

FIGURE 28. Distribution of Diminutiva Group species.

## *Aglaothorax diminutiva* (Rentz & Birchim, 1968)

*Neduba* (*Aglaothorax*) *diminutiva*—Rentz & Birchim 1968: 63

Fig. 28 (distribution), Fig. 29 (male and female habitus, calling song, male and female terminalia, karyotype), Plate 6 (male terminalia), Plate 9 (female subgenital plate), Plate 13 (male titillators), Plate 15 (male calling song).

**Common name.** Diminutive Shieldback.

**History of recognition.** Described in *Neduba* (*Aglaothorax*) from Mount Diablo, Contra Costa County, California (Rentz & Birchim 1968). Support for species status came from a divergent karyotype (Ueshima & Rentz 1979). Three subspecies were then described from Southern California: *constrictans*, *dactyla*, and *malibu* (Rentz & Weissman 1981), the first of these without female specimens and the second from a female holotype. Below, we elevate the first two subspecies to species rank and synonymize the third under *A. dactyla*.

**Type material.** The holotype male is deposited at Academy of Natural Sciences at Philadelphia. Images of the holotype are available at OSFO (Cigliano *et al.* 2025). TOPOTYPES EXAMINED: (n=11) **USA, CA, Contra Costa Co.**, Mount Diablo State Park, 37.862703, -121.93107, 1160 m, 1-IX-2002, d B Weissman, CAS, 1♀; same data except 13-VIII-1994, d B Weissman, CAS, 1♂; same data except 37.881038, -121.916706, 1142 m, 11-VIII-1990, d B, d W Weissman, CAS, 5♀; Mount Diablo State Park, Juniper Camp, 37.862703, -121.93107, 886 m, 17-VIII-1965, d C, KA Rentz, CAS, 1♂; same data except 28-VIII-1982, d B Weissman, CAS, 1♂; Mount Diablo State Park, Muir Picnic Area, 37.8764, -121.9208, 1001 m, 20-21-VII-2005, JA Cole, LACM, 1♂; Mount Diablo State Park, summit, 37.862703, -121.93107, 1220 m, 13-VIII-1991, d B Weissman, CAS, 1♀.

**Measurements.** (mm, ♂n=8, ♀n=7) Hind femur ♂12.21–13.68, ♀13.85–16.27, pronotum total length ♂7.00–8.23 ♀7.00–7.75, prozona length ♂2.79–3.49, ♀3.21–4.36, metazona dorsal length ♂4.00–4.83, ♀2.84–4.35, pronotum constriction width ♂2.34–2.96, ♀2.60–3.50, metazona dorsal width ♂5.00–5.57, ♀4.85–5.40, head width ♂3.56–3.95, ♀4.25–4.69, ovipositor length ♀11.21–12.24.

**Distribution.** Interior South Coast Ranges of California. Type material is from the northernmost extent of these mountains in the Diablo Range, but we have determined specimens from throughout the interior South Coast Ranges.

**Habitat.** Chaparral and oak woodland understory. On Sage (*Salvia* spp.), Mountain Mahogany, Coast Live Oak (*Quercus agrifolia* Née), Scrub Oak (*Quercus* spp.), and Poison Oak.

**Seasonal occurrence.** Adult activity from spring (12-VI-2008, JA Cole, LACM) through summer (6-IX-2002, JA Cole, LACM).

**Stridulatory file.** (n=6) length 2.80–3.40 mm, 83–110 teeth, tooth density 32.0±1.6 (29.6–34.3) teeth/mm.

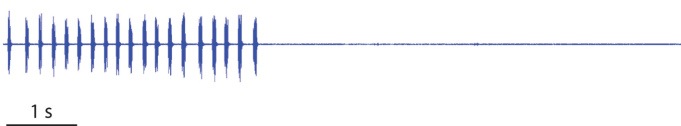
**Song.** (n=18) The common small *Aglaothorax* song with slowly produced, widely spaced pulse trains that occur slow enough that a human listener may count them. Pulse trains 70±40 ms in length are delivered at a rate of 4.34±0.88 s<sup>-1</sup>. Mean peak frequency is 15.14±4.54 kHz; high frequency recording equipment detected ultrasonic peak frequencies as high as 33.00 kHz. Echemes contain a variable number of pulse trains, typically a high number (mean 39±22, range 12–83 pulse trains). The echeme repetition rate range is 1–6 min<sup>-1</sup>. Acoustical activity intensifies as the night wears on. At the type locality, in Juniper Camp, a few paltry calls were heard before 2330 h. Upon awakening at 0130 h, some 15 males were calling in the same area. In San Luis Obispo County, singing did not begin in earnest until after 2330 h on 12-VI-2008, and in San Benito County on 10-VIII-2017, singing was frequent only after midnight.

**Karyotype.** (n=2), 2n♂=23(20t+Xm+Xt+y m), topotype T82-114 (S82-113). Ueshima and Rentz (1979) show the X<sub>1</sub> as a submetacentric, a condition confirmed at anaphase II in T82-114 (not shown in Fig. 28). The same karyotype was found from a population at Pinnacles National Park (Ueshima & Rentz 1979), confirming placement with this species. The sex determination is unique among *Aglaothorax*, a neo-X<sub>1</sub>X<sub>2</sub>Y system also shared with five species of *Neduba*: *N. arborea* Cole, Weissman, and Lightfoot, *N. duplocantans* Cole, Weissman, and Lightfoot, *N. inversa* Cole, Weissman, and Lightfoot, *N. prorocantans* Cole, Weissman, and Lightfoot, and *N. sierranus* (Rehn & Hebard) (Cole *et al.* 2021).

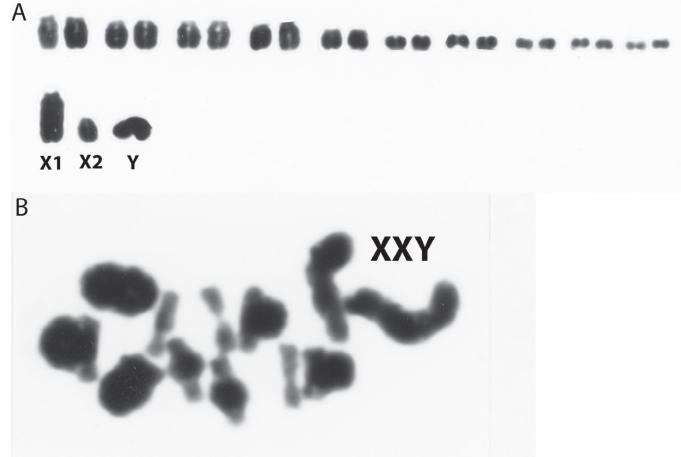
male TOPOTYPE USA. CA: Contra Costa Co. S94-96, R94-191



calling song TOPOTYPE USA. CA: Contra Costa Co. 25.0°C R94-191



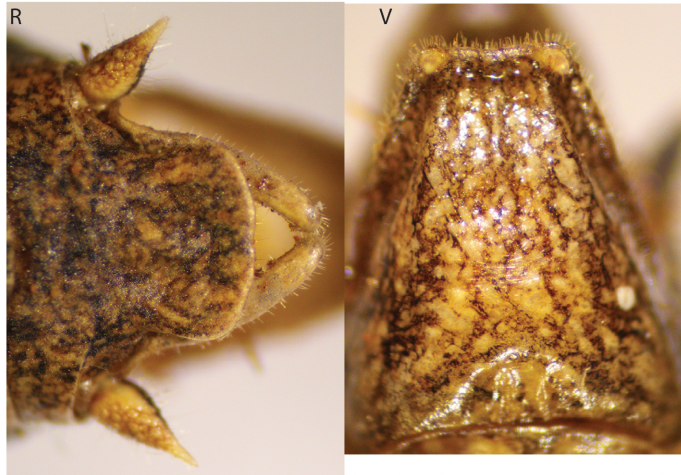
karyotype TOPOTYPE USA. CA: Contra Costa Co. S82-113, T82-114



female TOPOTYPE USA. CA: Contra Costa Co. S90-87



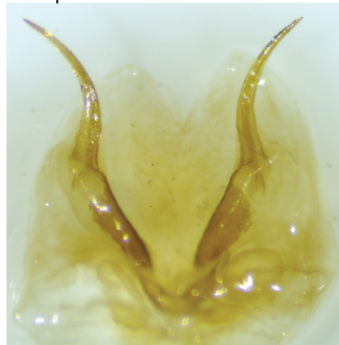
male terminalia TOPOTYPE USA. CA: Contra Costa Co.



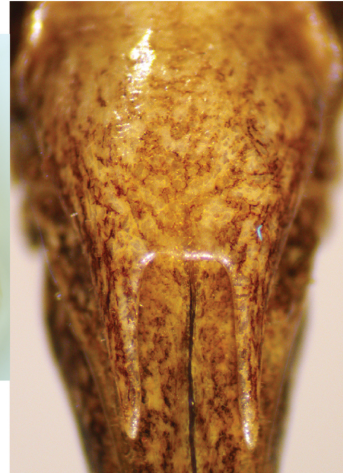
female USA. CA: San Benito Co. JAC000006520



titillators USA. CA: San Luis Obispo Co. JAC000002570



female subgenital plate TOPOTYPE USA. CA: Contra Costa Co.



**FIGURE 29.** *A. diminutiva* male and female habitus, calling song, male and female terminalia, and karyotype. A. Idiogram, *A. diminutiva*, type locality T82-114 (S82-113) showing  $X_1X_2Y$  sex chromosome system; B. Metaphase I in same male showing association of all 3 sex chromosomes, with submetacentric  $X_1$  and submetacentric Y apparent.

**Recognition.** Morphology, geography, karyotype. The male supra-anal plate is heart shaped, expanded after the base and indented along the caudal margin, and the titillator arms are long and bowed, character states that exclude all Morsei Group species. Likewise characteristic of the Diminutiva Group and exclusive of much of the Morsei Group, the male paraproct process has an apical tooth. Also occurring in the South Coast Ranges is *A. constrictans*, but in that species males have short, slightly curved titillator arms and females have short triangular subgenital plate lateral processes that are barely longer than wide. Female *A. diminutiva* have the subgenital plate lateral processes much longer than wide, and the processes meet the transverse caudal margin of the plate with a slight angle. Female *A. constrictans* have short, triangular subgenital plate processes that are scarcely longer than wide. Other Diminutiva Group species have the processes broadly rounded mesally onto the caudal margin of the plate. The processes of *A. diminutiva* are shorter and wider than those of *A. dactyla*. This is the only *Aglaothorax* species along the interior South Coast ranges and has the most northern distribution of any member of the genus. The *A. diminutiva* karyotype is unique among small *Aglaothorax* at  $2n\sigma=23$ .

**Notes.** Mount Diablo is a region of high endemism, particularly for Orthoptera where it is also the type locality of the endemic *Neduba diabolica* (Scudder) as well as the more wide-ranging *Capnobotes attenuatus* (Scudder). The lifespan of wild caught adults may be long: a female captured by DBW on 1-IX-2002 at the type locality lived until 8-XII and laid many eggs. *Ormia* parasitoid flies emerged within 5–7 days from each of five males brought back to the laboratory from Laguna Mountain Recreation Area, San Benito County. These males were collected late in the season in mid-August. We speculate as to whether the prevalence of early evening *Ormia* activity may be a factor that explains late night calling.

**Material examined.** (n=24) **All USA, CA, San Benito Co.,** Pinnacles Nat. Mon., Chalone Camp, 36.530796, -121.145198, 8-VII-1967, d C, KA Rentz, CAS, 1♂; Pinnacles Nat. Mon., Chalone Campground, 36.530796, -121.145198, 12-VIII-1982, d B Weissman, CAS, 1♂; Pinnacles National Monument, 36.530796, -121.145198, 427 m, 25-VII-1982, PH Sullivan, LACM, 1♀; Pinnacles National Park, Pinnacles Campground, 36.48970, -121.15072, 311 m, 6-VII-2023, JA Cole, C Wong, 1♂ song record; Pinnacles National Park, Pinnacles View Area, 36.48309, -121.16313, 306 m, 6-7-VII-2023, JA Cole, C Wong, LACM, 2♂; same data except JAC, 1♂, 1♀; Short Fence Trailhead, Coalinga Road, Laguna Mountain Recreation Area, BLM, 36.36403, -120.87840, 670 m, 10-11-VIII-2017, JA Cole, AMNH, 1♂; same data except LACM, 4♂; Upper Sweetwater Campground, Coalinga Road, Laguna Mountain Recreation Area, BLM, 36.36067, -120.85256, 848 m, 10-11-VIII-2017, JA Cole, 1♂ song record; **San Luis Obispo Co.,** La Panza Campground, Los Padres National Forest, 12 miles northeast of Pozo, 35.3538, -120.2606, 732 m, 12-13-VI-2008, JA Cole, LACM, 2♂; same data except JAC, 2♂; same data except 9-10-VI-2002, JA Cole, AMNH, 1♂; same data except LACM, 2♂; same data except JAC, 1♂; **Santa Clara Co.,** Uvas Canyon County Park, 15 miles west of Morgan Hill on Croy Road, 37.0855, -121.7954, 349 m, 6-IX-2002, JA Cole, LACM, 1♂; same data except JAC, 1♂.