SCIENTIFIC and COMMON NAMES: *Calicina* species, including:
C. arida
C. breva
C. cloughensis – Clough Cave harvestman
C. conifera
C. diminua – Marin blind harvestman
C. dimorphica
C. macula
C. mesaensis – Table Mountain harvestman
C. piedra – Piedra harvestman
(*Calicina minor* is treated in a separate account.)

CLASS, FAMILY: Arachnida, Phalangodidae

ORIGINAL DESCRIPTIONS: Ubick, D., and T.S. Briggs. 1989. The harvestmen family Phalangodidae. 1. The new genus *Calicina*, with notes on *Sitalcina* (Opiliones: Laniatores). Proceedings of the California Academy of Sciences 46(4):105 (*conifera*), 112 (*arida*), 117 (*dimorphica*), 119 (*mesaensis*), 121 (*diminua*); figs. 4b (tarsal spur of *mesaensis*), 6c,d (male genitalia of *conifera*), 10e-h (male genitalia of *arida*), 14j-l (male genitalia of *mesaensis*), 14m,n (male genitalia of *dimorphica*), and 15a-e (male genitalia of *diminua*).

Briggs, T.S. and K. Hom. 1967. New Phalangodidae from the Sierra Nevada (Opiliones). Pan-Pacific Entomologist 43(1):52 (*cloughensis*, as *Sitalcina cloughensis*); figs. 1 (dorsum), 2 (lateral view of eye tubercle), 7 (left lateral view of right palpus), 11 (ventral plate of penis), and 14 (lateral view of penis).

Briggs, T.S. 1968. Phalangids of the laniatorid genus *Sitalcina* (Phalangodidae: Opiliones). Proceedings of the California Academy of Sciences (ser. 4) 36:21 (*breva*, as *Sitalcina sierra breva*), 23 (*macula*, as *Sitalcina macula*), 24 (*piedra*, as *Sitalcina piedra*); figs. 17, 21, 22 (dorsum of *breva*, *macula*, and *piedra*, respectively), 47, 51, and 52 (lateral view of eye tubercle of *breva*, *macula*, and *piedra*), and 77, 81, and 82 (ventral view of penis of *breva*, *macula*, and *piedra*).

RANKING/STATUS: G1S1 for all species (NatureServe – CNDDB).

GENERAL DESCRIPTION: Males of the genus can be recognized by their telescoping penis glans; they are the only Nearctic phalangodids with this character. Most males also have a dorsal spur on the palpal tarsus, a character unknown in other genera of phalangodids. Females can be distinguished from those of *Sitalcina* by having ovipositors with a double setal fringe, and microspines on the cuticle. Most species in the genus also have a reduced tarsal formula of less than 3-5-5-5.

TYPES, DIAGNOSTIC CHARACTERS, DISTRIBUTION, and HABITAT (by species):

arida

Diagnosis: with characters of the *digita* species group: ventral plate of male genitalia arrow-shaped and glans bearing a pair of slender, ventral parastyli; and of the *arida* subgroup: the unique glans penis has a strongly sinuous stylus and the collar lobes are greatly enlarged. Unlike other subgroups of the *digita* species group, males lack spurs on the palpal tarsi, but have enlarged mesobasal, spine-bearing tubercles. *Calicina arida* is a paedomorphic species, unique in having the parastyli consisting of a single rod. The color is yellowish orange; body length measures about .80 mm for the male holotype, and .73 mm in females.

Types, Distribution: One male holotype and 18 paratypes (nine males, nine females), taken under serpentine rocks in an oak gully at Panoche Rd., 12.7 miles SE Paicines, San Benito County, 1 Dec 1984, collected by Briggs, Lee, and Ubick. The holotype (type #18132) is deposited in the California Academy of Sciences.

breva

Diagnosis: with characters of the *serpentinea* subgroup of the *serpentinea* species group: males with a ventral stylus and dorsal process bearing 5 apical lobes on the glans penis (3 cloverleaf-shaped lobes in *breva*); females with an ovipositor having only apical microspines; palpal spur absent, vestigial, or small. *Calicina breva* is a paedomorphic species, yellow in color, measuring about .70 mm in body length. The male genitalia differ from those of other species in the group by the pentagonal median lobe, which is subequal to the lateral lobes, and the ventral plate bearing only 5 pairs of setae.

Types, Distribution: Known only from the type locality. The male holotype, female allotype, and three male and two female paratypes were collected under basalt rocks in grassland 1 mile S Knight's Ferry, Stanislaus County, 11 Apr 1967, by Briggs. The holotype (type #10013) is deposited in the California Academy of Sciences.

cloughensis

Diagnosis: with characters of the *mariposa* species group: male genitalia simple, glans consisting of a stylus and a basal segment bearing collar lobes and lacking additional sclerites; ovipositor with 12 apical and 3 pairs of subapical setae. This is the only troglobitic species in the genus, and has the typical pale coloration and complete loss of eyes (cornea as well as retina) associated with cave-dwelling phalangodids. Males have bilobed collar lobes and a unique stylus bearing a median enlargement.

Types, Distribution: Known only from Clough Cave in Sequoia National Park, Tulare County. The type series of male holotype, female allotype, and six paratypes (two juveniles, one male, and three females) were taken from the Ladder Room of Clough Cave, at South Fork Ranger Station, 3500', 14 May 1966, by Briggs, Lee, and Hom. The holotype (type #9400) is deposited in the California Academy of Sciences.

conifera

Diagnosis: with characters of the *mariposa* species group, (see under *cloughensis*, above), except ovipositor with only 2 pairs of subapical setae. Differing from other species in the group by its smaller size (males measure about 1.0 mm in body length, females about 1.2 mm), pale yellowish orange coloration, and absence of retinae.
Types, Distribution: known only from the type series; male holotype and two female paratypes, from mixed coniferous forest 1.8 km E Crane Flat Junction, Tuolumne County, 29 Jul 1984, Briggs, Kubota, and Tang, collectors. The holotype (type #18134) is deposited in the California Academy of Sciences.

diminua

Diagnosis: with characters of the *sequoia* subgroup of the *serpentinea* species group: male with an extremely complex dorsal process on the glans penis, and with at least 5 pairs of regularly spaced lateral setae on the ventral plate; females having an ovipositor with only apical microspines. This paedomorphic species is the smallest in the genus, measuring only 0.6-0.77 mm in body length; the color is yellow and the carapace lacks anterior tubercles. Eyes (both retina and lens) are lacking. The dorsal process is complex, and described by Ubick and Briggs as "ornate." The ventral plate bears 5 pairs of lateral setae and 2 triads of ventral setae; the stylus is short and spine-like.
Types, distribution: Known only from the type locality. Taken under serpentine on a grassland hillside on San Marin Drive, Novato, Marin County, 2 Jan 1968, by Briggs and Ubick. The holotype (type #18135) is deposited in the California Academy of Sciences.

dimorphica

Diagnosis: with characters of the *serpentinea* subgroup of the *serpentinea* species group (see under *breva*, above). Color yellowish orange; eyes well developed. Body length is about 1.22 mm in males and 1.00 mm in females. Males are unique in the group in having a dorsal process with a diamond-shaped central lobe and elongated lateral lobes. The palpal spur is lacking, replaced by an enlarged mesoapical spine-bearing tubercle. The female has only one pair of subapical setae on the ovipositor, and the palpal tarsus lacks an enlarged spine-bearing tubercle like that of the male (hence the species name).
Types, distribution: Male holotype and three paratypes (two males, one female) collected under granite in an oak grassland at the northeast entrance to Watts Valley, Fresno County, 28 Jan 1968, by Briggs. The holotype (type #18136) is deposited in the California Academy of Sciences.

macula

Diagnosis: with characters of the *serpentinea* subgroup of the *serpentinea* species group (see under *breva*, above). It is the only species of *Calicina* with a dark, marbled color pattern. The species is paedomorphic.
Types, Distribution: Known only from the type locality. The male holotype, female allotype, and nine paratypes (eight males, one female) were collected under serpentine rocks in an oak grassland, 9 miles SE Academy, Fresno County, 16 Apr

1967, by Briggs. The holotype (type #10019) is deposited in the California Academy of Sciences.

mesaensis

Diagnosis: with characters of the *serpentinea* subgroup of the *serpentinea* species group (see under *breva*, above). This is a paedomorphic species, yellow-orange in color and measuring about 1.14 mm in length in males and 1.13 mm in females. Males possess a unique dorsal process, bearing a quadrate median lobe and elongate lateral lobes. The female ovipositor has apical microspines and 7 pairs of apical setae.
Types, distribution: Known only from the type locality. The male holotype and 11 male and 14 female paratypes were collected under basalt rocks in an oak grassland at Table Mountain, 1.8 miles N Millerton Lake Road on Sky Harbor Road, Fresno County, 31 Mar 1985, by Briggs, Ohsumi, Rauscher, and Ubick. The holotype (type #18138) is deposited in the California Academy of Sciences.

piedra

Diagnosis: with characters of the *serpentinea* subgroup of the *serpentinea* species group (see under *breva*, above). *Calicina piedra* is a large, reddish brown species; the male holotype measures 1.67 mm in body length. It is easily recognized by the structure of the male genitalia; the dorsal process of the glans is equal in length to the stylus and has a pair of basoventral lobes with small apical lobes. The ventral plate of the penis is attenuated apically and bears 5 pairs of lateral setae. The ovipositor is like that of *Calicina minor* (bearing 6 pairs of apical setae and with microspines restricted to the apex), but lacks subapical setae.
Types, Diagnosis: Known only from the type locality. The male holotype, female allotype, and female paratype were collected under rocks in an oak grassland 1.6 miles SW Piedra, Fresno County, 21 Jan 1967, by Briggs, Hom, and Jung. The holotype (type #10024) is deposited in the California Academy of Sciences.

OTHER ILLUSTRATIONS: Briggs (1968) illustrates the dorsum, lateral view of eye tubercle, and ventral view of the penis of *Calicina cloughensis* in figs. 20, 50, and 80, respectively. Ubick and Briggs (1989) illustrate the male genitalia of *cloughensis* (figs. 10a-d), *piedra* (figs. 13a-c), *breva* (figs. 14a-c), and *macula* (figs. 14g-i).

NOTES: The entire genus *Calicina* is restricted in its distribution to the central Sierra Nevada and the Coast Ranges in California; the genus name is a composite of California + *Sitalcina*, the genus in which some of the species were originally described.

LIFE HISTORY/BEHAVIOR: Very little is known about the life history and behavior of these species. They occur in mesic habitats, but are absent from situations where soils are saturated or periodically inundated. Most species occur under medium to large undisturbed rocks that are in contact with the soil. Some species in the genus, not included here, are found under logs. Four species in the genus have been found in association with caves, but only *cloughensis* is truly troglobitic; the others are

troglophilic with mostly surface populations. Unlike some other groups of phalangodids, no *Calicina* species have ever been collected in leaf litter.

Briggs and Ubick reported that out of 64 *Calicina* collections indicating specific rock associations, 28 were from serpentine, 13 were collected from granite, seven each were from basalt and sandstone, and four were from limestone other than cave habitats.

Written by Sandra Shanks, California Department of Fish and Game, Natural Diversity Database
Reviewed by Darrell Ubick, Department of Entomology, California Academy of Sciences, San Francisco.