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Contribution to the knowledge of the species Aradus ribauti Wagner, 1955 (Heteroptera: Aradidae)

By

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Abstract: Description of the larval instars II to V of Aradus ribauti Wagner, 1955, with remarks on the larval growth and biology of the species is given. Its occurrence in Romania is reported for the first time.

Aradus ribauti described some twenty years ago is one of the less known European Aradus species as far as its distribution and biology are concerned. Consequently, it was interesting to find flowering populations of the species on some dead trunks of Populus alba attacked by tinder fungus on a sandy area of the Great Hungarian Plain (Fülöpháza and Ágasegyháza, near Kecskemét in the territory of the Kiskunság National Park). Since the betulae-group of closely related species has several problematic questions every detail is a valuable contribution towards a better understanding of their relations.

Additional data on distribution: By the kind loan of B. KIS (Cluj, Romania) I could identify one exemplar of A. ribauti (Craiova, 28. VI. 1964, leg. B. Kis). Thus, this species also occurs in Romania.

Larval development: The materials examined were collected several times in field and numerous exemplars were reared on tindery pieces of bark kept in glass vessels and watered in every 2-3 days, respectively. The populations were consisted of different larval instars in each case. Adults were observed in copula at the end of April and in the first days of May. In this time only instars IV and V larvae were found. The eggs were deposited under the bark or in laboratory on the reverse of the bark, or in hidden places, e. g. into splits of the bark, one by one, rarely two or three at a time. At the end of May no living imago but many instar II larvae were observed. At the end of July in field mostly instar V larvae were found while in the population brought in on the 3rd. May even living imagos were represented amongst the mostly instar III larvae. Laboratory rearing thus proved useless for investigations as regards time, however, no significant morphological differences have been found. In autumn (6 October) two kinds of populations were found in field. The first comprised only imagos, the second, geographically near to the former, contained of instars III to V larvae and imagos.

The bugs in field were ordinarily sitting on the underside of the trunk even in the case when the upper parts were tindery or under the bark, respectively (each trunk was lying on the ground).

Table 1.
The average measurements (mm) of different stages of A. ribauti

	I	II	III	IV	V♂	V♀	Ad. ♂	Ad. ♀
Length of body	-	1.6	3.0	4.2	5.5	6.4	7.3	8.5
Length of head	-	0.44	0.61	0.87	1.14	1.17	1.32	1.46
Width of head	-	0.45	0.63	0.87	1.14	1.15	1.19	1.30
Length of ant. joint I	0.04	0.09	0.11	0.14	0.20	0.20	0.22	0.24
Length of ant. joint II	0.08	0.17	0.23	0.39	0.64	0.66	0.98	1.00
Length of ant. joint III	0.07	0.12	0.14	0.23	0.34	0.34	0.44	0.46
Length of ant. joint IV	0.18	0.24	0.28	0.34	0.43	0.43	0.48	0.48

The populations were too small to collect longer series satisfactory for statistical computation especially because of the great variability of the larval instars as regards size. Table 1 gives the average of some measurements taken on samples of several exemplars available. Some length ratios characteristic of larval development are given as well. Worthy to mention is the change in length ratio of antennal joints II and IV and those when compared with the width of head (Fig. 1-2). Unfortunately, no first instar larva was in the collected material, the length of their antennal joints was measured on the larval exuviae. On the basis of some morphological characters, first of all, the stronger constitution and general shape of the abdomen connected unambiguously with the characteristic form of pronotum, I distinguished the males and females of the last two larval instars.

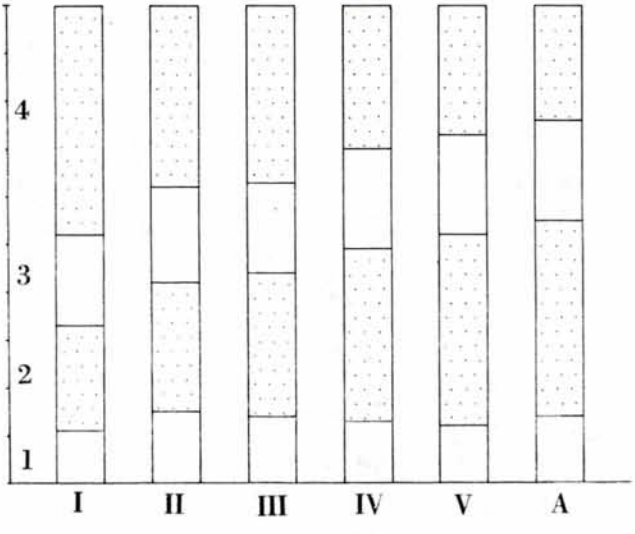

Fig. 1. Relative growth of antennal joints (length of joints compared properly with length of antenna)

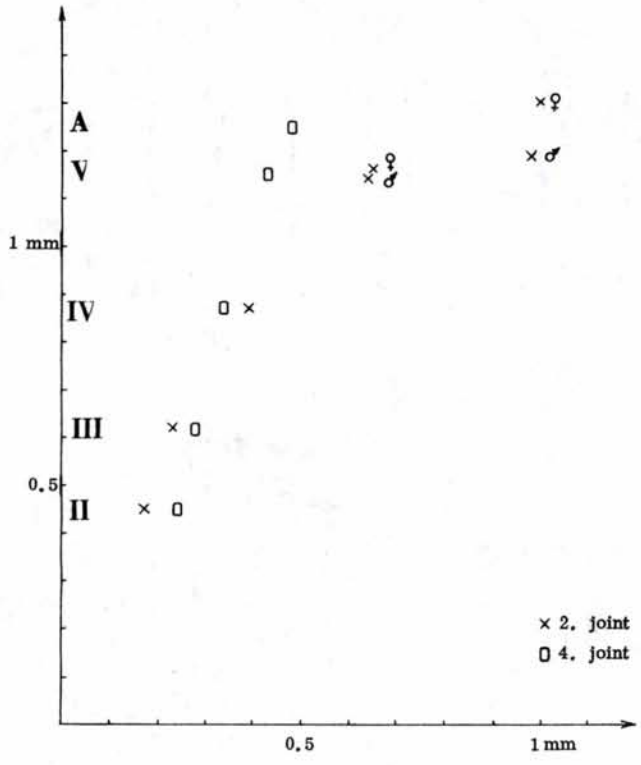

Fig. 2. Relative growth of second and fourth antennal joints (length of joints compared with width of head)

DESCRIPTIONS OF THE LARVAL INSTARS II TO V

Second larval instar (Fig. 3): Long oval, light brown with yellow markings. Head about as long as wide. White tubercles on antennal joint II and on legs. Antenniferous tubercles blunt with small hardly protruding tooth. Pre- and postocular tubercles not visible. Antennae thick, brown joint IV the longest. Pro-, meso- and metanotum with hardly serrate lateral margins. Median carinae visible on pronotum, lateral carinae represented by few white tubercles. Hind border of metanotum sinuated. White tubercles sparse on tergites. Abdominal scent gland openings clearly visible. Connexival plates with increasingly widely serrate lateral margins posteriorly, rounded on posterior segments. Lateral margin of segment IX strongly surpassing tip of that of segment VIII. Spiracles VIII laterodorsal. Glabrous areas on tergites 2:1:1, on sternites 1:1:1. Rostrum reaching hind border of mesonotum. Total length 1.5-1.7 mm, relative length of antennal joints I to IV as 8:15:11:22.

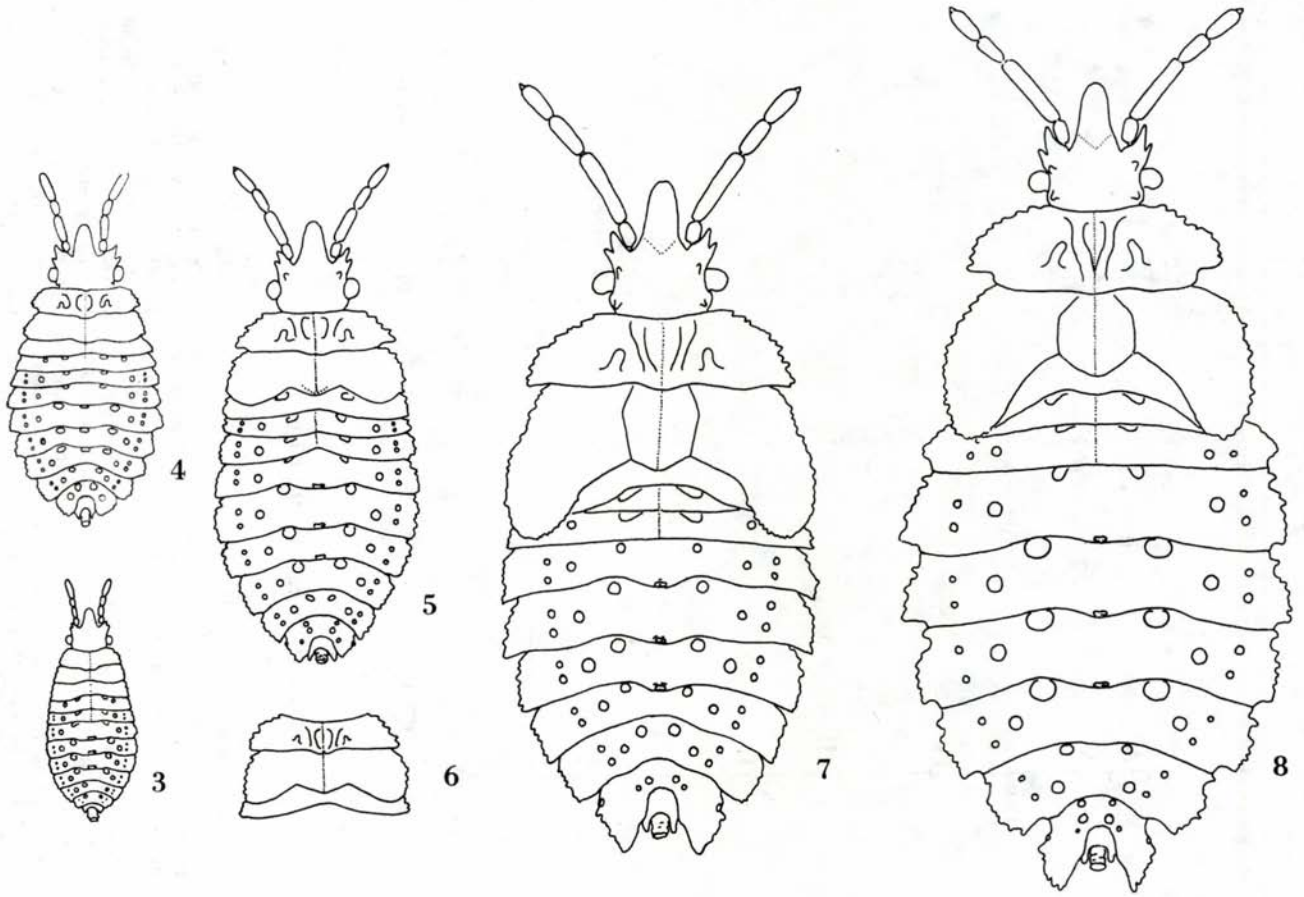

Fig. 3-8. Larval instars of A. ribauti
3 = instar II, 4 = instar III, 5 = instar IV female, 6 = thorax of instar IV male, 7 = instar V male, 8 = instar V female

Third larval instar (Fig. 4): Oval, light brown with brown and yellow markings. White tubercles present on antennal joint II and on legs. Head about as long as wide. Antenniferous tubercles with tooth, pre- and postocular tubercles represented by some granules. Antennae thick, dark-brown fourth joint the longest. Pronotum flattened with narrow serrate lateral margin, collar region not visible. Median and lateral carinae visible, latter only on hind half of disc. Mesonotum wider than pronotum with serrate lateral margins. Hind border uniformly convex. Metanotum the widest, hind border strongly sinuated medially. Abdominal scent gland openings on segments III to V clearly visible. White tubercles along hind border of abdominal tergites. Connexival plates each with narrow lateral margin, strongly serrate only on posterior segments. Pointed margin of segment IX surpassing apex of segment VIII. Glabrous areas on tergites 2:1:1, on sternites 1:2:1. Rostrum not reaching fore border of mesosternum. Legs short and thick. Total length 2.7-3.4 mm, relative length of antennal joints I to IV as 10:21:13:25.

Fourth larval instar (Fig. 5-6): Oval, yellowish brown with sharp light yellow and brown or reddish brown markings. White tubercles on antennal joint II and on legs. Head about as long as wide. Antenniferous tubercles with strong tooth, preocular tubercles blunt, postocular tubercles represented by granules. Antennae thick, second joint the longest. Antenna brown, tip of joint II and apical 3/4 of joint III yellow. Pronotum with posteriorly pointed serrate lateral margins, on ♀ not reaching hind border (Fig. 5), but reaching it on male (Fig. 6). Fore border sinuated with marks of neck region. Median and lateral carinae as on third instar. Hind border of pronotum on male slightly rounded with medial tubercles reaching posteriorly, on female without such tubercle. Mesonotum with signs of scutellum and with wing pads not reaching hind border of metanotum. Lateral margin rounded, serrate Metanotum with lateral margin serrate and widening posteriorly, hind border sinuated. Abdominal scent gland openings clearly visible. White tubercles along hind border of abdominal tergites. Connexival plates each with more widened serrate lateral margin, posterolateral angles of these rectangular or acute angled on posterior segments. Lateral margins of segment IX not reaching tip of lateral margins of segment VIII. Glabrous areas on tergites 2:1:1, on sternites 1:2:1. Rostrum reaching or slightly surpassing fore border of mesosternum. Legs thick. Total length: 3.7-4.9 mm, relative length of antennal joints I to IV as 13:35:21:31.

Fifth larval instar (Fig. 7, 8): Male narrow, female broad oval, yellowish brown with sharp light yellow and reddish or dark brown markings. Antennal joint II and legs with white tubercles. Head about as long as wide. Antenniferous tubercles with strong pointed tooth. Pre- and postocular tubercles developed, latter blunt, both with granules. Pronotum with wide serrate slightly rounded lateral margin not reaching hind border on female. Median and lateral carinae strongly elevating, latter reaching beyond middle of pronotum anteriorly. Fore border with expressed neck region on female. Hind border in male with median tubercles, those of female almost straight. Mesonotum with scutellum well visible, on male narrower than on female. Wing pads developed reaching 1/3 of second abdominal tergite. Lateral border of wing pads serrate. Wing pads of metanotum reaching beyond anterior border of second abdominal tergite. Abdomen broad on female, narrowing posteriorly on male. Abdominal scent gland openings well visible. Connexival plates each with developed serrate lateral margin, posterolateral angles rectangular or acute angled on posterior segments. White tubercles more dense on wing pads and on connexival plates. Lateral margin of segment IX not reaching tip of those of segment VIII. Glabrous areas on tergites 2:1:1, on sternites (2)1:2:1; meaning that the lateral areas are oval and sometimes two centres are visible. Rostrum reaching fore border of mesosternum. Legs thick. Total length: 5-7.2 mm, relative length of antennal joints I to IV as 12:39:20:25.

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