

The Veintinueve Group

Gryllus veintinueve Weissman & Gray, n. sp.

Treated here as a single-species Group, *G. veintinueve* nonetheless is most closely related to a number of currently undescribed species in Mexico that will be the subject of future work. Of the species considered in this treatment, most closely related to the Assimilis Group and *G. locorojo* (Fig. 54, Fig. 6, p. 28).

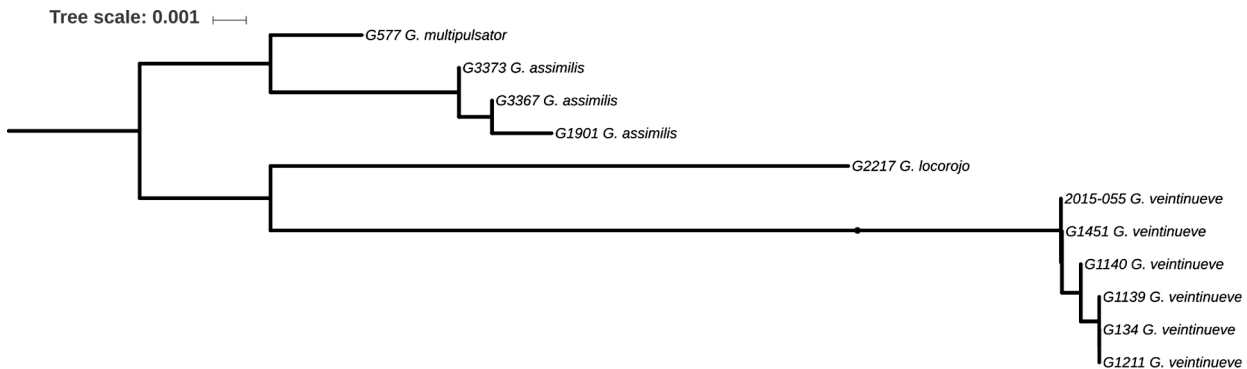


FIGURE 54. ITS2 gene tree. *G. multipulsator* sample: S03-41 (G577); *G. assimilis* samples: S10-64 (G1901); S16-12 (G3367, G3373); *G. locorojo* sample: type locality (Rainbow Mealworms); *G. veintinueve* samples: S02-39 (G134); S07-21 (G1139); S07-27 (G1140, G1211); S09-71 (G1451); OK, Love Co., Hwy 32 at Boggy Creek (2015-055).

Gryllus veintinueve Weissman & Gray, n. sp.

Number 29 Field Cricket

Figs 54–59, 62, Table 1

‘Gryllus #29’ in DBW notebooks.

Distribution. Known from Oklahoma and Texas within the study area.

Recognition characters and song. –In an unusually diverse variety of habitats, which is atypical of *Gryllus* species: rocky areas, grasslands and sparse woodlands. Small to medium sized, short cerci, pronotum shiny, always short hind winged. **Song** (Fig. 55, R09–89) a fast chirp, usually 3 (range 2 to 4) p/c, 130–250 c/m, PR 19–28 @25°C. Morphologically resembles allopatric *G. vernalis* in being almost pure black (except for inside of hind femurs) and with female tegmina separated (Fig. 58) although can be separated from the latter by its longer body length, head never narrower than pronotum, no overlap in teeth/mm (Table 1, p. 18), tegmina length and different DNA (Fig. 6, p. 28). Also sounds like *G. vernalis* with which it has an overlapping CR and PR. Distinguished from sympatric *G. fultoni* in eastern Oklahoma and eastern Texas, by *G. veintinueve* never having yellow cerci when alive, head not narrower than pronotum, and no overlap in PR (always faster in *G. fultoni*). Distinguished from sympatric, probably earlier maturing *G. veletis*, which has longer, frequently brown (not black as in *G. veintinueve*) tegmina in both sexes, wider pronotum when compared to hind femur (Fig. 56), and different DNA (Fig. 6, p. 28; Fig. 57).

From always allopatric, more western *G. vocalis*, the latter has a faster chirp rate and almost non-overlapping and faster pulse rate (Table 1, p. 18), in addition to different DNA.

Holotype. Male (Fig. 58). USA: Texas, Howard Co., Big Springs State Park, 2880’, 30-vi-2009, 32° 13’ 26.5” -101° 28’ 26.2”. DB Weissman & DC Lightfoot. S09-71, R09-145, DNA sample G1453. 16S GenBank accession # MK446645. BL 19.61, HF 10.96, right cercus 8.04. Right tegmen removed, 146 teeth, file 3.3, tegmen width 4.65, tegmen length 10.9. Type deposited in CAS, Entomology Type #19263.

Paratypes. (Total 64♂ 49♀) **Oklahoma:** *Atoka Co.*, Hwy 43 2.5 m NE Stringtown, 600’, 16-vi-1988 (S88-47) 3♂ 1♀. **Comanche Co.**, Hwy 49 E entrance Wichita Mts. Wildlife Refuge, 1300’, 6-viii-2002 (S02-46) 5♂ 4♀. **Love Co.** Hwy 32 at Boggy Creek, road cut, 33.98385 -96.97518, 650’, 5-xi-2015 (2015-055) RW & JE Cohen, 1♀, as

nymph. *Osage Co.*, 9 m NW of Hwy 64 on S209 W Ave. 600', 15-vi-1988 (S88-44) 2♂ 1♀. *Tulsa Co.*, Keystone State Park, 600', 15-vi-1988 (S88-42) 4♂ 4♀. Lake Keystone Dam Area, 740', 22-v-2001 (S01-47) 7♂ 2♀; 9-vi-2007 (S07-21) 5♀. Tulsa, near 5828 W. Skelly Dr., 36° 04' 56.7" -96° 02' 58.0", 775' 15-vii-2013 (S13-67) 6♂ 1♀. 2 m E Tulsa city limits off I44, 36° 09' 38.1" -95° 47' 04.7", 756' 15-vii-2013 (S13-68) 5♂ 2♀. **Texas:** *Hidalgo Co.*, Bentsen Rio Grande Valley State Park, 110', 3-viii-2002 (S02-34) 4♂ 1♀; 10-vi-2007 (S07-27) 4♂ 4♀. *Howard Co.*, Big Springs, Big Springs State Park, 2880' 30-vi-2009 (S09-71) 8♂ 3♀. *Tarrant Co.*, Fort Worth Nature Center and Refuge 2 m NE Lakeside 600', 5-viii-2002 (S02-39) 8♂ 17♀. Grapevine Lake Dam, 23-v-2001 (S01-48) 1♂. *Taylor Co.*, 17 m S Abilene on Hwy 277, 2250', 11-vi-1988 (S88-34) 3♂ 1♀. *Val Verde Co.*, 7.5 m E Del Rio on Hwy 90. 27-vi-1986 (S86-50) 4♂ 2♀.

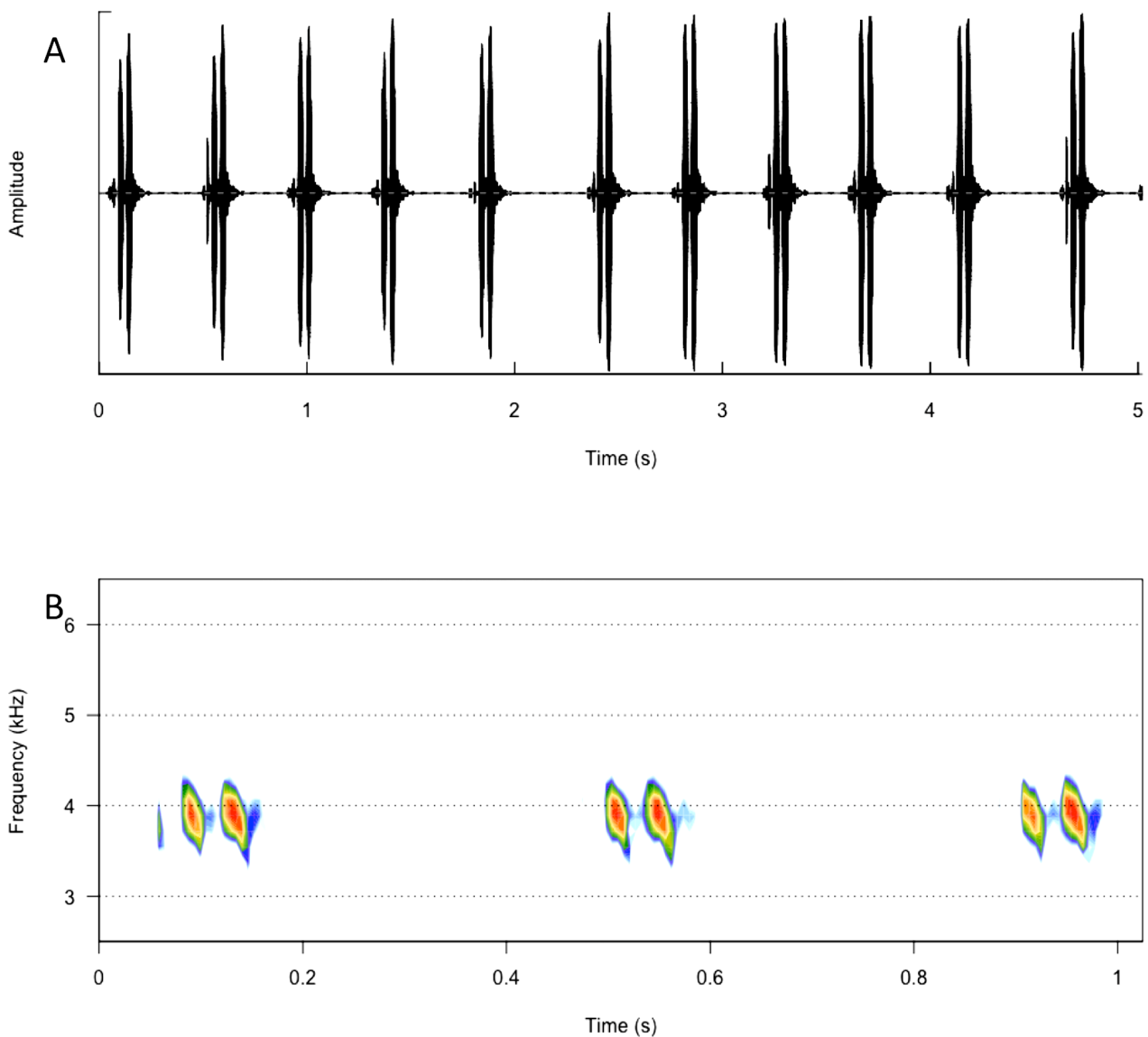


FIGURE 55. Five second waveform (A) and one second spectrogram (B) of calling song (R09-89) of *G. veintinueve* from type locality (S09-71), recorded at 25°C.

Derivation of name. In homage to the notebook number that this species was designated by for some 30+ years. Also, we couldn't think of a good name, although Variable Habitat Field Cricket, '*G. habitolatus*', was entertained, but discarded, since it might engender confusion with the (Color) Variable Field Cricket *G. lineaticeps*.

Geographic distribution. Fig. 59. Also into adjacent northern Mexico.

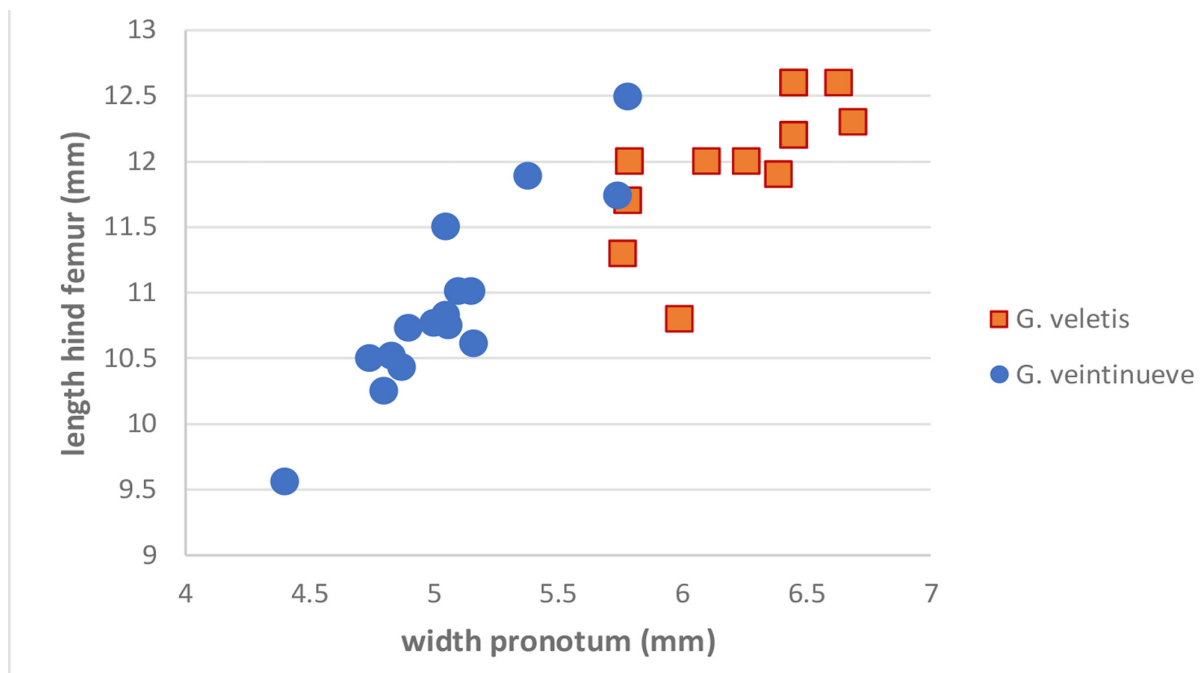


FIGURE 56. Regression width pronotum vs. length hind femur in *G. veintisive* vs. sympatric *G. veletis*, showing near morphological separation.

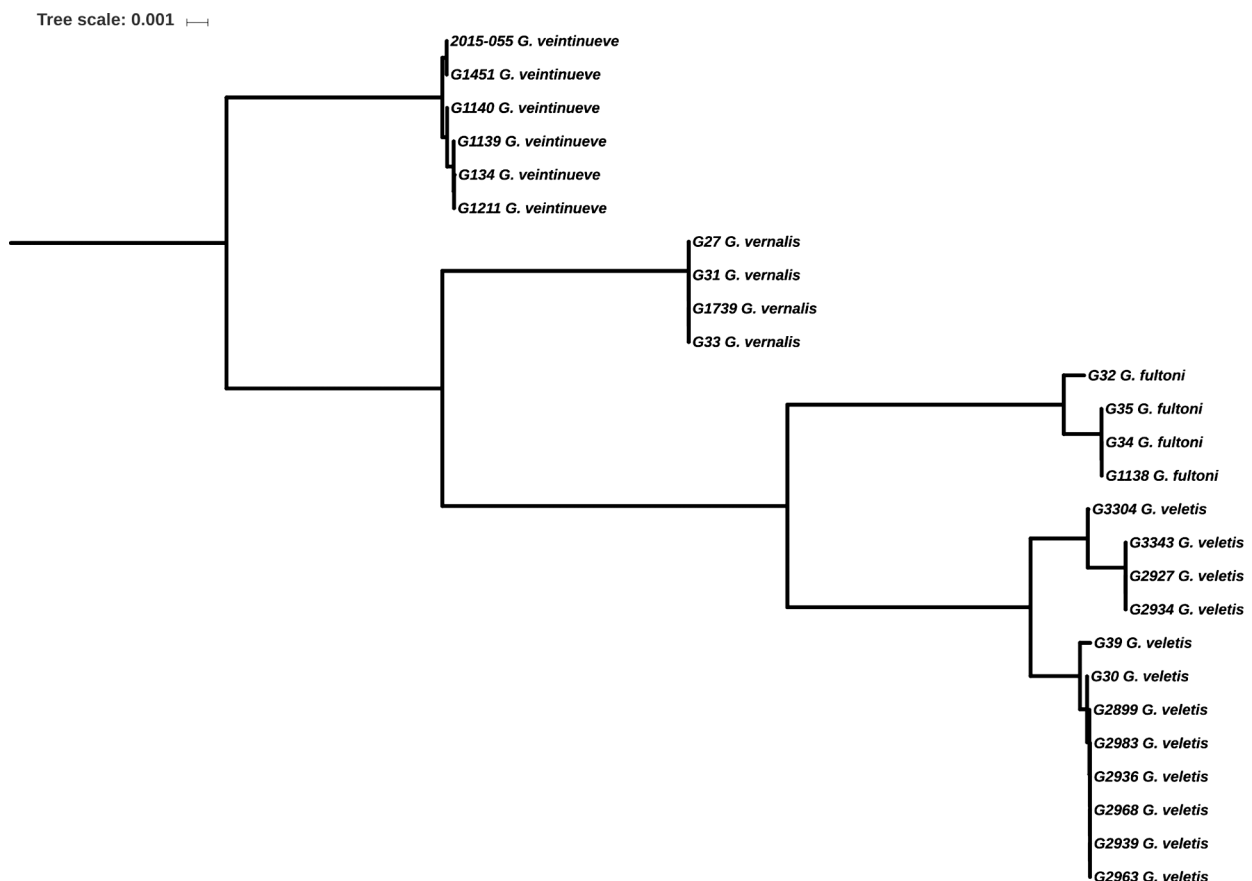


FIGURE 57. ITS2 gene tree. *G. veintisive* samples: S02-39 (G134); S07-21 (G1139); S07-27 (G1140, G1211); S09-71 (G1451); OK, Love Co., Hwy 32 at Boggy Creek (2015-055). *G. vernalis* samples: S03-56 (G27, G1739); S03-62 (G31, G33). *G. fultoni* samples: S03-62 (G32, G34); S03-64 (G35), S07-22 (G1138). *G. veletis* samples: S03-58 (G39); S03-60 (G30); S15-9 (G2939); S15-16 (G2927, G2934); S15-21 (G2899); S15-24 (G2936); S15-25 (G2963, G2968, G2983); S15-53 (G3304, G3343).



FIGURE 58. Holotype male (left), *G. veintinueve*, paratype (middle) female (S09-71), and color variant (right) male (S02-46).

Habitat. Variable: rocky areas, such as road cuts south of Abilene (S88-34), Osage Co. (S88-44), and Stringtown (S88-47); rocky dam areas at Keystone State Park (S88-42, S01-47 and S07-21) and Grapevine Lake Dam (S01-48); grassy areas E Del Rio (S86-50) and Wichita Mts. Wildlife Refuge (S02-46); and sparse woodland usually with grass at Bentsen Rio Grande Valley State Park (S02-34 and S07-27), Fort Worth Nature Center (S02-39), and Big Springs State Park (S09-71). These crickets climb trees: (1) At Big Springs State Park (S09-71), two males singing from 1–2 m above ground, with a female approaching the singing, higher male. (2) At 3.2 km E Tulsa (S13-68), two males singing from tree trunks 1–2.5 m above ground and a third male 0.3 m above ground on tree trunk but not singing. The 2 singing males moved around the tree trunk before dropping to the ground where they were collected.

Life cycle and seasonal occurrence. No egg diapause: Osage Co. (S88-34) and Big Springs State Park (S09-71). Probably 2 generations/yr. Field collected nymphs matured as followed: late July and 12-viii (Big Springs State Park, S09-71); 18 & 30-viii (Bentsen Rio Grande Valley State Park, S02-34); 5-viii & 10-viii (Tulsa, S13-67), and several in early August (E Tulsa, S13-68) and probably all represent second generation, although variable maturing rates in first generation individuals can't be ruled out without more extensive field work.

Variation. Body length: Largest adults collected at Lake Keystone Dam (S01-47). **Inside hind femur:** Varies from bright orange (Fig. 58) to almost absent (Fig. 58).

DNA. Multilocus G1330 (type locality) and 2015-055 (OK, Love Co.) most closely related to several undescribed Mexican species (Gray *et al.* in prep). In our abbreviated US tree (Fig. 6, p. 28), maps closest to Assimilis Group and *G. locorajo*. DNA helped confirm that one habitat-diverse species is involved here. Does not map close to the three US *Gryllus* species that it, physically, most closely resembles: *G. vernalis*, *G. veletis*, and *G. fultoni*.

Discussion. Occurs with *G. fultoni* at Keystone State Park (S88-42 and S01-47), and around Tulsa (S13-68). Occurs with *G. veletis* around Tulsa (S13-67 and S13-68). In these situations, populations of *G. veintinueve* seem to be peaking when most spring singing *G. fultoni* and *G. veletis* have died out.

The Assimilis Group

G. assimilis (Fabricius) and *G. multipulsator* Weissman.

Sister species with a slow chirp rate typically consisting of 6–9 (*G. assimilis*) or 11–17 (*G. multipulsator*) pulses per chirp (Figs. 60, 61). Separated by geography (Fig. 66 vs Fig. 72), DNA (Fig. 62), and song differences.