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Host and Calling Song of Dwarf *Oecanthus quadripunctatus* Beutenmuller

(Orthoptera : Gryllidae)

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From specimens collected by Rentz and K. Frick, Walker (1963) described a dwarf form of *Oecanthus quadripunctatus* Beutenmuller occurring in coastal central California. Averaging only 8.0 mm in tegminal length, these are the smallest oecanthine crickets known from the United States. They differ from typical *O. quadripunctatus* not only in size but also in coloration and in spacing of the teeth of the stridulatory file.

Walker (1963) suggested the two forms might represent different species; however, their taxonomic status is unlikely to be resolved until they are shown to be extremes of a cline or they are brought together and tested for ethological and genetic compatability. We report here two additional characteristics of dwarf *O. quadripunctatus*.

HOST PLANT

Rentz collected dwarf *O. quadripunctatus* at five localities in three counties (Santa Cruz, Marin, Contra Costa), and in every case the crickets were found abundantly only on tarweed. (J. T. Howell of The California Academy of Sciences determined the Marin County tarweed as *Hemizonia lutescens.*) Typical *O. quadripunctatus* has been collected on a great variety of plants (Walker, 1963) and has not been reported from tarweed. Rentz has collected *Oecanthus argentinus* Saussure in company with dwarf *O. quadripunctatus* on tarweed.

CALLING SONG

A significant difference in pulse rate in the calling songs of typical and dwarf *O. quadripunctatus* would be evidence that the two forms are species. The converse is not true. Rentz sent live dwarf *O. quadripunctatus* from Bon Tempe Lake, Marin County, California, to Walker, who used an Ampex 351 recorder to tape the calling songs of two individuals in a controlled temperature room. Temperature at the cage of the cricket was measured immediately after taping. The tapes were analyzed with a Tektronix Type 564 storage oscilloscope. Three sam-

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TABLE 1. Pulse rate and frequency of the calling song of two individuals of dwarf *O. quadripunctatus* Beutenmuller collected at Bon Tempe Lake, Marin Co., California, compared with typical *O. quadripunctatus* from northeastern United States.

Individual	°C	Mean pulses/Sec.		Mean kilocycles/Sec.	
		dwarf	(typical)[1]	dwarf	(typical)[2]
582-59	19.0	26.7	(29.2)	3.2	(2.9)
	24.4	39.6	(39.8)	3.9	(3.8)
	25.1	42.1	(41.2)	3.8	(3.9)
582-60	18.2	28.8	(27.6)	3.2	(3.0)
	24.5	40.0	(40.0)	3.5	(3.8)
	30.4	51.5	(51.6)	3.4	(4.2)

[1] Calculated from the regression formula for data in Fig. 5, Walker, 1963.
[2] Estimated from Fig. 14, Walker, 1963.

ples of 20 pulses and three samples of 20 sine waves were used to calculate three pulse rates and three frequencies for each tape. The difference between the highest and lowest value for a single tape was never greater than 1.2 pulses per second or 0.1 kilocycle per second. The characteristics of the taped songs are listed in Table 1.

With a Magnemite 610E recorder Rentz taped the calling songs of two individuals of dwarf *O. quadripunctatus* indoors in California. One produced 34 pulses/sec. at 22.5° C and the other 36 pulses/sec. at 21° C. The frequencies were 3.5 and 3.6 respectively.

The songs of these four individuals of dwarf *O. quadripunctatus* are well within the range of individual variation encountered within a single population of typical *O. quadripunctatus*. Indeed, *O. quadripunctatus* from Gainesville, Florida, differs more in pulse rate from northeastern *O. quadripunctatus* than does dwarf *O. quadripunctatus* from Bon Tempe Lake (Table 2, Walker, 1962). The calling songs of typical *O. quadripunctatus* in California is unknown, but taped songs from Oregon and Utah are not significantly different from eastern *O. quadripunctatus* (Walker, 1963).

Calling song provides no basis for considering dwarf *O. quadripunctatus* a distinct species.

LITERATURE CITED

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