

ADDITIONAL BUG (HEMIPTERA, REDUVIDE) ANNOYANCE AND *Trypanosoma cruzi* IN SOUTHWESTERN NATIONAL MONUMENTS

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INTRODUCTION

The writer has recorded a brief historical sketch of conenose bug annoyance and *Trypanosoma cruzi* Chagas in Arizona and New Mexico as well as new data for 1952 (Wood, 1953). Additional information on occurrence of conenose bugs, *Triatoma*, and related genera, *Oncocephalus*, *Zelus* (*Spiniger*), *Rhignia*, etc., is reported here for the same area. One male *Triatoma longipes* Barber from a residence in Tonto National Monument was found naturally-infected with *Trypanosoma cruzi*.

OBSERVATIONS

Minor annoyance to feeding of *Triatoma rubida uhleri* (Newy) was reported for Caucasians as follows: from Gila Pueblo for 14 adults and 8 children exposed, "enclosed is one ♀ kissing bug which I caught the night of June 6th after it had finished 'kissing' my wife and was on its way back to a hiding place under the mattress. Although my wife was not aware that she had been bitten, the bug had, without a doubt, just finished feeding for it was replete with fresh blood when captured. An itching sensation was noticed about two minutes after the bite and a small welt began to appear at that time also. Apparently the bug had been hiding in the bed for several nights as I had been finding welts on my

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arms for several mornings before the bug was captured. Neither my wife nor I have had the least discomfort from the bites except for itching and a welt such as might have been the result of a mosquito bite." (L. P. A.); at the Madrona Ranger Station in Saguaro National Monument of 3 adults and 4 children exposed, "during August of 1952 my mother was bitten three times on the upper left arm and each spot raised a large welt, turned blue-black about 12 hours later and almost paralyzed the entire left arm and hand for three days. A ♀ conenose bug was found between the sheets the morning after the attack." (G. E. S.); and at Tuzigoot National Monument of 4 adults exposed, a ♂ *rubida* "bit her on the hand with the result, that there were several hard welts 2 inches in diameter on her hand and wrist. Must have fed while she was sleeping. Found the insect under the rug alongside the bed." (L. M.P.) and a ♀ *rubida* from the bedroom was responsible for "several large welts over the body" (J.W.B.).

At Tuzigoot in September, 2 well-fed, fourth instar *rubida* were removed from a 3-year-old boy's bed showing that these bugs may occur in houses as nymphs or enter through cracks especially under doors in search of warm-blooded hosts (L. M. P.).

During the summer of 1953, the following Triatominae were received: 1 ♀ *Triatoma protracta* (Uhler) from Chaco Canyon, New Mexico (A. W.); 4 ♂ and 3 ♀ *T. rubida uhleri* and 1 ♂ *T. longipes* from Gila Pueblo, Globe, Arizona (L. P. A.); 2 ♀ *T. protracta* from Montezuma Castle (L. M. P.); 2 ♂ and 10 ♀ *T. rubida uhleri* from Saguaro (G. E. S.); 1 ♂ *T. protracta*, 16 ♂ and 14 ♀ *T. rubida uhleri*, and 3 ♂ and one 5th nymph of *T. longipes* from Tonto (G. R. W.); 2 ♂ *T. longipes* from Tumacacori (W. C. B., F. G. S.); and 1 ♀ *T. protracta* and 1 ♂, 2 ♀ and 2 fourth instar nymphs of *T. rubida uhleri* from Tuzigoot (J. W. B., L. M. P.). Additional Arizona sources were 1 ♀ *T. rubida uhleri* from a residence in Globe, Gila Co. (L. P. A.); 1 ♀ *T. rubida uhleri* and 1 ♀ *T. sanguisuga indictiva* (Neiva) collected by O. W. Deubler from the Tubac Inn, Santa Cruz Co. (F. G. S.) and 1 ♂, 2 ♀ and one 5th nymph of *T. rubida uhleri* and 3 ♂, 2 ♀ and two 5th nymphs of *T. longipes* collected by Barton Wright from Ramonote Canyon, off the Santa Cruz River, Santa Cruz Co. (F. G. S.).

The Triatominae from Gila Pueblo, Tumacacori, Tuzigoot and Globe came from inside the houses while all others were collected from the screen surfaces of doors and windows and walls of the various dwellings or in a cave as at Ramonote Canyon. One *rubida* was collected in a living room at Globe while the Gila Pueblo and Tuzigoot specimens were taken in bedrooms. At Tumacacori, one *longipes* was found in bed and the other crawling on the living room curtains. One *rubida* and *sanguisuga* were found inside the house at Tubac Inn. In ten minutes collecting

at Tonto National Monument in early June, 11 *rubida* and 2 *longipes* were taken from window and door screens of one residence (G. R. W.).

Previous mention of moisture in relation to *Triatoma* abundance has been noted by Wood (1950). From Tonto on July 18th, Archeologist Wenger wrote as follows: "This spring, we had no rain from March 3rd until July 7th and we have seen few bugs. However, beginning July 7th and continuing to date we have had a number of good rains and the *Triatoma* are out and we are again collecting them." On August 1st, Archeologist Pierson from Montezuma Castle reports that "the first rains of summer came on July 5th and it has been more or less raining ever since. The *Triatoma* were first noticed several days after the rains began and the insect population in general was much more in evidence after the rains."

From Saguaro National Monument, Ranger Steele forwarded 12 *Triatoma rubida uhleri* collected on the windows on July 11, 1953 with the comment that these bugs "have been common for 7 or 8 weeks and it is not unusual to count up to 24 each evening at the Madrona District Ranger Station residence." Such bug abundance compares with that observed at the Alvarado Mine during the summers of 1939-41 (Wood, 1941, 1943).

Ranger Smith reports association of *Triatoma* with chickens at the Tubac Inn, as previously noted by Wood (1941). He also reports *longipes* and *rubida* from a cave excavation in Ramonote Canyon writing as follows: "the *Triatoma* seem to wait in the cave for warm-blooded hosts." One *longipes* "came from beneath a rock near the front of the cave."

Verification of *Triatoma protracta* at Montezuma Castle is noted here as indicated above and reported by Wood (1953).

Examination in sodium citrate solution of the feces of 1 ♂ *Triatoma longipes* (received 21-VII-53) from Tonto National Monument revealed numerous actively motile crithidiform and a few trypanoform stages of *Trypanosoma cruzi* even though the bug had been dead for several days. This verifies the suspected bug infection for Tonto mentioned in 1952 (Wood, 1953).

The following bugs examined for trypanosomes were negative: 1 ♀ *protracta* from Chaco Canyon; 1 ♂ and 1 ♀ *rubida* and 1 ♂ *longipes* from Gila Pueblo; 1 ♀ *rubida* from Globe; 2 ♀ *protracta* from Montezuma Castle; 1 ♂, 2 ♀ and one 5th nymph of *rubida* and 3 ♂ and 2 ♀ *longipes* from Ramonote Canyon; 2 ♂ and 9 ♀ *rubida* from Saguaro; 12 ♂ and 14 ♀ *rubida*, 2 ♂ *longipes*, and 1 ♂ *protracta* from Tonto; 2 ♂ *longipes* from Tumacacori; and 1 ♂, 2 ♀ and two 4th instar *rubida* and 1 ♀ *protracta* from Tuzigoot. Thus, of 80 mostly dead Triatominae received, 64 were examined and one was found naturally-infected with *Trypanosoma cruzi*.

Additional bug associates of conenoses collected in and about residences for the summers of 1952 (3) and 1953 (21) were the following: 1 ♂ *Oncocephalus nubilus* Van Duzee and 1 ♂ *Reduvius personatus* Linnæus from Bandelier National Monument (F. W. B.); 1 ♂ *Reduvius senilis* Van Duzee and 1 ♂ *Rhiginia cinctiventris* Stal from Montezuma Castle National Monument (L. M. P.); 1 ♂ *O. nubilus* and 1 ♂ *Rasahus thoracicus* Stal from Saguaro National Monument (G. E. S.); 1 ♀ *Leptoglossus clypealis* Herrich-Schæffer, 8 ♂ *O. nubilus*, 2 ♂ and 1 ♀ *Zelurus (Spiniger) arizonensis* (Banks), 1 ♂ *Rhiginia cinctiventris*, 1 ♀ *Apiomerus spissipes* (Say), and 1 ♂ *Zelus exsanguis* (Stal) from Tonto National Monument (G. R. W.); 1 ♀ *R. thoracicus* and 1 ♀ *Lygæus lateralis* Dallas from Tumacacori National Monument (W. C. B., F. G. S.); and 1 ♂ *R. thoracicus* from the Tubac Inn (F. G. S., O. W. D.). All of these bugs belong to the family Reduviidæ excepting *Leptoglossus* (Coreidæ) and *Lygæus* (Lygæidæ).

DISCUSSION

Many of the bugs belonging to the family Reduviidæ are commonly called assassin bugs because of their feeding habits on insects. *Oncocephalus* has been fed on flies in the laboratory by Readio (1927). *Reduvius personatus* feeds on bedbugs, flower beetles, May flies, house flies, leaf hoppers, grass bugs, grasshoppers, etc. (Readio, 1927, Matheson, 1950) and is known to inflict a painful bite when handled roughly by man (Blatchley, 1926, Herms, 1950). In laboratory experiments *Reduvius personatus* and *Reduvius senilis* killed *Triatoma protracta*. *Rasahus thoracicus* is a known insect destroyer (Readio, 1927) and severe biter of man when roughly handled or injured by flying into blinding lights at night (Essig, 1936, Herms, 1950). *Apiomerus spissipes* is a known control agent of plant insect pests many of which are of economic importance (Readio, 1927) and is known to inflict a painful bite for man when carelessly handled (Blatchley, 1926, Readio, 1927). *Zelus exsanguis* was raised on house flies by Readio (1927).

Little appears to be known concerning the habits of *Reduvius senilis*, *Zelurus (Spiniger)*, and *Rhiginia* but part of the attraction to houses is probably in search of other insects as food, possibly *Triatoma*. Therefore, it is important for man in these areas where *Triatoma* annoyance occurs to be able to separate beneficial insect feeders from blood feeders and this can be done by noticing the form of the beak or proboscis. The assassin bugs, *Oncocephalus*, *Reduvius*, *Zelurus (Spiniger)*, *Rasahus*, *Rhiginia*, *Apiomerus* and *Zelus*, have short proboscides like the conenoses, *Triatoma*, but they curve downwards forming an arch under and

away from the head from the tip of the "nose" to the "chest" in contrast to the short, straight, slender-tapered beak of *Triatoma* which lies close to the under surface of the head. Plant feeding bugs like *Leptoglossus* and *Lygaeus* have longer, nearly straight, slender beaks like *Triatoma* but the proboscis extends beyond the "chest" to the "belly" of the insect. However, there are no easy methods of specific identification of these bugs without intensive study of basic insect anatomy.

SUMMARY

Minor annoyance to the feeding of *Triatoma rubida uhleri* on man was reported for central Arizona. *Trypanosoma cruzi* was found for the first time at Tonto National Monument in *Triatoma longipes*. Twenty-two assassin bugs, representing *Oncocephalus Reduvius*, *Zelus (Spiniger)*, *Rasahus*, *Rhignia*, *Apiomerus* and *Zelus*, were collected with *Triatoma*.

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