

FURTHER NOTES ON THE HABITS OF SOME FLAT BUGS
WITH A DESCRIPTION OF THE MALE OF ARADUS
PATIBULUS VAN DUZEE
(Hemiptera, Aradidae)

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The following observations on aradids were made between May 10th and June 15th, 1942, in the Sierra Nevada Mountains of Madera and Mariposa counties in the vicinity of the south entrance of Yosemite National Park, California. As in our previous paper,¹ biological observations are by E. G. Linsley, taxonomic notes and identifications by R. L. Usinger.

Aradid spring dispersal flights were observed at Miami Ranger Station, Madera County. The flights began on May 19th, which was the third of three successively warmer days after the end of the spring snow storms and rains. On May 19th, the flight began at approximately 5 P.M. P.S.T. and was over by 6:15 P.M. A sample of 102 specimens was taken. This included 6 species, of which 51 per cent of the examples were *Aradus behrensi* Bergr. On May 20th a second flight occurred. The day was warm but overcast in the late afternoon. The flight began at approximately 4 P.M., was over by 5:30 when the temperature began to fall. The same sampling method yielded only 39 examples of two species, with *A. behrensi* again predominant. On May 21st, a third flight occurred, this time on a warm but wholly overcast day. The flight began at about 4 p.m., lasted until approximately 6:00. Forty-three examples were taken representing six species, of which more than 50 per cent were again *behrensi*. On this date three species appeared which had not been represented in previous samples. This was the last flight observed. On both May 22nd, and 23rd, one example of *behrensi* was taken but no further examples were captured in flight between May 23rd and June 15th (termination of observation).

Associated with the aradids in their dispersal flights were numerous species of Coleoptera (fig. 1). Although the samples

¹ Linsley, E. G. and R. L. Usinger, 1942. Notes on some flat bugs from the vicinity of Mt. Lassen, California. Pan-Pac. Ent., 18:83-86.

obtained are too small to be of significance as far as most of the individual species are concerned, the totals clearly indicate that the flights of these insects as a group were correlated with those of the aradids. Of further significance would appear to be the fact that the majority of these species are bark inhabitants, as are aradids, the remainder mostly wood borers. This suggests that the same factors which initiate aradid dispersal also influence emergence of other insects which occupy the same habitat.

ARADINAE

ARADUS AMPLIATUS UHLER

This species was not encountered until the third day of dispersal flights. This is of interest in view of the fact that in the Mt. Lassen area adults were taken in flight two days prior to the flights of other species.

ARADUS PATIBULUS VAN DUZEE

Taken in flight only on May 19th. Adults later found under bark of western yellow pine at Fish Camp, Mariposa County. Not previously observed in dispersal flight.

Male. Antennae and pronotum as in the female (Usinger, Ann. Ent. Soc. Amer., 29:515, plate I, fig. 4A, 1936) but size smaller, 7 mm. long, $2\frac{1}{2}$ mm. wide across pronotum, and $3\frac{1}{2}$ mm. wide across the abdomen. Male genital capsule similar to that of *ampliatius* Uhler (Usinger, *Loc. cit.*, fig. 4) but narrower than long, 27::29; more narrowed basally with shallower, rounded basal sinuation; and apical lobes a little more strongly produced, extending beyond general contour of abdomen. Other characters as in the female.

Neallotype, male, Miami Ranger Station, Mariposa County, California, May 20, 1942 (E. G. Linsley).

ARADUS DEPICTUS VAN DUZEE

In flight on May 21st. This species was not encountered in the Mt. Lassen area.

ARADUS FUSCOMACULATUS STÅL

In flight only on May 19th. Also found under bark of western yellow pine at Sugar Pine, Madera County. Not previously observed in dispersal flight.

ARADUS BEHRENSI BERGROTH

This species dominated the dispersal flights on May 19-21, but was most numerous (52 examples) on May 19th. On May 30th, at Bass Lake, Madera County, 67 adult specimens were found under a six-inch square of bark of *Quercus kelloggii*,

Table I

COLEOPTERA ASSOCIATED IN ARADID DISPERSAL FLIGHTS - MIAMI RANGER STATION - MAY 1942

	May 18	May 19	May 20	May 21	May 22	May 23
<i>Leptura pictum</i> Fauv. (Staphylinidae)	0	12	2	0	0	0
<i>Alonothroscus validus</i> Lec. (Throscidae)	0	14	1	2	0	0
<i>Throscus mendax</i> Horn (Throscidae)	0	6	0	2	0	1
<i>Eronyxa expansa</i> Van Dyke (Ostomidae)	0	3	0	0	0	0
<i>Calitys scabra</i> Thunberg (Ostomidae)	0	2	1	0	0	0
<i>Tenebroides sinuatus</i> LeConte (Ostomidae)	0	1	3	2	0	0
<i>Lobiopa oblonga</i> Parsons (Nitidulidae)	0	1	1	4	0	1
<i>Perthalyora murrayi</i> Horn (Nitidulidae)	0	3	5	0	0	0
<i>Glischrochilus cylindricus</i> (LeConte) (Nitidulidae)	0	1	2	0	0	0
<i>Laemophloeus</i> sp. (Cucujidae)	0	6	19	7	0	0
<i>Laemophloeus</i> sp. (Cucujidae)	0	1	5	3	0	0
<i>Cryptophagus</i> sp. (Cryptophagidae)	0	3	2	0	0	0
<i>Mycetophagus californicus</i> Horn (Mycetophagidae)	0	11	2	0	1	0
<i>Laeonotus complex</i> LeConte (Colydiidae)	0	0	9	0	0	0
<i>Aulonium longum</i> LeConte (Colydiidae)	0	0	3	1	0	0
<i>Phymaphora californica</i> Horn (Mycetidae)	1	8	5	5	0	0
<i>Ptinus interruptus</i> LeConte (Ptinidae)	0	2	0	2	0	0
<i>Ernobius punctulatus</i> (LeConte) (Anobiidae)	0	2	10	4	0	0
<i>Stephanopachys pacificus</i> Casey (Bostrichidae)	0	7	6	3	0	0
<i>Spondylis upiformis</i> Mannerheim (Cerambycidae)	2	6	11	3	1	1
<i>Asemum nokelunne</i> (Casey) (Cerambycidae)	0	3	1	0	0	0
<i>Atimia dorsalis</i> LeConte (Cerambycidae)	0	4	14	9	0	0
<i>Gylptocelis sequoiae</i> Blaisdell (Chrysomelidae)	0	2	11	0	1	0
<i>Rhinomaecr bombifrons</i> LeConte (Curculionidae)	0	1	3	0	0	0
<i>Pissodes yosemite</i> Hopkins (Curculionidae)	0	2	6	3	0	1
<i>Cossonus ponderosae</i> Van Dyke (Curculionidae)	0	8	11	5	1	0
<i>Cossonus crenatus</i> Horn (Curculionidae)	0	4	7	0	2	0
<i>Dendroctonus valens</i> LeConte (Scolytidae)	2	38	53	16	2	0
<i>Hylurgops lecontei</i> Swaine (Scolytidae)	0	9	12	2	0	2
<i>Hylastes nigrinus</i> (Mannerheim) (Scolytidae)	0	19	34	4	1	2
<i>Hylastes macer</i> LeConte (Scolytidae)	14	148	113	78	14	6
<i>Pityophthorus</i> sp. (Scolytidae)	0	6	2	0	1	0
<i>Ips latidens</i> (LeConte) (Scolytidae)	0	2	4	3	0	0
<i>Gnathotrichus sulcatus</i> (LeConte) (Scolytidae)	0	3	17	2	0	0
TOTAL	19	415	375	160	24	14

where they had apparently congregated for mating. No immature stages were present.

ARADUS APICALIS VAN DUZEE

In flight only on May 21st. Dispersal flights of this species have not been previously recorded.

ARADUS DEBILIS UHLER

Small flight on May 19th. This species overwinters as adults or last instar nymphs. First instar nymphs were found on *Polyporus volvatus* fungi on fallen western yellow pine on May 28th, 9 days after the dispersal flight was observed. Adults were also found in large numbers on the dark upper surface of the fungus, *Fomes penicola*, on fallen white fir at Mariposa Big Trees, June 6th. Because of perfect cryptic coloration they were very difficult to detect and several minutes were required to complete examination of each fungus. The maximum number of individuals encountered on a single fungus was fourteen.

ARADUS BLAISDELLI VAN DUZEE

In flight on May 19th. Dispersal flight not previously recorded. Adults also found under bark of western yellow pine.

ARADUS COMPRESSUS HEIDEMANN

In flight on May 19th, 20th, and 21st. Largest flight on May 19th.

ARADUS CINNAMOMEUS PANZER

Commonly beaten from branches and new foliage of western yellow pine at Miami Ranger Station and Fish Camp, Mariposa County, from May 19th to June 10th. A few examples were also found on *Abies concolor* at Sugar Pine, Madera County.

MEZIRINAE

MEZIRA REDUCTA VAN DUZEE

Found at Miami Ranger Station in colonies of *Zootermopsis* in western yellow pine, sugar pine, white fir, and red fir, and in nests of *Xylocopa californica* in incense cedar.

MEZIRA PACIFICA USINGER

Taken under bark western yellow pine, sugar pine, Digger pine, white fir, incense cedar, *Quercus kelloggii*, *Alnus rhombifolia*, and *Populus trichocarpa*.



Linsley, E Gorton and Usinger, Robert L. 1944. "Further notes on the habits of some flat bugs with a description of the male of *Aradus patibulus* Van Duzee (Hemiptera, Aradidae)." *The Pan-Pacific entomologist* 20, 111–114.

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