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A New Species of *Serradigitus* from Central California (Scorpiones: Vaejovidae)

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Abstract.—The scorpion genus *Serradigitus* Stahnke is discussed, redefined, and resurrected. A new species, *Serradigitus torridus* Williams and Berke, is described and named. Sixteen species of *Vaejovis* are placed in *Serradigitus*.

In 1974, Stahnke proposed a new genus in the Vaejovidae which he called *Serradigitus*. At that time he placed several taxa, associated with the wupatkiensis group of *Vaejovis,* into this genus. The main criteria used to define *Serradigitus* were as follows: pedipalp tarsus (movable finger) with a continuous row of conspicuously serrate, subequal denticles uninterrupted, or indefinitely so, by larger denticles; pedipalp chela with a terminal denticle which is abnormally large, clawlike, and bears on its terminus an elongate, whitish cap; inferior lateral, large flanking denticles (supernumerary denticles of chela movable finger) vary in position and number 6 to 16; female pectines with proximal teeth 1-3 more paddle-like and somewhat larger than others; and the number and location of pedipalp trichobothria. Regarding the latter character, Stahnke stated that *Serradigitus* possesses 27 trichobothria on the pedipalp chela. However, neither his summary table nor illustration of *Serradigitus* supports this statement. All of the *Serradigitus* we have examined have had 26 trichobothria on the chela, which is also typical for *Vaejovis*. Stahnke also attempted to distinguish *Serradigitus* from *Vaejovis* on the basis of the relative position of trichobothria on the pedipalp brachium. However, the level of variation observed in the location of these trichobothria does not support a diagnostic value for this character. The proposal of *Serradigitus* was attractive because the genus *Vaejovis* had become extremely large and diverse. The interpretation of *Serradigitus* subsequently became awkward as new species were found in Baja California, Mexico that appeared to be intermediate between *Vaejovis* and *Serradigitus* (Williams, 1980). This led to placing *Serradigitus* into synonymy (Williams, 1980) and restoring the wupatkiensis group of scorpions to *Vaejovis*.

Recent study of the wupatkiensis group suggests it was heterogeneous, as previously perceived. The following taxa appear to be members of *Vaejovis* that have secondarily evolved the elongate terminal denticle on the movable and fixed fingers of the chela, which is characteristic of *Serradigitus: Vaejovis peninsularis* Williams, *V. janssi* Williams, *V. baueri* Gertsch, *V. pacificus* Williams, *V. bechteli* Williams, *V. littoralis* Williams, and *V. minimus thompsoni* Gertsch & Soleglad. Examination of the dentition of the chela fingers of these taxa suggests they are evolved from forms that had more robust primary row denticles. In these taxa, the finger denticles are divided into 5-7 linear subrows by distinctly enlarged

denticles. Of these, *V. peninsularis* and *V. janssi* have the primary row denticles distinctly divided into 6 subrows by enlarged denticles, as is common in *Vaejovis.* The fixed finger subrows are reduced to 5 in *V. littoralis* and to four in *V. bechteli, V. baueri,* and *V. pacificus.*

The genus *Serradigitus* is closely related to *Vaejovis* and is characterized as follows: Carapace frontal margin emarginate, lateral ocelli 3 per group, prosomal sternum pentagonal; chela with elongate, slender fingers, movable and fixed fingers terminating in elongate, hook-like denticle (fixed finger terminal-denticle length no less than ¾ depth of finger at this point); fixed finger with terminal denticle at least 5 times longer than first supernumerary denticle; chela with primary row denticles sharp, serrate, arranged in linear row, not subdivided or subdivided into 2-3 subrows by slightly enlarged denticles; metasoma with dorsal and dorsolateral keels terminating posteriorly in elongate denticle, ventral keels paired on segments I–IV, single on V; vesicle often with subtle subaculear tubercule; pectines with three anterior marginal lamellae, distal middle lamellae subcircular, fulcra triangular, females with proximal teeth 1-3 often more elongate or more swollen than more distal ones; genital opercula with genital papillae in males, no papillae in females; chelicerae similar to *Vaejovis,* lacking denticles on ventral margin of movable finger; walking legs with single row of short setae on ventral sole of telotarsi; two pedal spurs; tarsal spurs lacking; stigma of booklungs short oval.

The following species, previously placed in *Vaejovis,* are here considered to belong to *Serradigitus: S. adcocki* (=*V. adcocki* Williams), *S. armadentis* (=*V. armadentis* Williams), *S. calidus* (=*V. calidus* Soleglad), *S. deserticola* (=*V. deserticola* Williams), *S. dwyeri* (=*V. dwyeri* Williams), *S. gertschi* (=*V. gertschi* Williams), *S. gigantaensis* (=*V. gigantaensis* Williams), *S. gramenestris* (=*V. gramenestris* Williams), *S. haradoni* (=*V. haradoni* Williams), *S. harbisoni* (=*V. harbisoni* Williams), *S. hearnei* (=*V. hearnei* Williams), *S. joshuaensis* (=*V. joshuaensis* Soleglad), *S. minutis* (=*V. minutis* Williams), *S. subtilimanus* (=*V. subtilimanus* Soleglad), *S. wupatkiensis* (=*V. wupatkiensis* Stahnke). *Serradigitus joshuaensis* is included in *Serradigitus* even though the females are atypical in having the proximal pectine tooth smaller than the other ones.

Recently an undescribed species of *Serradigitus* was found in the Mojave Desert of central California. This species is here described, named, and added to the list of species recognized as belonging to *Serradigitus.*

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Serradigitus torridus *Williams* and Berke, NEW SPECIES
(Fig. 1, Table 1)

Diagnosis.—Total length up to 31 mm in males, 34 mm in females; base color of body golden yellow, pectines white; dorsal and dorsolateral metasomal keels with 0-1-1-2 pairs of macrosetae on segments I—IV; ventrolateral keels crenular, with 2-3-3-3-5 pairs of macrosetae on segments I–V; ventral keels smooth to crenulate on I–II, crenular on III–IV, with 3-3-3-3 pairs of macrosetae on segments I–IV; chela with supernumerary denticles 6 on fixed finger, 7 on movable finger;

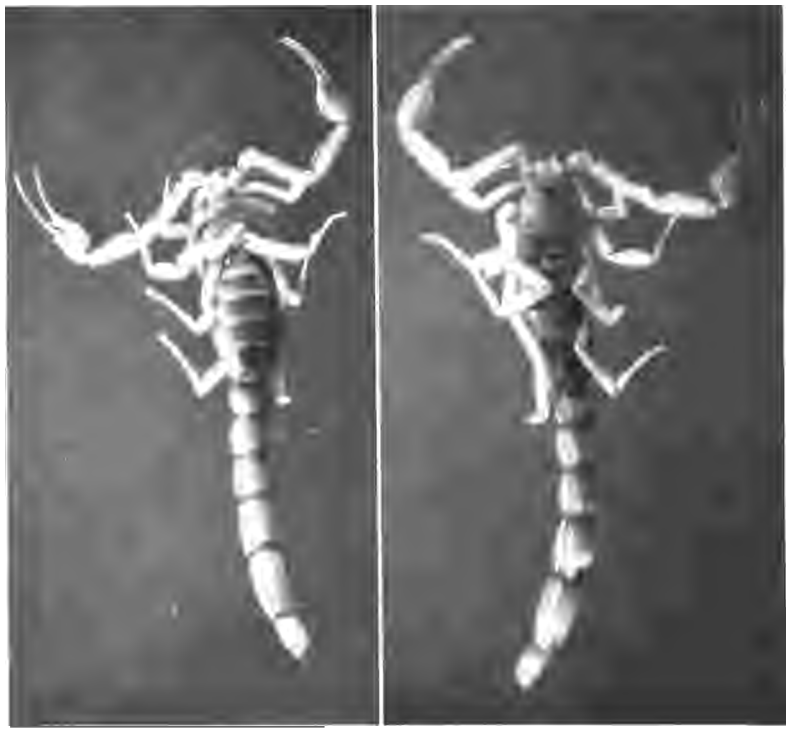

Figure 1. *Serradigitus torridus* Williams and Berke, holotype (male), dorsal and ventral views.

chela with primary row denticles of fixed and movable finger subtly divided into 2-3 linear subrows, denticles serrate; chela palm moderately swollen, ratio of chela length to palm width 3.9 in males, 4.1 in females; fingers moderately elongate, movable finger equal to carapace in length, or slightly longer; fixed finger with *id* and *ip* trichobothria above and between supernumerary denticles 5-6, located on proximal half of fixed finger; pectine teeth (single comb) 16-18 in males, 14 in females.

Related to *Serradigitus gertschi, Serradigitus wupatkiensis,* and *Serradigitus armadentis*. Distinguished from *S. gertschi* by presence of 2 pairs macrosetae on dorsal keels of metasomal segment IV (not 1 pair); pedipalp palm more swollen, ratio of chela length to width 4.3 or less. Distinguished from *S. wupatkiensis* by more swollen pedipalp palm, ratio of palm length to width 1.8 or less. Distinguished from *S. armadentis as* follows: Telson less hirsute, with about 7 pairs of ventral macrosetae (not greater than 9 pairs); fixed finger of chela with trichobothrium *ip* between supernumerary denticles 5-6 (not proximal to 6).

Description of holotype.—Male. Coloration: Base color of exoskeleton uniform golden-yellow; keels with slightly more contrasting amber coloration; fingers similar to palm in color; pectines white. Prosoma: Carapace anterior margin with slight median emargination, set with 3 pairs of macrosetae; carapace surface coarsely granular; median ocelli on slightly raised, smooth ocular tubercule; 3 pairs of sternal setae. Mesosoma: Terga completely and regularly granular; terga 3-6 with subtle obsolescent median keel, tergum 7 with irregular patch of about

Table 1. Measurements (mm) of *Serradigitus torridus* Williams and Berke, new species, holotype (male) and allotype. Abbreviations as follows:1 = length, w = width, d = depth, fmd = frontal margin distance, ditd = distal internal trichobothrium distance, p-row = primary denticle row of chela, if = fixed finger, mf = movable finger.

	Holotype (male)	Allotype
Total length	31.0	33.1
Carapace (1/w at median eyes)	3.7/2.7	4.2/3.1
Diad (width/fmd)	0.5/1.5	0.5/1.6
Metasoma, length	14.3	14.4
Segment I (l/w/d)	1.9/2.3/1.9	1.8/2.4/1.9
Segment II (l/w/d)	2.2/2.3/1.9	2.2/2.4/1.9
Segment III (l/w/d)	2.4/2.2/1.9	2.8/2.4/1.9
Segment IV (l/w/d)	3.3/2.2/1.9	3.2/2.3/1.9
Segment V (l/w/d)	4.5/2.2/1.8	4.4/2.3/1.8
Telson, length	3.8	4.0
Vesicle (l/w/d)	2.5/1.6/1.2	2.6/1.7/1.3
Aculeus (1)	1.3	1.4
Pedipalp, Humerus (1/w)	3.7/1.1	3.9/1.2
Brachium (l/w)	4.1/1.3	4.2/1.4
Chela (1)	6.2	6.6
Palm (l/w/d)	2.8/1.6/1.7	2.8/1.6/1.6
Movable finger (1/base)	3.9/0.7	4.3/0.7
Fixed finger (l/ditd)	3.4/2.2	3.8/2.4
Supernumerary denticles (ff/mf)	6/7	6/7
Fixed finger p-row denticles	12-7-22	13-27
Movable finger p-row denticles	8-6-26	8-30
Pectine teeth (left/right)	18/17	14/14
Stigma 3 (l/w)	0.17/0.7	0.23/0.10

16 granules medially; terga 1-6 lacking lateral keels; tergum 7 with 2 pairs of well-developed granular lateral keels; basal sternum of pectines with deep anteromedian groove extending one-fourth length of sternum; pectines with middle lamellae composed of angular basal sclerite plus 12 subcircular sclerites in single row, most fulcra with 3 ventral macrosetae, subcircular middle lamellae with 1-2 ventral macrosetae; sternum 7 with 1 pair of granular lateral keels. Metasoma: Dorsal and dorsolateral keels granular on I–IV, each terminates in enlarged posterior denticle; ventral keels smooth to crenulate on I–II, crenulate on III–IV; macrosetal formulae on metasomal segments I–IV respectively: 0-1-1-2 dorsals, 0-1-1-2 dorsolaterals, 2-3-3-3 ventrolaterals, 3-3-3-3 ventrals. Telson: Vesicle with 7 pairs of macrosetae ventrally, small broad subaculear tubercule. Chelicerae: Ventral margin of movable finger lacks denticles, with ventral setal comb on distal half of tyne. Pedipalps: Fingers terminate distally in elongated, hook-like tooth; terminal tooth length approximates finger depth at that point; fixed finger and movable finger each with primary row denticles subtly divided into 3 linear subrows by slightly enlarged denticles; palm with well-developed keels; no conspicuous scallop between fingers when chela closed; chela with 10 trichobothria on fixed finger, 16 on palm; brachial trichobothria: 2 dorsals, 14 retrolaterals, 2 ventrals, 1 prolateral; humeral trichobothria: 1 dorsal, 1 retrolateral, 0 ventral, 1 prolateral.

Allotype.—Similar to holotype in color and structure except as follows: Larger in size, pectines smaller, fewer pectine teeth, proximal 2 teeth more elongate than

others; brachium slightly less elongate, primary row denticles of chela divided into 2 linear subrows on both fingers.

Paratype variation.—Little significant variation among paratypes except as follows: Adults varied in total length 24-32 mm, juveniles 16-20 mm; pectine tooth counts (per comb) 16-18 (mode = 16-17) in males, 14 in females; pedipalps with primary row denticles in 2-3 linear subrows on both fingers.

Type data.—Holotype (male), California: Kern Co., Red Rock Canyon State Recreation Area, 8 Oct. 1980, Coll. S. C. Williams Allotype, same data except collected on 16 Aug. 1981. Holotype and allotype depository: California Academy of Sciences, Entomology Type No. 15750. This species is named *Serradigitus torridus* in reference to its hot, dry, desert habitat.

Paratypes.—California. Kern County: Red Rock Canyon State Rec. Area, 8 Oct. 1980, S. C. Williams (7 male topoparatypes); Red Rock Canyon, 16 Aug. 1981, S. C. Williams (1 male, 2 juveniles); Red Rock Canyon, 16 Aug. 1984, Bennett Berke (1 juvenile, 2 females); Jaw Bone Canyon, 2 Jun. 1972, R. M. Haradon, J. L. Marks (2 females); 20 miles N Mojave, 13 Apr. 1968, S. C. Williams, V. F. Lee, R. Lewert (3 females).

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