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NEW SPECIES OF CRAB SPIDERS FROM BAJA CALIFORNIA SUR (ARANEAE: THOMISIDAE)

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ABSTRACT: Three new species of the genera *Isaloides*, *Misumenoides* and *Tmarus* from the Cape Region, Baja California Sur, are described and illustrated.

Only two species of spiders from the Americas are included in the genus *Isaloides* F. Pickard-Cambridge: *Isaloides puta* (F. O. Pickard-Cambridge 1890) from México and Panama and *I. toussainti* Banks 1903 from Cuba and Haiti (F. O. Pickard-Cambridge 1903; Brignoli 1983 and Bonnet 1957).

Spiders of this genus are typically six mm in total length and with a carapace longer than wide and flattened. The eyes are arranged in two transverse and recurved rows with the anterior row shorter; the lateral eyes are larger than the median eyes and are seated on separate tubercles. The legs are generally short, pale brown, rather thick, and very strong without scopulae. Legs I and II are longer than III and IV. The tarsi have two claws and claw tufts. The opisthosoma is rather angular, longer than wide, and with four or five pairs of circular red spots. The palpal tibia of the male is without both retrolateral or ventral apophyses, and the tegulum is flattened. The embolus is long, slender and curled. The epigynum of the female is with a wide excavated atrium and without median septum or hood. The spermathecae are small, varying in the shape according to the species.

Twenty seven species of the genus *Misumenoides* F.O. Pickard-Cambridge 1900 have been described worldwide (Brignoli 1983, Bonnet 1957), of which four occur in North America: *Misumenoides formosipes* (Walckenaer) from Canada and United States, *M. parva* (Keyserling 1880) from México, Panama and Colombia, *M. aleatoria* (Hentz 1847) from United States and Canada, and *M. annulipes* (O.P. Cambridge 1891) from Mexico, Guatemala and United States.

Members of this genus have large, flattened bodies of 2.50–11.30 mm total length. The caparace is low, smooth and convex, the body is pale green and white along the lateral margins, with red markings in the opisthosoma; several erect setae and a white transverse carina are found on the clipeus. The eyes are arranged in two transverse recurved white rows, with the posterior row more curved than the anterior row. The lateral eyes are larger than the median eyes and are seated on large conjoined tubercles. Legs I and II are much longer and thicker than legs III and IV. They are creamy white and have no spots or bands, scopulae or claw tufts. They have a pair of ventral macrosetae, and the tarsi have with two claws. The opisthosoma is broad and flat, off-white to yellow in color and lacking erect setae. The palpal tibia of the male has an elaborate retrolateral apophyses, and a shorter simpler ventral apophysis. The embolous is short, spur-like, and arising near the distal end of tegulum. The epigynum of the female is nearly sclerotized with a shallow atrium and a broad hood. The spermathecae are broader than long (Dondale & Redner 1978).

These spiders usually sit between petals and stamens of blossoms, where they ambush pollinating insects of considerable size.

The genus *Tmarus* Simon 1875 has a wide distribution with approximately 150 described species worldwide (Bonnet 1959; Brignoli 1983). Eight species of this genus are known from México (Jimenez 1987). Members of this genus are recognized by their strong, dark brown dorsally, rather convex carapace that is larger than wide and conspicuously developed anteriad. The eyes are in two transverse recurved rows. The lateral eyes are longer than the median eyes and are seated on large separate tubercles. The legs are long with black spots, and no scopulae or claw tufts. The tarsi have two claws. Legs I and II are longer than III and IV. The opisthosoma is angular at the lateral margins, longer than wide, with a conspicuous dorsal tubercle at the pos-

terior end. It is mottled and dull in color. The palpal tibia of the male has both ventral and retrolateral apophyses. The embolus is broad, the epigynum is lightly sclerotized, with a small hood. The spermathecae are longer than wide, with surface grooves (Gertsch 1939; Dondale & Redner 1978).

Isaloides yollotl, new species
(Figs. 1–4)

Types.—Male holotype from low deciduous forest in Santiago, Baja California Sur, (13 August 1989, F. Cota). The following paratypes are from the type locality: six females and eight males (13 August 1989, F. Cota). Type and one female paratype will be deposited at the Collection of the Acarology Laboratory, Fac. de Ciencias Universidad Nacional Autonoma de México, with the exception of 13 paratypes which will be deposited in the Arachnological Collection of the Centro de Investigaciones Biologicas de Baja California Sur, A.C.

Etymology.—The specific name is derivated from the Nahuatl word "yollotl" which means "heart". This is suggested by the epigynum shape.

Diagnosis.—Members of *Isaloides yollotl* n. sp. resemble *I. puta* (O. P. Cambridge) in coloration and body shape, but can be separated from those of the other known similar species by the embolus where the tip rests on a groove at the distal edge of the bulb. Epigynum of the female has a broader atrium and the spermathecae shape is diagnostic.

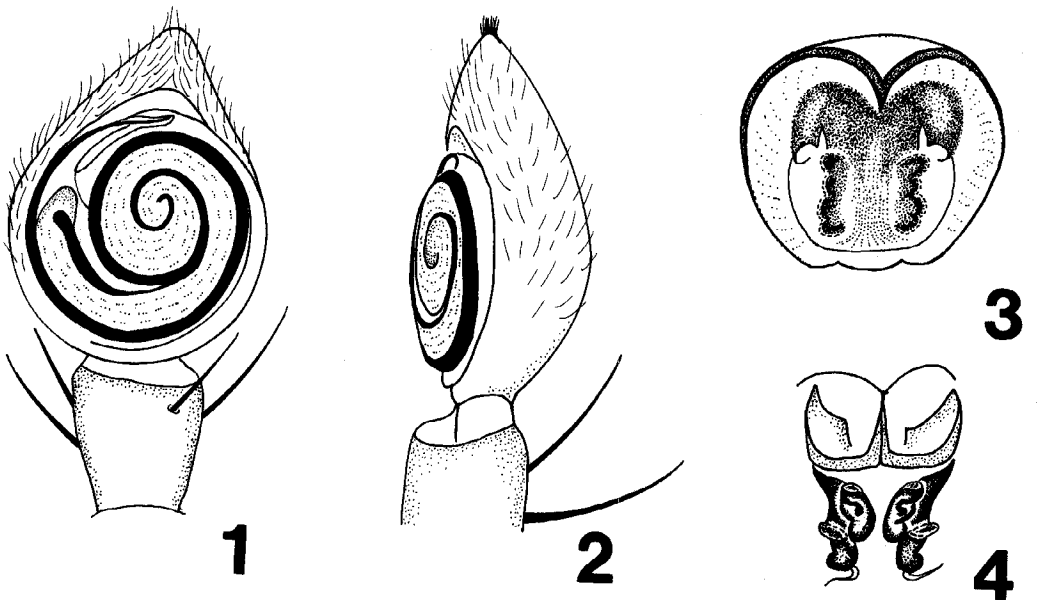
Males.—Total length 3.80–4.85 mm, prosoma 1.70–2.15 mm long and 1.60–2.00 mm wide (nine specimens). Femur II 2.75–3.50 mm. Carapace pale redish yellow, flattened, higher at level of coxa III, with few white clavate setae; ocular area darker. Anterior region of carapace with darker radiating lines and a pale median area, with edges somewhat dark. Eyes on small gray tubercles and arranged in two transverse rows, anterior more procurved than posterior; anterior median eyes separated one diameter between them; anterior lateral eyes bigger and red, separated 2.5 diameters of one anterior median eye. Chelicerae with two small teeth on both promargin and retromargin. Legs with sparse scopula and claw tufts; patella and distal part of tibia and tarsus darker. Femur I 3.10–3.55 mm, dark yellow with three dorsal macrosetae, five prolateral, four retrolateral and two or three small ventral macrosetae; tibia I 2.50–3.00 mm, with two dorsal macrosetae, three prolateral, three retrolateral and no ventral. Basitarsus I 2.55–2.80 mm, with three prolateral macrosetae, three retrolateral and three pairs of ventral macrosetae. Tibia III 0.95-1.10 mm, with two dorsal macrosetae, two prolateral, two retrolateral and three ventral pairs. Opisthosoma slender, cleft mid-line, pale yellow, dorsally with a median dark band and five pairs of red circular spots on lateral light bands; sides pale, with grooves and dark setae; venter pale and with a light spot in half-moon shape on each side; spinnerets reddish yellow, lighter at tip. Tibia of the palpus as long as wide without ventral or retrolateral apophyses. Embolus long, slender and curled, with the tip resting on an anterior distal groove of the bulb; pars pendula terminating at approximately 270° of bulb, with prolateral edge strongly sclerotized (Figs.1, 2).

Female.—Total length 5.65–6.15 mm, prosoma 2.30–2.85 mm long and 2.05–2.50 mm wide (six specimens). Shape and color similar to the male, but with the body much paler. Femur II 3.05–3.40 mm long. Femur I 3.00–3.35 mm, with two dorsal macrosetae, four prolateral, four retrolateral, none ventral. Tibia I 2.50–2.85 mm, with two dorsal macrosetae, three prolateral, three retrolateral, four ventral pairs. Basitarsus I 2.00–2.25 mm, with no dorsal macrosetae, three prolateral, three retrolateral and three ventral pairs. Tibia III 0.90–1.25 mm, with two dorsal macrosetae, two prolateral, three retrolateral and three ventral pairs. Epigynum heart shaped, as long as wide, with broad atrium and conspicuous copulatory openings; spermathecae small, and lightly curled; copulatory tubes wide and short (Figs. 3, 4).

Range.—Known only from the type locality.

Misumenoides quetzaltocatl, new species
(Figs. 5–8)

Types.— Male holotype from xeric shrub El Comitan, 28 September 1987 (M. Vazquez). Along with the following paratypes: four males and three females, 7 October 1987 (F. Cota and M. Jimenez), 7 October 1986 (M. Jimenez), 17 September 1987 (A. Cota), all from the type locality; Sierra de la Laguna, La Zorra canion, low deciduous forest, 1 October 1987 (M. Jimenez); Santiago, (13 August 1989 (A. Cota). The type and one female paratype are deposited at the Collection of the Acarology Laboratory, Facultad de Ciencias, Universidad Nacional Autonoma de México, and six paratypes, which are deposited at the Arachnological Collection of the



Figures 1–4.—**Isaloides yollotl** nov. sp.: 1. Palpus, ventral view; 2. Palpus, lateral view; 3. Epigynum, ventral view; 4. Epigynum, dorsal view.

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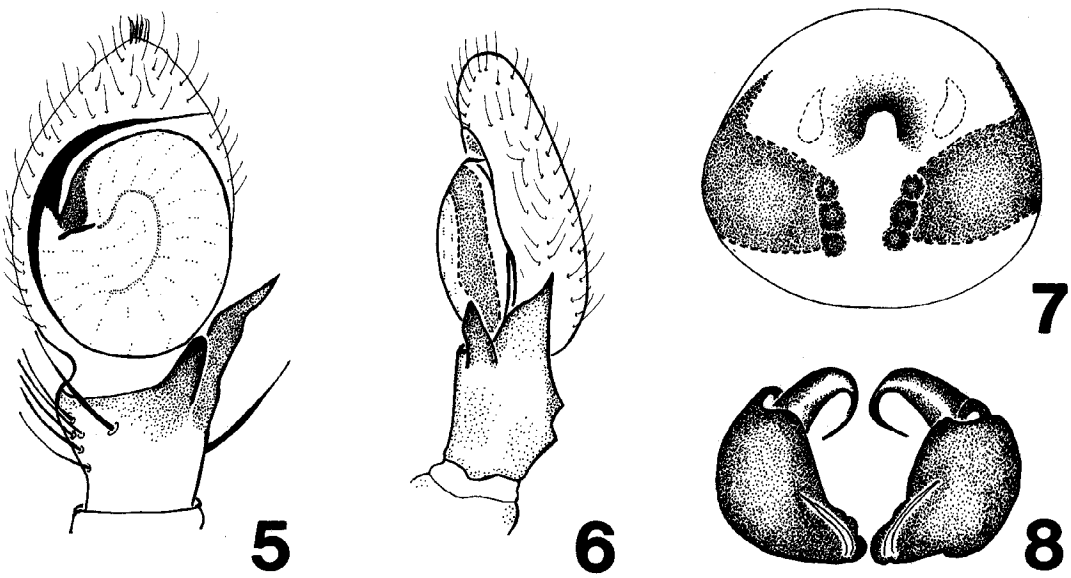
Etymology.—The specific name is derived from the Nahuatl word "quetzalli" which means "green and beautiful plumage" and "tocatl" which means "spider". The name denotes the green coloration of this species.

Diagnosis.—*Misumenops quetzaltocatl* n. sp. is most similar to *M. parvus* (Keyserling), but differs from the latter in having the male palpus smaller and the retrolateral apophysis without a distal notch; the spermathecae of the female are not round and the copulatory tubes originate distally.



Figures 5–8.—**Misumenoides quetzaltocatl** nov. sp.: 5. Palpus, ventral view; 6. Palpus, lateral view; 7. Epigynum, ventral view; 8. Epigynum, dorsal view.

Males.—Total length 2.57–2.67 mm, prosoma 1.15–1.25 mm long, and 1.27–1.47 mm wide (five specimens). Femur II 1.50–1.90 mm. Carapace low, greenish orange, highest at level of coxae III, with sparse setae, and with a white transverse carina on front. Anterior region of caparace light with white edges; ocular area pale. Eyes in two transverse curved rows, anterior row more recurved than posterior row; lateral eyes seated on conjoined white tubercles; anterior median eyes separated by three times the diameter; anterolateral eyes larger and separated from median eyes by one and a half the eye diameter. Chelicerae reddish brown and without teeth on either margin. Sternum dark yellow. Legs I and II much longer and thicker than legs III and IV, dark brown and strongly sclerotized, with sparse scopula and with dorsal granulations, except on the basitarsi and tarsi. Coxa and trochanter I and II dorsally pale; legs III and IV pale yellow; joints of the patella, tibia and femur II and IV with white rings; femur I 1.50–1.92 mm, with four dorsal macrosetae; tibia I 1.10–1.37 mm, with two or three pairs of ventral macrosetae. Basitarsus I 1.00–1.27 mm, with one prolateral macroseta; one retrolateral, four or five ventral macrosetae. Tibia III 0.45–0.50 mm, with no macrosetae; trochanter IV with a shallow notch. Dorsum of opisthosoma dark yellow, and broad, with small sparse setae, with five dark spots; sides dark; venter pale with a greenish spot at median region; epigastric region dark yellow. Tibia of palpus somewhat wider than long, with a long retrolateral apophyses without notch (Fig. 5); ventral apophysis short and slender; embolus short curved, arising distally on tegulum (Fig. 6).

Female.—Total length 5.00–6.75 mm, prosoma 2.25-3.00 mm long and 2.37–2.90 mm wide (three specimens). Shape and color similar to the male but with the following exceptions: carapace green with a white spot on anterior region; ocular area with a dorsal median white line; sternum pale; legs with white segments. Femur I 2.65–3.35 mm with a dorsal macrosetae and three prolateral macrosetae. Femur II 2.75–3.25 mm. Tibia I 1.95–2.25 mm, with three ventral macrosetae. Basitarsus I 1.62–2.00 mm with 10 ventral macrosetae. Tibia III 0.75–1.00 mm, with no macrosetae. Dorsum of opisthosoma whitish, with sides darker, venter pale, with median green spot. Epigynum wider than long with a shallow atrium and with small hood; copulatory openings located at median part (Fig. 7); copulatory tubes short, rather thick; spermathecae longer than wide (Fig. 8).

Range.—Known only from the type and locality of Sierra de La Laguna.

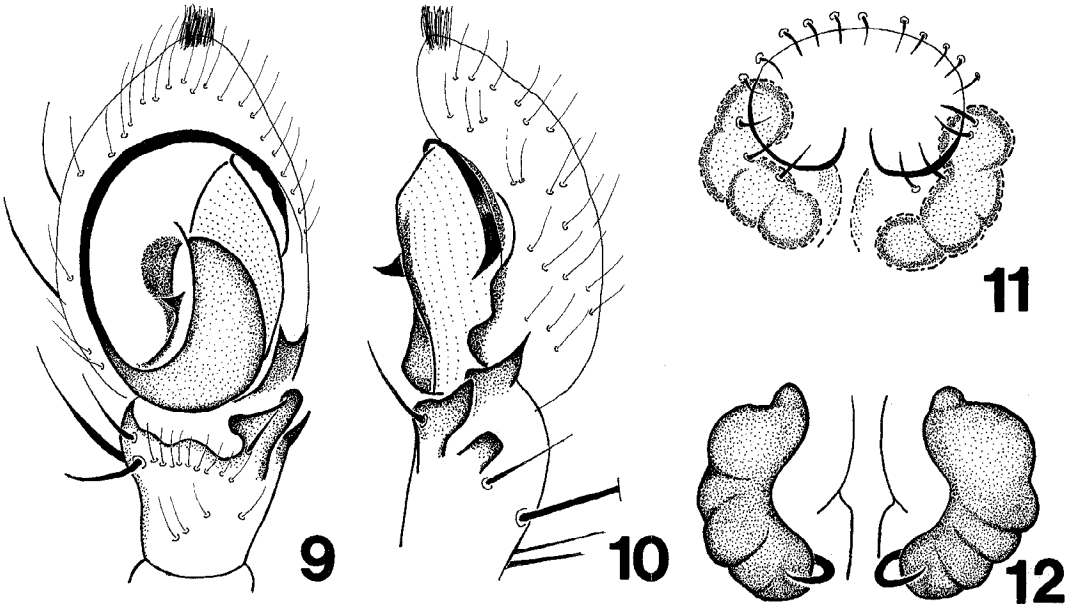
Tmarus ehecatltocatl, new species
(Figs. 9–12)

Types.—Male holotype from xerich shrub El Comitan, Baja California Sur, 15 August 1986 (M. Jimenez and F. Cota) and three females and three males [15 August 1986, 17 September 1987], Sierra de la Laguna, Baja California Sur; low deciduous forest, 5 October 1986, 3 November 1987 (M. Jimenez, A. Acevedo and A. Cota). The type and one female paratype will be deposited at the Collection of the Acarology Laboratory, Fac. de Ciencias Universidad Nacional Autonoma de México. Seven paratypes are deposited at the Arachnological Collection of the Centro de Investigaciones Biologicas de Baja California Sur, A. C.

Etymology.—The specific name is a compound Nahuatl word "ehecatltocatl" which means "spider of the wind".

Diagnosis.—*Tmarus ehecatltocatl* n. sp. most resembles *T. minutus* Banks in structure but differs from that species in having the palpus of the male with the ventral apophysis bifurcated, the retrolateral apophysis ending in a bent tip, and the embolus longer and thinner and the tegulum with a median spur.

Males.—Total length 2.97–3.55 mm, caparace 1.07–1.42 mm long and 1.07–1.14 mm wide (four specimens). Femur II 2.07–2.80 mm. Carapace reddish brown anteriorly region with whitish radiating lines and scattered black spots and lighter areas; sides with reticular pigment, with macrosetae arranged in three longitudinal rows. Eyes on gray whitish tubercles; posterior median eyes surrounded with small setae; front white, almost horizontal. Chelicerae white, with sparse macrosetae and without teeth on either margin. Sternum pale yellow with black spots. Legs pale yellow, with dark rings at distal part of basitarsus I and II. Legs III and IV paler and with sparse scopula; ventral region of femur, patella and tibia without dark spots. Femur I 2.12–2.87 mm, with two dorsal macrosetae, three retrolateral and two prolateral. Tibia I 1.80–2.45 mm, with a dorsal macrosetae, three prolateral, three retrolateral, five ventral. Basitarsus I 1.60–2.17 mm, with two retrolateral macrosetae, two or three prolateral and five ventral. Tibia III 0.77–1.10 mm, with two dorsal macrosetae. Dorsum of opisthosoma



Figures 9–12.—*Tmarus ehecatltocatl* nov. sp.: 9. Palpus, ventral view; 10. Palpus, lateral view; 11. Epigynum, ventral view; 12. Epigynum, dorsal view.

gray brown, with sparse setae arising on small tubercles, with a pale longitudinal stripe; sides with a black discontinuous band; venter pale; epigastrium with a pale stripe and a median dark spot and a pale band in each side; distal segment of spinnerets with numerous dark setae. Tibia of the palpus appoximately as long as wide, with a bicuspid ventral apophyses, left cusp wider and bigger, the right cusp smaller and truncated; retrolateral apohyses short and ending in a lateral tip; tegulum with one median spur; embolus rather short and thin, with tip lightly curved in lateral view (Figs. 9, 10).

Female.—Total length 3.45–6.05 mm, prosoma 1.25–1.50 mm long and 1.37–1.50 mm wide. General structure and color essentially as in male (five specimens). Femur I 1.87–2.22 mm, with one or two dorsal macrosteae, two prolateral, three or four retrolateral. Femur II 1.87–2.30 mm. Tibia I 1.47–1.67 mm, with two dorsal macrosetae, three prolateral, two or three retrolateral, three ventral. Basitarsus I 1.22–1.47 mm, with two retrolateral macrosetae, eight ventral. Tibia III 0.80-1.10 mm, with one dorsal macrosetae, one prolateral and one retrolateral. Epigynum round, somewhat sclerotized and without hood, with anterior oval depression bounded by setae (Fig. 11). Spermathecae longer than wide and half-moon shaped, with series of shallow transverse surface grooves (Fig. 12).

Range.—Known from the type locality and Sierra de la Laguna.

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