

The Katydid Genus *Platylyra*

(Orthoptera : Tettigoniidae)

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Although described in 1898 by Samuel Scudder, this monotypic genus has been mentioned only infrequently in the literature. Despite its apparently wide distribution all the known collections together total only a few more than 200 specimens. We have examined all the specimens presently in collections and have observed the species in the field. Even though our observations are meager, we have written this paper to sum up what is known of *Platylyra californica* Scudder. In this way we hope to encourage future observations and collections.

Perhaps the most interesting aspect of this genus and species is the puzzle presented by its morphological relationships with other katydids. The species most closely related to *P. californica* are found in Chile and Ecuador. The Chilean genus *Cosmophyllum*, for example, shares with *Platylyra* a number of characters which suggests close relationship: ovoid wings with similar venation; transverse meso- and metasternal lobes; a low, broad, weakly developed fastigium; processes on the second and third abdominal tergites; pronotal lobes longer than deep. Relationship is also indicated with the Chilean genera *Stenophyllia*, *Marenestha*, and a genus not yet described. An undescribed genus from Ecuador also shows fairly close relationship to *Platylyra*. In North America no genus suggests relationship to *Platylyra*, in this sense making it our most distinctive phaneropterine.

PLATYLYRA SCUDDER

Platylyra Scudder, 1898: 288.

TYPE SPECIES: *Platylyra californica* Scudder (monotypy).

DIAGNOSIS.—Wings fully developed, but short, the anterior ones broad in relation to length. Stridulating field dark brown, contrasting with green wing color. Pronotal lobes longer than deep (Fig. 1).

¹ Deceased, see obituary in this issue.

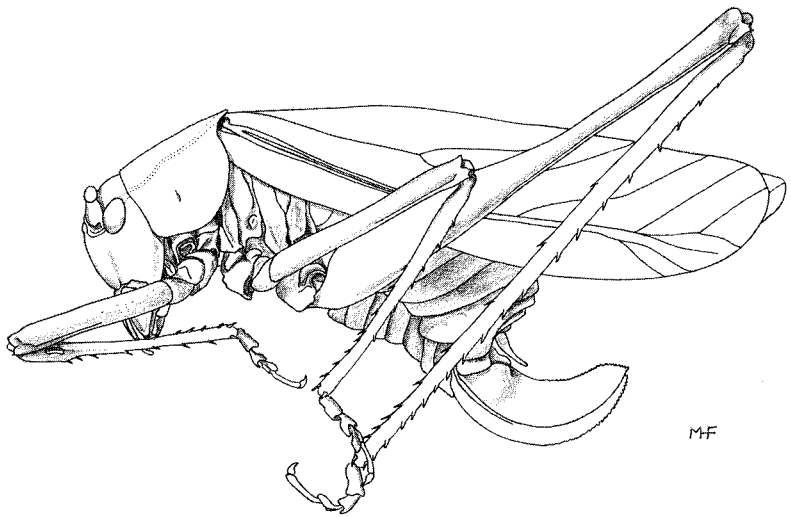


Fig. 1. *Platylira californica* Scudder.

DESCRIPTION.—Vertex domed, higher than the dorsal surface of the eyes. Fastigium of vertex broad, little elevated, scarcely compressed laterally, weakly sulcate dorsally, anteriorly blunt. Fastigium of frons weakly expressed, dorsally blunt. Eyes small, elliptical.

Pronotum with lateral carinae obsolete or missing anteriorly, weakly expressed in posterior quarter. Disc plane, broadening posteriorly. Anterior border truncate, posterior border arcuate. Lateral lobes longer than deep, with a poorly developed dorsal sinus, outline as in Fig. 1.

Anterior wings short and broad in relation to length. Venation and proportions as in Fig. 1. Stridulating field large.

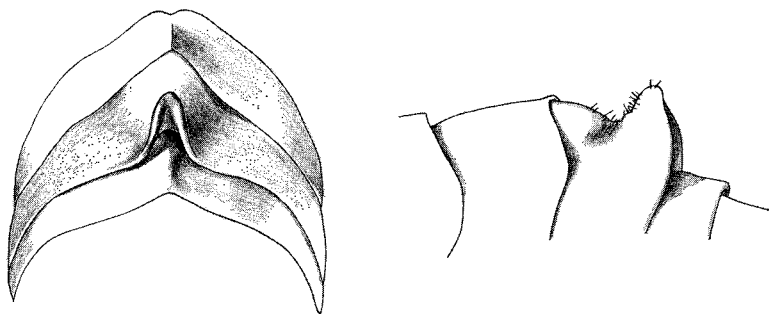
Mesosternal and metasternal lobes poorly developed, transverse in form.

Anterior coxal spine variable. Anterior femora more than one-third as long as posterior femora. Posterior femora without ventral spines. Posterior tarsi with two apical spurs on each lateral face.

MALE.—Second and third abdominal tergites each with a middorsal process which is highly developed on the third tergite (Figs. 2, 3). Tenth abdominal tergite normal, posterior border truncate. Cerci elongate, sinuate, apically somewhat flattened and sclerotic, with a sharp, sclerotic, pigmented terminus. Subgenital plate elongate, upturned, apically emarginate, styles absent. (See Figs. 5, 6.)

FEMALE.—Ovipositor broad, apically acute and dentate. Basal lobes of ovipositor simple. Subgenital plate simple, trigonal. On either side of the base of the ovipositor is a prominent, fleshy, ventrally directed process. (See Fig. 4.)

The insect is typically "katydid green," relieved only by a thin, light-colored strip behind each eye (sometimes absent) which continues along the lateral borders of the pronotal disc. Males have the stridulating field mottled with dark brown.



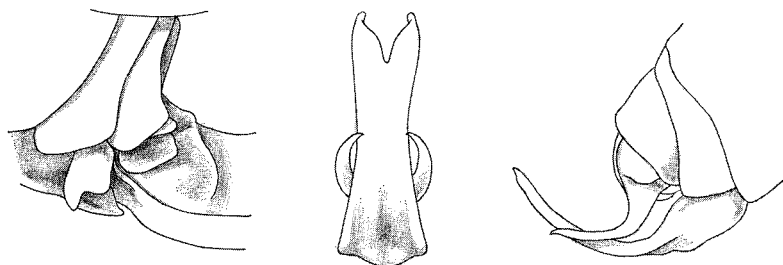
Figs. 2, 3. Basal abdominal tergites of *Platylira californica*. Fig. 2, dorsoposterior aspect; Fig. 3, lateral aspect.

PLATYLIRA CALIFORNICA Scudder

Platylira californica Scudder, 1898: 288; 1900: 69; 1901: 268. Woodworth, 1902: 14. Kirby, 1906: 447. Caudell, 1908: 78. Woodworth, 1913: 318. Helfer, 1963: 275.

TYPE: *Lectotype male* (here designated), MT. WILSON, ALTADENA, 2,400 feet, LOS ANGELES COUNTY, CALIFORNIA, 27 July 1897. Lectotype in the collections of the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

SPECIMENS EXAMINED.—CALIFORNIA. ALAMEDA COUNTY: Alameda, 1 ♂ [CAS]; Berkeley, 27 June 1925 (H. H. Keifer), 1 ♂ [CAS]. CONTRA COSTA COUNTY: Mount Diablo, 16 July 1933 (R. H. Beamer), 1 ♂; Mount Diablo, Juniper Camp, 13 August 1965 (D. C. and K. A. Rentz), 7 ♂, 4 ♀ [Rentz Coll.]. KERN COUNTY: Havilah, 21 June 1905 (F. Grinnell, Jr.), 1 ♂. LAKE COUNTY: Austin's Resort, 23 June 1958 (D. C. Rentz), 1 ♂ [CAS]; West of Lakeport, 19 July 1962 (Jon B. Snell), 1 ♂ [CAS]; 8 miles west of Oasis, 26 June 1961 (D. C. Rentz), 1 ♂ [CAS]; 5 miles west of Oasis, 27 June 1961 (D. C. Rentz), 1 ♂ [CAS]; 1 mile east of Oasis, 27 June 1961 (D. C. Rentz), 1 ♂, 1 ♀ [CAS]. LOS ANGELES COUNTY: Beverly Glen Canyon, 22 July 1956 (R. X. Schick), 1 ♂ [LACMUS]; Claremont, 26 July 1935 (Jack Beamer), 1 ♀ [MICH]; Glendora (at light), 1 July 1951 (G. Henno), 1 ♂ [LACMUS]; Los Angeles County only, 10 June 1952 (Coquillet, B. Lazaroff, R. Laxineta), 2 ♂, 2 ♀ [ANSP, LACMUS, USNM]; Mint Canyon, 6 May 1933, 25 May 1937 (R. H. Beamer, E. P. Van Duzee), 3 ♀ [ANSP, CAS]; Mount Wilson, 2,400 feet, Altadena, Los Angeles, 27 July 1897 (S. H. Scudder), 1 ♂ (Lectotype) [MCZ]; San Gabriel Mountains, 5,500 feet, Strawberry Ridge, 23 June 1910 (F. Grinnell, Jr.), 1 ♂; Sepulveda Canyon, 5 June 1941 (Don Wasem), 1 ♀ [LACMUS]; Sierra Madre, 11 July 1940, 1 ♀ [LACMUS]; Tanbark Flat, 19, 20, 22, 24, 25, 30 June 1950, 1, 2, 3, 7, 9, 13, 14 July 1950, 23 July 1952 (J. D. Paschke, J. W. MacSwain, H. L. Hansen, T. R. Haig, F. X. Williams, P. D. Hurd, D. C. Blodget, E. G. Lindsley, W. A. MacDonald, W. V. Garner), 34 ♂, 1 ♀ [CAS, CIS, LACMUS]. MADERA COUNTY: Sugar Pine, 4,300–5,000 feet, 24, 31 August 1914 (J. C. Bradley) 2 ♂, 1 ♀. MARIN COUNTY:



Figs. 4, 5, 6. Genitalia of *Platylyra californica*. Fig. 4, base of ovipositor; Fig. 5, male genitalia, ventral aspect; Fig. 6, the same, lateral aspect.

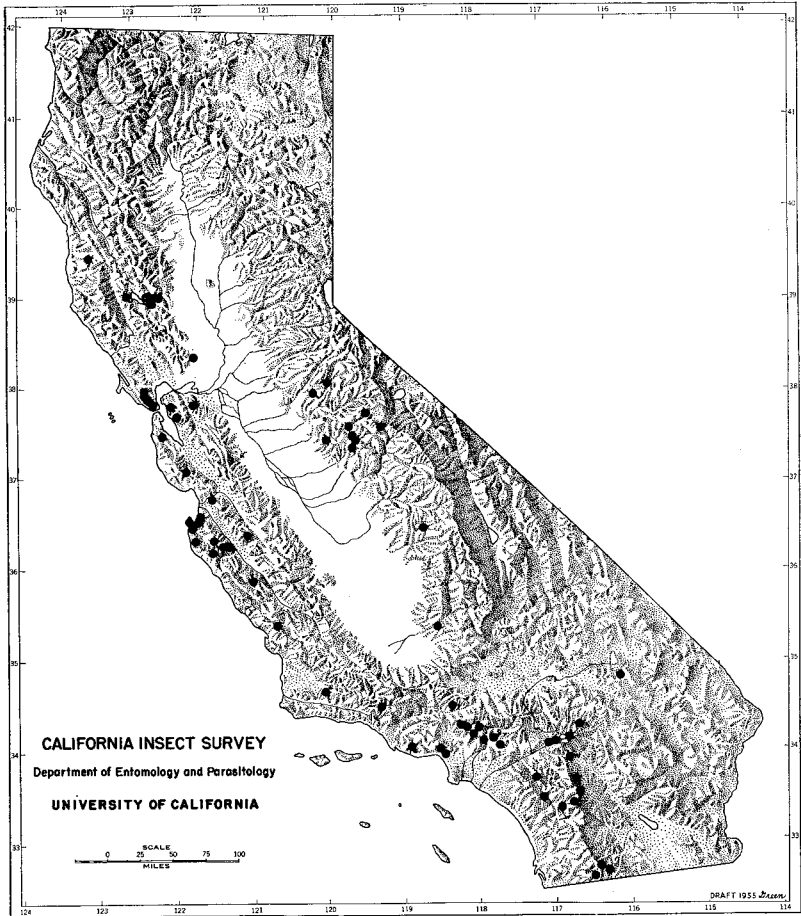
Alpine Lake, 20 August 1959 (D. C. Rentz), 1 ♂ [CAS]; 5 miles north of Alpine Lake, 8 August 1960 (E. P. Catts), 1 ♂ [CAS]; Cypress Ridge, 21 September 1930 (E. P. Van Duzee), 1 ♂ [CAS]; Mill Valley, 19 July 1925, July 1948, 27 September 1948 (E. P. Van Duzee, E. S. Ross, Hugh B. Leech), 3 ♀ [CAS]; Mount Tamalpais, 20 June 1909, 23 June 1918 (E. C. Van Dyke, E. P. Van Duzee), 1 ♂, 1 ♀ [CAS]. MARIPOSA COUNTY: 5 miles west of El Portal, 2,000 feet, 20 July 1957 (T. J. Cohn), 1 ♂, 1 ♀ [MICH]; Miami Ranger Station, 6 August 1946 (T. O. Thatcher), 1 ♂ [CIS]; 2.2 miles east of Mount Bullion, 2,500 feet, 11 August 1957 (T. J. Cohn), 2 ♂ [MICH]; Yosemite National Park, El Portal, 1,550 feet, 23 July 1938 (C. L. Hubbs family), 1 ♂ [MICH]; Yosemite National Park, 2.9-5.9 road miles north of Wawona, 21 July 1957 (T. J. Cohn), 1 ♂ [MICH]; Yosemite National Park, 10 August 1939, 1 August 1940 (R. H. Beamer), 2 ♀ [UT, ANSP]. MENDOCINO COUNTY: Sherwood, 31 July 1927 (J. C. Bradley), 1 ♂. MONTEREY COUNTY: Carmel, 1 August 1923 (L. S. Slevin), 1 ♂ [CAS]; Chew's Ridge Lookout, Santa Lucia Range (18 air miles west of Greenfield, 5,000 feet), 29 July 1957 (T. J. Cohn), 4 ♂ [MICH]; Del Monte, in grasses and plants among sand dunes, 20 August 1909, 1 ♂; Del Monte, 20 feet, 21 July 1957 (T. J. Cohn), 10 ♂ [MICH]; Frances Simes Hastings Natural History Reserve, 14 August 1938 (J. M. Linsdale) 4 ♂, 1 ♀ [MICH]; Jamesburg, 11 August 1938 (L. W. Henner), 1 ♀ [K]; Lockwood, 24 July 1935 (Jack Beamer), 3 ♂; Monterey, 27 July 1935 (E. I. Beamer), 1 ♂; 2 miles east of United States Route 1 in Palo Colorado Canyon (12 miles south of Carmel), 800 feet, 2 August 1957 (T. J. Cohn), 5 ♂ [MICH]; 2 miles northeast of Prunedale, 250 feet, 31 July 1952 (T. J. Hubbell), 3 ♂ [MICH]; Seaside (behind beach dunes), 20 feet, 24 June 1957, 3, 5 August 1957 (T. J. Cohn), 3 ♂ [MICH]; 5 road miles north of Tassajara Hot Springs, Tassajara Summit (18 air miles west-southwest of Greenfield, 4,650), (T. J. Cohn), 1 ♂ [MICH]; White Oaks Camp, Santa Lucia Range (18 air miles west of Greenfield, 4,150 feet), 28 July 1957 (T. J. Cohn), 1 ♂ [MICH]. RIVERSIDE COUNTY: Anza, 29 July 1938 (R. H. Beamer, R. I. Sailer), 1 ♂, 1 ♀ [K]; Cabezon, 1 June 1941 (E. C. Van Dyke), 2 ♂ [CAS]; Idyllwild, 3 August 1935 (R. H. Beamer), 1 ♂; 1½ miles west of Perris, 29 May 1946, 1 ♂; 2 miles south of Temecula, 2 July 1963 (H. L. Griffin), 1 ♂ [CIS]. SAN BERNARDINO COUNTY: Big Bear Lake, 26 July 1932 (J. D. Beamer), 1 ♂; San Bernardino Mountains, northeast (desert) slope, 6,500 feet, 29 July 1952 (T. H. Hubbell), 1 ♂ [MICH]; San Bernardino Mountains, south slope, 4,900 feet, 28 July 1952 (T. H. Hubbell), 1 ♀

[MICH]; San Bernardino County only, May (Coquillett), 3♂, 2♀ [ANSP, USNM]; Rim Summit, south rim of San Bernardino Mountains (on California Route 18) 5,756 feet, 22 August 1951, 1♀. SAN DIEGO COUNTY: Boulevard, 26 July 1938 (R. H. Beamer, D. W. Craik), 1♂, 2♀ [K]; Campo, 10 August 1935 (Jack Beamer, R. H. Beamer), 3♂; Laguna Mountains, 1 mile north of Highway 80, 18 June 1960 (Gayle H. Nelson), 1♀ [MICH]; Nellie, 23, 25 July 1917, 4, 23, 25, 27, 29 August 1917, 3 September 1917 (E. P. Hewlett), 33♂, 3♀; Oak Grove, 5 June 1941 (D. J. and J. N. Knull), 1♂ [USNM]. SAN LUIS OBISPO COUNTY: Atascadero, 28 June 1940, 1♂ [CIS]. SAN MATEO COUNTY: Crystal Lakes, 18 June 1916 (E. P. Van Duzee), 1♂. SANTA BARBARA COUNTY: Sunset Valley, 4 July 1939 (E. C. Van Dyke), 1♀ [CAS]. SAN BENITO COUNTY: Pinnacles National Monument, Chalone Camp, 8 April 1964 (D. C. and K. A. Rentz), 1♂ [CAS]. SANTA CRUZ COUNTY: Hecker Pass, Coast Range, 1,750 feet, 20 August 1941 (Rehn and Rehn), 1♀; Santa Cruz Mountains, 1♀ [CAS]. SOLANO COUNTY: Vacaville, Solano, 21 June 1932 (A. S. Harrison), 1♂, 1♀ [CIS]. TUOLUMNE COUNTY: Strawberry, 11 August 1960 (C. A. Toschi), 1♂ [CIS]. Twain Harte, 8, 9 August 1958, 11 August 1959, 20 August 1960, 26 July 1961 (D. C. Rentz, M. Lundgren), 8♂, 1♀ [CAS]. TULARE COUNTY: Midfork of Kaweah River, Sequoia National Park, 1,700 feet, 6 August 1914, 1♂. VENTURA COUNTY: Lake Sherwood, 29 August 1952, 1♀ [LACMUS]; Wheeler Hot Springs, 30 July 1943 (Don Meadows), 1♂ [LACMUS]. CALIFORNIA only, 1♀ [USNM].

DISTRIBUTION.—This species is known from California only from the Sierra west to the coast. It has been collected in Mendocino and Lake counties in the north, south to San Diego County (Map 1).

HABITAT AND LIFE HISTORY.—Nymphs appear in early spring and are found on a variety of herbaceous shrubs, frequently on monkey flower of several species in the genus *Mimulus*. It also occurs in chaparral on scrub oaks and *Ceanothus*. The young katydids are rather robust and uniform green color. They could easily be mistaken for *Microcentrum* nymphs in their general appearance. Their characteristic posture keeps the body upraised on the plant as if on stilts, possibly eliminating shadows. In the nymphal stage, *Platylyra* is extremely sluggish. If prodded the nymphs will reluctantly jump and often will land on their backs and have great difficulty righting themselves. While rearing the nymphs in the laboratory, it was noticed that presence of a moisture source such as a water dish or wet cotton resulted in the loss of specimens due to drowning. The young katydids would jump into the liquid and made little or no attempt to get out of the situation, and they eventually died.

As the nymphs mature, they move to larger plants. In coastal areas maturity is reached by mid-June and in the higher areas, such as the Sierra Nevada Mountains where *Platylyra* is found, mature specimens are not found until the beginning of August. The winged adults fly to the tops of trees and only infrequently are again found on low



Map 1. Distribution of *Platylira californica*. Base map courtesy California Insect Survey.

bushes. However, they are often found in the late summer at night around electric lights. There seems to be a preference as to the type of tree desired by the adults. They have never been taken in conifers but seem to be always found in broad-leaved trees.

The adults are not sluggish as are the nymphs and the male calls loudly and frequently and is fairly active, moving back and forth along a branch while stridulating. Males answer one another and it is often quite difficult to locate a given male in a tree in which several are calling. The calling song consists of repeated "zwick" not unlike

Table 1. Measurements of seven characters of *Platylyra californica*. The number in parentheses following range (R) is the number of specimens measured. Means (M) are based on original values. All measurements are in millimeters.

Total length	R (38) 20.0-26.7, M 24.4	R (19) 21.6-26.4, M 23.9
Length pronotum	R (40) 3.7-4.7, M 4.2	R (19) 3.7-5.2, M 4.4
Width pronotum	R (40) 3.0-3.8, M 3.5	R (19) 3.2-4.0, M 3.6
Length posterior femur	R (37) 14.9-20.2, M 17.4	R (19) 15.3-19.3, M 17.2
Width posterior femur	R (37) 1.5-2.3, M 1.9	R (19) 1.8-2.4, M 2.1
Length anterior wing	R (39) 15.5-20.5, M 18.2	R (20) 16.2-20.3, M 18.3
Length ovipositor		R (15) 5.4-7.9, M 6.4

those of *Neduba* which occurs in low bushes throughout the range of *Platylyra*.

Although the oviposition habits of this species are unknown, it is interesting to speculate about where the eggs might be laid. The very broad ovipositor seems adapted for laying eggs between leaf tissues. Since nymphs are found in low bushes and shrubs, it would not seem likely that the eggs are laid high in the trees. Perhaps eggs are placed in the leaves which drop from the trees in the fall and remain on the ground providing the nymphs with tender grasses in the spring. It is also possible that females fly down to lower bushes to oviposit, but there are no observations to support these ideas.

MEASUREMENTS.—See Table 1. All measurements were made using the precision device recently described by Grant (1965).

VARIATION.—Conspicuous variation occurs in several characters of *P. californica*. The anterior coxal spine varies from a short and well-developed condition to being almost absent. The fastigium of the vertex varies in the degree of its expression, but is never more than weakly developed. Anterior wings are variable in length, usually not reaching the apices of the posterior femora when these are drawn up on the long axis of the body, but occasionally exceeding them. The dorsoposterior sinus of the pronotal lobes varies in the degree of its development, but is always shallow.

There appears to be little correlation between variation and geographical placement. Two populations possibly possessing the least ability to exchange genes are those from Monterey and Tuolumne counties. The San Joaquin Valley is an impassable ecological barrier separating the two and any gene flow between them would have to take place around the northern or southern ends of the valley. Yet, a sample of 10 males from each population indicates only that the Tuolumne

population is slightly larger, has longer anterior wings, and slightly different posterior femoral proportions.

ACKNOWLEDGMENTS

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