

The Antioch Sand Dunes have received widespread recognition because of their unique geographic location and because northern taxa of typically desert species are known from there. It is also the type locality for many insects including another endemic decicid, *Idiostatus middlekauffi* Rentz. This species (see Rentz, 1973) was periodically common at the present dune site, at least in the late 1960's. The dunes and their unique insect fauna were popularized during the 1950's when Life Magazine devoted an article with a full color skematic drawing of the dunes and some of its inhabitants, including *Idiostatus middlekauffi*. This has been reprinted along with a photograph of the original dune site in the Time-Life Nature Library book on North America (see Farb, 1964).

The author made repeated trips to the Antioch Dunes during the 1960's both at night and during the day at different times of the year and has never encountered a *Neduba* species. It seems unlikely that this species exists elsewhere.

Neduba (Neduba) extincta Rentz, New Species

(Figures 1-5)

Species description. — HOLOTYPE MALE. Antioch, Contra-Costa County, California, 1 July 1937. E.S. Ross collector. Holotype deposited in California Academy of Sciences, number 12,987. Size large for genus, from robust. HEAD well seated in pronotum; fastigium of vertex with feeble sulcus, frons flat; eye ovo-elliptical, shallow. Pronotum not greatly produced distad as in other species, covering only about half of first abdominal tergite; apex of tegmen slightly protruding from beneath pronotum; anterior margin of pronotum straight, posterior margin obtuse, lateral carinae convergent proximad; lateral lobes of pronotum with borders evenly obtuse, posterior portion declivent; median carina barely perceptible; anterior fifth of disc cut by a single sulcus, obsolete mesad; dorsal surface of disc smooth but not glabrous; prosternum bearing a pair of widely separate aciculate processes; mesosternum produced laterally forming a pair of quadrate processes; metasternum similarly formed but processes lower. APPENDAGES: fore tibia armed on dorsal surface with 0 and 1 spine on anterior margin positioned in distal quarter, posterior margin with 2 spines, one positioned over auditory foramen, the other at apex; ventral surface bearing 6, 7 spines on both margins; middle tibia armed dorsally with 3 spines on anterior margin, all positioned in proximal third, posterior margin with 4 spines, the 4th spine positioned at apex, ventral surface bearing 7 spines on both margins; hind tibia armed dorsally with a large number of close-set spines of equal lengths, apex without spurs, ventral surface with several widely spaced spines, apex with a pair of spurs, the inner of which is much the longer. Plantula elongate, two-thirds the length of metatarsus. All femora unspined ventrally; fore femur armed on dorsal surface with 5 spines, 4 positioned in proximal quarter, the other subapically; middle tibia armed with 4 and 5 spines dorsally, one positioned subapically; dorsal surface of hind femur armed with a large number of spines all positioned on surface proximad to narrow distal portion. Genicular lobe of fore femur armed only on

**A NEW AND APPARENTLY EXTINCT KATYDID FROM
ANTIOCH SAND DUNES
(ORTHOPTERA: TETTIGONIIDAE)¹**

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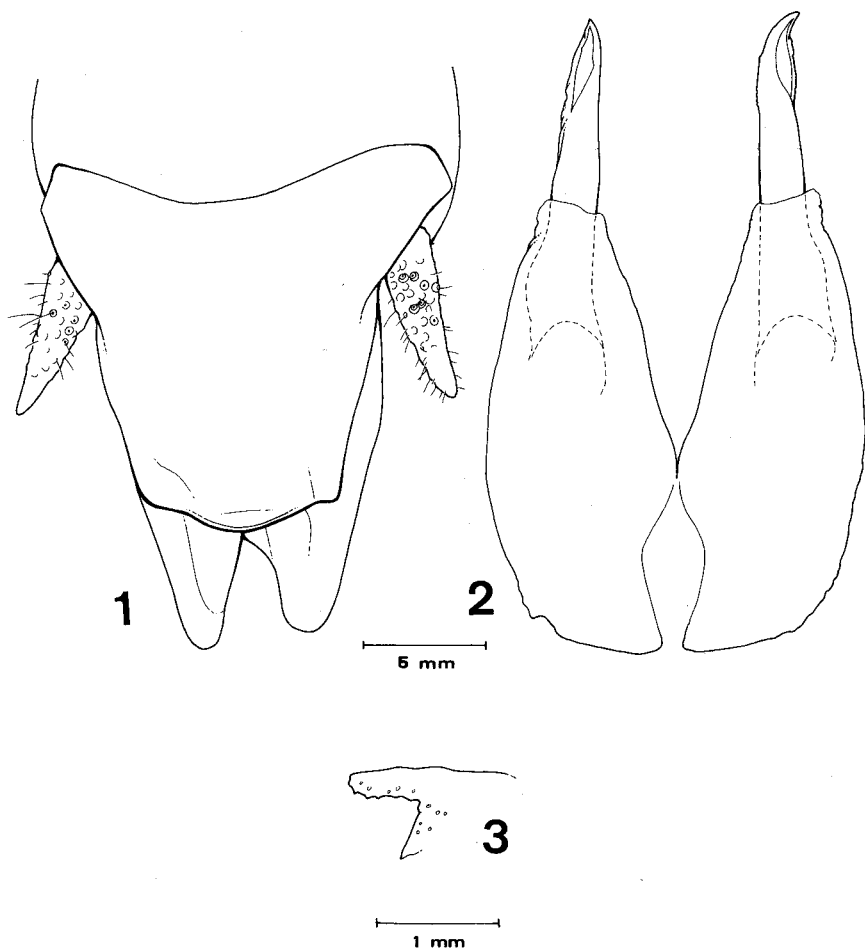
ABSTRACT: A new species of shield-backed katydid is described from the Antioch Sand Dunes, Antioch California which formerly occupied a considerable acreage along the Sacramento-San Joaquin Rivers but which is now a small highly disturbed parcel which may soon be completely destroyed. The holotype male is the only specimen known of the species which is now believed to be extinct.

Systematic and ecological studies in recent years on the western Decticinae have yielded some interesting records (see Rentz and Birchim, 1968; Rentz, 1972; Rentz, 1973) but none as peculiar as the species described in this paper. The male specimen reported here is apparently the sole existing representative (living or dead) of a species which was restricted to the narrow band of sand dunes in Antioch, California. The dunes now are largely destroyed either due to building construction or various other forms of habitat disturbance. The katydid is particularly distinctive for the genus *Neduba* and is of zoogeographical interest because of the proximity of the type locality (Mt. Diablo) of the widespread and abundant *Neduba (Neduba) diabolica* (Scudder).

The Antioch Sand Dunes are unique aeolian deposits and were once situated on the south shore of the confluence of the Sacramento and San Joaquin Rivers. This narrow band of sand, believed to be late Pleistocene in age, occupied several miles of shoreline. Now, industry, development, and sand removal have reduced the dunes to a few acres near the Pacific Gas and Electric tower on Wilbur Ave. The encroachment of introduced plants and the retardation of the free "waxing and waning" of sand have severely affected the area. And for some reason, no new sands are being deposited. The grazing of penned horses, tillage of soil, and severe dry summer of 1976 with concurrent brush fire probably have sounded the death knell for the Antioch Dunes.

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Figures 1-3. Terminalia of holotype male *Neduba extincta* Rentz, new species. Fig. 1, dorsal view apex of abdomen; Fig. 2, titillator; Fig. 3, ventral sclerite.

anterior lobe with a single spine; middle femur armed similarly but on both lobes; hind femur armed only on internal lobe. ABDOMEN: dorsal surface with trace of median carina, apex with tenth tergite, cerci, and pseudocerci as (figs. 1, 5); subgenital plate without styles, apex very narrow, cut by an abrupt but shallow V-shaped incision. Titillator (figs. 2, 3), ventral sclerite feebly serrate. COLORATION: overall general coloration pale (not really shown in figs. 4-5) straw brown; head with mottling ventrad of eye; antenna dark with highly contrasting light and dark annuli; pronotum concolorous straw brown except apical rim which is alternately marked similar to antenna (fig. 5). Fore and middle femur with subapical dark annulus; fore and middle tibiae with two annuli, less extensively defined; hind femur with mottled areas dorsally (fig. 5), outer pagina with a narrow longitudinal stripe.

Measurements. — (in mm) Length body, 28.0; Length pronotum, 9.9; width pronotum, 6.6; Length hind femur, 21.8.

Derivation of name. — This species is named with reference to its probable status.

Discussion

Neduba extincta Rentz, new species is a member of the subgenus *Neduba* as indicated by the quadrate tenth tergite and distinctive titillators with parallel arms. It is very distinct from other species in the subgenus in the shape of the pronotum, its large size, and very pale coloration. The armature of the legs is also unique. Topotypic *N. (N.) diabolica* from Mt. Diablo, not far from the Antioch Dunes, have a pair of apical spines on the dorsal surface of the fore tibia rather than the single spical spine on the posterior margin. *N. (N.) extincta* is the sole known member of the subgenus lacking styles on the male subgenital plate.

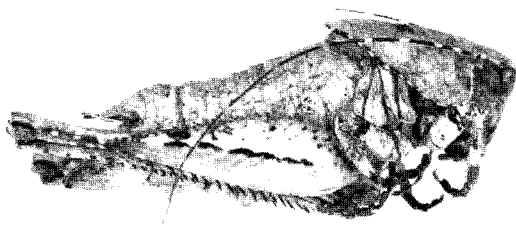
The author has searched collections in the San Francisco Bay Area likely to have material from the Antioch Dunes for additional specimens but none have been located.

ACKNOWLEDGEMENTS

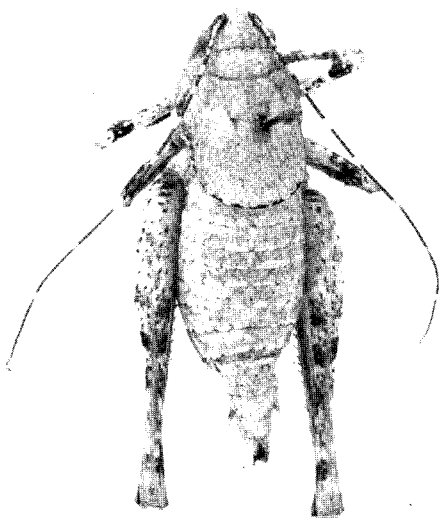
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Figures 4, 5. Holotype male *Neduba extincta* Rentz, new species. Fig. 4, lateral view; Fig. 5, dorsal view.