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Biogeography

Track analysis of the funnel-web spiders (Araneae: Agelenidae) of Mexico

Análisis de trazos de las arañas tejedoras de red de embudo (Araneae: Agelenidae) de México

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Abstract

We analyzed distributional data of 59 species of funnel-web spiders (Araneae: Agelenidae) of Mexico. We constructed individual tracks for the species analyzed, based on published and unpublished records, and based on their overlap we obtained 9 generalized tracks. Three generalized tracks belong to the Californian Nearctic dominion (Nearctic region) and 6 generalized tracks extend along the Mexican transition zone. Seven generalized tracks are defined by species of the same genus or closely related genera and 2 generalized tracks are supported by species of distantly related genera, which shows that both spatial relationships and phylogenetic evidence support the existence of ancestral biotas including unrelated taxa.

Keywords: Biogeography; Mexican transition zone; Ageleninae

Resumen

Se analizaron los datos de distribución de 59 especies de arañas tejedoras de red de embudo (Araneae: Agelenidae) de México. Construimos los trazos individuales de las especies analizadas utilizando registros publicados y sin publicar y, con base en su superposición, obtuvimos 9 trazos generalizados. Tres trazos generalizados pertenecen al dominio Neártico Californiano (región Neártica) y 6 trazos generalizados se extienden a lo largo de la Zona de Transición Mexicana. Por otro lado, 7 trazos generalizados están definidos por especies del mismo género o géneros relacionados cercanamente y 2 trazos generalizados están apoyados por especies de géneros relacionados lejanamente, lo cual muestra que las relaciones espaciales y la evidencia filogenética sustentan la existencia de biotas ancestrales conteniendo taxones no relacionados.

Palabras clave: Biogeografía; Zona de Transición Mexicana; Ageleninae

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Introduction

The distribution of taxa represented by recorded localities in space, their relative position with respect to each other, and the links between them are the bases for biogeographical analyses (Craw et al., 1999). Track analysis is aimed to identify biotas, which are sets of spatiotemporally integrated taxa that characterize biogeographic areas and are the basic units of evolutionary biogeography (Morrone, 2004, 2010). By searching for repetitive distributional patterns, track analysis identifies biogeographically homologous distributions, allowing the correlation of distributional pattern of unrelated taxa and leading to the recognition of ancestral biotas (Morrone & Márquez, 2001).

Mexico belongs to both the Nearctic and Neotropical regions, which overlap in the Mexican transition zone, where the mixture of biotic elements is strongly favored (Morrone, 2015a; Morrone & Márquez, 2008). Additionally, smaller units are recognized, and characterized by different plant and animal taxa (Morrone, 2005). Although these taxa include several groups of arthropods (Mariño-Pérez et al., 2007; Morrone & Gutiérrez, 2005; Morrone & Márquez, 2001; Ochoa et al., 2003), there are still many terrestrial arthropods in Mexico with poor knowledge that have not been studied formally from a biogeographic perspective (Morrone & Márquez, 2008).

Agelenidae are the tenth most diverse spider family in the world, with 1,279 species (World Spider Catalog, 2017). They show restricted dispersal ability because they are not known to disperse aerially through ballooning, a typical dispersal method in spiders (Ayoub et al., 2005). Taxonomic studies of Agelenidae in Mexico have been scarce until recent years. In 1898, the first Mexican species were described from the states of Baja California Sur, Veracruz (Banks, 1898), and Morelos (Pickard-Cambridge, 1898). Gertsch described 10 more species (Gertsch, 1934, 1971; Gertsch & Davis, 1940; Gertsch & Ivie, 1936) and Roth (1968) revised the *Tegenaria* from Mexico. Additional species were described by Pickard-Cambridge (1902), Brignoli (1974), and García-Villafuerte (2009). Recent studies (Bolzern & Hänggi, 2016; Maya-Morales & Jiménez 2013, 2016, 2017a, b; Maya-Morales et al., 2017) have contributed to a total of 15 genera (*Agelenopsis*, *Bajacalilena*, *Cabolena*, *Calilena*, *Callidalena*, *Eratigena*, *Hoffmannilena*, *Hololena*, *Lagunella*, *Melpomene*, *Novalena*, *Rothilena*, *Rualena*, *Tegenaria*, and *Tortolena*) and 107 species recorded for the country, with 4 genera (*Bajacalilena*, *Cabolena*, *Lagunella*, and *Rothilena*) and 87 endemic species (Appendix 1). The family is widely distributed in Mexico in both arid and temperate habitats although some of the genera have a very limited distribution, especially in the Baja California peninsula. From biogeographic and historical perspectives *Agelenopsis* is the most studied genus of the family in the Western Hemisphere (Ayoub & Riechert, 2004; Ayoub et al., 2005). However, its greatest diversity is present in USA and Canada (Whitman-Zai et al., 2015). Given the high diversity, distribution, and restricted dispersal, the family may be useful in biogeographic studies. Our aim was to find distributional patterns of agelenid spiders in Mexico, using track analysis.

Material and methods

The area analyzed corresponds to Mexico. Records of agelenids were compiled from published and unpublished data. From the 107 species recorded in Mexico, we excluded those with a single record (46) or without precise localities (2). The selected species (numbers of records between brackets) are *Agelenopsis aperta* (26), *A. naevia* (2), *Bajacalilena bolzerni* (2), *B. clarki* (9), *Cabolena huiztocatl* (2), *Calilena angelena* (2), *Callidalena quintin* (5), *Eratigena edmundoi* (4), *E. fernandoi* (2), *E. flexuosa* (5), *E. florea* (5), *E. gertschi* (7), *E. guanato* (10), *E. mexicana* (10), *E. queretaro* (3), *E. rothi* (8), *E. selva* (12), *E. tlaxcala* (8), *E. xilitla* (10), *E. yarini* (3), *Hoffmannilena apoala* (2), *H. cumbre* (2), *H. marginata* (4), *H. mitla* (2), *H. tizayuca* (18), *Hololena septata* (2), *Melpomene chamela* (2), *M. coahuilana* (4), *M. elegans* (9), *M. rita* (2), *M. solisi* (4), *M. transversa* (2), *Novalena annamae* (5), *N. approximata* (48), *N. atzimbo* (2), *N. bipunctata* (2), *N. chamberlini* (3), *N. divisadero* (4), *N. jiquilpan* (3), *N. leonensis* (3), *N. mexiquensis* (4), *N. paricutin* (2), *N. perote* (2), *N. poncei* (4), *N. prieta* (2), *N. puebla* (3), *N. punta* (2), *N. simplex* (2), *N. volcanes* (2), *Rothilena cochimi* (3), *R. griswoldi* (2), *R. pilar* (2), *R. sudcalifornienses* (11), *Rualena cedros* (4), *R. magnacava* (2), *R. parritas* (5), *Tegenaria domestica* (6), *T. pagana* (2), and *Tortolena glaucopis* (14).

Distribution points for each species were connected with a line representing the minimum distance between them, known as individual tracks. When individual tracks match, they delimit a generalized track, which allows inferring the existence of an ancestral biota widely distributed and fragmented by vicariance events, suggesting a shared history within a biota. When 2 or more generalized tracks overlap in an area, a node is identified (Craw et al., 1999; Torres-Miranda & Luna-Vega, 2006). All maps were generated using QGIS 2.8.2 and edited with Adobe Photoshop CS6.

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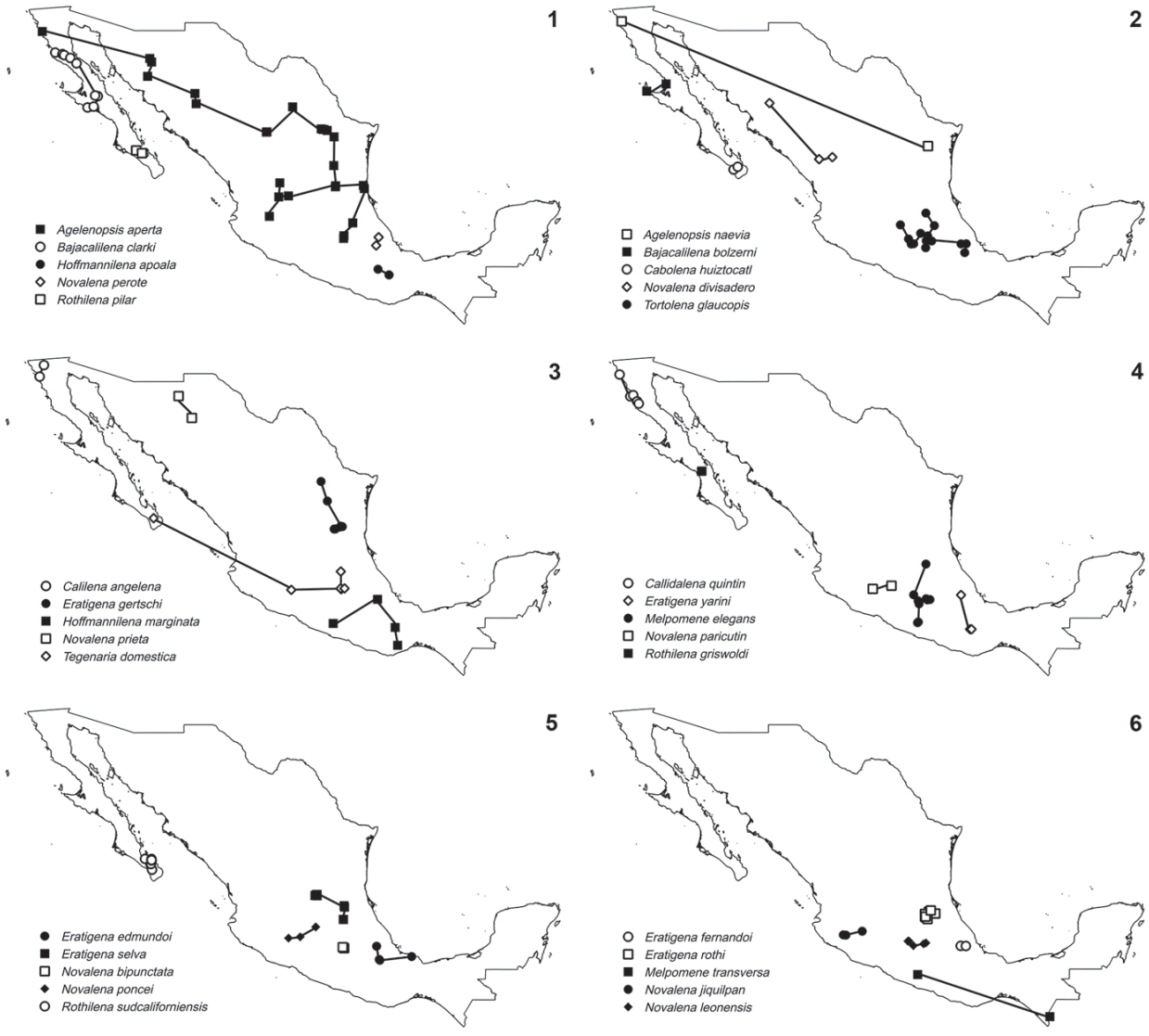
Results

Fifty-nine individual tracks were constructed. Distribution of most of the species is relatively restricted and many species are found in central Mexico (Figs 1-12). Nine generalized tracks were obtained based on 24 individual tracks (Table 1), whereas 35 individual tracks did not contribute to any of the generalized tracks found. Four generalized tracks are supported by species of the same genus: *Eratigena* (G), *Hoffmannilena* (I) and *Novalena* (E and H). Three generalized tracks are supported by species of closely related genera: *Calilena* and *Hololena* (A) and *Bajacalilena* and *Rualena* (B and C). Two are supported by distantly related genera: *Melpomene* and *Novalena* (D), and *Eratigena* and *Melpomene* (F) (Table 1).

The first group of generalized tracks belongs to the Californian Nearctic dominion, of the Nearctic region (Morrone & Márquez, 2003). One generalized track runs



Figures 1-6. Individual tracks. 1, *Agelenopsis aperta*, *Bajacalilena clarki*, *Hoffmannilena apoala*, *Novalena perote*, and *Rothilena pilar*. 2, *Agelenopsis naevia*, *Bajacalilena bolzerni*, *Cabolena huiztocatl*, *Novalena divisadero*, and *Tortolena glaucopis*. 3, *Calilena angelena*, *Eratigena gertschi*, *Hoffmannilena marginata*, *Novalena prieta*, and *Tegenaria domestica*. 4, *Callidalena quintin*, *Eratigena yarini*, *Melpomene elegans*, *Novalena paricutin*, and *Rothilena griswoldi*. 5, *Eratigena edmundoi*, *E. selva*, *Novalena bipunctata*, *N. poncei*, and *Rothilena sudcalifornienses*. 6, *Eratigena fernandoi*, *E. rothi*, *Melpomene transversa*, *Novalena jiquilpan*, and *N. leonensis*.

Table 1
Description of generalized tracks in terms of agelenid species.

Generalized track	Species
A	*Calilena angelena* and *Hololena septata*
B	*Bajacalilena clarki*, *Rualena magnacava*, and *R. parritas*
C	*Bajacalilena bolzerni* and *Rualena cedros*
D	*Melpomene rita* and *Novalena prieta*
E	*Novalena chamberlini* and *N. divisadero*
F	*Eratigena gertchi*, *Melpomene coahuilana*, and *M. solisi*
G	*Eratigena queretaro*, *E. rothi*, *E. selva*, and *E. xilitla*
H	*Novalena atzimbo*, *N. mexiquensis*, *N. paricutin*, and *N. poncei*
I	*Hoffmannilena cumbre* and *H. mitla*

parallel to the California and Baja California provinces (A) and 2 in the Baja California province (B and C). The second group belongs to the Mexican transition zone (Morrone, 2010, 2015a). Two generalized tracks run parallel to the Sierra Madre Occidental province (D and E), 2 across the Chihuahuan Desert and the Sierra Madre Oriental provinces (F and G), one runs parallel to the Transmexican Volcanic Belt province (H), and another runs parallel to the Sierra Madre del Sur province (I) (Fig. 13).

No nodes were found in the track analysis.

Discussion

The distributional patterns of the species analyzed show congruence with the biogeographic patterns and complexity of the country. The generalized tracks from northwestern Mexico (A, B, and C) are supported by genera that are found in arid ecosystems. The Baja California peninsula has undergone latitudinal and longitudinal displacements along the northwest to southeast peninsula starting approximately 15 million years ago (Gillespie, 2013). The region presents a highly distinctive Agelenid fauna with 10 genera and 24 species, of which 4 (40%) and 17 (70.8%) are endemic, respectively. This rate of endemism is very high compared to other families of arthropods like Formicidae (27.6% of the species; Johnson & Ward, 2002). The richness is highest in both the base of the peninsula and its southern part, which refutes the peninsula effect hypothesis (species richness declines form the base to the tip of the peninsula; Simpson, 1964). *Bajacalilena* is endemic to the peninsula and *Callidalena* is restricted to the northern part of the peninsula and southern California (Maya-Morales et al., 2017). In spiders, deep divergence has been found between *Homalonychus selenopoides* (Homalonychidae) on the east side of the Colorado River and its congener *H. theologus* on the west side including the peninsula (Crews & Hedin, 2006). Although the southern part of the peninsula presents 11 species, no generalized tracks were found. *Cabolena*, *Lagunella*, and *Rothilena* are restricted to this region (Maya-Morales et al., 2017), which may be related to the hypothesized vicariance event of a midpeninsular seaway during the Pleistocene (Riddle et al., 2000). Along with *Bajacalilena*, the generalized tracks in the peninsula are defined by species of *Calilena*, *Hololena*, and *Rualena*, which are Nearctic genera that have a larger distribution in western USA (Chamberlin & Ivie, 1941, 1942; Maya-Morales & Jiménez, 2016). The Californian Nearctic pattern has been detected also in bird taxa (Rojas-Soto et al., 2003) and land mammals (Escalante et al., 2004).

In the Mexican transition zone, we found 4 generalized tracks defined by species of the same genus. Species of *Novalena*, the most diverse Agelenid genus in Mexico and the Western Hemisphere (Maya-Morales & Jiménez, 2017b), define the generalized tracks located in the Sierra Madre Occidental province (E) and the Transmexican Volcanic Belt province (H), which presents the highest species diversity of the genus. Species of *Eratigena* define the generalized track across the Chihuahuan Desert and Sierra Madre Oriental provinces (G), the last one presents most of the species of the genus. Bolzern and Hänggi (2016) recognized 2 morphological groups within Nearctic and Neotropical *Eratigena*: the *mexicana*-group in central and northeastern Mexico and the *flexuosa*-group in southeastern Mexico. This pattern is like the spider genus *Physocyclus* (Pholcidae), which is distributed according to 2 phylogenetic groups, one in the Continental Nearctic and Mesoamerican dominions (north of the Transmexican Volcanic Belt province) and the second in Mexican transition zone and the Mesoamerican dominion (south of the Transmexican Volcanic Belt province) (Valdez-Mondragón, 2013). The *mexicana*-group of *Eratigena* includes 12 of the 16 endemic species from Mexico (Bolzern & Hänggi, 2016) and the species that define generalized tracks belong to the *mexicana*-group. Species of *Hoffmannilena* define the generalized track in the Sierra Madre del Sur province (I), which presents most of the species of the genus. Two generalized tracks are defined by pairs of distantly related genera (Bolzern & Hänggi, 2016): *Melpomene* and *Novalena* (D), and *Eratigena* and *Melpomene* (F). These spatial relationships shared by unrelated taxa in the form of generalized tracks may indicate that geographic constraints are not limited to

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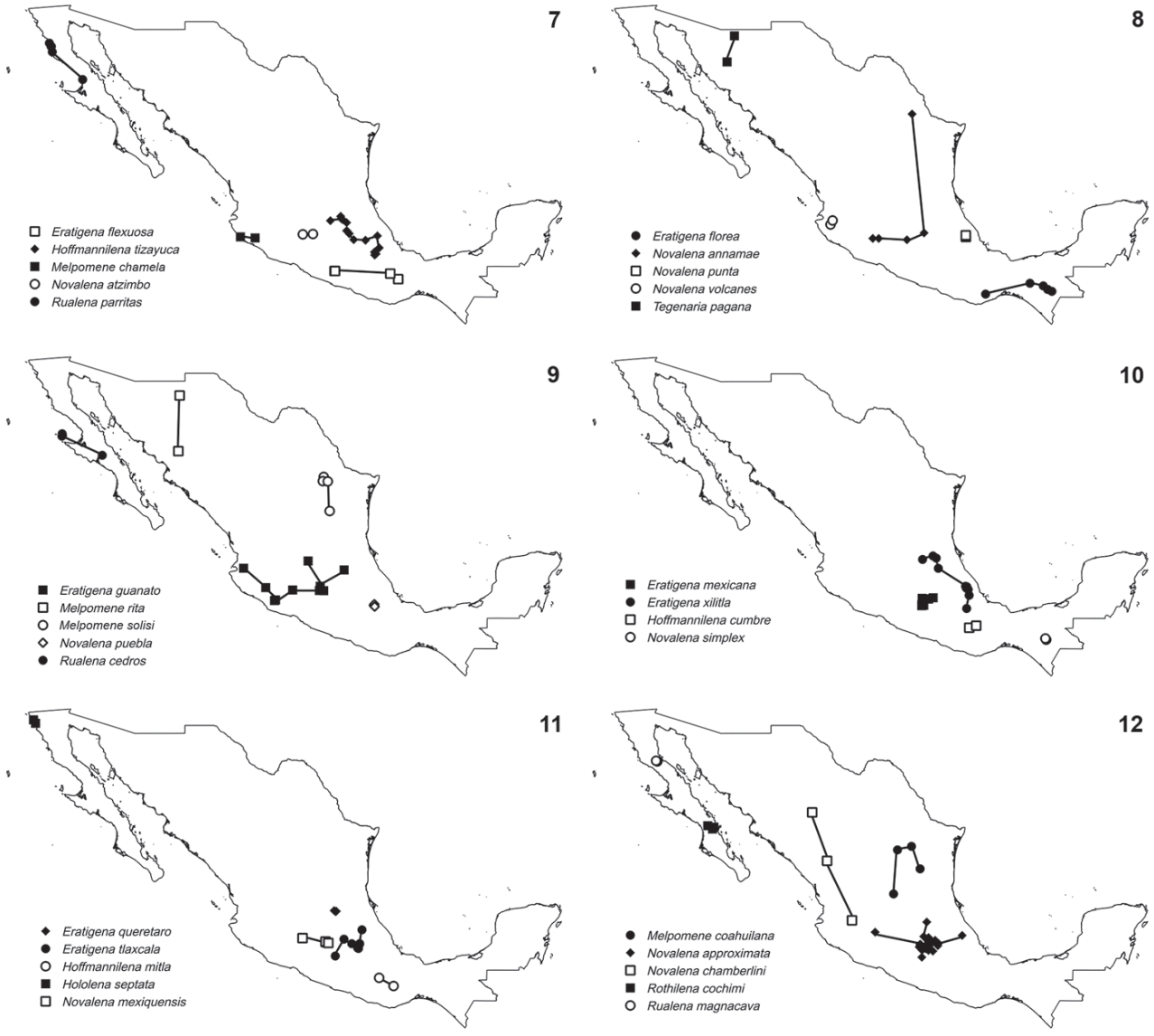

Figures 7-12. Individual tracks. 7, *Eratigena flexuosa*, *Hoffmannilena tizayuca*, *Melpomene chamela*, *Novalena atzimbo*, and *Rualena parritas*. 8, *Eratigena florea*, *Novalena annamae*, *N. punta*, *N. volcanes*, and *Tegenaria pagana*. 9, *Eratigena guanato*, *Melpomene rita*, *M. solisi, Novalena puebla*, and *Rualena cedros*. 10, *Eratigena mexicana*, *E. xilitla*, *Hoffmannilena cumbre*, and *Novalena simplex*. 11, *Eratigena queretaro*, *E. tlaxcala*, *Hoffmannilena mitla*, *Hololena septata*, and *Novalena mexiquensis*. 12, *Melpomene coahuilana*, *Novalena approximata*, *N. chamberlini*, *Rothilena cochimi*, and *Rualena magnacava*.

the effects of local ecology on the fitness of individual populations but imply a more general process of biotic evolution (Craw et al., 1999). Generalized tracks are not only recognized when there is phylogenetic evidence supporting them but, in a more general sense, they should reflect the existence of ancestral biotas (Morrone, 2015b). Similar patterns in the Mexican transition zone have been found in Coleoptera (Liebherr, 1991; Morrone & Márquez, 2001; Toledo et al., 2007).

The absence of generalized tracks in the Continental Nearctic dominion and in the Neotropics may be the result of lack of sampling since most of the Western Hemisphere genera of Agelenidae have a Nearctic distribution and *Hoffmannilena*, *Novalena*, and *Melpomene* are also distributed in Central America (Chamberlin & Ivie, 1942; Maya-Morales & Jiménez, 2017b). New systematic collects should improve the accuracy of the generalized tracks and allow finding biogeographical nodes.

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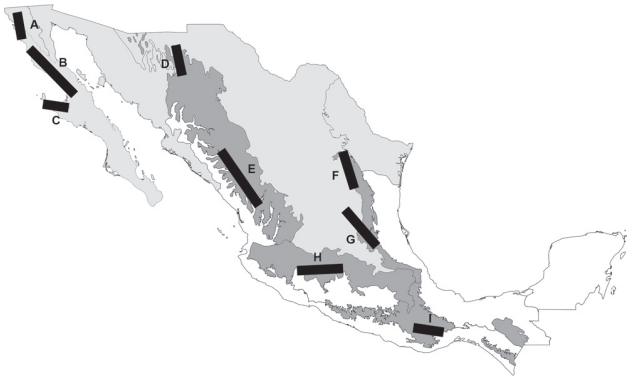

Figure 13. Generalized tracks identified in the analysis. Nearctic region (light grey), Mexican transition zone (dark grey), and Neotropical region (white). Generalized tracks in black.

We conclude that the current distribution of the Agelenid spiders of Mexico show 2 basic patterns, which correspond to the Nearctic region and the Mexican transition zone.

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Appendix 1. Agelenid species recorded from Mexico. * = Mexican endemic. Provinces: BC = Baja California; BB = Balsas Basin; C = California; Ch = Chiapas; CD = Chihuahuan Desert; MG = Mexican Gulf; MPC = Mexican Pacific Coast; SMS = Sierra Madre del Sur; SMOc = Sierra Madre Occidental; SMOr = Sierra Madre Oriental; S = Sonora; T = Tamaulipas; TVB = Transmexican Volcanic Belt. [a]Includes unpublished records.

Species	Provinces	Literature references
Agelenopsis aperta	BC, CD, MG[a], SMOc, SMOr, S, T[a], TVB	Ayoub & Riechert, 2004; Cruz, 2014; Gertsch & Davis, 1940; Gómez-Rodríguez & Salazar-Olivo, 2012; Lucio-Palacio, 2012; Maya-Morales, 2015; Maya-Morales & Jiménez, 2013; Roth & Brown, 1986
A. naevia	C, T	Chamberlin, 1924; Chickering, 1937
A. potteri		Roth & Brown, 1986 (unknown locality)
**Bajacalilena bolzerni*	BC	Maya-Morales et al., 2017
**B. clarki*	BC	Maya-Morales et al., 2017
**Cabolena huiztocatl*	BC	Maya-Morales et al., 2017
**C. kosatli*	BC	Maya-Morales et al., 2017
**C. sotol*	BC	Maya-Morales et al., 2017
Calilena angelena	BC, C	Maya-Morales et al., 2017
**C. peninsulana*	BC	Banks, 1898
**Callidalena quintin*	BC, C	Maya-Morales et al., 2017
C. tijuana	C	Maya-Morales et al., 2017
**Eratigena blanda*	SMOr	Bolzern & Hänggi, 2016
**E. caverna*	SMOr	Bolzern & Hänggi, 2016
**E. decora*	SMOr	Bolzern & Hänggi, 2016
**E. edmundoi*	MG, SMS, TVB	Bolzern & Hänggi, 2016
**E. fernandoi*	SMOr, TVB	Bolzern & Hänggi, 2016
**E. flexuosa*	SMS[a]	Bolzern & Hänggi, 2016
**E. florea*	Ch, MG, SMS	Bolzern & Hänggi, 2016
**E. gertschi*	CD, SMOr	Bolzern & Hänggi, 2016
**E. guanato*	BB, CD, SMS, TVB[a]	Bolzern & Hänggi, 2016
**E. mexicana*	BB, TVB	Bolzern & Hänggi, 2016
**E. queretaro*	SMOr	Bolzern & Hänggi, 2016

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Species	Provinces	Literature references
**E. rothi*	MG, SMOr	Bolzern & Hänggi, 2016
**E. selva*	CD, SMOr	Bolzern & Hänggi, 2016
**E. tlaxcala*	SMOr, TVB	Bolzern & Hänggi, 2016
**E. xilitla*	MG, SMS, SMOr, TVB[a]	Bolzern & Hänggi, 2016
**E. yarini*	SMS, TVB	Bolzern & Hänggi, 2016
**Hoffmannilena apoala*	SMS	Maya-Morales & Jiménez, 2016
**H. cumbre*	SMS	Maya-Morales & Jiménez, 2016
**H. huajuapan*	SMS	Maya-Morales & Jiménez, 2016
**H. lobata*	SMS	Maya-Morales & Jiménez, 2016
**H. marginata*	SMS	Maya-Morales & Jiménez, 2016
**H. mitla*	SMS	Maya-Morales & Jiménez, 2016
**H. tizayuca*	CD, SMS, TVB	Maya-Morales & Jiménez, 2016
**H. variabilis*	SMS	Maya-Morales & Jiménez, 2016
Hololena hola		Roth & Brown, 1986 (unknown locality)
H. septata	C	Maya-Morales et al., 2017
**Lagunella guaycura*	BC	Maya-Morales et al., 2017
Melpomene bicavata	SMS	Pickard-Cambridge, 1902
**M. chamela*	MPC	Maya-Morales & Jiménez, 2017a
**M. coahuilana*	CD, SMOr[a]	Chamberlin & Ivie, 1942; Gertsch & Davis, 1940; Gómez-Rodríguez & Salazar-Olivo, 2012
**M. elegans*	BB[a], SMS, SMOr, TVB	Guerrero-Fuentes, 2014; Maya-Morales, 2015; Maya-Morales & Jiménez, 2017a; Pickard-Cambridge, 1898
M. rita	CD, SMOc	Roth & Brown, 1986
**M. singula*	SMS	Gertsch & Ivie, 1936
**M. solisi*	SMOr, T	Maya-Morales & Jiménez, 2017a
M. transversa	Ch, SMS	Ibarra-Núñez et al., 2011; Pickard-Cambridge, 1902
**Novalena ajusco*	TVB	Maya-Morales & Jiménez, 2017b
**N. alamo*	SMOc	Maya-Morales & Jiménez, 2017b
**N. alvarezi*	TVB	Maya-Morales & Jiménez, 2017b
**N. annamae*	BB, T, TVB	Maya-Morales & Jiménez, 2017b
N. approximata	BB, CD, SMOr, TVB	Maya-Morales & Jiménez, 2017b
N. attenuata	SMS	Maya-Morales & Jiménez, 2017b
**N. atzimbo*	TVB	Maya-Morales & Jiménez, 2017b
N. bipunctata	TVB	Maya-Morales & Jiménez, 2017b
**N. bosencheve*	TVB	Maya-Morales & Jiménez, 2017b
**N. chamberlini*	SMOc, TVB	Maya-Morales & Jiménez, 2017b
**N. cieneguilla*	SMOr	Maya-Morales & Jiménez, 2017b
**N. cintalapa*	Ch	Maya-Morales & Jiménez, 2017b
**N. clara*	SMOc	Maya-Morales & Jiménez, 2017b
**N. comaltepec*	SMS	Maya-Morales & Jiménez, 2017b
**N. creel*	SMOc	Maya-Morales & Jiménez, 2017b
**N. dentata*	TVB	Maya-Morales & Jiménez, 2017b
**N. divisadero*	SMOc	Maya-Morales & Jiménez, 2017b

Species	Provinces	Literature references
**N. durango*	SMOc	Maya-Morales & Jiménez, 2017b
**N. franckei*	TVB	Maya-Morales & Jiménez, 2017b
**N. garnica*	TVB	Maya-Morales & Jiménez, 2017b
**N. gibarrai*	Ch	Maya-Morales & Jiménez, 2017b
**N. iviei*	MPC	Maya-Morales & Jiménez, 2017b
**N. ixtlan*	SMS	Maya-Morales & Jiménez, 2017b
**N. jiquilpan*	MPC, TVB	Maya-Morales & Jiménez, 2017b
**N. leonensis*	TVB	Maya-Morales & Jiménez, 2017b
**N. mexiquensis*	TVB	Maya-Morales & Jiménez, 2017b
**N. oaxaca*	SMS	Maya-Morales & Jiménez, 2017b
**N. orizaba*	SMS	Banks, 1898
**N. paricutin*	TVB	Maya-Morales & Jiménez, 2017b
**N. perote*	SMOr	Maya-Morales & Jiménez, 2017b
**N. poncei*	TVB	Maya-Morales & Jiménez, 2017b
**N. popoca*	TVB	Maya-Morales & Jiménez, 2017b
**N. prieta*	CD, SMOc	Maya-Morales & Jiménez, 2017b
**N. puebla*	TVB	Maya-Morales & Jiménez, 2017b
**N. punta*	SMOr, TVB	Maya-Morales & Jiménez, 2017b
**N. saltoensis*	SMOc	Maya-Morales & Jiménez, 2017b
**N. shlomitae*	Ch	Maya-Morales & Jiménez, 2017b
N. simplex	Ch	Maya-Morales & Jiménez, 2017b
**N. sinaloa*	MPC	Maya-Morales & Jiménez, 2017b
N. tacana	Ch	Maya-Morales & Jiménez, 2017b
**N. triunfo*	Ch	Maya-Morales & Jiménez, 2017b
**N. valdezi*	SMS	Maya-Morales & Jiménez, 2017b
**N. victoria*	TVB	Maya-Morales & Jiménez, 2017b
**N. volcanes*	TVB	Maya-Morales & Jiménez, 2017b
**Rothilena cochimi*	BC	Maya-Morales & Jiménez, 2013; Maya-Morales et al., 2017
**R. golondrina*	BC	Maya-Morales & Jiménez, 2013
**R. griswoldi*	BC	Maya-Morales & Jiménez, 2013
**R. naranjensis*	BC	Maya-Morales & Jiménez, 2013
**R. pilar*	BC	Maya-Morales & Jiménez, 2013; Maya-Morales et al., 2017
**R. sudcaliforniensis*	BC	Maya-Morales & Jiménez, 2013; Maya-Morales et al., 2017
**Rualena cavata*	SMS	Pickard-Cambridge, 1902
**R. cedros*	BC[a]	Maya-Morales & Jiménez, 2016
R. magnacava	BC	Maya-Morales & Jiménez, 2016
**R. parritas*	BC	Maya-Morales & Jiménez, 2016
**R. pasquinii*	Ch	Brignoli, 1974
**R. ubicki*	BC	Maya-Morales & Jiménez, 2016
Tegenaria domestica	BC, CD, TVB	Banks, 1898; Durán-Barrón et al., 2009; Roth, 1952, 1968
T. pagana	CD[a], S	Banks, 1898
Tortolena dela	T	First record in Mexico (*T. glaucopis* in Chickering, 1937)

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Species	Provinces	Literature references
T. glaucopis	BB, CD, SMS[a], SMOr[a], TVB[a]	Álvarez-Padilla Laboratory, 2017; Chamberlin & Ivie, 1941; Cruz, 2014; Durán-Barrón et al., 2009; Jiménez, 1989; Maya-Morales, 2015; Maya-Morales & Jiménez, 2013; Medina, 2002; Pickard-Cambridge, 1902

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