753.

Type: United States, "Habitat in Virginia". RCN: 5524. (BM000051143!). Lectotype designated by Britton, Trans. New York Acad. Sci. 12: 60. 1893.

Distinguishing features: Prostrate herbs. Stems initially suberect, branched, striate, silky or glabrescent. Stipules persistent, linear-triangular, 2–3 mm. Leaves 3-foliolate, subsessile, petioles generally 3–5 mm. Terminal leaflet 1–1.7 × 0.6–0.8 mm, the lateral ones 0.8–1 × 0.5–0.7 mm, elliptic or broadly elliptic, glabrescent, appressed-pilose, abaxial greenish, membranous. Inflorescences in axillary racemes with 2–6 flowers, longer than the underlying leaves. Pedicels 0.5–1 mm. Flowers chasmogamous, 6–8 mm, corolla pink, violet, or rarely white. Stamens monadelphous. Loment (chasmogamous) stipitate, circular or elliptical loments, 4–6 mm.

Representative examined material: Nuevo León: 15-VIII-2025, *E. Estrada 26760* (CFNL). Tamaulipas: 25-VIII-94, *G.B. Hinton 24668* (MEXU).

Distribution: Eastern USA, extending to the mountains in northeastern Mexico, in Nuevo León and Tamaulipas, rare, in pine forest, 1800–2230 m a.s.l.

Lespedeza texana Britton, Fl. S.E. U.S. 641, 1332. 1903.

Type: United States, Texas, Kerr Co., about Kerville, 19-VI-1894, *A.A. Heller 1914* (Holotype: NY00015672! Isotype: MO-1889093! US00650376!).

Distinguishing features: Prostrate herbs. Stems initially erect, branched, striated, appressed-pubescent, and spreading-pilose. Stipules deciduous, linear-triangular, 3–8 mm. Leaves 3-foliolate, shortly petiolate; petioles ca. 1 cm. Terminal leaflet 1.5–2.5 × 0.6–1 cm, the lateral ones 1.5–2 × 0.5–0.7 cm, obovate, glabrescent or appressed-pilose along the midrib and toward the margins, abaxial grayish, chartaceous. Inflorescences in axillary racemes of 4–8 flowers, longer than the underlying leaves. Pedicels 3–5 mm. Flowers chasmogamous, 5.5–8.5 mm. Corolla purple. Stamens monadelphous. Loment (chasmogamous) stipitate, circular loment, 5–7 mm.

Representative examined material: Coahuila: 31-VII-1973, *Henrickson 11650* (TEX-LL). Tamaulipas: 25-VIII-1994, *Hinton 24668* (ARIZ317685).

Distribution: Eastern USA (from Maine to Wisconsin and from Kansas to Florida, extending to Texas). Isolated in small populations in northeastern Mexico. In the study area in Coahuila and Tamaulipas, in pine forest, 2000–2200 m a.s.l.

Lespedeza virginica (L.) Britton, Trans. New York Acad. Sci. 12(2): 64.1893. Basionym: *Medicago virginica* L., Sp. Pl. 2: 778. 1753.

Type: United States, "Habitat in Virginia". RCN: 5713. (BM000038861!). Lectotype designated by Britton, Trans. New York Acad. Sci. 12: 65. 1893.

Distinguishing features: Erect herbs. Stems initially erect, branched, striate, appressed-pubescent, and spreading-pilose. Stipules persistent, narrowly triangular, 3–5 mm. Leaves 3-foliolate, shortly petiolate; petioles ca. 1 cm long. Terminal leaflet 2.3–2.5 × 0.5–0.7 cm, the lateral ones 1–2 × 0.5–0.7 cm, narrowly elliptic, appressed-pubescent, chartaceous. Inflorescences in terminal and axillary racemes of 4–14 flowers, shorter than or equal to the underlying leaves. Pedicels 1–2 mm. Flowers chasmogamous, clustered at the apex of the peduncle, 5–7 mm. Corolla pink or purple. Stamens monadelphous. Fruits (chasmogamous) stipitate, subcircular, 4–7 mm.

Representative examined material: Nuevo León: 18-VIII-39, *C.H. Mueller 2820* (TEX-LL). Tamaulipas: 28-IX-85, *O.L. Briones 2020* (CFNL, MEXU).

Distribution: Southeastern Canada, Eastern USA (from New Hampshire to Nebraska, and from Texas to Florida). Isolated in small populations in northeastern Mexico. In the study area in the states of Nuevo León and Tamaulipas, in oak-pine forest and pine forest, 1370–2200 m a.s.l.

Tribe Millettieae Miq., Fl. Ind. Bat. 1. 1855. 137. Hutch., Gen. 1: 380 (p. p. maj.). Tephrosieae (Benth.) Hutch., Gen. 1: 394 (p.p.); A.L.S.; 245. Lonchocarpeae (Benth.) Hutch., Gen. 1: 380 (p.p.maj.).

Trees, lianas or shrubs. Leaves compound, commonly imparipinnate, sometimes 1-3-foliolate, or digitately 3-7-foliolate. Leaflets 1 > 40, commonly opposite or subopposite, rarely alternate, sometimes with hyaline pearl-glands or pellucid dots. Inflorescences racemes, panicles or pseudo-panicles. Flowers in brachyblasts, fascicled, 2-10-flowered per fascicle, sometimes on leafless branches of inflorescences. Calyx with 4–5 or more lobes. Corolla papilionaceous. Wings generally adherent to the keel or free. Keel petals valvately connate. Stamens monadelphous or diadelphous. Disk tubular, commonly surrounding the stipe of the ovary. Ovules 1–17. Style glabrous or bearded. Stigma capitate. Fruit dehiscent or indehiscent, winged or not, valves membranous, coriaceous or woody. Seeds with a rim-aril.

Tribe composed of 43 [48]–45 [49] genera and almost 870 species [49]. Pantropical and subtropical distribution.

1A.	Herbaceous or small shrubs up to 1 m tall; fruits dehiscent	***Tephrosia***
1B.	Trees, 4 m long or taller; fruits indehiscent	2
2A.	Fruit without wings or with a short wing on one or both sutures	***Lonchocarpus***
2B.	Fruit with four wings	***Piscidia***

Lonchocarpus Nov. Gen. Sp. 6: 383. 1824. *Capassa* Klotzsch, Naturw. Reise Mossambique 6(Bot., 1): 27. 1861. *Clompanus* Aubl., Hist. Pl. Guiane 2: 773. 1775. nom. rej. *Canbotrys* Zucc., Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(2): 28. 1845. *Icthyoctonum* Boivin ex Baill., Bull. Mens. Soc. Linn. Paris 1: 440. 1884. *Neuroscapha* Tul., Ann. Sci. Nat., Bot., sér. 2, 20: 137. 1843. *Terua* Standl. & F.J. Herm., J. Washington Acad. Sci. 39: 306. 1949. *Willardia* Rose, Contr. U.S. Natl. Herb. 1: 97. 1891.

Type: *Lonchocarpus sericeus* (Poir.) Kunth ex DC., Prodr. 2: 260. 1825.

Shrubs or trees. Leaves imparipinnate, rarely 1-foliolate. Leaflets commonly estipellate. Inflorescences in paniculate racemes. Bracts and bractlets present. Pedicels geminate or fasciculate, rarely solitary or several. Flowers papilionaceous, white, pink or purple. Calyx commonly cupulate, truncate or with small teeth. Banner usually orbicular, auriculate basally, retuse apically. Wing petals oblique-oblong or falcate, adhering to the keel petals. Keel petals incurved, fused along their lower margin. Stamens monadelphous, the tube fenestrate at the base; vexillar stamen free at the base. Anthers versatile. Ovary sessile or stipitate. Style filiform, arcuate. Stigma capitellate. Ovules 2–10. Fruit oblong to subobicular, flat, membranous or coriaceous, the vexillar suture thin, concave, thickened or carinate, indehiscent. Seeds 1–4, flattened.

The genus *Lonchocarpus* includes around 180 species [50] distributed in the tropical regions of America and one on the west coast of equatorial Africa. Two species in northeastern Mexico.

1A.	Pubescence on new vegetative shoots 0.6 mm long; stipules linear, 1.5–4.5 mm long, straight; foliage and flowering isochronous; banner purple, violet, or purple, externally moderately yellowish-brown to canescent sericeous	***L. hidalgensis***
1B.	Pubescence on new vegetative shoots up to 2 mm long; stipules broader, (4-)6–19 mm long, reflexed; foliage and flowering asynchronous, flowering late; banner red or cherry, externally sericeous coppery	***L. rugosus*** subsp. ***gillyi***

Lonchocarpus hidalgensis Lundell, Wrightia 1: 153. 1946.

Type: Hidalgo: Mexico, Hidalgo, Mpio. Jacala, rocky mountain side, 7-VII-1939, V.H. Chase 7337 (Holotype: LL00371334! Isotypes: F0059370F! GH00065717! MO-277579!).

Distinguishing features: Tree. The leaves and flowers are isochronous. New growth with trichomes up to 6 mm long. Stipules 1.5–4.5 mm long, linear, straight. Leaves ferruginous pubescent. Leaflets 13–17, 1–4.5 cm long, pubescent on both surfaces. Inflorescences with ferruginous, crinkled trichomes. Pedicels with two narrow bracteoles above the middle. Calyx ferruginous. Banner purple or violet, externally moderately yellowish-brown to canescent sericeous, short, up to 4 mm long.

Representative examined material: Tamaulipas: 23-V-1983, *F. González-Medrano 13165* (MEXU811934); 9-VII-1983, *F. González-Medrano 13179*, *P. Hiriart* (MEXU812768); 2-V-1967, *A. Gómez-Pompa 2041* (MEXU159789); 17-X-2003, *B. Boyle 7291* (ARIZ381922); 20-X-2003, *B. Boyle 7352* (ARIZ382163).

Distribution: Endemic to Mexico (northeastern part of the country, Hidalgo, Puebla, Querétaro, and San Luis Potosí). In the study area, recorded only in the state of Tamaulipas, low deciduous forest and cloud forest, 800–1400 m.

Lonchocarpus rugosus Benth. subsp. ***gillyi*** (Lundell) M. Sousa, Ceiba 125: 2008. Basionym: *Lonchocarpus gillyi* Lundell, Wrightia 1: 56. 1945.

Type: México, Chiapas: 2 km from Salto de Agua on Yajalón, C.L. Gilly y E. Hernández X. 430 (Holotype: LL00371333! Isotypes: CAS0003186! CHAPA0000132! MICH1104134!).

Distinguishing features: Trees, deciduous. New growth densely pubescent; the trichomes up to 2 mm long or glabrescent. Leaves and flowers asynchronous. Stipules laminar-obovate, 4–19 mm long, patent to reflexed. Banner red or cherry, externally sericeous, coppery.

Representative examined material: Tamaulipas: 21-VI-1980, *F. Hansen*, *M. Nee 7318* (USF158201B).

Distribution: From Mexico to Colombia. In Mexico, mostly in the southern region (Chiapas, Tabasco, Quintana Roo, Veracruz, and Yucatán). Rare in our area, piedmont scrub, 350 m a.s.l.

Piscidia L., Syst. Nat., ed. 10. 2: 1155. 1759. *Canizaresia* Britton, Mem. Torrey Bot. Club 16: 69. 1920. *Ichthyomethia* P. Browne, Civ. Nat. Hist. Jamaica: 296. 1756.

High shrubs or trees. Leaves imparipinnate. Stipules present, soon caducous or persistent for a short time. Stipels absent. Leaflets opposite, 5–25. Inflorescences in axillary spikes, racemes or panicles. Bracts caducous. Bracteoles paired at the base of calyx, caducous. Flowers papilionaceous. Calyx campanulate or sub-campanulate, sometimes urceolate, the teeth 5, equal or subequal, the vexillar pair, commonly connate (fused). Corolla white, pink or pink-purple. Banner nearly orbicular or nearly so, most frequently pubescent outside (glabrous in one species). Wings oblong, falcate, clawed, adherent to the keel petals, frequently little longer than the banner. Keel obtuse, long clawed. Stamens 10, monadelphous, the vexillar filament free at the base, but soon fused with the others, forming a tube. Ovary sessile, several ovules, densely pubescent. Style glabrate, reflexed, the stigma minute, capitate. Fruit oblong, 4-winged, wings sinuate-margined, indehiscent, breaking irregularly in transverse units. Seeds several, kidney-shaped, oblong, tan, reddish to black, laterally compressed.

A genus of seven species from Florida to northern South America (Colombia, Ecuador, and Peru) and the West Indies [30]. Only one species in northeastern Mexico.

Piscidia piscipula (L.) Sarg., Gard. & Forest 4: 436. 1891. Basionym: *Erythrina piscipula* L., Sp. Pl.: 707. 1753. *Ichthyomethia piscipula* (L.) Hitchc., Gard. & Forest 4: 472. 1891. *Piscidia erythrina* L., Syst. Nat., ed. 10. 2: 1155. 1759. nom. superfl. & illeg. *Piscipula erythrina* (L.) Loefl., Iter Hispan.: 275. 1758.

Type: Lectotype: "Habitat in America calidiore". RCN: 5179. Lectotype Herb. Sloane 6: 18 (BM-SL). Lectotype designated by Rudd in Phytologia 18: 486. 1969. Sloane, Voy. Jamaica 2: 39. 1725.

Distinguishing features: Tree. Leaflets 6–10, coriaceous. Inflorescences in axillary racemes or panicles. Bracteoles reniform. Flowers 1–1.3 cm long. Keel sub-reniform, pubescent. Stamens monadelphous. Ovary subsessile or tiny stipitate. Fruit stipitate, the body terete, 4-winged, the wings rectangular, thinly membranous.

Representative examined material: Tamaulipas: 5-VIII-1972, VIII-1963, *A. Gómez Pompa*, *F. González Medrano 1054* (MEXU); 13-VIII-1976, *J. I. Calzada 2611* (MEXU); 29-VI-1948, *H. E. Moore Jr., C. E. Wood, Jr. 3626* (MEXU); 28-VI-2000, *R. M. Flores Herrero 8* (MEXU); 16-VI-2000, *M. Galván 789* (MEXU); 15-VI-2000, *M. Galván 785* (MEXU); 10-VI-1999, *M. Galván 753* (MEXU).

Distribution: USA (Florida), Mexico (from Sinaloa and Tamaulipas to Chiapas), extending to Belize, Guatemala, Honduras, and Panama, also in the West Indies. In the study area, restricted to the central and southern parts of the state of Tamaulipas, in low deciduous forest, tropical forest, evergreen tropical forest, 100–650 m a.s.l.

Tephrosia Syn. Pl. [Persoon] 2: 328. 1807. *Apodynomene* E. Mey., Comm. Pl. Afr. Austr.: 111. 1836. *Catacline* Edgew., J. Asiat. Soc. Bengal 16: 1214. 1847. nom. inval. *Caulocarpus* Baker f., Legum. Trop. Africa: 169. 1926. *Colinil* Adans., Fam. Pl. 2: 327. 1763. *Cracca* L., Sp. Pl.: 752. 1753. nom. rej. *Crafordia* Raf., Specchio Sci. 1: 156. 1814. *Erebinthus* Mitch., Acta Phys.-Med. Acad. Caes. Leop.-Francisc. Nat. Cur. 8: 210. 1748. *Kiesera* Reinw. ex Blume, Catalogus: 93. 1823. *Lupinophyllum* Hutch., Gen. Fl. Pl. 2: 626. 1967. *Macronyx* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 35. 1850. *Needhamia* Scop., Intr. Hist. Nat.: 310. 1777. *Orobos* St.-Lag., Ann. Soc. Bot. Lyon 7: 131. 1880. *Paratephrosia* Domin, Repert. Spec. Nov. Regni Veg. 11: 261. 1912. *Pogonostigma* Boiss., Diagn. Pl. Orient. 2: 39. 1843. *Reineria* Moench, Suppl. Meth.: 44. 1802. Seemannantha Alef., Bonplandia (Hannover) 10: 264. 1862. *Xiphocarpus* C. Presl, Symb. Bot. (Pragae) 1: 13. 1831.

Type: *Tephrosia purpurea* (L.) Pers., Syn. Pl. 2: 329. 1807.

Perennial herbs or shrubs. Stems erect or decumbent, commonly densely pubescent. Leaves alternate, odd pinnate; leaflets 1–41, almost always pubescent, at least abaxially, secondary veins raised, parallel. Stipules present. Inflorescence axillary or terminal, flowers in clusters of 2–6 or more at the nodes, each cluster with a primary bract at the base and each pedicel with a secondary bract at the base. Flowers white, purple or red. Banner hairy outside. Wings as long as the banner, commonly basally adnate to the keel. Stamens commonly diadelphous, the vexillary stamen frequently fused to the stamen tube above, free at the base. Ovary sessile, hairy. Style bearded above or glabrous. Fruit flat, linear or oblong, straight or slightly curved, sessile, beaked on the upper side, the valves usually coiling in dehiscence. Seeds several, circular to oblong, flattened.

Tephrosia includes 350 [49], distributed in temperate and tropical regions of America, Africa, temperate and tropical Asia, and Australia [9,51].

Tephrosia comprises two subgenera. The subgenus *Barbistyla* includes species with a pubescent style and glabrous stigma and the subgenus *Tephrosia* has species with a pubescent stigma [52].

1A.	Style glabrous; stigma penicillate	**2**
1B.	Style barbate; stigma glabrous	3
2A.	Leaflets 11–15	***T. cinerea***
2B.	Leaflets 5–7, rarely 9	***T. uniflora*** subsp. ***uniflora***
3A	Leaflets obovate to orbicular; herbs with sympodial branching; fruit 7–8.5 mm wide	4
3B	Leaflets elliptical, oblong-elliptical, linear-oblong, never obovate or orbicular; herbs with monopodial branching; fruit 3.5–6.5 mm wide	5
4A	Leaflets 3–9, mostly 5–7, glabrous adaxially; calyx and banner with golden pubescence	***T. potosina***

4B.	Leaflets 5–19, mostly 9–11, densely pubescent to sub-glabrous, but always with some white trichomes near the margins; calyx and outer surface of the banner with white or whitish pubescence	***T. lindheimeri***
5A	Calyx 3.5–7 mm long, the lateral and lowermost lobes deltoid, lanceolate to ovate-lanceolate, never obliquely short-acuminate, the lowermost one 2.5–3 mm long, subulate; leaflets 15–31, 2–4.5 cm long	***T. foliolosa***
5B	Calyx 5–8.5 mm long, the lateral lobes 2–4 mm long, oblong to obovate, abruptly and frequently obliquely short-acuminate, the lowermost one 2.5–5 × 2–4 mm, lanceolate-ovate to obovate; leaflets 17–41, 4.5–6 cm long	***T. sinapou***

Tephrosia cinerea (L.) Pers., Syn. Pl. 2: 328. 1807. Basionym: *Colinil cinereum* (L.) Hitchc., Rep. (Annual) Missouri Bot. Gard. 4: 75. 1893. *Cracca villosa* var. *cinerea* (L.) Kuntze, Revis. Gen. Pl. 1: 173. 1891. *Galega cinerea* L., Syst. Nat., ed. 10. 2: 1172. 1759. *Tephrosia cinerea* var. *typica* Hassl., Repert. Spec. Nov. Regni Veg. 16: 166. 1919. nom. inval.

Type: Lectotype: "Habitat in Jamaica". RCN 559. Lectotype Herb Linn No. 942.2 (LINN). Lectotype designated by Fawcett & Rendle, Fl. Jamaica 4: 20. 1920.

Distinguishing features: Herbaceous, perennial. Stems several from the base, erect or prostrate. Leaflets 11–15, opposite, 1.3–3.8 cm, elliptic to oblanceolate, chartaceous, silvery pubescent abaxially. Inflorescences in racemes, terminal or opposite to the leaves. Flowers few. Corolla pink to pinkish-violet. Style glabrous, stigma penicillate. Fruit 4–6 cm long, linear, slightly flattened.

Representative examined material: Tamaulipas: 12-V-1982, *P. Moreno*, *S. Castillo*, *F. Rodríguez 772* (MEXU); 19-VII-1994, *J.L. Mora López*, *A. Mora-Olivo 549* (MEXU); 22-VII-2007, *E. Martínez S. 39488* (MEXU); 9-X-2008, *E. Martínez S.; A. Ibarra 41003* (MEXU); 18-VII-2011, *G. Castillo Campos*, *J. Pale 26701* (MEXU); 17-III-1969, *González Medrano; J. Sánchez; H. Puig 2238* (MEXU).

Distribution: Distributed in Mexico (states adjacent to the Pacific Coast, from Tamaulipas to Yucatán and the Pacific Coast, from Sinaloa to Chiapas), Central America, West Indies, and South America (from Venezuela to Brazil, Argentina, Paraguay, and Uruguay). In the study area, found in Tamaulipas, in coastal dunes, low deciduous forest, and tropical perennial forest, 0–600 m a.s.l.

Tephrosia foliolosa (Rydb.) L. Riley, Bull. Misc. Inform. Kew 1923: 339. 1923. Basionym: *Cracca foliolosa* Rydb., N. Amer. Fl. 24: 162. 1923.

Type: Mexico, Sinaloa. Vicinity of Culiacán, Cerro Colorado, 3-XI-1904, T. S. Brandegee *s.n.* (Holotype: US00091019! Isotypes: GH00053475! RSA0003233!).

Distinguishing features: Shrub, up to 2 m long. Stems angled, strigose. Leaflets 17–31, 2–4.5 cm long, elliptical, oblong-elliptical to linear-oblong. Calyx 3.5–7 mm long, the lateral and lowermost lobes deltoid, lanceolate to ovate-lanceolate, never obliquely short-acuminate. Style barbate, stigma glabrous.

Representative examined material: 26-IV-1960, *R.L. Dressler 2002* (MICH: 1183341!).

Distribution: Endemic to Mexico (Durango, Sonora, and Tamaulipas). Rare in northeastern Mexico, recorded only in the state of Tamaulipas, municipality of Aldama (Rancho Las Yucas), scrubland and oak forest, 450–700 m a.s.l.

Tephrosia lindheimeri A. Gray, Boston J. Nat. Hist. 6: 172. 1850. Basionym: *Cracca lindheimeri* (A. Gray) Kuntze, Revis. Gen. Pl. 1: 175. 1891.

Type: USA, Texas, 1847, *Lindheimer 592* (Holotype: PH00030238! Isotypes: G00367966! MO-277491! NY00033793! US00003898!).

Distinguishing features: Herbaceous. Stems prostrate to procumbent, strigose, the trichomes spreading or retrorse. Leaflets 5–19, obovate, obtriangular to orbicular, always with white trichomes near the margins. Flowers pink, pink-purple or red-violet. Banner with white or whitish pubescence. Style bearded, stigma glabrous.

Representative examined material: Tamaulipas: 26-IV-1960, *M.C. Johnston 5352* (MEXU).

Distribution: Endemic to Texas (USA) and Tamaulipas. Rare in Mexico, registered only in the northernmost part of Tamaulipas, in the municipality of Matamoros, almost on the border with Texas, in sandy or limestone soils, scrublands and oak forest, 0–550 m a.s.l.

Tephrosia potosina Brandegee, Univ. Calif. Publ. Bot. 4: 272. 1912. Basionym: *Cracca potosina* (Brandegee) Standl., Contr. U.S. Natl. Herb. 23: 472. 1922.

Type: Mexico, San Luis Potosi, VIII-1911, *C.A. Purpus 5273* (Holotype: UC155269!. Isotypes: F0059919F; GH00063523; MEXU00091697! MO-125159! NY00033814!).

Distinguishing features: Herbaceous, perennial. Stems decumbent, hirsute to pilose, the trichomes spreading or retrorse. Leaflets obovate to orbicular, 3, 5–7 or 9, suborbicular, 1.1–3.9 cm, glabrous adaxially. Calyx with golden pubescence. Flowers reddish-purple. Banner with golden pubescence. Style bearded, stigma glabrous.

Representative examined material: Coahuila: 26-III-1992, *M. A. Carranza; J. Noriega P.; L. García 1315* (ANSM, MEXU); 21-IV-1977, *R. Grether; H. Quero 634* (MEXU). Nuevo León: 28-VI-1948, *H. E. Moore Jr.; C. E. Wood, Jr. 3618* (MEXU). Tamaulipas: 8-X-2008, *E. Martínez S.; A. Ibarra 40953* (MEXU); 17-V-1985, *O. Briones 1651* (CFNL, MEXU).

Distribution: USA (Texas) and northeastern Mexico and San Luis Potosí and Zacatecas. Piedmont scrub, oak, and oak-pine forest, 450–1650 m a.s.l.

Tephrosia sinapou (Buc'hoz) A. Chev., Compt. Rend. Hebd. Séances Acad. Sci. 180: 1522. 1925. Basionym: *Cracca schiedeana* (Schltdl.) Standl., Contr. U.S. Natl. Herb. 23: 474. 1922. *Cracca toxicaria* (Sw.) Kuntze, Revis. Gen. Pl. 1: 175. 1891. *Galega sericea* Lam., Encycl. [J. Lamarck & al.] 2(2): 596. 1788 [14 Apr 1788]. *Galega sinapou* Buc'hoz, Hist. Univ. Règne Vég. 10: t. 4. 1777. *Galega toxicaria* Sw., Prodr. Veg. Ind. Occ.: 108. 1788. *Orobus sericeus* Sessé & Moc., Naturaleza (Mexico City), ser. 2, 1(App.): 118. 1890. nom. illeg. *Tephrosia emarginata* Kunth, Nov. Gen. Sp. 6: 461. 1824. *Tephrosia schiedeana* Schltdl., Linnaea 12: 299. 1838. *Tephrosia toxicaria* (Sw.) Pers., Syn. Pl. 2: 329. 1807.

Type: Mexico, Barranca de Tiorelo, *C.J.W. Schiede*, *F. Deppe*, *F.*, *s.n.* (Holotype not found. Isotype: K000478337!).

Distinguishing features: Herbaceous perennial, erect or a small shrub up to 1 m tall. Stems densely pubescent with yellow-brownish trichomes. Leaflets 17–41, elliptical, oblong-elliptical to linear-oblong. Calyx 5–8.5 mm long, the lateral lobes 2.5–4 mm long, oblong to obovate, abruptly and frequently obliquely short-acuminate, the lowermost one 2.5–5 × 2–4 mm, lanceolate-ovate to obovate. Corolla white to pink. Densely pubescent abaxially. Style barbate; stigma glabrous.

Representative examined material: Tamaulipas: 9-X-1957, *R.L. Dressler 2311* (MEXU); 20-VIII-1985, *M. Yañez 393* (MEXU); 23-IX-1985, *M. Yañez 451* (MEXU).

Distribution: Mexico (from Tamaulipas to Chiapas and Oaxaca), extending to Central and South America (from Venezuela and Colombia to Peru, Bolivia, and Brazil). In the study area, recorded only in the state of Tamaulipas, piedmont scrub, oak forest, 480–1500 m a.s.l.

Tephrosia uniflora Pers., Syn. Pl. 2: 329. 1807. subsp. ***uniflora*.** Basionym: *Cracca anthyllodes* (Hochst. ex Webb) Kuntze, Revis. Gen. Pl. 1: 174. 1891. *Cracca richardiana* Kuntze, Revis. Gen. Pl. 1: 175. 1891. *Tephrosia anthylloides* Hochst. ex Webb, Hooker's J. Bot. Kew Gard. Misc. 2: 345. 1850. *Tephrosia apollinea* Guill. & Perr., Fl. Seneg. Tent.: 196. 1832. nom. illeg. *Tephrosia cordofana* Hochst. ex Baker, Fl. Trop. Afr. 2: 118. 1871. *Tephrosia hirsuta* Schumach. & Thonn., Beskr. Guin. Pl.: 377. 1827. *Tephrosia ilorinensis* J.R. Drumm. ex Baker f., Legum. Trop. Africa: 184. 1926. *Tephrosia mossambicensis* Schinz, Bull. Herb. Boissier, sér. 2, 2: 948. 1902. *Tephrosia quartiniana* Cufod. ex Greuter & Burdet, Willdenowia 16: 446. 1987. nom. illeg. *Tephrosia transjubensis* Chiov., Fl. Somala 2: 161. 1932. *Tephrosia uniflora* var. *parvifolia* Baker f., Legum. Trop. Africa 1: 184. 1926.

Type: Senegal, *Roussillon s.n.* (Holotype: P-LA, not seen).

Distinguishing features: Herbaceous, perennial. Stems silky pilose with spreading hairs. Leaflets 5–7, rarely 9, the terminal leaflet much larger than the laterals. Flowers pink. Style glabrous, stigma penicillate.

Representative examined material: Tamaulipas: 24-VIII-1986, *A. Delgado S. 1349* (MEXU); 15-VIII-1983, *R.M. Martínez* (MEXU); undated, *M.C. Johnston*, *J. Crutchfield 4518* (MEXU).

Distribution: Apparently native to tropical Africa, it is distributed throughout almost all of Africa, as well as in Saudi Arabia, Pakistan, and India. In the study area recorded only in the state of Tamaulipas, in scrublands with prairie openings, thorny scrublands, and conifer forest, 250–1100 m a.s.l. The presence of this species is relatively recent, at least since the 1980s, perhaps due to accidental distribution, perhaps related to agricultural activities.

Tribe Psoraleeae (Benth.) Rydb., Fabaceae, tribe Psoraleeae, Part I. N. Amer. Fl. 24: 1–64. 1919.

Herbaceous, annual or perennial, subshrubs, shrubs or small trees. Stems, branches, leaves, inflorescences, and calyx glandular-punctate. Leaves commonly 3-foliolate, sometimes 1–5-foliolate, sometimes reduced to phyllodes or scales. Inflorescences in panicles, compact racemes or subspherical capitula. Flowers papilionaceous. Calyx campanulate, upper lobes partially fused. Banner unguiculate. Wings lamellae-shaped. Keel apically acute. Stamens diadelphous. Ovary sessile or stipitate, pubescent or sparsely covered with bottle-shaped glands. Ovule 1. Style incurved, penicillate or glabrous. Fruit paleaceous, woody, warty.

The tribe consists of 10 genera and 280 species [53], widely distributed in the world, mainly in temperate biomes, found in grasslands and montane habitats, less frequent in tropical areas. In northeastern Mexico, there are two genera and four species [11].

1A. Fruits rugose and glabrous ***Orbexilum***
1B. Fruits smooth and commonly pubescent (rarely glabrous) ***Pediomelum***

Orbexilum Raf., Atlantic J. 1: 145 1832. *Rhytidomene* Rydb., N. Amer. Fl. 24: 12. 1919.

Herbaceous, perennial with woody root. Stems single or several from base, forming colonies by rhizomes. Stipules fused-free, caducous or persistent. Leaves simple, most commonly 3-foliolate or palmately 5–7-foliolate. Leaflets petiolulate, elliptic to broadly ovate, glabrate or pubescent, without glands, glandular adaxially only, or glandular on both sides. Inflorescence in ovoid or compact elliptic pseudo-raceme, rarely paniculate basally branched in the first node. Bracts caducous. Flowers pedicellate. Calyx tubular-campanulate, short, up to 2 mm, the teeth twice as long as the tube or longer. Corolla blue to violet or white. Banner clawed. Wing and keel petals free or more commonly lightly adherent. Keel petals fused apically. Stamens fused, though the vexillary one less so, but free with age. Anthers introrse, in two basifixed and dorsifixed, or all basifixed. Ovary stipitate, glabrous to sericeous. Style curved to reflexed. Stigma with a ring of hairs at the base. Fruit detaching above receptacle, oblique-elliptic to obovate in profile view, brown to black, glandular or without glands, rugose, and sometimes papillate, apiculate to beaked, surpassing the calyx. Seed reniform, smooth, free from pericarp.

Orbexilum comprises nine species [53]. Only one species is recorded in northeastern Mexico.

Orbexilum melanocarpum (Benth. ex Hemsl) Rydb., N. Amer. Fl. 24: 6. 1919. Basionym: *Lotodes melanocarpum* (Benth. ex Hemsl.) Kuntze, Revis. Gen. Pl. 1: 194. 1891. *Psoralea melanocarpa* Benth. ex Hemsl., Biol. Cent.-Amer., Bot. 1: 234. 1879. *Psoralea oligantha* Brandegee, Univ. Calif. Publ. Bot. 4: 179. 1880. *Orbexilum oliganthum* Turner, Lundellia 11: 4–5: 2008.

Type: Mexico, Zimapan, undated, *Coulter 561* (Holotype not found. Isotype: K000478363!).

Distinguishing features: Herbaceous, perennial, rhizomatous. Stems prostrate, decumbent to suberect. Leaflets ovate to lanceolate, with yellow light glands on both faces. Inflorescence in ovoid to elliptical racemes. Peduncle 2–12 cm long. Flowers purple to blue. Fruit obovate, laterally flattened, 8–11 × 3.5–4.5 mm, rugose, glabrate, glandular, scarcely apiculate or the beak 2.5 mm long.

Representative examined material: Coahuila, 30-VI-1991, *E. Estrada 2070*, *J. Fairey*, *C. Schoenfeld* (CFNL); 22-VII-2015, *J. Encina 4985* et al. (CFNL); 6-IX-1994, *J. A. Villarreal*, *M. A. Carranza 7839* (ANSM, MEXU). Nuevo León: 8-VII-2003, *E. Estrada 15726* (CFNL); 23-II-2002, *E. Estrada 13346* (CFNL); 1-VII-2008, *E. Estrada 20226* (CFNL); 2-VII-2000, *E. Estrada 11517*, *C. Yen* (CFNL); 2-X-2004, *E. Estrada 18992* (CFNL); 21-II-2001, *J. Medellín s.n.* (CFNL); 3-XII-2011, *C. Romero*, *J. Estrada 038* (CFNL); 16-VII-1987, *E. Estrada 1253* (CFNL); 16-VII-1987, *E. Estrada 1255* (CFNL), 7-VII-1897, *E. Estrada 1160* (CFNL), 26-IV-1988, *J.S. Marroquín 4164* (CFNL); 8-VII-2004, *E. Estrada 16489* (CFNL); 26-VI-2004, (CFNL). Tamaulipas: 21-IV-1988, *E. Estrada 1403* (CFNL); 31-VII-1976, *G.L. Webster*, *W. Scott Armbruster 50263* (MEXU); 8-VI-1990, *F. González Medrano*, *V. Juárez Jaimes*, *P. Tenorio L. 17564* (MEXU); 6-VI-1990, *F. González Medrano*, *V. Juárez Jaimes*, *P. Tenorio L. 17502* (MEXU).

Distribution: Endemic to Mexico (from northern Coahuila and Nuevo León to Hidalgo and Querétaro, isolated in Chiapas). In the study area, in Coahuila, Nuevo León, and Tamaulipas, open areas, scrublands, oak, and oak-pine forest, 100–2700 m a.s.l.

Pediomelum Rydb, N. Amer. Fl. 24: 17. 1919. *Psoralea* subgenus *Pediomelum* (Rydb.) Ock., Southw. Nat. 10: 81. 1965.

Type: *Pediomelum esculentum* (Pursh) Rydb., N. Amer. Fl. 24: 20. 1919.

Herbaceous, perennial, acaulescent and the stems arising from a woody root or caulescent. Stems decumbent or erect, commonly with glands and pubescent. Stipules free or fused-free. Leaves pinnately 3-foliolate, palmately 3–7-foliolate, or 5-pseudo-palmate. Inflorescences in racemes (pseudo-raceme), persistent or deciduous, the whole unit. Calyx 5-toothed, increasing in size and changing in shape when developing, initially tubular-campanulate, then turning gibbose in flower, and, finally, gibbose-campanulate, urceolate-campanulate, or broadly campanulate in fruit. Corolla blue, violet to lavender, sometimes ochroleucous, white or yellow. Stamens initially monadelphous, the vexillary stamen becoming free with age. Anthers in two series, the upper one basifixed, the lower one dorsifixed. Ovary short-stipitate, 1-ovulate, style reflexed, stigma capitate, glabrous, or with a ring of hairs at base. Fruit dehiscent by the transverse rupture of the thin ovary wall, the base persistent on the receptacle. Seed reniform, elliptic, or round, red-brown, smooth to rugose, free from the pericarp.

A genus of 29 species [53] distributed from south-central Canada to Mexico, inhabiting deserts, grasslands, and forests [11].

1A.	Plants erect or plants acaulescent; flowers at least blue-violet, or lavender	***P. humile***
1B.	Plants prostrate, caulescent, all stems with leaves and flowers; flowers yellow, ochroleucous, salmon, or brick-red	2
2A.	Leaves pseudo-palmate, 5-foliolate	***P. palmeri***
2B.	Leaves pinnately 3-foliolate	***P. rhombifolium***

Pediomelum humile Rydb., N. Amer. Fl. 24: 24. 1919. Basionym: *Psoralea humilis* (Rydb.) J.F. Macbr., Contr. Gray Herb. 65: 15. 1922. nom. illeg. *Psoralea rydbergii* Cory, Rhodora 38: 405. 1936.

Type: Mexico, Mexico. Coahuila. Valley of the Rio Grande near Piedras Negras, C.G. *Pringle 9205* (Holotype: US00037114!).

Distinguishing features: Herbaceous, acaulescent, pubescent, with dark brown glands. Leaves pinnately 3-foliolate. Leaflets orbicular to obovate adaxially gland-dotted,

with black glands and white trichomes abaxially. Flowers blue or violet. Fruit oblong-elliptic in profile, 6 × 4 mm, smooth, pubescent on the distal third, beak 5 mm long, pubescent, as long as the calyx.

Representative examined material: Coahuila, 19-IV-1910, *C.G. Pringle 9205* (US00037114).

Distribution: Very rare species, recorded in very few localities in New Mexico and Texas (USA), and only one locality in northern Coahuila (near Piedras Negras). In desert scrub, 560 m a.s.l.

Pediomelum palmeri (Ockendon) J.W. Grimes ex Gandhi, Harvard Pap. Bot. 20: 213. 2015. Basionym: *Pediomelum ockendonii* Gandhi & Kartesz, Sida 15: 138. 1992. *Psoralea palmeri* Ockendon, S. W. Naturalist 11: 412. 1966.

Type: Mexico, Durango, Tepehuanes, 25-IV-1906, *E. Palmer 295* (Holotype: NY00026814!. Isotypes: MO-096436! K000478359! GH00063912! CM1093! F0059783F0! US00151860!).

Distinguishing features: Perennial. Stems prostrate. Leaves commonly pseudo-palmately 5-foliolate, sometimes with pinnately 3-foliolate leaves. Flowers salmon-pink, whitish-green to yellow, or yellow, 6–9 mm long. Fruit ovate, 4.5–5.5 cm long, eglandular, strigose on upper third, contracted apically in a beak 5–9 mm long, strigose, surpassing calyx teeth.

Representative examined material: Coahuila: 7-V-1939, E.G. *Marsh 1725* (TEX00272964). Nuevo León: 23-VIII-2025, *E. Estrada 26775* (CFNL).

Distribution: Endemic to Mexico (from Chihuahua to Nuevo León, extending south to Jalisco and Oaxaca). Rare in our area, in scrublands, disturbed pine forest, along roadsides, 750–1900 m a.s.l.

Pediomelum rhombifolium (Torr. & A. Gray) Rydb., N. Amer. Fl. 24: 23. 1919. Basionym: *Lotodes rhombifolium* (Torr. & A. Gray) Kuntze, Revis. Gen. Pl. 1: 194. 1891. *Pediomelum brachypus* Rydb., N. Amer. Fl. 24: 24. 1919. *Pediomelum coryi* Tharp & F.A. Barkley, Madroño 8: 54. 1945. *Pediomelum sonorae* Rydb., N. Amer. Fl. 24: 23. 1919. *Psoralea brachypus* (Rydb.) Standl., Publ. Field Mus. Nat. Hist., Bot. Ser. 11: 161. 1936. *Psoralea decipiens* M.E. Jones, Contr. W. Bot. 18: 41. 1933. *Psoralea rhombifolia* Torr. & A. Gray, Fl. N. Amer. 1: 303. 1838.

Type: USA, Texas, undated, *Drummond 134* (Holotype not found. Isotypes: BM000901994!).

Distinguishing features: Herbaceous, perennial. Stems prostrate or decumbent. Leaves pinnately 3-foliolate. Leaflets rhombic, with dark glands. Flowers white, salmon-pink to brick-red, 7–11 mm long. Fruit almost rounded in profile, pubescent on upper third, contracted into a beak 6–8 mm long, surpassing calyx teeth, pubescent.

Representative examined material: Tamaulipas: 16-V-1985, *O.L. Briones V. 1593* (CFNL, MEXU).

Distribution: Widely distributed, from the SE United States (Oklahoma and Texas) and northern Mexico (from Baja California to Tamaulipas) to Chiapas. Inhabiting different plant communities such as desert scrublands, grasslands, oak forest, oak-pine forest, pine forest, cold conifer forest, and reaching near alpine meadow, 350–3400 m a.s.l.

Tribe Robinieae (Bentham) Hutchinson, Gen. fl. plants 1: 366. 1964. Galegeae subtribe Robininae Bentham in Bentham and Hooker, Gen. pl. 1(2): 445. 1865. Sesbanieae (Rydberg) Hutchinson, Gen. fl. plants 1: 401. 1964. Galegeae subtribus Sesbaniinae Rydberg, Amer. J. Bot. 10: 495. 1923. Galegeae subtribus Corynellinae Rydberg, Amer. J. Bot. 11: 471. 1924.

Herbaceous, shrubs and trees. Leaves imparipinnate or paripinnate, rarely 1-foliolate. Leaflets mostly opposite. Tannins frequently in lines or patches. Stipules herbaceous, or spinescent. Stipels commonly present. Inflorescences in axillary racemes. Calyx with short or well-developed lobes. Banner petal callosities usually well developed, glabrous or pubescent, auriculate, contracted into a claw. Wings free or fused to the keel. Keel petals

fused commonly to the tip. Stamens diadelphous. Ovary sessile to subsessile. Ovules up to six. Style glabrous or ciliate. Fruit elastically and explosively dehiscent or tardily dehiscent.

Robinieae comprises 12 genera [54,55] and 72 species [55]. Distributed mostly in the tropics of the world, but also extends to warm and cool areas in the Americas. Many species have economic value, mainly used for construction, fodder and vegetation restoration, and agricultural purposes.

1A.	Style glabrous	***Gliricidia***
1B.	Style pubescent	2
2A.	Distal part of style with a tuft of hairs longer on either side; keel petals acute; fruit internally septate	***Coursetia***
2B.	Distal part of the style with a tuft of uniformly sized hairs around it; keel petals obtuse; fruit without internal septa	3
3A.	Inflorescences in terminal racemes; stems herbaceous, originating from a tuberous root	***Peteria***
3B.	Inflorescences axillary; shrubs	4
4A.	Inflorescences in pendulous racemes; flowers whitish to pinkish; fruit with seeds oriented transversely; trees 7 m long or longer	***Robinia***
4B.	Inflorescences axillary, solitary; flowers yellow; fruit with seeds not oriented transversely; small shrubs up to 1 m tall	***Genistidium***

Coursetia DC, Ann. Sci. Nat. (Paris) 4: 92. 182. *Balboa* Liebm., Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn 1853: 106. 1853. *Benthamantha* Alef., Bonplandia (Hannover) 10: 264. 1862. *Brittonamra* Kuntze, Revis. Gen. Pl. 1: 164. 1891. *Callistylon* Pittier, J. Washington Acad. Sci. 18: 211. 1928. *Cracca* Benth., Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn 1853: 8. 1853. nom. cons. *Humboldtiella* Harms, Repert. Spec. Nov. Regni Veg. 19: 12. 1923.

Type: *Coursetia tomentosa* DC., Ann. Sci. Nat. (Paris) 4: 92. 1825.

Herbaceous perennial, scandent to shrubs or trees. Leaves pinnate or 1-foliolate. Leaflets opposite. Stipules persistent or caducous. Stipels commonly present. Flowers small, in axillary racemes or panicles. Calyx campanulate, 5-lobed. Corolla papilionaceous, whitish, yellowish, sometimes tinged with reddish, purplish or yellow. Banner rounded to kidney-shaped, retuse apically, auriculate. Wings oblong, auriculate and unguiculate basally. Wing incurved, apically acute, basally auriculate and unguiculate. Stamens 10, diadelphous or monadelphous. Ovary sessile, pubescent. Ovules 12–30. Style curved, pubescent distally along one side. Stigma capitate. Fruit linear to oblong, flattened, marginally straight or sinuous, internally septate between the seeds, elastically dehiscent, glabrous, pubescent or glandular. Seeds compressed.

American genus of 35 [12]–38 species [56], from southern USA to Paraguay and Argentina, and also in the West Indies. Inhabiting mainly in seasonally dry tropical forest and scrublands.

1A.	Peduncles 1/3 to 1/2 the length of the rachis; fruits resupinate, borne on twisted pedicels	***C. caribaea*** var. ***caribaea***
1B.	Peduncles 1/10 the length of the rachis; fruits straight, borne on straight pedicels	2
2A.	Leaflets 2–4 per leaf; banner yellow; branches thorny apically; Coahuila	***C. insomnifolia***
2B.	Leaflets 6–12 per leaf; banner whitish or pinkish; branches non-thorny apically; Nuevo León and Tamaulipas	***C. axillaris***

Coursetia axillaris J.M. Coult & Rose, Contr. U.S. Tatl. Herb. 2: 81.1891.

Type: USA, Texas, Duval, San Diego, V-1891, *G.C. Nealley 16* (Holotype: US00037208! Isotypes: F0059047F! GH000534381! NY00006541! US0074299!).

Distinguishing features: Shrub 1–1.5 m tall. Leaves 1.5–7 cm long. Leaflets 6–12, elliptic to obovate, with tannin stains along the veins. Inflorescences in short, sessile

racemes. Peduncle 1/10 the length of the rachis. Flowers whitish to pinkish. Fruit 2–4 × 0.4–0.6 cm, glabrous.

Representative examined material: Nuevo León: 3-VIII-2010, *M.A. Guzmán Lucio s.n.* (TEX00487837). Tamaulipas: 14-III-1976, *M.D. Whalen 277* (TEX00220092); 3-IV-1960, *R.F. Smith M-55* (TEX00220093).

Distribution: From southeastern Texas (USA) and Nuevo León, Tamaulipas, San Luis Potosí, and Veracruz (Mexico), in desert scrubland, Tamaulipan thornscrub, 100–330 m a.s.l.

Coursetia caribaea (Jacq.) Lavin Advances legumes syst. 3: 63. 1987. var. ***caribaea*** Basionym: *Benthamantha brandegeei* Rydb., N. Amer. Fl. 24: 246. 1924. *Benthamantha edwardsii* (A.Gray) Rose, Contr. U.S. Natl. Herb. 10: 99. 1906. *Benthamantha fruticosa* Rose, Contr. U.S. Natl. Herb. 10: 99. 1906. *Benthamantha microphylla* Rydb., N. Amer. Fl. 24: 244. 1924. *Brittonamra caribaea* var. *edwardsii* (A. Gray) Kuntze, Revis. Gen. Pl. 1: 165. 1891. *Cracca berenicea* McVaugh, Fl. Novo-Galiciana 5: 367. 1987. *Cracca caribaea* var. *edwardsii* (A.Gray) Hassl., Repert. Spec. Nov. Regni Veg. 16: 160. 1919. *Cracca edwardsii* A.Gray, Smithsonian Contr. Knowl. 5(6): 35. 1853. *Cracca venosa* (M.Martens & Galeotti) Kuntze, Revis. Gen. Pl. 1: 175. 1891. *Tephrosia venosa* M. Martens & Galeotti, Bull. Acad. Roy. Sci. Bruxelles 10(2): 47. 1843.

Type: Specimen cultivated from seed brought by Jacquin "habitat in Caribaeis" (Holotype BM?, not found, photo; NY! line drawing accompanying protologue (Lavin, 1988).

Distinguishing features: Polymorphic species, herbaceous, subshrub, rarely tree. Commonly 0.2–3 m tall. Stems erect to decumbent. Leaflets 3–27. Peduncles a third to one half the length of the rachis. Pedicels caducous, falling off, attached to the calyx. Corolla yellow, whitish or pinkish. Style with a brush of hairs along the distal two-thirds or three-fourths. Fruit 3.9–5 0.25–7 cm, resupinate, borne on twisted pedicels, glabrous or pubescent, rarely stipitate glandular.

Representative examined material: Coahuila: 31-X-2004, *R. Torres Colín 16755* (MEXU); 26-VIII-1992, *J. Valdes Reyna 2193* (ANSM, MEXU); Nuevo León: 9-XI-2002, *E. Estrada 15170*, *C. Yen* (CFNL); 1-X-2011, *E. Estrada 21203* (CFNL); 7-VI-2003, *E. Estrada 15684*, *C. Yen* (CFNL); 2-IV-2002, *E. Estrada 13441* (CFNL) 11-V-2012, *E. Estrada 21821* (CFNL) 22-IX-2001, *E. Estrada 13107*, *C. Yen* (CFNL); 8-VI-2002, *E. Estrada 14688* (CFNL); 28-VI-2002, E. Estrada 14726 (CFNL); 2-IV-2002, *E. Estrada 13408* (CFNL); 13-IV-2002, *E. Estrada 14520* (CFNL); 2-IV-2002, *E. Estrada 13434* (CFNL); 25-IX-2004, *E. Estrada 16851* (CFNL). Tamaulipas: 15-V-1994, *L. Hernández 1994* (CFNL); 12-XI-1981, *C.H. Ramos*, *A. García-Mendoza 44* (MEXU).

Distribution: Widely distributed, from northern Mexico to northern South America, and also in the West Indies. In our area, common in desert scrublands, Tamaulipan thornscrub piedmont scrub, low deciduous forest, oak forest, oak-pine forest, 200–1600 m a.s.l.

Coursetia insomniifolia Lavin, Madroño 33: 182. 1986.

Type: Mexico, Coahuila de Zaragoza, Puerto de Ventanillas, 21 mi S of El Mesquite, 25 mi N of San Pedro along hwy 30 to Cuatrocienagas, 18-X-1985, *M. Lavin*, *R. Scott*, *G. Nesom 5732* (Holotype: MEXU00417834!. Isotypes: ANSM038515! ARIZ-BOT-0004152! MO-126300! NY00006548! TEX00371274! US00345184!).

Distinguishing features: Shrub up to 1.5 m tall. Stems intricate, the branches distally thorny, densely pubescent. Leaflets 2–4 per leaf, elliptical. Inflorescences in short sessile racemes, rachis 0.2–4 mm long. Peduncles one-tenth the length of the rachis. Pedicles falling attached to the calyx. Corolla 7–9 mm long, yellow turning reddish with age. Ovary granulose. Fruits 1–3 × 0.-0.4 cm, fruits straight, borne on straight pedicels, glabrous, sinuously margined.

Representative examined material: Coahuila: 18-X-1985, *M. Lavin 5732* (ARIZ 277528!); 18-X-1985, *M. Lavin*, *R. Scott*, *G.L. Nesom 5732* (TEX00371274); 27-IX-1986, *J.S. Henrickson*, *L. Woodruff 20414* (TEX00220261).

Distribution: Endemic to the central part of the state of Coahuila, in desert scrublands, 2000 m a.s.l.

Genistidium I.M. Johnston, J. Arn. Arbor. 22: 113.1941.

Type: *Genistidium dumosum* I.M. Johnst., J. Arnold Arbor. 22: 113. 1941.

Shrubs, armed. Stems scandent to erect, broomlike, the branches distally thorny, the young parts densely pubescent. Stipules somewhat spiny. Leaves unifoliolate or 3-foliolate, with entire margin, densely or sparsely pubescent on both faces. Inflorescences solitary, axillary in the distal leaves. Bracts present. Flowers papilionaceous, yellowish. Calyx zygomorphic, campanulate, 5-lobed. Stamens 10, diadelphous. Style glabrous basally, style pubescent in the distal half. Stigma capitate, ciliate. Fruit sessile, linear, elastically dehiscent, laterally compressed, sericeous.

Monospecific genus, endemic to Texas (USA) and Mexico (Coahuila and Nuevo León) [57].

Genistidium dumosum I.M. Johnst., J. Arnold Arbor. 22: 113. 1941.

Type: Mexico, Coahuila, Sierra de San Antonio, canyon at San Antonio de los Alamos, Mexico, 2-IX-1940-3-IX-1940, *I.M. Johnston & C.H. Muller 944* (Holotype: GH00066181! Isotypes: GH00066180! LL00371324! MEXU00159545!).

Distinguishing features: See the genus description.

Representative examined material: Coahuila: 2-IX-1940, *I.M. Johnston*, *C. H. Muller 944* (MICH1166821); 9-VIII-1941, *R.M. Stewart 1116* (LL220892); 28-X-1941, *R.M. Stewart 2217* (LL220894); 17-IX-2011, *G.B. Hinton 29302* (TEX00452677); 25-II-1975, *T.L. Wendt. E. Lot 796* (TEX220893); 18-III-1977, *T.L. Wendt*, *E. Lot*, *R.G. Olmstead 1951* (TEX220895). Nuevo León: 10-VII-1993, *G.B. Hinton 23005* (ARIZ312790).

Distribution: Endemic to western Texas (USA) and northern Mexico, in Coahuila and Nuevo León, inhabiting desert scrublands, 800–1300 m a.s.l.

Gliricidia Kunth, Repert. Bot. Syst. 1: 679. 1842. *Hybosema* Harms, Repert. Spec. Nov. Regni Veg. 19: 66. 1923. *Yucaratonia* Burkart, Darwiniana 15: 523. 1969.

Type: *Gliricidia sepium* (Jacq.) Kunth, Repert. Bot. Syst. 1: 679. 1842.

Trees, unarmed. Leaves imparipinnate. Leaflets opposite, entire, commonly drying with purple mottling abaxially. Stipules persistent. Flowers in axillary racemes, appearing before or with the leaves. Bracts small. Flowers papilionaceous, pink or pink-tinged. Calyx campanulate, truncate, 5-lobed, minute or the lobes absent. Banner elliptic to orbicular, retuse apically, narrowed and with 2 callosities by the midvein basally. Wings as long as the keel. Stamens 10, diadelphous. Ovary stipitate, dehiscent, many ovules. Style incurved, glabrous. Stigma capitate. Fruit flattened, oblong, or widening near the apex, glabrous, dehiscent, the valves commonly coiling after dehiscence. Seeds rounded, flattened.

American genus of five species [58], native to Mexico and Central America, with species in Ecuador and Peru.

1A. Corolla 1.5–2 cm long or longer; leaflets 3–7 × 2–3 cm; corolla pink or white, sometimes with yellow or white spots; fruit 10–15 cm long ***G. sepium***

1B. Corolla 1.5 cm long or shorter; leaflets 2–3.5 × 1–2 cm; corolla light-violet; fruit up to 7 cm long ***G. ehrenbergii***

Gliricidia ehrenbergii (Schltdl.) Rydb., N. Amer. Fl. 24: 239. 1924. Basionym: *Gliricidia guatemalensis* Micheli, Bull. Herb. Boissier 2: 442. 1894. *Gliricidia meistophylla* (Donn.Sm.) Pittier, Contr. U.S. Natl. Herb. 20: 86. 1917. *Hybosema ehrenbergii* (Schltdl.) Harms, Repert. Spec. Nov. Regni Veg. 19: 66. 1923. *Lonchocarpus meistophyllus* Donn.Sm., Bot. Gaz. 56: 55. 1913. *Robinia ehrenbergii* Schltdl., Linnaea 12: 303. 1838.

Type: Mexico, Mexico. In solo calcareo boream versus ab aquis calidis. pr. Grande. VII-1831, C.A. Ehrenberg 645 (Holotype HAL0071864!).

Distinguishing features: Shrub up to 1 m tall. Leaflets 9–17, 2–3.5 × 1–2 cm, ovate to elliptic, rounded at both extremes. Inflorescences in racemes up to 10 cm long. Calyx 4–5 mm long, ciliolate-margined; the upper two teeth fused near the apex, forming a deltoid; ovate teeth; the three lower ones deltoid, close to each other. Corolla light violet, 1.5 cm long. Fruit up to 7 cm long, glabrous.

Representative examined material: Tamaulipas: 1-VI-2010, *Ma.C. Macías 51* (MEXU); IX-1971, *F.G. Medrano*, *E. Martínez 3663* (MEXU); 2-I-2008, *E. Martínez S. 39961* (MEXU).

Distribution: Mexico, Central America (El Salvador and Honduras). Rare in the study area, deciduous forest and oak forest, 450–1400 m a.s.l.

Gliricidia sepium (Jacq.) Kunth, Repert. Bot. Syst. 1: 679. 1842. Basionym: *Gliricidia lambii* Fernald, Bot. Gaz. 20: 533. 1895. *Gliricidia maculata* var. *multijuga* Micheli, Bot. Gaz. 20: 284. 1895. *Lonchocarpus roseus* (Mill.) DC., Prodr. 2: 260. 1825. *Lonchocarpus sepium* (Jacq.) DC., Prodr. 2: 260. 1825. *Millettia luzonensis* A. Gray, U.S. Expl. Exped., Phan. 1: 456. 1854. *Robinia sepium* Jacq., Enum. Syst. Pl.: 28. 1760. *Robinia variegata* Schltdl., Linnaea 12: 301. 1838.

Type: Colombia. Cartagena, *N.J. Jacquin s.n.* (Holotype: not found).

Distinguishing features: Tree up to 15 m tall. Leaves imparipinnate, 15–35 cm long. Leaflets 7–15, 3–7 × 2–4.5 cm, elliptic or narrowly so; inflorescences 12–15 cm long. Flowers papilionaceous, pink to lavender. Calyx 5.5–9 mm long, truncate or the lobes 0.1–0.2 mm long, puberulent. Corolla 1.5–2.3 cm long. Fruit 7–23 × 1.2–2.2 cm, oblong, flattened, glabrous.

Representative examined material: Tamaulipas: 15-IV-2017, *M.F. Piña s.n.* (URUZA), Ocampo, Tamaulipas.

Distribution: From Mexico to Colombia and the West Indies, introduced in several countries in South America, and also in Africa, Australia, and the USA (Florida). In the study area is rare, recorded only in the southern region of the state of Tamaulipas, low deciduous forest, 200–400 m a.s.l.

Peteria A. Gray, Smithsonian Contr. Knowl. 3(5): 50. 1852.

Type: *Peteria scoparia* A. Gray, Smithsonian Contr. Knowl. 3(5): 50. 1852.

Herbaceous. Stems erect or decumbent, originating from a deep tuberous root. Leaves imparipinnate. Leaflets 7-many. Stipules paired, modified in slender divaricate prickles. Stipels absent. Inflorescences in terminal racemes or sometimes the racemes lateral and opposite the leaves, not axillary. Flowers papilionaceous, short-pedicellate. Bracts subulate, subtending the pedicels. Bracteoles absent. Calyx cylindric-campanulate, basally gibbous, five-lobed, the lobes different, the two upper lobes fused, forming a lobe with a shallower sinus than the other petals. Corolla white or ochroleucous, sometimes tinged with purple. Petals clawed. Banner obovate-oblong, moderately to strongly retroflexed. Wings oblong to oblong-obovate, basally auricled. Keel petals obliquely-obovate, broadly auricled basally. Stamens 10, diadelphous. Anthers alike. Ovary sessile or short-stipitate, with several ovules. Style becoming incurved, hardened and twisted at the base with age. Stigma with an oblique tuft of hairs distally. Fruit stipitate or sessile, linear or narrowly oblong, laterally flattened, almost straight, sometimes constricted between inter-seminal spaces or where ovules have aborted, dehiscent along both sutures. Seeds few to several, flattened, oblong-rounded.

Genus of four species [33], from south USA (Utah, Nevada, and Arizona) to southern Mexico (from Chihuahua, Nuevo León and Coahuila to San Luis Potosí, Querétaro, and Puebla). Three of the species occur in Mexico (*P. pinetorum*, *P. glandulosa*, and *P. scoparia*), and two of them occur in the northeastern region.

1A.	Stems 10–30 cm long; leaflets persistent; pedicels and calyx densely glandular	***P. glandulosa***
1B.	Stems 50–80 cm long; leaflets early caducous; pedicels and calyx densely strigose, slightly glandular	***P. scoparia***

Peteria glandulosa (A. Gray ex S. Watson) Rydb., N. Amer. Fl. 24: 183. 1923. Basionym: *Peteria scoparia* var. *glandulosa* A. Gray ex S. Watson, Proc. Amer. Acad. Arts 17: 342. 1882.

Type: México. San Luis Potosi, 1876, *J. G. Schaffner 834* (Lectotype: GH00064189!). Lectotype designated by C.L. Porter, Rhodora 58: 353. 1956.

Distinguishing features: Herbaceous, perennial, originating from a tuberous root. Stems up to 30 cm long. Stipules paired, spinose. Leaves 1–3 cm long. Leaflets persistent, 9–15, elliptic. Inflorescence in terminal racemes, 6–16 cm. long, about 3–5-flowered. Pedicels, calyx, and commonly the axis of the raceme, densely glandular. Fruit stipe 5–6 mm long, the body 4–4.5 × 0.3–0.5 cm, linear, straight or slightly constricted between the seeds.

Representative examined material: Nuevo León: 8-VI-2003, *E. Estrada 15750*, *C. Yen* (CFNL); 13-IV-2003, *E. Estrada 15519*, *C. Yen* (CFNL); 10-IX-2011, *E. Estrada 20905* (CFNL) 12-XII-2009, *E. Estrada 20835* (CFNL); 28-VII-1993, *G.B. Hinton 23109* (MEXU), 19-VII-2012, *M.J. Moore*, *H. Flores O.*, *H. Ochoterena B. N. Mendoza D.*, *N. Douglas 905* (TEX495650); 23X-1993, *G.B. Hinton 23703* (TEX272974); 29-VII-1998, *M.A. Carranza*, *J. Valdés R. C-2987* (TEX272975).

Distribution: Endemic to Mexico. Outside the study area, from San Luis Potosí and Zacatecas to Puebla. In calcareous or gypsic soils, slopes, gypsophilous vegetation, desert scrublands, 1400–1800 m a.s.l.

Peteria scoparia A. Gray, Smithsonian Contr. Knowl. 3(5): 50. 1852.

Type: USA, Texas. Jeff Davis Co. Mountain valleys beyond the pass of the Limpia, 26-VIII-1849, C. Wright 138 (Lectotype: GH0064184!). Lectotype designated by C.L. Porter, Rhodora 58: 352. 1956.

Distinguishing features: Subshrub. Stems woody, 50–100 cm tall. Branches ascending or divaricate, striate. Stipules paired, spinose. Leaflets early caducous, giving the plant a broom-like appearance in dry seasons, 9–15, oblong to narrow elliptic. Pedicels and calyx strigose, slightly glandular. Fruit 3.5–6 cm long.

Representative examined material: Coahuila, 15-IX-1972, *F. Chiang*, *T.L. Wendt*, *M.C. Johnston* 9273 (MEXU).

Distribution: From southwestern USA (Arizona, Nevada, and New Mexico) to northern Mexico (Chihuahua and Coahuila). In desert scrublands, arid slopes, 1400–1600 m a.s.l.

Robinia Sp. Pl.: 722. 1753. *Pseudacacia* Moench, Methodus: 145. 1794. nom. illeg. *Pseudo-acacia* Duhamel, Traité Arbr. Arbust. 2: 187. 1755. nom. illeg.

Type: *Robinia pseudoacacia* L., Hort. Cliff. 354.

Deciduous, trees or shrubs. Branches usually armed with paired stipular spines, bristly hispid or glandular-viscid, sticky to the touch. Leaves imparipinnate, 10–35 cm long. Leaflets 3–9 pairs, ovate to elliptic, petiolulate and stipellate, margins entire. Inflorescences in axillary racemes, pendulous, 4–40-flowered. Bracts caducous. Calyx campanulate, 5-lobed, the two adaxial (upper) lobes shorter than the others, fused into an apical lip. Corolla papilionaceous, white, pink, or pinkish, sometimes with a central yellow spot. Petals unguiculate. Banner retroflexed. Wings incurved. Keel petals fused along half or three quarters of their length, incurved, acute apically, enclosing the stamens and style. Stamens diadelphous. Anthers similar, longitudinally dehiscent. Ovary stipitate, 10–25-ovuled. Style linear, apically for one quarter or one third of its length and adaxially pubescent. Stigma terminal, minute. Fruit laterally compressed, flat or turgid, papery or coriaceous, dehiscent, splitting along both sutures, coiling after dehiscence or remaining flat, glabrous, bristly pubescent or with viscid glands, sometimes with a wing along the adaxial suture. Seeds oblong or reniform, brown or black, mottled.

Genus of 4 [34] to 7 species [26], widely distributed throughout the world, in the USA, Mexico, southern South America, Europe, Asia, north and south Africa, and New Zealand.

Robinia pseudoacacia L., Sp. Pl.: 722. 1753. Basionym: *Robinia pringlei* Rose, Contr. U.S. Natl. Herb. 12: 274. 1909.

Type: "Habitat in Virginia". Sp.Pl. 2: 722. 1753. RCN: 5449. Lectotype Herb. Clifford 354. Robinia 1 sheet B (BM-000646538). Lectotype designated by Barrie in Jarvis et al., Regnum Veg. 127: 82. 1993.

Distinguishing features: Tree up to 20 m tall. Stipules spinose, 1–1.5 cm long. Leaflets 7–19, 2–4 cm long. Racemes, 10–20 cm long. Flowers white, fragrant, 1.5–2.5 cm long. Calyx finely pubescent, the upper two lobes fused throughout and forming a shallow adaxial sinus 0.3–0.6 mm deep. Ovary glabrous. Fruit 5–10 cm long, with a wing 1–3 mm wide along the adaxial suture.

Representative examined material: Coahuila: 2-VI-2000, *J.A. Villarreal*, *M.A. Carranza*, *I. Ramírez 9003* (MEXU); 21-XI-1979, *S. Zárate*, *R. Reid 364* (MEXU). Nuevo León: 7-IV-2005, *E. Estrada 19616*, *C. Yen* (CFNL); 1993, *M.A. Carranza s.n.* (MEXU).

Distribution: Native to the Americas and widely distributed throughout the world, in the USA, Mexico, southern South America, Europe, Asia, North and South Africa, and New Zealand. In the study area, cultivated in public or private gardens in temperate climates, 600–1800 m a.s.l.

Tribe Sesbanieae Hutch., Gen. Fl. Pl. 1: 401. 1964. Tribe Galegeae, subtribe Sesbaninae [as Sesbanianae] Rydb., Gen. N. Am. Fab. 10: 487. 1923.

Herbaceous, shrubs, or trees. Leaves paripinnate. Leaflets numerous; inflorescences in axillary racemes, distal. Calyx campanulate or papilionaceous, five-lobed, the teeth subequal, rarely bilabiate. Corolla yellow, sometimes with spots, or red, dark purple or white. Banner broad, with 2 callosities on the claw. Wings falcate, auriculate basally. Keel the petals fused, auriculate, clawed. Stamens 10, diadelphous. Ovary linear, stipitate, with several ovules. Style linear. Stigma capitate. Fruit linear, long and terete, many-seeded, septate between seeds, dehiscent, beaked apically.

The tribe comprises only one genus and ca. 60 species [13]. Inhabiting subtropical, tropical, and temperate areas of the Americas, Asia, Africa, and Australia.

Sesbania Scop., Intr. Hist. Nat. 308. 1777. *Agati* Adans., Fam. Pl. 2: 326. 1763. nom. rej. *Darwinia* Raf., Fl. Ludov.: 106. 1817. nom. illeg. *Daubentonia* DC., Mém. Légum.: 285. 1826. *Daubentoniopsis* Rydb., Amer. J. Bot. 10: 497. 1923. *Glottidium* Desv., J. Bot. Agric. 1: 119. 1813. *Monoplectra* Raf., Fl. Ludov.: 106. 1817. *Resupinaria* Raf., Sylva Tellur.: 115. 1838. *Sesban* Adans., Fam. Pl. 2: 327. 1763.

Type: *Sesbania sesban* Britton, Brooklyn Bot. Gard. Mem. i. 54. 1918.

The genus *Sesbania* comprises 55 [13] to 85 species [35], widely distributed in the world, the Americas, Africa, Asia, and Australasia, inhabiting mostly wetlands and coastal systems [35].

The morphological description of the genus is the same as that of the tribe. There are two species in northeastern Mexico.

1A.	Legumes narrow-elongate or flattened, 3–4 mm wide; seeds (3–)12–40(–51); keel blades with basal tooth; banner with calluses or ridges; upper margin of keel and wings with a small auricle along the claw	***S. herbacea***
1B.	Legumes flattened-inflated or 4-angled or winged, 5–10 mm wide; seeds 1–9(–10); keel blades without basal tooth; banner without calluses or ridges; upper margin of the keel and wings without small auricle along the claw	***S. drummondii***

Sesbania drummondii (Rydb.) Cory, Rhodora 38: 406. 1936. Basionym: *Daubentonia drummondii* Rydb., Amer. J. Bot. 10: 498. 1923. *Daubentonia texana* Pierce, Trop. Woods 72: 13. 1942. nom. illeg.

Type: USA. Texas, *Drummond 71* (Holotype: NY00075781! Isotype: K000873124!).

Distinguishing features: Shrub, 0.4–3 m tall. Leaves 10–20 cm long. Peduncles 1–3 cm long. Inflorescences in racemes, 1–12-flowered. Flowers light-yellow (often with red lines). Calyx somewhat papilionaceous, pubescent and usually with stalked glands between adaxial lobes. Fruit 5–9 cm long, stipitate, the stipe 1–2 cm long, the body 4-angled with pronounced wings the full length, wings up to 3 mm wide, indehiscent or late dehiscent. Seeds 1–10.

Representative examined material: Tamaulipas: 26-X-2014, *E. Estrada 22740* (CFNL); 15-V-1983, *F. González Medrano*, *P. Hiriart 13057* (MEXU); 7-VIII-1888, *C.G. Pringle s.n.* (MEXU); 15-XI-1990, *F. González Medrano*, *V. Juárez*, *G. Hernández*, *H. González 17598* (MEXU); 19-X-1984, *L. Hernández 1229* (CFNL); 10-V-1993, *F. González Medrano*, *G.G. Hernández*, *J.G.R. Wong 17771* (MEXU) 9-X-1996, *M. González 2744* (MEXU); VI-1964, F. González-Medrano 547 (MEXU).

Distribution: Southeastern USA (Texas to Florida) to northeastern Mexico (Tamaulipas), from Laredo to Matamoros, along the Río Bravo, associated with riparian vegetation, sandy soils, 10–450 m a.s.l.

Sesbania herbacea (Mill.) McVaug, Fl. Novo-Galiciana 5: 695. 1987. Basionym: *Emerus herbacea* Mill. Gard. Dict., ed. 8., Emerus n.° 3. 1768.

Type: Mexico, Veracruz, 1731, *W. Houstoun s.n.* (Holotype: BM000931452!).

Distinguishing features: Leaflets 30–70, 1–2 cm long, mostly obtuse. Corolla yellow, the banner blotched or flecked with reddish-brown. Fruit 3–4 mm wide, linear, little constricted between seeds. Seeds commonly 12–50.

Representative examined material: Coahuila: 24-IX-2025, *A. Contreras s.n.* (CFNL); 26-IX-2002, *M.A. Carranza*, *I. Ramírez C-3829* (MEXU); 9-X-1996, *J.A. Villarreal*, *J. Zavala B. 853*. Tamaulipas: 23-IX-1992, *J.L. Mora López*, *A. Mora 464* (MEXU) 28-VI-2000, *R.M. Flores Luna 1* (MEXU); 16-VII-1975, *C. Rodríguez J. 1498* (MEXU); 9-X-2008, *E. Martínez S.*, *A. Ibarra 41010* (MEXU); 4-X-2008, *E. Martínez S.*, *A. Ibarra 40686* (MEXU); 8-XI-1995, *A. Mora Olivo 5607* (MEXU); 21-I-1999, *A. Mora Olivo 7367* (MEXU).

Distribution: Widely distributed in the USA and Mexico (from Baja California to Yucatán, Quintana Roo, Oaxaca, and Chiapas). In northeastern Mexico, recorded in Coahuila, in disturbed humid areas (oxidation ponds), and in Tamaulipas, near water bodies, wetlands, and disturbed areas, 50–1450 m a.s.l.

Tribe Sophoreae Spreng, Anleit. 2, 2: 741: 1818.

Trees, shrubs, or herbs, sometimes lianas: Leaves pinnately, one- to many-foliolate. Stipules present or absent. Inflorescences in racemes or panicles. Flowers papilionaceous or sub-actinomorphic. Calyx valvate or imbricate in bud. Petals free or with the keel petals joined (or overlapping). Stamens 10 or fewer, the filaments free to the base, equal or subequal in size. Ovary 1 to several-ovulate. Style glabrous, at least apically. Fruit bivalvate, dehiscent or indehiscent, sometimes samaroid.

The tribe Sophoreae consists of 16 genera. A consistent monophyletic group in molecular phylogenetic analyses [59,60]. Four genera are recorded in northeastern Mexico.

1A.	Leaflets resinous, with pellucid lines and dots; fruit flattened, samaroid, with 1–4 seeds, not constricted between inter-seminal spaces	***Myrospermum***
1B.	Leaflets not resinous, with pellucid lines, sometimes dotted; fruit torulose, terete, and constricted between inter-seminal spaces	**2**
2A.	Herbaceous perennials, shrubs or trees; flowers without bracteoles; fruits dehiscent	***Sophora***
2B.	Shrubs or trees; flowers with bracteoles; fruit indehiscent	**3**
3A.	Leaflets without stipels; calyx not truncated, vexillar lip longer than the carinal one; fruit dry	***Dermatophyllum***
3B.	Leaflets with stipels; calyx truncate or almost so, vexillar lip shorter than the carinal one; fruit fleshy	***Styphnolobium***

Dermatophyllum Scheele, Linnaea 21: 458. 1848. *Agastianis* Raf., New Fl. 3: 85. 1838. nom. illeg. *Broussonetia* Ortega, Nov. Pl. Descr. Dec.: 61. 1798. nom. rej. *Calia* Terán & Berland., Mem. Comis. Limites: 13 (1832) nom. illeg.

Type: *Dermatophyllum speciosum* (Ortega) Scheele, Linnaea 21: 459 (1848).

Shrubs, 0.5–6 m tall. Stems erect, unarmed. Stipules present, caducous. Leaves imparipinnate. Leaflets 5–19, alternate to subopposite, thick, coriaceous. Inflorescences axillary or terminal racemes, 2-many flowers. Bracts and bracteoles present, persistent or caducous. Flowers papilionaceous, blue, purple, blue-purple, violet, lavender or white. Calyx campanulate to gibbous, 5-lobed, with evident lobes (teeth), sometimes connate adaxially. Keel petals partly connate. Stamens 10, free or basally fused. Fruit stipitate, the body flattened to torulose cylindric, straight to curved, indehiscent, papery, leathery or woody, appressed-pubescent.

Dermatophyllum comprises six species, distributed from southwestern USA (Arizona, New Mexico, and Texas) to Mexico (from Chihuahua to Tamaulipas, extending to Hidalgo, Querétaro, Puebla, Veracruz, and Oaxaca).

The genus *Dermatophyllum* was segregated from the larger paraphyletic genus *Sophora*, based on woody habit, leaflet texture (coriaceous), flower color (blue, violet, or white flowers), evident calyx teeth, and fruit shape (flattened to terete); ecologically, discriminated by its geographically restricted distribution [61]. The most striking morphological differences to recognize *Dermatophyllum* from *Styphnolobium* are its leaflets lacking stipels; the calyx is not apically truncate, the banner petal is longer than the keel petals, and its fruit is dry. *Styphnolobium* has leaflets with stipels, a calyx apically truncate, the banner is shorter than the keel petals, and the fruit is fleshy.

Three species were recorded in the study area.

1A.	Fruit cylindrical, torulose and woody; leaflets mostly 3–7 cm long	***D. secundiflorum***
1B.	Fruits flattened, not woody; leaflets mostly 0.5–3 cm long	**2**
2A.	Leaves 4–6 cm long; corollas lavender, banner 1.4 cm long	***D. juanhintoniorum***
2B.	Leaves 3–4 cm long; corollas commonly white, banner 2 cm long	***D. purpusii***

Dermatophyllum juanhintonianum (B.L. Turner) B.L. Turner, Phytoneuron 2012-3: 1–4. 2012. Basionym: *Sophora juanhintoniana* B.L. Turner, Phytologia 76: 385. 1994.

Type: Mexico. Nuevo, León: Mpio. Aramberri, La Soledad, base of gypsum mounds, 1680 m, 26-III-1994, *G.B. Hinton* et al. *24053* (Holotype: TEX00371400! Isotypes: MEXU00627598! MEXU00627598!).

Distinguishing features: Low shrub, 0.4–1.2 m tall. Stems erect. Leaves 4–6 cm long. Petals lavender. Banner 1.4 cm long, apically retuse, fruit flattened, 6–8 × 1 cm, non-woody, indehiscent, weakly arcuate, appressed-pubescent. Seeds red.

Representative examined material: Nuevo León: 26-III-1994, *G.B. Hinton 24053* (CFNL).

Distribution: Endemic to the state of Nuevo León, in gypsum and calcareous soils, desert scrublands, 1680 m a.s.l.

Dermatophyllum purpusii (Brandegee) Vincent, Phytoneuron 2011-57: 3. 2011. Basionym: *Calia purpusii* (Brandegee) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21: 45. 1967. *Sophora purpusii* Brandegee, Zoe 5: 235. 1907.

Type: Mexico, Coahuila. Sierra de Parras, III-1905, *C.A. Purpus 1076* (Holotype: UC101753!. Isotypes: GH00063706! MO-126297! NY00026997! US00002968!).

Distinguishing features: Shrub. Leaves 3–4 cm long. Flowers 2 cm long. Calyx 1 cm long, sub-sericeous; the teeth 1 mm long, deltoid; the tube 9 mm long. Corolla white with purplish tones. Banner 2 cm long, longer than the wings and keel. Fruit flattened, 4–6 × 0.8–1 cm, indehiscent, somewhat torulose, non-woody, sericeous, glabrescent. Seeds 1–6.

Representative examined material: Coahuila: 25-VI-2015, *M.A. Carranza 4079*, *F. Meraz*, *A. Esquivel* (CFNL); III-1905, *C. A. Purpus 1076* (NY26997).

Distribution: Endemic to Mexico, in southern Coahuila (Sierra de Parras) and northern Zacatecas (Cedros), inhabiting desert scrublands, 1500–2100 m a.s.l.

Dermatophyllum secundiflorum (Ortega) Gandhi & Reveal, Phytoneuron 2011-57: 2. 2011. Basionym: *Agastianis secundiflora* (Ortega) Raf., New Fl. 3: 86. 1838. *Broussonetia secundiflora* Ortega, Nov. Pl. Descr. Dec.: 61. 1798. *Calia secundiflora* (Ortega) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21: 45. 1967. *Cladrastis secundiflora* (Ortega) Raf., Neogenyton: 1. 1825. *Sophora secundiflora* (Ortega) Lag. ex DC., Cat. Pl. Horti Monsp.: 148. 1813. *Virgilia secundiflora* (Ortega) Cav., Icon. 5: 1. 1799.

Type: Spain. Cultivated, Botanical Garden at Madrid "è seminibus missis per D. Sessé," M. Lagasca s.n. Lectotype G-DC, based on annotations by R. McVaugh, fide Rudd 1968). Lectotype designated by Gandhi, K.N., M.A. Vincent & J.L. Reveal. Phytoneuron 57: 1–4, 2011.

Distinguishing features: Shrub or small tree, up to 12 m tall. Leaves 6–15 cm long. Leaflets 7–11, 2–6.5 × 1–3.5 cm, subopposite or alternate, obovate to oblong, apically obtuse or retuse, coriaceous. Flowers 2–3 cm long, fragrant. Corolla blue to violet-blue. Banner longer than the other petals. Fruit 3–13 × 1–2 cm, cylindrical, usually torulose, woody, coriaceous, indehiscent, sericeous, sometimes glabrescent. Seeds 1–6 red, sometimes yellow.

Representative examined material: Coahuila: 4-VIII-1973, *J. Henrkickso*, *T. Wendt 11879* (MEXU);11-VIII-1995, *M.A. Carranza*, *J. Encina*, *C-2383* (ANSM, MEXU). Nuevo León: 19-III-1982, *R.E. Silva s.n.* (CFNL); 1-IV-2005, *E. Estrada 19512* (CFNL); 20-VI-2006, *E. Estrada 19871* (CFNL); 22-VIII-1999, *E. Estrada 11052* (CFNL); 6-VII-2001, *E. Estrada 12954* (CFNL); 9-IV-2001, *E. Estrada* et al. *12048* (CFNL); 15-V-2003, *E. Estrada 15622* (CFNL); 9-XI-2002, *E. Estrada 15186* (CFNL); 15-V-2003, *E. Estrada 15622* (CFNL); 22-III-2003, *E. Estrada 15309* (CFNL); 7-III-2003, *E. Estrada 15282* (CFNL); 2-III-2003, *E. Estrada 15220* (CFNL). Tamaulipas: 10-VIII-2008, *L. García 17* (CFNL); 7-II-1998, *M. Martínez 4006* (MEXU); 25-VIII-1983, *J.L. Villaseñor 511* (MEXU).

Distribution: From southwestern USA (New Mexico and Texas) to southern Mexico (from Chihuahua and Nuevo León to Veracruz), in low plains and slopes, mountains, desert scrublands, oak, oak-pine, and conifer forest, 300–1900 m a.s.l.

Myrospermum Jacq., Enum. Syst. Pl.: 4. 1760. *Calusia* Bertero ex Steud., Nomencl. Bot., ed. 2, 1: 262. 1840.

Type: *Myrospermum frutescens* Jacq., Enum. Syst. Pl.: 20. 1760.

Trees or shrubs, up to 15 m tall, balsamiferous. Stipules minute or absent. Leaves imparipinnate, up to 24 cm long. Leaflets 10–25, subopposite to alternate, oblong to elliptic, rounded, obtuse to retuse apically, with pellucid linear balsam glands, glabrous or puberulent. Stipels present or absent. Inflorescences axillary and terminal racemes. Pedicels 3–7 mm long. Bracts deltoid, 1–2 mm long. Bracteoles like bracts. Flowers papilionaceous, white, sometimes with purple, pink, green or yellow tones. Calyx campanulate, subglabrous to silvery pubescent, 5-toothed, the teeth subequal, green or with purple tints at the margin. Petals clawed. Banner twice as wide as the wings and keel, pubescent at the apex. Stamens 10, free, anthers similar. Ovary pubescent at least basally. Style glabrous, stigma sub-capitate, terminal, penicillate. Fruit samara-like, flattened, narrowly winged on both adaxial and abaxial margins or apically winged, indehiscent; Seeds 1–4, elliptical to reniform.

Genus of two species [38], distributed from central Mexico to Central America, South America (Venezuela and Colombia) and the West Indies. In northeastern Mexico, one species.

Myrospermum sousanum A. Delgado & M.C. Johnst., Syst. Bot. 9: 356. 1984.

Type: Mexico, Nuevo León, Municipio of Bustamante, mountains west of Bustamante, spring 1982, *L. Lowrey*, *R. Jordan and E. Dodd s.n.* (Holotype: TEX00371362! Isotypes: K000478415! MEXU00500000! MEXU00702413!).

Distinguishing features: Tree 2–14 m tall. Leaves 12–24 cm long. Leaflets 12–25, elliptic to obovate, each with a pellucid gland at the apex, chartaceous. Corolla 2 cm long, white, with a cinnamon fragrance. Fruit stipitate, the stipe 0.8–1.2 cm long, the body 7.5–12 × 2.2–2.5 cm, oblong, flattened, narrowly winged on both margins, stramineous or dark brown, valves coriaceous, reticulate-veined, with balsamic glands, usually 1–4 seeded. Seeds brown.

Representative examined material: Nuevo León: 14-IV-2001, *E. Estrada* et al. *12156* (CFNL); 7-VII-2001, *E. Estrada 13003*, *C. Yen* (CFNL); IV-1983, *L. Lwrey*, *R. Jordan n.n.* (CFNL); 6-VII-2001, *E. Estrada 12964* (CFNL); 19-VI-2001, *J.A. Villarreal 9167*, *M. A. Carranza*, *J. A. Encina* (CFNL); 3-IV-2009, *E. Estrada* et al., *20741* (CFNL).

Distribution: Endemic to the state of Nuevo León, in small, separate populations in the mountains of the state, associated with piedmont scrub and transitions with oak forest, in humid and protected canyons, open plains with runoff, 380–1000 m a.s.l.

Sophora L., Sp. Pl.: 373. 1753. *Ammothamnus* Bunge, Reliq. Bot.: 67. 1847. Cep*halostigmaton* (Yakovlev) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21: 47. 1967. *Echinosophora* Nakai, Bot. Mag. (Tokyo) 37: 33. 1923. *Edwardsia* Salisb., Trans. Linn. Soc. London 9: 298. 1808. *Goebelia* Bunge ex Boiss., Fl. Orient. 2: 628. 1872. *Keyserlingia* Bunge ex Boiss., Fl. Orient. 2: 629. 1872. *Patrinia* Raf., J. Phys. Chim. Hist. Nat. Arts 89: 97. 1819. nom. illeg. *Pseudosophora* (DC.) Sweet, Hort. Brit., ed. 2: 122 (1830) nom. superfl. *Radiusia* Rchb., Consp. Regn. Veg.: 148. 1828. *Vexibia* Raf., Neogenyton: 3. 1825. *Vibexia* Raf., Atlantic J. 1: 144. 1832. *Zanthyrsis* Raf., New Fl. 3: 84. 1838.

Type: Lectotype: *Sophora alopecuroides* L. (Britton & Brown, Ill. Fl. N. U. S. ed. 2, 2: 342. 1913) "Oriente".

Herbaceous perennials, shrubs or trees, unarmed. Stems erect. Stipules present. Leaves imparipinnate. Leaflets 7–50, opposite, subopposite to alternate, glabrate, pubescent or densely so. Inflorescences in axillary or terminal racemes or panicles. Bracts present, caducous. Bracteoles present, caducous or absent. Flowers papilionaceous. Calyx campanulate, sometimes gibbous, 5-toothed, the teeth subequal, acute or truncate, the adaxial pair commonly partially fused. Corolla white, whitish, creamy-white, yellow or purple. Keel petals partially connate. Stamens 10, free or basally connate. Style linear. Fruit sessile or short stipitate, cylindric but compressed, torulose, moniliform-oblong or fusiform, dehiscent. Seeds 1–15 light brown to yellow, globose to sub-globose.

Genus of almost 50 species [39] distributed around the world, in the Americas from the USA to South America, the West Indies, Africa, Australia, Eurasia, and the Pacific Islands.

Sophora is easily recognized morphologically from *Dermatophyllum* and *Styphnolobium* by its flowers without bracteoles and its dehiscent fruits.

1A.	Herbs up to 0.6 m tall; leaflets 0.3–1.5 × 0.2–1 cm; inflorescences 6–35-flowered; flowers white	***S. nuttalliana***
1B.	Shrubs 0.6–3 m tall; leaflets 2–5 × 1–3.5 cm; inflorescences 35–70-flowered; flowers white to yellow	***S. tomentosa***

Sophora nuttalliana B.L. Turner, Field & Lab. 24(2): title page verso [42]. 1956. Basionym: *Patrinia sericea* Raf., J. Phys. Chim. Hist. Nat. Arts 89: 97. 1819. *Pseudosophora sericea* (Raf.) Sweet, Hort. Brit., ed. 2: 122. 1830. *Radiusia sericea* (Raf.) Heynh., Nom. Bot. Hort.: 582. 1841. *Sophora sericea* Nutt., Gen. N. Amer. Pl. [Nuttall]. 1: 280. 1818 nom. illeg. *Vexibia nuttalliana* (B.L.Turner) Yakovlev, Bot. Zhurn. (Moscow & Leningrad) 57(6): 592. 1972. *Vexibia sericea* (Raf.) Raf., Atlantic J. 144. 1832.

Type: USA, Nebraska, Platte River, *T. Nuttall s.n.* (Holotype: K001051583!).

Distinguishing features: Herb, perennial, 10–80 cm high. Leaflets 7–23, 0.3–1.5 × 0.2–1 cm, elliptic or ovate, white sericeous; inflorescences 5–35-flowered. Corolla whitish, sometimes with purple tones. Fruit 3–7 × 0.5–1 cm, terete, torulose, firmly papery, stramineous, sericeous or glabrescent, dehiscent. Seeds 1–6, ellipsoid, yellowish to light brown.

Representative examined material: Nuevo León: 15-V-2003, *E. Estrada 15621* (CFNL); 10-V-2003, *E. Estrada 15583* (CFNL); 25-IV-1001, *E. Estrada 2022* (CFNL).

Distribution: From northern USA (South Dakota and Wyoming to Arizona and Texas) to northern Mexico. In calcareous, gypsum and limestone soils, in open calcareous grasslands, conifer forest, abandoned cultivated areas, roadsides and disturbed areas, 1800–3400 m a.s.l.

Sophora tomentosa L. Sp. Pl.: 373. 1753. subsp. ***occidentalis*** Kirkia 5(2): 265–266. 1966. Basionym: *Sophora havanensis* Jacq. Enum. Syst. Pl.: 20. 1760. *Sophora occidentalis* L., Syst. Nat., ed. 10. 2: 1015. 1759. *Sophora polyphylla* Urb., Symb. Antill. 9: 447. 1928. *Sophora tomentosa* f. *longiflora* Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 54. 1967. *Sophora tomentosa* f. *polyphylla* (Urb.) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 55. 1967. *Sophora tomentosa* subsp. *havanensis* (Jacq.) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 54. 1967. *Sophora tomentosa* subsp. *longiflora* Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 55. 1967. *Sophora tomentosa* subsp. *polyphylla* (Urb.) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 17: 66. 1964. *Sophora tomentosa* var. *occidentalis* (L.) Isely, Brittonia 30: 471. 1978.

Type: "Habitat in America". Sp. Pl., ed. 2, 1: 533. 1762. RCN: 2394. Lectotype: Browne, Herb. Linn No. 522.6 (LINN). Lectotype designated by Dillon in Woodson & Schery, Ann. Missouri Bot. Gard. 67: 766. 1980. **Distinguishing features:** Shrub, to about 3 m high. Leaflets 11–21, 2–5 × 1–3.5 cm, oblong, ovate, obovate to suborbicular. Inflorescences 35–70-flowered. Corolla white to yellow. Fruit 5–17 × 0.5–1 cm, cylindrical, torulose to moniliform, sub-coriaceous, dehiscent, tomentulose. Seeds 1–15, light brown.

Representative examined material: Tamaulipas: 13-IX-1981, *P.A. Fryxell 3654* (MEXU); 5-X-2008, *E. Martínez S.*, *A. Ibarra* 40745 (MEXU); 25-VII-1984, *D. Baro*, *R. Fuentes*, *J. Gómez*, *M. Navarro 345* (MEXU); VI-1964, *F. González-Medrano 717* (MEXU).

Distribution: Species with worldwide distribution, in tropical and subtropical seashores [39,62]. USA (coast of Texas adjacent to the Mexican political border), Mexico (Tamaulipas), South America, Africa, Asia, and Australasia. In the study area recorded only on the coast of Tamaulipas. In vegetation adjacent to coastal dunes, 0–150 m a.s.l.

Styphnolobium Schott, Wiener Z. Kunst. 3: 844. 1830. *Sophora* secc. *Styphnolobium* (Schott) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 17: 56. 1964. Late homonym: Tsoong, Acta Phytotax. Sin., 19(2): 161. 1981.

Type: *Styphnolobium japonicum* (L.) Schott., Wiener Z. Kunst 3: 844. 1829.

Trees. Bark smooth, fissured to scaly, with metallic tones. The branches appear to be whorled. Stipules present. Leaves pinnate, imparipinnate: leaflets opposite or alternate. Stipels present. Inflorescences in axillary racemes, rarely terminal and in panicles. Pedicels basally articulated, subtended by a sub-amplexicaule bract. Bracteoles 2. Calyx campanulate to urceolate, lobed to truncate, sometimes gibbous. Corolla papilionaceous, zygomorphic, pink to whitish. Banner unguiculate, suborbicular, reflexed, maculate. Wings symmetrical or asymmetrical. Keel petals free and widely overlapping. Stamens free. Anthers similar. Ovary glabrous or pubescent. Style glabrous. Stigma terminal. Fruit indehiscent, pendulous, frequently stipitate, succulent, moniliform to torulose, leathery, fleshy and mucilaginous internally. Seeds elliptic to oblong, smooth, blackish to black.

Genus of nine species mostly distributed in Mexico and Central America [40]. *Styphnolobium* is described by Schott [63] from *Sophora japonica* L. and is recognized as such

by Bentham [64]. Yakovlev [65] includes *Styphnolobium* as a section within *Sophora*, which is recognized as such by [66]. Tsoong & Ma [67] recognize *Styphnolobium* as a subgenus within *Sophora*. Yakovlev [65] recognizes the genus *Calia* Terán & Berlandier, which is now a synonym of *Dermatophyllum* [40]. The most striking morphological differences to recognize *Styphnolobium* from *Dermatophyllum* are the leaflets; where *Styphnolobium* has stipels, its calyx is apically truncate, the banner is shorter than the keel petals, and the fruit is fleshy. In *Dermatophyllum,* the leaflets lack stipels, the calyx is not apically truncate, the banner petal is longer than the keel petals, and its fruit is dry.

Styphnolobium affine (Torr. & A. Gray) Walp., Repert. Bot. Syst. 1: 807. 1843. Basionym: *Sophora affinis* Torr. & A. Gray, Fl. N. Amer. 1: 390. 1840.

Type: USA, Louisiana, Red River, M.C. Lavernworth s.n. (Lectotype: NY00026983!). Lectotype designated by Rudd. N. Amer. Fl. Ser. 2, 7: 1–53. 1972.

Distinguishing features: Shrub or small tree 3–8 m tall. Leaflets 13–17, with stipels. Calyx urceolate-campanulate, truncate or almost so, the teeth 1 mm long. Corolla white-pinkish or dull white-purple. Fruit stipitate, the body 1.5–6 cm long, ovate to oblong, subterete, moniliform, the segments separated by narrow portions or elongate sterile intervals, the valves fleshy and woody with age. Seeds, 1–6, dark.

Representative examined material: Nuevo León: 26-VII-1985, *S. Ginzbarg*, *A. Whittemore*, *A. McDonald 238* (MEXU).

Distribution: From southern USA (Texas, Oklahoma, Arkansas, and Louisiana) to northeastern Mexico. Rare in our area, with only one collection reported for the state of Nuevo León, in burned areas with oak forest, 1800–2000 m.

Tribe Trifolieae Endl, Fl. Poson 452. 1830. Subtribus Trifoliinae Bronn, 1822. Form. Pl. Legumin.: 127. 132.

Herbaceous, annual or perennial. Stems prostrate, creeping, erect to procumbent. Leaves alternate, pinnate or palmate 3-foliolate. Stipules fused to the petiole, margin entire or denticulate. Inflorescences axillary subterminal, in capitula-like or spicate racemes. Bracts commonly present. Calyx campanulate, the teeth unequal. Corolla papilionaceous, white, purple or yellow. Stamens monadelphous or diadelphous. Ovules 1-several. Fruit straight, falcate, spiral coiled, cochleate, reniform, ovate, cylindrical or sub-globose, dehiscent or indehiscent.

The tribe Trifolieae comprises 6 genera and almost 485 species [15], distributed mainly in temperate regions of the northern hemisphere of the Old World.

In northeastern Mexico, there are three genera and 10 species.

1A.	Fruit generally spirally coiled, armed with spines or unarmed	***Medicago***
1B.	Fruit not spirally coiled, unarmed	2
2A.	Leaves palmate-3-foliolate; inflorescences in compact racemes or umbellate	***Trifolium***
2B.	Leaves pinnate-3-foliolate; inflorescences in spike-like racemes	***Melilotus***

Medicago L. Sp. Pl. [Linnaeus] 2: 778. 1753. *Cochleata* Medik., Vorles. Churpfälz. Phys.-Ökon. Ges. 2: 385. 1787. *Crimaea* Vassilcz., Novosti Sist. Vyssh. Rast. 16: 131. 1979. *Diploprion* Viv., Fl. Libyc. Spec.: 48. 1824. *Factorovskya* Eig, Bull. Inst. Agric. Nat. Hist. Tel-Aviv 6: 11. 1927. *Kamiella* Vassilcz., Novosti Sist. Vyssh. Rast. 16: 134. 1979. *Lupularia* (Serg.) Opiz, Seznam: 61. 1852. nom. superfl. *Lupulina* Noulet, Fl. Bass. Sous-Pyrén.: 156. 1837. nom. illeg. *Medica* Mill., Gard. Dict. Abr., ed. 4.: [s.p.]. 1754. *Nephromedia* Kostel., Ind. Hort. Bot. Prag.: 92. 1844. *Rhodusia* Vassilcz., Novosti Sist. Vyssh. Rast. 9: 204. 1972. *Spirocarpus* Opiz, Seznam: 93. 1852. *Trifillium* Medik., Vorles. Churpfälz. Phys.-Ökon., Ges. 2: 383. 1787. *Turukhania* Vassilcz., Novosti Sist. Vyssh. Rast. 16: 132. 1979.

Type: *Medicago sativa* L., Sp. Pl.: 778. 1753.

Herbaceous, annual or perennial, or shrub. Stipules commonly fused to the petiole, toothed or entire. Leaves 3-foliolate. Leaflets cuneate, obovate or orbicular with the lateral veins prolonged like small teeth. Inflorescences in axillary racemes, spiked racemes or axillary heads. Bracts small or absent. Flowers papilionaceous, small, yellow or blue to purple. Calyx campanulate, 5-toothed, teeth equal or subequal to each other. Petals 5. Banner obovate or oblong, subsessile. Wings oblong. Keel obtuse, shorter than the wings. Stamens 10, diadelphous. Ovary sessile or sub-stipitate. Ovules 1-numerous. Style glabrous. Fruit arched or spirally coiled, indehiscent, spiny on the margins or unarmed.

Genus of 83 species [15], widely distributed around the world. Some species have been introduced for cultivation in temperate regions of the Americas [7].

1A.	Flowers purple to violet	***M. sativa***
1B.	Flowers yellow	2
2A.	Fruit without spines, slightly curved; seed 1	***M. lupulina***
2B.	Fruit armed with spines, spirally coiled; seeds several	***M. polymorpha***

Medicago lupulina L., Sp. Pl.: 779. 1753. Basionym: *Medicula lupulina* (L.) Medik., Vorles. Churpfälz. Phys.-Ökon. Ges. 2: 386. 1787. *Melilotus lupulinus* (L.) Trautv., Bull. Sci. Acad. Imp. Sci. Saint-Pétersbourg 8: 271. 1841 nom. illeg. *Trifolium lupulinum* (L.) Savi, Fl. Pis. 2: 171. 1798.

Type: Europe. Habitat in Europe e pratis. Herb. Linn. No. 933.10. Lectotype designated by Ali, Taxon 17: 540. 1968:

Distinguishing features: Herbaceous, annual. Leaflets obovate, denticulate at the edges in the distal midportion. Inflorescences in ovoid, compact, axillary racemes, 5–10 mm long. Flowers yellow. Fruits curled or curved, 2.0–2.4 × 3.5 mm, brown or blackish, somewhat hairy, reticulate. Seed 1.

Representative examined material: Coahuila: 3-VI-2001, *E. Estrada 12629* (CFNL, MEXU); 13-VIII-1993, *M.A. Carranza*, *J. Encina*, *R. González 1643* (ANSM, MEXU). Nuevo León: 9-VI-1987, *E Estrada 942* (CFNL, MEXU); 10-VIII-1982, *R. Torres C.*, *J. López*, *O. Oropeza*, *R. Sánchez 1057* (MEXU); 12-IV-2003, *E. Estrada 15511*, *C. Yen* (CFNL); 4-VI-1989, *Hinton* et al. *19465* (TEX-LL); 18-V-1989, *Hinton* et al. *19417* (TEX-LL); 10-V-2003, *E. Estrada 15593*, *C. Yen* (CFNL); *E. Estrada 15644*, *C. Yen* (CFNL); 2-III-2003, *E. Estrada 15258*, *C. Yen* (CFNL); 8-VI-2003, *E. Estrada 15717*, *C. Yen* (CFNL); 12-IV-2003, *E. Estrada 15481*, *C. Yen* (CFNL). 4-IV-2003; *E. Estrada 15458*, *C. Yen* (CFNL); 20-VI-1984, *J.A. Villarreal*, *M.A. Carranza y M. Vázquez 2829* (ANSM, CFNL, MEXU).

Distribution: Native to Eurasia. Widely distributed around the world; introduced. In northeastern Mexico, in plains and mountains, desert scrublands, oak, oak-pine, conifer forest, abandoned crop fields, roadside, and disturbed areas, 100–3000 m.

Medicago polymorpha L. Sp. Pl.: 779, 1200. 1753. Basionym: *Medica polymorpha* (L.) Scop., Fl. Carniol., ed. 2, 2: 89. 1771. *Medicago denticulata* subsp. *polymorpha* (L.) Pit. & Proust, Iles Canaries: 158. 1909. nom. superfl. *Medicago hispida* subsp. *polymorpha* (L.) Rouy, Fl. France 5: 36. 1899 nom. illeg. *Medicago polycarpa* subsp. *polymorpha* (L.) Cadevall & Sallent, Fl. Catalunya 2: 85. 1919.

Type: Lectotype: designated by Heyn in Bull. Res. Council Israel, Sect. D. Bot. 7: 163. 1959 Herb. Clifford: 378, *Medicago* 11 δ (BM-000646786).

Distinguishing features: Herbaceous, annual. Leaflets obovate, denticulate on the margin, with marked reticulations, 1–1.7 × 0.6–0.8 cm. Inflorescences resembling lax umbels, 2–4 cm long. Flowers yellow. Fruit twisted 2–3 times, with hooked spines or spines on the margin. Seeds several.

Representative examined material: Nuevo León: 20-IV-2002, *E. Estrada 14579* (CFNL, MEXU); 29-IV-1949, *R.T. Clausen 7626* (MEXU).

Distribution: Native to Europe, Africa, and Asia, introduced to the Americas, Pacific Islands, Australia, and New Zealand. In the study area, recorded in desert scrublands, roadside, and private gardens. Easily recognized by its fruits with spines on their margins.

Medicago sativa subsp. ***sativa*** L., Sp. Pl.: 778. 1753. Basionym: *Medica sativa* (L.) Mill., Gard. Dict., ed. 8.: n.° 1. 1768. *Medica sativa* Lam., Fl. Franç. (Lamarck) 2: 584. 1779. *Medicago sativa* var. *vulgaris* Alef., Comp. Fl. Ital.: 160 (1882) nom. inval. *Medicago vera* Kirschl., Fl. Vogéso-Rhén. 1: 122 (1870) nom. illeg.

Type: "Habitat in Hispaniae, Galliae apricis". RCN: 5716. Lectotype (Heyn in Bull. Res. Council Israel, Sect. D. Bot. 7: 162. 1959: [icon] "Medica falcata sativa siliqua cornuta magis tortilla flore violaceo" in Morison, Pl. Hist. Univ. 2: 158 s. 2, t. 16, f. 2. 1680.

Distinguishing features: Herbaceous, perennial. Leaflets 2–3 × 1–1.6 cm, denticulate in the middle portion or at the apex. Inflorescences in axillary racemes. Flowers purple or violet. Fruit 0.7–1.5 cm, curved ovoid or cylindrical, spirally coiled, 1–5 coils.

Known as "alfalfa" and cultivated as forage in Mexico and many countries of the world.

Representative examined material: Coahuila: 5-XI-1996, *C.E. Zermeño 14073* (MEXU0); 11-VI-1968, *D. Pinkava 5375* (ASU0023769!); 21-X-1981, *J.A. Villarreal s.n.* (ANSM, CHAP6554). Nuevo León: 16-VI-1987, *E. Estrada 1212* (CFNL, MEXU); 14-XI-2001, *E. Estrada 13262* (CFNL, MEXU).

Distribution: Native to Europe, Asia, and northern Africa [68], introduced to the Americas, the Pacific Islands, and Australia [68]. Common in disturbed areas, abandoned cultivated areas, along roadsides, 210–2300 m.

Melilotus (L.) Mill., Gard. Dict. Abr., ed. 4. [876]. 1754. *Brachylobus* Dulac in Fl. Hautes-Pyrénées: 279. 1867. *Melilota* Medik. in Vorles. Churpfälz. Phys.-Ökon. Ges. 2: 382. 1787. *Sertula* L. ex Kuntze in Revis. Gen. Pl. 1: 205. 1891.

Type: *Melilotus officinalis* (L.) Pall., Reise Russ. Reich. 3: 537. 1776.

Herbaceous, annual or biennial. Stems erect, glabrous or almost so. Stipules partially attached to the base of the petiole. Leaves 3-foliolate. Leaflets obovate or oblanceolate, denticulate in the distal margin. Inflorescences in axillary spike-like racemes, several centimeters long and many-flowered. Flowers yellow or white, small, papilionaceous. Calyx campanulate, the teeth lanceolate to subulate of the same size. Banner obovate or oblong, subsessile. Wings oblong. Keel obtuse, shorter than the wings. Stamens 10, diadelphous. Ovary sessile or stipitate, few-ovuled. Fruit small, sub-globose to ovoid, longer than the calyx, straight, indehiscent, usually monospermous.

Genus represented by approximately 18–20 species [69], mainly in Europe (the Mediterranean area), subtropical Asia, and North Africa. Two species are recorded in northeastern Mexico, both introduced, and used as forage and as honey plants.

1A. Flowers white; fruits 3.5 × 1.6–2 mm ***M. albus***
1B. Flowers yellow; fruits 1.1 × 1.4 mm ***M. indicus***

Melilotus albus Medik., Vorles. Churpfälz. Phys.-Ökon. Ges. 2. 382. 1787. Basionym: *Melilotus officinalis* subsp. *albus* (Medik.) H. Ohashi & Tateishi, Sci. Rep. Tohoku Imp. Univ., Ser. 4, Biol. 38: 319. 1984. nom. illeg. *Sertula alba* (Medik.) Kuntze, Revis. Gen. Pl. 1: 205. 1891. *Trifolium album* (Medik.) Loisel., Fl. Gall.: 479. 1807. *Trifolium melilotus* Georgi, Bemerk. Reise Russ. Reich 1: 227. 1775. *Trigonella alba* (Medik.) Coulot & Rabaute, Bull. Soc. Bot. Centre-Ouest. Numéro Spécial 40: 631. 2013.

Type: Not found, not seen. No type information cited.

Distinguishing features: Herbaceous, annual or biennial. Leaves 2.5–4 cm long. Leaflets denticulate medially and distally, sometimes almost to the base. Flowers

white. Fruit 3.5–4 × 1.6–2 mm, ovoid, glabrous, irregularly reticulate, reflexed, with a persistent style.

Representative examined material: Coahuila: 11-VI-1968, *E. Letho 5367* (ASU0024182); 28-IX-1976, *T. Wendt 1799* (ASU0024184). Nuevo León: 31-X-1980, *Hinton 18073* (MEXU); 28-V-1987, *E. Estrada 1002* (CFNL); 10-VIII-1989, *E. Estrada 1643* (CFNL, TEX-LL); 1-X-2004, *E. Estrada 19069*, *C. Yen* (CFNL, MEXU) VII-2003, *Hinton 19480* (MEXU); 2-VII-2000, *E. Estrada 11596* (CFNL); 2-X-2004, *E. Estrada* et al. *18971* (CFNL); 2-X-2004, *E. Estrada* et al. *18982* (CFNL); 3-VII-1989, *G.B. Hinton 19480* (MEXU); 1-X-2004, *E. Estrada 19069*, *C. Yen* (CFNL, MEXU).

Distribution: Native to Europe and western Asia. Introduced to the Americas, Australia, and Africa. In our area, widely distributed in low and high plains and mountains, in desert scrublands, along roadsides, frequent in cultivated fields, disturbed places, halophytic communities, gypsophilous grasslands, oak, and oak-pine forest, 100–2500 m.

Melilotus indicus (L.) All., Fl. Pedem. 1: 308. 1785. Basionym: *Sertula indica* (L.) Kuntze, Revis. Gen. Pl. 1: 205. 1891. *Trifolium indicum* L., Sp. Pl.: 765. 1753.

Type: China: Hubei: Ximen, 1500 m, 1/6-VI-1905, *Silvestri 1155* (Holotype not found; isotype: FI, not seen).

Distinguishing features: Herbaceous, aromatic. Leaves 1–3 cm long. Leaflets denticulate in the distal half. Flowers yellow. Fruit 1.1–1.4 mm long, ovoid, striated, glabrous. Seed 1.

Representative examined material: Coahuila: 14-V-1981, *M.A. Carranza 1192* (ANSM); 3-IV-1969, *D. J. Pinkava 5864* (ASU0024198). Nuevo León: 13-V-1986, *E. Estrada 424* (CFNL, MEXU); 11-XII-2001, *E. Estrada 15299*, *C. Yen* (CFNL); 28-VII-1987, *E. Estrada 1003* (CFNL); 9-V-2001, *E. Estrada 12575* (CFNL); 8-VIII-1936, *M.T. Edwards 113* (MEXU). 5-IV-1999, *E. Estrada 10094*, *C. Yen* (CFNL); 13-V-1986, *E. Estrada 424* (CFNL, MEXU); 24-III-1987, *E. Estrada 787* (CFNL, MEXU). 22-V-2004, *E. Estrada* et al. *16069*, *16086* (CFNL).

Distribution: Native to Africa, Europe, and Asia, widely introduced in many countries. Frequently in disturbed areas, abandoned crop fields, roadsides, inhabiting desert scrublands, grasslands, and oak-pine forest, 100–2700 m a.s.l.

Trifolium L. Sp. Pl. 2: 764. 1753. *Amarenus* C. Presl, Symb. Bot. (Pragae) 1: 46. 1831. *Amoria* C. Presl, Symb. Bot. (Pragae) 1: 45. 1831. *Bobrovia* A.P. Khokhr., Novosti Sist. Vyssh. Rast. 31: 137. 1998. nom. illeg. *Calycomorphum* C. Presl, Symb. Bot. (Pragae) 1: 50. 1831. *Chrysaspis* Desv., Fl. Anjou: 338. 1827. *Dactiphyllon* Raf., Amer. Monthly Mag. & Crit. Rev. 2: 268. 1818. *Falcatula* Brot., Phytogr. Lusitan. Select. 1: 160. 1816 publ. 1817. *Galearia* C. Presl, Symb. Bot. (Presl) 1: 49. 1831. nom. rej. *Galearia* Zoll. & Moritzi, Symb. Bot. (Pragae) 1: 49. 1831. nom. rej. *Lagopus* Bernh., Syst. Verz. Erf.: 229. 1800. nom. illeg. *Lagopus* Hill, Brit. Herb.: 306. 1756. *Lojaconoa* Bobrov, Bot. Zhurn. (Moscow & Leningrad) 52: 1598. 1967. *Loxospermum* Hochst., Flora 29: 594. 1846. *Lupinaster* Fabr., Enum. Meth. Pl.: 171. 1759. *Micrantheum* C. Presl, Symb. Bot. (Pragae) 1: 47. 1831. nom. illeg. *Microphyton* Fourr., Ann. Soc. Linn. Lyon, n.s., 16: 362. 1868. *Mistyllus* C. Presl, Symb. Bot. (Pragae) 1: 49. 1831. *Ochreata* (Lojac.) Bobrov, Bot. Zhurn. (Moscow & Leningrad) 52: 1598. 1967. *Paramesus* C. Presl, Symb. Bot. (Pragae) 1: 45. 1831. *Pentaphyllon* Pers., Syn. Pl. 2: 352. 1807. *Triphylloides* Moench, Methodus: 509. 1794. *Ursia* Vassilcz., Novosti Sist. Vyssh. Rast. 16: 133. 1979. *Ursifolium* Doweld, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 108(4): 78. 2003. *Xerosphaera* Soják, Čas. Nár. Mus., Odd. Přír. 154: 35. 1985 publ. 1986.

Type: *Trifolium repens* L. Lectotype: designated by W. Fawcett & A.B. Rendle, *Flora of Jamaica* 4: 13. 1920. (LINN-HL930-16).

Herbaceous, annual or perennial. Stems erect or procumbent, sometimes creeping. Stipules partially or completely connate to the petiole, entire or toothed. Leaves digitate-3-foliolate. Leaflets obovate or orbicular with denticulate or serrulate edges distally, veins

reaching the margin. Inflorescences axillary or terminal, in spikes, heads or umbels. Bracts present or absent, free or connate, toothed or lobed. Flowers white or purple, pink, lilac, violet, sometimes bicolor, pedicellate or sessile. Calyx tubular or campanulate, 5–10 or 20-veined, five-toothed, identical or different, the teeth entire or dentate, sometimes bilabiate. Corolla papilionaceous. Banner ovate or oblong, free or united at the base with the other petals or with the free stamen. Wings narrow. Keel shorter than the wings, obtuse. Stamens 10, diadelphous. Ovary sessile or stipitate with 1–9 ovules. Style filiform, curved above. Stigma capitate or hooked. Fruit ovoid, oblong to linear, indehiscent or sometimes opening by sutures, enclosed in the persistent calyx and sometimes also in the persistent corolla, rarely exerted, usually membranous. Seeds 1–2(-9), globular, ovoid to oblong, sometimes reniform or lenticular.

Genus with approximately 255 species [70], distributed in temperate and subtropical regions, mainly in temperate Eurasia (150 species) and North America (60), and also in Africa and South America [15].

1A.	Plants glabrous or almost so	2
1B.	Plants pubescent at least in the youngest parts	3
2A.	Plants creeping, with roots at the nodes; inflorescences not subtended by involucral bracts	***T. repens*** var. *repens*
2B.	Plants prostrate or decumbent, without roots at the nodes; inflorescences subtended by involucral bracts (10 or more), separate, entire or laciniate	***T. pinetorum***
3A.	Inflorescences in umbels ca. 1 cm diameter, 3–4-flowered	***T. schneideri***
3B.	Inflorescences in umbels 1–3.5 cm diameter, 8-more-flowered	4
4A.	Leaflets broadly obovate, as long as broad, retuse apically	***T. amabile*** var. ***hemsleyi***
4B.	Leaflets narrow ovate, 2–3 times as long as broad, rounded or acute apically	***T. amabile*** var. ***amabile***

Trifolium amabile Kunth, Nov. Gen. Sp. 6: 503. 1824 var. ***amabile***. Basionym: *Trifolium humboldtii* Spreng., Syst. Veg., ed. 16. 3: 213. 1826. *Trifolium lozani* House, Bot. Gaz. 41: 342. 1906. *Trifolium matthewsii* A. Gray, U.S. Expl. Exped., Phan. 1: 398. 1854. *Trifolium reflexum* var. *mexicanum* M. Martens & Galeotti, Bull. Acad. Roy. Sci. Bruxelles 10(2): 39. 1843. *Trifolium schiedeanum* S.Watson, Proc. Amer. Acad. Arts 17: 339. 1882.

Type: Mexico, Tolucca crescit pratis [Nov. gen. sp.: Crescit in pratis prope Toluccam (Regno Mexicano)], A.J.A. *Bonpland*, *F.W.H.A. von Humboldt*, *n.n.* (Holotype: P00659966!, image of the type in FOBN002017!).

Distinguishing features: Herbaceous, pubescent. Leaflets 0.7–1.8 cm long, ovate, mostly ovate, two or three times as long as broad, acute or rounded apically, denticulate with broad teeth marginally. Inflorescences 1–1.5 cm in diameter, globose, 10-many flowers, rachis prolonged beyond the flowers, Calyx 4–5 mm long, 10-veined, membranous, 5-toothed, the teeth 1–2.6 times longer than the tube.

Representative examined material: Nuevo León: 3-VI-2007, *E. Estrada 15697* (CFNL); 1-VI-1987, *E. Estrada 1091* (CFNL); 20-VIII-1975, *J.M. Gillett y A. Delgado 17092* (MEXU). 6-XII-1987, *E. Estrada 1059* (CFNL); 7-VI-2003, *E. Estrada 15697*, *15719*, *C. Yen* (CFNL); 8-VI-2003, *E. Estrada 15722*, *C. Yen* (CFNL); 25-X-2003, *E. Estrada 15841* (CFNL); 25-X-2003, *E. Estrada 15852* (CFNL); 25-X-2003, *E. Estrada 15869* (CFNL); 1-VI-1987, *E. Estrada 1091* (CFNL).

Distribution: Southwestern USA (Arizona), Mexico, Central America (Guatemala, Costa Rica, and Nicaragua), and South America (Colombia, Ecuador, Peru, Bolivia to Argentina). In the study área only found in Nuevo León, in oak and oak-pine forest, 1600–2200 m a.s.l.

Trifolium amabile Kunth var. ***hemsleyi*** (Lojac.) D.Heller & Zohary, Genus *Trifolium*: 127. 1984. Basionym: *Trifolium hemsleyi* Lojac., Nuovo Giorn. Bot. Ital. 15: 143. 1883. *Trifolium macrorrhizum* Ulbr., Repert. Spec. Nov. Regni Veg. 2: 2. 1906. nom. illeg.

Type: Mexico, chiefly in the region of San Luis Potosí. 6000–8000 ft., 1878, *C. C. Parry*, *E. Palmer 136* (Holotype: K000478380! Isotype: BM000901353!

Distinguishing features: Herbaceous, annual or biennial, pubescent. Like the previous variety, except that the leaflets of *T. hemselyi* are broadly obovate, as long as wide and apically retuse. Inflorescences in umbels, 1–3.5 cm diameter, 8-more-flowered.

Representative examined material: Coahuila: 25-VI-1987, *E. Estrada 1147* (CFNL).

Distribution: Widely distributed, from northern Mexico to South America (Peru, Ecuador, Bolivia, and Argentina). Rare in our area, recorded only in Coahuila, in conifer forest, 1800–2000 m a.s.l.

Trifolium pinetorum Greene, Erythea 2: 182. 1894. Basionym: *Trifolium longicaule* Wooton & Standl., Contr. U.S. Natl. Herb. 16: 141. 1913. *Trifolium triaristatum* f. *pinetorum* (Greene) McDermott, Ill. Key Amer. *Trifolium*: 60. 1910. *Trifolium willdenovii* var. *longicaule* (Wooton & Standl.) L.D. Benson, Leafl. W. Bot. 4: 209. 1945. *Trifolium wormskioldii* var. *longicaule* (Wooton & Standl.) L.D. Benson, Amer. J. Bot. 28: 363. 1941.

Type: USA, Pinos Altos Mountains, 15-IV-1880, E.L. Greene 372 (Lectotype: GH00013112!). Lectotype: designated by Gillett, Can. J. Bot. 58(13): 1440. 1980.

Distinguishing features: Herbaceous, glabrous. Leaflets linear-elliptic, elliptic to elliptic-obovate, with marked venation. Inflorescences in compact, globose umbels, 2–3.5 cm in diameter, 20–40-flowered, surrounded by an involucre of almost 10 bracts, lanceolate, irregularly toothed. Calyx 5-toothed. Corolla persistent. Fruit small, membranous, enclosed by the calyx.

Representative examined material: Coahuila: 9-VIII-2004, *D.H. Riskind*, *J. Valdés R.*, *J.S. Henrickson 23760* (TEX00447141). Nuevo León: 5-VIII-1936, *M. Taylor 64* (MEXU, TEX-LL).

Distribution: Southeastern USA (Arizona and New Mexico), extending to central Mexico. In the study area, recorded only on the farthest northern side of the state of Coahuila, at the Sierra Maderas del Carmen, in oak-conifer forest, 1700–1900 m a.s.l.

Trifolium repens L., Sp. Pl.: 767. 1753. subsp. ***repens***. Basionym: *Trifolium neglectum* Noë ex Nyman, Consp. Fl. Eur.: 178. 1878. *Trifolium luxurians* Steud., Nomencl. Bot., ed. 2, 2: 706. 1841. *Trifolium venulosum* Royle ex BakerFl. Brit. India 2: 86. 1876. *Trifolium nothum* Steven, Bull. Soc. Imp. Naturalistes Moscou 29(II): 137. 1856. *Trifolium album* Lam. Fl. Franç. 2: 603. 1779. *Trifolium anomalum* Schrank, Pl. Rar. Hort. Monac.: t. 47. 1819. *Trifolium Limonium* Phil., Linnaea 28: 679. 1858. *Trifolium stipitatum* Clos Fl. Chil. 2: 71. 1847. *Trifolium helveticum* Scheele, Flora 26: 440. 1843.

Type: Lectotype: Designated by Fawcett & Rendle in Fl. Jamaica 4: 13. 1920. Europe. Herb. Linn 930-16 (LINNs).

Distinguishing features: Herbaceous, perennial. Stems glabrate or almost so, creeping with roots at the nodes. Leaflets lanceolate, broad-elliptic to suborbicular. Inflorescences 1–2.5 cm diameter, in subspherical to globose umbels, not subtended by involucral bracts. Peduncles longer than leaves. Flowers white or with pink tones. Calyx 5-toothed, the teeth slightly shorter than the tube or almost as long. Corolla 2–3 times longer than the calyx.

Representative examined material: Nuevo León: 30-IV-1987, *J.A. Villarreal s.n.* (ANSM, CHAP17932); 20-VI-2002, *E. Estrada 14665* (CFNL, MEXU); 8-IV-2004, *E. Estrada 15975* (CFNL, MEXU); 8-IV-2004, *E. Estrada 15986* (CFNL).

Distribution: Europe (Mediterranean area), north and central Asia, and northern Africa. Widely naturalized in Mexico and Central America. In our area, in oak-conifer forest, riparian vegetation, along roadsides, forming dense colonies in humid areas, 1600–2200 m a.s.l.

Trifolium schneideri Standl., Publ. Field Mus. Nat. Hist., Bot. Ser. 22: 83. 1940.

Type: Mexico, Nuevo León, Municipio de Galeana, in cracks between rocks on an exposed alpine slope of Cerro Potosí, alt. 3750 m, 20-VII-1938 *R.A. Schneider 942* (Holotype in Herb. Field Muss. Not seen. Isotypes: ARIZ-BOT-0004057! ILL00007450! US00997114!).

Distinguishing features: Herbaceous, perennial. Stems up to 9 cm long. Leaflets 5–6 mm long, obovate, almost as long as wide, prominently veined. Inflorescences in axillary hemispherical umbels, 1 cm in diameter, 3–4-flowered, rachis short. Flowers pink. Calyx pubescent or hairy, the teeth triangular-subulate, 1–2 times as long as the tube. Corolla 5–6 mm long. Fruit 4 mm long, enclosed in the corolla. Like *T. amabile*, but smaller, and with fewer flowers per inflorescence.

Representative examined material: Nuevo León: 27-IV-2026, *E. Hernández*, *s.n.* (CFNL); 20-VII-1938, *Students Ariz. Univ. 942* (ARIZ67642!); 22-VIII-1986, *McDonald 2063* (TEX).

Distribution: Endemic to Nuevo León. Inhabiting the subalpine meadow on Cerro El Potosí, 3650 m a.s.l.

4. Discussion

4.1. Species and Genera Richness of the Tribes Under Study in Northeastern Mexico

Genera richness of tribes Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae in the study area is shown and compared with other regions in Table 4. The tribes within the subfamily Papilionoideae that have the highest genera richness in Mexico are Millettieae, Robinieae, and Sophoreae, the same pattern that is found around the globe. This can be interpreted as a consequence of the physiographic, altitudinal, and climatic ranges present in this area, because these tribes are mainly distributed in biomes with tropical, subtropical, and arid climates. In northeastern Mexico, the tribes with the highest number of genera are Desmodieae, Robinieae, and Sophoreae. It is interesting to note that within the tribe Desmodieae, the predominant genus is *Desmodium*, as it has almost all of the species of this tribe in the northeastern part of the country; because most of the genera of this tribe have tropical and subtropical affinities, they predominate in species richness in the tropical and subtropical areas of the region, essentially in the south of the state of Tamaulipas. All genera of the tribe Desmoideae recorded in Mexico are also found in northeastern Mexico, including *Grona*, an Asiatic non-native species [46] that reaches the southern part of the country. Of the 30 genera and nearly 300 species [5] that include the Desmodieae around the planet, 13% and 28% of them, respectively, are present in Mexico; *Desmodium* stands out for its richness in the country. Nearly 40% of all *Desmodium* species are distributed in Mexico, 12.5% of these species are found in the northeastern part of the country, and half of those are endemic to Mexico. Geographically, all *Lespedeza* species found in Mexico are distributed exclusively in northeastern Mexico [71], where the three recorded species represent only 6% of the genus's richness; in addition, they represent the southernmost distribution range of the genus in the Americas [72]. This distribution can be attributed to the climatic and physiographic affinities that the northeastern region of the country shares with the extreme southeast and middle east of the USA, where similar plant communities, such as oak–pine forests, can be found.

The Millettieae has a low number of genera in Mexico; only 6% of them are found in the country and the northeastern region has only 3% (*Lonchocarpus*, *Piscidia*, and *Tephrosia*). The northeastern region of Mexico has a small area of subtropical vegetation in the south of the state of Tamaulipas, consisting of low jungles and tropical forests. These are relatively homogeneous, which may have a significant effect on the scarce generic diversity of this tribe in the region, because most of its genera and species are preferentially inhabitants of tropical regions. Even though *Lonchocarpus* is one of the genera with almost 100 species in Mexico [50], in the northeast region it is poorly represented, with 2% of the species

and are distributed exclusively in subtropical areas in the southern region of the state of Tamaulipas. *Tephrosia* is another highly diversified genus in the world; more than 10% of the total species are found in Mexico, inhabiting mostly the ecosystems found south of the Tropic of Cancer. However, its richness dramatically decreases in the northeast region, where only 1.5% of the world species are found.

Table 4. Genera richness of tribes Desmodieae, Millettieae, Psoraleeae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae in the world, in Mexico, and northeastern Mexico. References are shown within brackets.

Tribe	Genera in the World	Genera in Mexico	% Genera in Mexico	Genera in NE Mexico	% Genera in NE Mexico
Desmodieae	30 [5]	4	13	4	13
Millettieae	45 [49]	6 [29]	13	3	6
Psoraleeae	9 [11]	3 [29]	30	2	22
Robinieae	11 [12]	8 [29]	81	5	45
Sesbanieae	1 [13]	1 [29]	100	1	100
Sophoreae	45 [14]	7 [29]	16	4	9
Trifolieae	6 [15]	3 [29]	50	3	50

Given the disjunct distribution of the members of the Psoraleeae tribe, only 30% of the genera of it are distributed in Mexico: *Orbexylum*, *Pedimoelum* and *Psoralidium*; only the first two reach northeastern Mexico and three (out of six) reach their distribution as far as the study area. The three genera mainly inhabit elevations above 1600 m, in the arid and cool climates of the region, like other genera and species of the tribe.

Robineae could be considered a Mexican tribe, because all eleven genera are found in the country [12]. A total of 42% of these genera extend their distribution to northeastern Mexico and include 32% of the species recorded for the country. This high diversity of genera and species occurs in part because most of them have affinities for semi-arid climates, dominated by desert scrubland, as is the case for *Genistidium*, *Coursetia*, and *Peteria*. Two genera stand out in this tribe: *Peteria* and *Genistidium*. Half of the *Peteria* species are distributed in northeastern Mexico, inhabiting soils with specific characteristics, particularly those that have high calcium carbonate and gypsum content. *Genistidium dumosum*, on the other hand, is a relatively rare species not only in northern Mexico but also throughout the country, with few records in arid zones and found in a limited number of desert habitats. *Peteria* and *Genistidium* are two of the genera of this tribe whose species are found in areas whose impact is manifestly a clear deterioration of the landscape due to direct and indirect anthropogenic impact; the populations are relatively close to human settlements, there is a presence of various types of domestic livestock, and there is poaching of cacti that causes a strong disturbance in these areas.

The tribe Sesbanieae, with its single genus *Sesbania*, is represented in northeastern Mexico by 2–3% of the total species. Its diversity is slightly higher in the southern part of the country, where three species are found. The distribution of *Sesbania* species in the region is similar to that of the rest of the taxa; one of them is frequent in riparian communities (*S. drummondii*) and the other inhabits secondary vegetation communities adjacent to water sources (*S. herbacea*), both in arid and semi-arid climates, but always close to bodies of water.

The tribe Sophoreae is represented by 45 genera worldwide [14]. Nine percent of these genera (7) are found in Mexico and three of them can be considered Mexican because almost all their species are distributed within the country, many of which are endemic. This is the case for *Dermatophyllum*; four out of five species are found in Mexico and three-quarters of these are distributed in the northeastern region. Furthermore, they are endemic to this region, inhabiting extremely small areas and forming populations with few individuals. The same applies to *Myrsopermum*; one species is distributed in southern Mexico and the other in the northeastern part of the country, where their populations are extremely small

in specific locations and are at serious risk of extinction. Almost 67% of the species of *Styphnolobium* are found in our country. This genus is relatively rare in northeastern Mexico, because there is only one record in the state of Nuevo León; there have been further efforts to locate it again in the same place, but those have been unsuccessful. It should be noted that the areas where it was collected have been subjected to cyclical fires and it is likely that the few populations left have decreased in number or have completely disappeared.

The tribe Trifolieae is represented in our country by three of its six genera. Although this represents 50% of the genera richness, its species diversity is far below that found in other regions of the world, such as Europe and North America [15]. Of the approximately 383 species of *Trifolium*, *Melilotus*, and *Medicago* worldwide, only 20 species are recorded in Mexico; *Trifolium* stands out in this study because it is particularly species-rich in the northwestern part of the country. Nine of the species of the tribe are found in the study area; most of them are non-native and widely distributed in various plant communities, widely dispersed by overgrazing and used as forage for livestock.

4.2. Genera and Species Richness of the Tribes Under Study Compared to Those Recorded for Southern USA and Different Areas of Mexico

The genera and species richness of the tribes considered here are compared in Table 5 among different states and regions of Mexico and some southern states of the USA.

Table 5. Comparison of the species richness of the tribes Desmodieae, Millettieae, Psoraleae, Robinieae, Sesbanieae, Sophoreae, and Trifolieae in northeastern Mexico with that of different regions of the country and the southern USA.

	Desmodium	*Hylodesmum*	*Lespedeza*	*Grona*	*Lonchocarpus*	*Piscidia*	*Tephrosia*	*Orbexilum*
California	0	0	0	0	0	0	0	0
Arizona	14 [73]	0	0	0	0	0	3 [29]	0
Texas	26 [73]	1 [74]	12 [73]	0	0	0	5 [29]	2 [11]
NE Mexico	24	1	3	1	2	1	6	1
Durango	18 [74]	0	0	0	2 [74]	0	7 [74]	0
Nov. Galicia	52 [7]	0	0	1 [7]	17 [7]	2 [7]	25 [7]	0
Quintana Roo	6 [75]	0	0	0	8	1	1	0
Chiapas	46 [6]	0	0	1	46	3	10	1
Tabasco	11 [76]	0	0	1	18	1	5	0
Valley of Mexico	10 [42]	0	0	0	0	0	0 [77]	0
	Pediomelum	*Coursetia*	*Genistidium*		*Gliricidia*	*Peteria*	*Robinia*	*Sesbania*
California	2 [11]	0	1 [31]		0	1 [33]	3 [34]	2 [35]
Arizona	9 [11]	3 [56]	1 [31]		0	2 [33]	2 [34]	1 [35]
Texas	18 [11]	1 [56]	1 [31]		0	1 [33]	3 [34]	5 [35]
NE Mexico	3	3	1		2	2	1	2
Durango	1 [74]	4 [74]	0		0	0	0	0
Nov. Galicia	2 [7]	2 [7]	0		1 [7]	0	0	2 [7]
Quintana Roo	0	0	0		2 [75]	0	0	2 [75]
Chiapas	0	3 [6]	0		3 [7]	0	0	1 [6]
Tabasco	0	2 [76]	0		2 [42]	0	0	1 [76]
Valley of Mexico	2 [41]	2 [41]	0		0	1 [41]	0	0
	Dermatophyllum	*Myrospermum*	*Sophora*		*Styphnolobium*	*Medicago*	*Melilotus*	*Trifolium*
California	0	0	0		0	13 [68]	3 [69]	67 [43]
Arizona	1 [36]	0	2 [39]		0	6 [68]	3 [69]	16 [43]
Texas	2 [36]	0	3 [39]		1 [40]	5 [68]	3 [69]	18 [43]
NE Mexico	3	1	2		1	3	2	4
Durango	0	0	0		0	2 [74]	2 [74]	5 [74]
Nov. Galicia	0	1 [38]	0		0	3 [7]	1 [7]	3 [7]
Quintana Roo	0	0	1 [75]		0	0	0	0
Chiapas	0	0	0		1 [40]	3 [6]	2 [6]	3 [6]
Tabasco	0	0	0		0	0	0	0
Valley of Mexico	0	0	0		0	3 [41]	3 [41]	6 [41]

Of the tribes considered here, no other genus is more diverse or widely distributed in the southern United States and Mexico than *Desmodium*, ranging from Arizona to Chiapas. Arizona seems to be the western limit of its distribution in the USA, as it is completely absent

from California. The highest richness is found in southern and central Mexico (Chiapas and the Novo Galicia region, respectively), while the northeastern region of the country and Texas can be considered an area with moderate to low species richness. Diversity decreases considerably in the states of Tabasco and Quintana Roo, where the terrain is relatively flat and the climate is homogeneously tropical. The contrasting topography across extensive areas and climatic types in Chiapas and Novo Galicia are undoubtedly important factors that shape the *Desmodium* species richness, because many of its species thrive in tropical, mesic, and cold climates.

Lonchocarpus has a strong preference for tropical habitats in southern Mexico [8]; more than half of the species present in Mexico are found in Chiapas [6] and a quarter of them extend into Tabasco and the Nueva Galicia region. Its richness contrasts dramatically with changing climate and topography. *Lonchocarpus* is absent from the Valley of Mexico, California, Arizona, and Texas; they all have arid and semi-arid climates, as well as cold climates in central and northern California. In northeastern Mexico, the presence of the species is restricted to the south of the Tropic of Cancer, in the state of Tamaulipas, growing in the subtropical and tropical portions of the study area, in tropical deciduous forests and cloud forests.

Tephrosia is primarily distributed in seasonally dry tropical forests and scrublands [7]. It is especially species-rich in these climates in Chiapas and the Novo Galicia region, gradually decreasing in Quintana Roo and Tabasco, which have more homogeneous climates and topography. Some *Tephrosia* species inhabit oak and oak-pine forests in cooler climates. Their distribution becomes less prevalent north of the Tropic of Cancer, in arid and semi-arid zones and even in cold climates such as parts of California and Arizona, where their presence is restricted to a few species. Durango and northeastern Mexico, as a climatic transition zone between the southern United States and southern Mexico, have a relatively low number of species, although it is higher than in California and Arizona. Cold climates limit the distribution of many of its species.

Pediomelum is a good indicator of habitat preferences for cooler or colder climates and different latitudes. The highest concentration of species is found in Arizona and Texas, decreasing sharply towards the south, with two species in the highland and semi-arid climates of northeastern Mexico and mesic climates in Novo Galicia; the genus is completely absent in the southern states with tropical climates.

Two genera, *Genistidium* and *Peteria*, restrict their distribution to northern Mexico and the southern United States, inhabiting desert areas, especially the Chihuahuan Desert. *Genistidium dumosum* is a rare species in northeastern Mexico, occurring in small, isolated populations in Coahuila and Nuevo León, and associated with desert scrublands and heavily calcareous soils.

Peteria is a typically Mexican genus, found in the country's arid regions; three of its four species are found in Mexico. *Peteria glandulosa* is endemic to the country and has a wide distribution; its populations are distributed in areas with gypsum or heavily calcareous soils in the Mexican Plateau, almost always on the edge of the Chihuahuan Desert. Similarly, *P. scoparia* follows the same pattern, although it extends from Coahuila and Chihuahua into the southwestern United States, in the same type of soil and arid conditions.

Dermatophyllum, *Myrospermum*, and *Styphnolobium* can certainly also be considered Mexican genera, because most of their species are found in Mexico. Four of the five *Dermatophyllum* species inhabit Mexico, three of which are found in the northeastern part of the country. Two of these species are endemic to this region: *Dermatophyllum purpusii* and *D. juanhintonianum*, both inhabiting desert scrublands in Coahuila and Nuevo León, respectively. The other, *D. secundiflorum*, has a wide distribution in Mexico and the southern United States. The two *Myrospermum* species are found separately in Mexico: one in the

south of the country, extending into Venezuela and Colombia (*M. frutescens*), and the other, endemic to the state of Nuevo León, *M. sousanum*, is found in piedmont scrub and oak forest communities. Six of the nine species of *Styphnolobium* are found in Mexico, almost exclusively in the central-western and southern parts of the country [41], except for *S. affine*, restricted to the southeastern United States in Texas, Oklahoma, Arkansas, and Louisiana, and an isolated population in northeastern Mexico (Nuevo León). In 2024 and 2025, this population was sought at the known coordinates (Cerro El Potosí, Galana, Nuevo León, Mexico); however, the expeditions were unsuccessful. It is worth noting that the area has been subject to periodic cyclical fires and the population may have been affected by them; alternatively, its populations are now smaller under this fire regime, thus going unnoticed during the botanical search.

Medicago, *Melilotus*, and *Trifolium* are primarily native to Europe, Asia, and Africa [43,68,69]. Many of their species have spread to the Americas, especially North America, where approximately 380 species are recorded [43,68,69]. Of the three genera, *Trifolium* is the most diverse in Mexico (14 species), with the highest species richness occurring in the northwestern part of the country, along the border with California (USA), where most of the *Trifolium* species are known to occur within the United States [43]. The northeastern, central, and southern regions of the country are relatively species-poor and have almost the same species: *Trifolium amabile* (with several subspecies), *T. pinetorum*, and *T. repens*. Of the species recorded in northeastern Mexico, only *T. schneideri* is exclusive to this region, inhabiting the highest peak in the northeastern part of the country, Cerro El Potosí, at an elevation of 3600 m a.s.l. Similarly, the three *Medicago* species present in eastern Mexico are the same as those found in the central and southern parts of the country, occurring in cooler and higher elevations. The *Melilotus* species present in northeastern Mexico, *M. albus* and *M. indicus*, follow the same distribution and behavior pattern as in the central and southern parts of the country; they are species found in high-elevation areas with relatively cool climates and overgrazing.

4.3. Endemism and Conservation Implications

Of the 14 endemic species recorded in the study, 8 (60%) are exclusive to northeastern Mexico. These species are distributed across the three states and encompass almost all the important plant communities of this region: Tamaulipan thorn scrub, piedmont scrub, desert scrubland, halophytic vegetation, tropical deciduous forest, tropical evergreen forest, montane cloud forest, oak forest, pine-oak forest, pine forest, coniferous forests, and subalpine grasslands. The highest number of endemic species was detected in desert scrublands, especially those found on gypsum and calcareous soils and in different types of oak forests.

These taxa belong to four tribes, Desmodieae, Robinieae, Sophoreae, and Trifolieae. The genera with endemic species in northeastern Mexico are *Coursetia*, *Dermatophyllum*, *Desmodium*, *Myrospermum*, *Peteria*, and *Trifolium*. *Desmodium* and *Dermatophyllum* each have two endemic species in northeastern Mexico. None of the studied tribes have genera endemic to the study area. The monotypic genus *Genistidium* (*G. dumosum*) is found only in northeastern Mexico, although its distribution extends northward into Texas (USA) [57].

The endemic species of northeastern Mexico, *Desmodium subrosum*, *Dermatophyllum juanhintonianum*, and *Trifolium schneideri* have the most restricted distribution areas, as they are only found in their type localities, all three in the state of Nuevo León. The first two inhabit desert scrub and oak scrub communities on calcareous and/or gypsum soils. *Trifolium schneideri* is recorded only from the municipality of Galeana, associated with scrublands of *Juniperus zanonii* and *Pinus culminicola*. *Dermatophyllum juanhintonianum* and *Trifolium schneideri* are undoubtedly the two endemic species at great risk of extinction.

The most significant factors affecting their populations are the presence of livestock in their habitats, where they are subject to both direct and indirect anthropogenic impacts. Residents allow their livestock to graze freely in areas where these species live, causing trampling and browsing. Another primary threat is the recurring wildfires where *Trifolium schneideri* thrives. Of the endemic species, those recorded only from their type locality are undoubtedly the most threatened with extinction and are subject to human threats due to habitat destruction from overgrazing, trampling, and climatic effects such as fires, which are quite frequent in these areas. Therefore, habitat conservation is essential for their survival. Their ecosystems are extremely fragile and their distribution areas are so restricted that extraordinary measures must be taken, such as preventing entry to these areas and even fencing off the perimeter where they live as an extreme precautionary measure.

Coursetia insomnifolia and *Myrospermum sousanum*, endemic to Coahuila and Nuevo León, respectively, have a somewhat wider distribution than the previous three species; however, their populations are small and isolated. Although this may not favor their conservation due to alteration of the ecosystems where they develop, the source of alteration produced by domestic livestock grazing and direct human effects is also palpable, through breaking branches, falling trees, and the effect of machinery for road and urban infrastructure construction. The remaining endemic species of Mexico, also present in the study area such as *Desmodium leptoclados*, *D. subsessile*, *Lonchocarpus hidalgensis*, *Tephrosia foliolosa*, *Orbexilum melanocarpum*, and *Pediomelum palmeri*, have wider distribution areas; most of them extend towards the southern part of the country and also inhabit other types of climates and different plant communities, which to some extent guarantees their conservation due to a higher availability of habitat types. In addition to Mexico's rich plant diversity, its endemism is characteristic because almost half of its flora is exclusive to the country [78]. Endemism in Mexico is most prevalent in arid and desert zones [78], and this is evident in the tribes studied; most are distributed in these areas, with strongly calcareous and gypsum soils, belonging to the Chihuahuan Desert and adjacent plant communities in the mountains, particularly oak forests.

The piedmont scrub is one of the plant communities where *Myrospermum sousanum* is almost exclusively distributed. This plant community is relatively extensive in northeastern Mexico, extending to Veracruz through the lower slopes of the Sierra Madre Oriental mountains [79]. The areas where this species is distributed are subject to extensive land use, including the presence of new human settlements, grazing by cattle, horses and goats, as well as recreational activities such as hiking, cave exploration and road construction for access to tourist areas. This plant is distributed on the shallow and steep slopes of canyons, on flat areas within canyons, as well as on low plains and adjacent to human settlements. There are even some individuals within private gardens in Bustamante, Nuevo León, located along the canyon's drainage paths, dispersing seeds by depositing them in these areas. Due to the beauty of its foliage and the fragrance of its flowers, local people are protecting not only the plants themselves but also the piedmont scrub areas (pers. comm.). An important aspect regarding the local conservation of this species is the presence of the "Grutas de Bustamante" tourist area, which attracts speleologists and other enthusiasts, as well as those interested in cultural and recreational activities. Access to the caves is restricted, so a significant portion of the *Myrospermum* population within this area is strongly protected against any management activities that could endanger its existence.

The subalpine meadow is an extremely rare plant community in northeastern Mexico. It is found on the highest peaks of the region, one of which is the summit of Cerro El Potosí, at an elevation of 3650 m. One of the populations of dwarf pines and junipers is found there, forming what is known as coniferous scrubland [79], a plant community unique to these areas and home to several endemic Fabaceae species, such as *Trifolium schneideri*.

This area experiences cyclical fires, occurring at least every 20 years [20], and currently less than half of its original area remains [20]. In Nuevo León, even though this area is protected by law, access is not restricted. The presence of abundant domestic livestock is evident, as they trample and consume the plants found here, many of which are unique and endemic. It is hoped that this and other areas where endemic species are recorded will be visited and inspected by state and federal authorities, so they are adequately and permanently protected.

5. Conclusions

This study contributes to the knowledge of the taxonomy of six tribes of the subfamily Papilionoideae in northeastern Mexico, including all the most recent nomenclatural changes, especially at the tribe level, and the segregation of some new genera. Information concerning diversity patterns at the tribal, generic, and species levels is included. Among the contributions of this study is the development of dichotomous keys for the identification of genera, species, and infraspecific categories—information previously lacking for the study and taxonomic recognition of Fabaceae species in the regional flora of northeastern Mexico. New knowledge is provided regarding the number of endemic species within these tribes in northeastern Mexico, along with implications for their conservation, especially those with microendemic distributions. The importance of continuing to document Fabaceae, not only in northeastern Mexico but throughout the country, should be emphasized because it is one of the most important families worldwide from a nutritional, economic, and ecological perspective. Although we are just beginning to understand the diversity of this family and its distribution patterns in the study area, future research, some of which is already underway, will have to focus on the use, exploitation, and management of these natural resources, particularly as food, medicine, the chemical industry, and even traditional uses of the species. All these practices must be accompanied by clear and attainable conservation goals and sustainable resource management.

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