Revision of Palaearctic species of Amiota subg. Phortica (Diptera, Drosophilidae)

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Amiota 4 sp. n., morphology, ecology, parasitological importance

Hitherto, three species of the subgenus Phortica were known from the Palaearctic subregion: Amiota (Phortica) variegata (FALLÉN), A. (P.) oldenbergi (DUDA) and A. (P.) magna OKADA; the first is also recorded from the Oriental region (e.g. OKADA 1956). These species seem to be well differentiated from other members of the subgenus, which are distributed mainly in the Oriental region. The Oriental species were keyed by OKADA (1971a). Other species are known from the Nearctic subregion and from the Ethiopian and Australian regions.

The study of the variability of specimens from different parts of the Palaearctic which have been placed under A. variegata has shown that "A. variegata" is, in reality, a complex of several forms, being well distinguishable from each other by the morphology of the male genitalia. There are additional differences in the colour pattern and sometimes also in the structure of various parts of the body, but these are comparatively slight and sometimes of a merely statistical character. It is thus advisable to confirm any determination of male specimens by examination of their genitalia. In some forms it was found that the female genitalia also provide good taxonomic characters. Although a great deal of material has been studied, no specimens having intermediate characters of genitalia have been found, even where some forms were collected simultaneously at the same locality. This indicates reproductive isolation among these forms, and therefore I consider them to be separate species of the "variegata complex".

The non-Palaearctic specimens of the complex were not taken into account. Besides, Prof. T. Okada informed me that another species occurs in Japan, which he intends describing in the near future. Consequently, it is probable that the number of species of the "variegata complex" will be further increased.

Various authors have held Phortica Schiner to be a separate genus. I am not in a position to decide whether this conception is right or not.

MATERIAL AND METHODS

A total of 198 specimens, mostly pinned, belonging to the subgenus Phortica, from different parts of the Palaearctic subregion was studied. Where sufficient material was available, 15 males and 15 females of each species were measured in order to determine mean values of measurements and indices. When the variance of characters was greater than 5%, maximum and minimum values are stated. Where there were fewer specimens available, all were measured. Wing length was measured always from the distal break on the base of R vein to the apex of wing.
Nomenclature of bristles is after Duda (1935) and for other morphological nomenclature the terminology of Örół (1966) is adopted, if not stated otherwise.

In the list of material of particular species, information is quoted in the following sequence: locality, date, number of specimens (♂♀, ♀♂), collector name (not mentioned when material was collected by me), deposition (not mentioned when the material was processed for microscopical preparations), and finally, in parentheses, code number of known data about the way of collecting. These data are:

Beer traps (1), see Mäe (1973), mostly suspended. Date of emptying traps is stated, but the traps were exposed about 14 days previously to this date. Ground traps with formol (2). Sweeping of herbs and shrubs (3). Collecting on the tree sap (4). Collecting of specimens flying about human eyes or seeking heads of perspiration (5).

The following abbreviations are used for the indication of museums and other institutions:


Subgenus Phortica Schiner, 1862


Type-species: Drosophila variipilis Fallén, 1823, Dipt. Soc. Geomyc.: 5; by original designation.

This subgenus is a rather distinctive one; originally it was described as a separate genus, now it is placed in the genus Amiella Loew, 1862 by most authors. The species of the subgenus have plumose arista (at least on the upper side), males of two Oriental species have arista bare and apically expanded. Second orbital bristle short, as well as the postvertical bristles. Face, humerus and peteropleura without milky white spots. Mesonotum with a pollinose pattern (Fig. 10). Each tibia usually with three dark transverse bands. Wings with transverse vein R4+5-M well behind middle of the discoidal cell. Abdominal tergites yellowish, with dark pattern.

Periphalic organs (Figs. 9-2): Epandrium with an indication of longitudinal suture medially (in species studied by me) and with a robust apodeme along anterior edge. Several bristles arising at posterior margin. Heel swung to the forward and above, toe inconspicuous, bare. Anal lamellae with fine bristles only. Clasper anteriorly with a lobular enlargement bearing short bristles, some of them wedge-shaped, but without dentiform bristles which are usual for other Drosophilidae. The claspers of A. (P.) oldenbergi seem to be bare, those of A. (P.) magna have a strong, inwards directed spine. Decasternum arched dorsad, its caudal end with a small transversal sclerite attached at least in A. (P.) oldenbergi. Hypandrium is a narrow arch.

Phallic organs (Figs. 1-2) have a complicated structure; the terminology used by Okada (1956, 1971a) is followed here but with some modifications. Apodeme mostly rather weak. Vertical rod well developed. Anterior parameres at least with a subapical bifurcation, in the species of variipilis complex they are trilobed, with branches directed mediad, dorsad and caudad, respectively. These parameres are rather movable, they may tilt cranial to more than 90°. The proper aedeagus is deeply bifurcated and ± straight in A. oldenbergi; other species have aedeagus bent ventrad with apical part hidden under 6th sternite but movable outwards, and with basal part with or without basal processes below: sclerotized rods are sometimes attached to proper aedeagus laterally. The construction of aedeagus might be theoretically

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inferred from the "quinaria type" defined by Nater (1953) in that of the original sclerotized tubular formation only the medial rod, sometimes with lateral rods remains; the rest of tubular aedeagus is membranous, as may be seen in fresh uncleared material (the membranous parts are shown only in Figs. 1—2). The membranous parts reach up to the spoon-shaped lobe of the posterior paramere: the paramere is bent cranially in the middle and bifurcated above. The connections of posterior paramere, epandrium, hypandrium and clasper are rather complicated and hardly can be properly shown in two-dimensional figures. Ejaculatory apodeme small, spoon-shaped.

♂♂: The first seven abdominal segments have usual construction for Drosophilidae. The following tergite is contracted in the middle and has a longish costal each side and several short hairs. Anal conus (terminology of Anderson, 1976, is followed): supraanal plate small, with cerci distinctly separated from it and from one another; subanal plate concealed on the base. The egg-guides are (imperfectly) separated on the base, and with unmodified bristles. Pregenital lamellae are rather large and show good taxonomic characters (compare Figs. 3—4, 12—13). There is a pair of minute sclerites just dorsal to the genital porus. This pair of sclerites may be homologous with "subanal plate" of some "Drosophila" spp., figured by Nater (1953); they should better be called perineal sclerites. Spermathecae spherical, not giving good taxonomic characters.

Notes on imaginal ecology and on early stages

The males of variegata complex are known to often fly about the eyes of man or to suck perspiration (Duda, 1935; Okada, 1956). In this way they may transfer parasitic Nematoda of the family Thelazidae, as was mentioned by Nagata (1959, 1960) and Britz (1968, p. 630). It seems necessary to re-determine the particular species concerned in this habit and to pay attention to this behaviour in the future (See also note at A. okadai).

The females of the variegata complex do not behave in such a way, as a rule. They may be readily baited in beer traps hung in the tree canopy. Egg-laying ♂♂ were recorded on fermenting sap of Betula (by Duda, 1953), Castanea (by Okada, 1968) and Quercus (by Okada, 1968 and from my own observations).

As for ontogeny, there is only an observation of larve found in the sap of Salix by Séguy (1934) and a paper by Okada (1968) describing all preimaginal stages of A. variegata, but identifications of the species are not certain. I found fully developed eggs within the inner genitalia of the two species A. variegata (in July—August) and A. semivirgo (in May). The eggs were never found in other seasons, although almost all females studied were dissected. I often used to find several mature eggs together; in the abdomen of one ♀ A. semivirgo I found altogether 34 mature eggs. The eggs were not found to show any characters distinguishing both species. They correspond to the description of eggs given by Okada (1968) but are somewhat larger (length 0.85—0.90 mm) and their surface, mainly between longitudinal vela, is nipped rather than reticulous.

Key of the Palearctic species of the subgenus Phortica

1 Frontal hairs rather strong. Scutellum with a pair of fine bristles proximal to lateral pair of bristles. Abdominal tergites dark, with light patches in posterior half. Male genitalia.
as in Figs. 23—26. German Dem. Rep. .......... Amiota (Phorica) oldeneryi (DUDA),
— Frontal hairs fine. Soutellum proximal to lateral bristles bare. Abdominal tergites light.
— with dark caudal bands .................................. 2

2 (1) Dark bands of the abdominal tergites straight or congested medially. Male genitalia
— Dark bands of abdominal tergites dilated medially. 3:3:3. Anterior parameres trilobed
(variegata complex) .................................. 3

3 (2) Soutellum yellowish to tannish, its ground colour lighter than the ground colour of meso-
notal scutum. 6th sternite ± pentagonal (Fig. 19). Apodemes of aedeagus with triangular
dilatation at apex. Lateral rods absent or attached to apex of medial rod ........... 4
— Major part of soutellum dark, of same ground colour as mesonotal scutum. 6th sternite ±
quadrate, with broadly rounded free corners (Fig. 19). Apodemes of aedeagus not even
sparsely swollen. Lateral rods attached to medial rod before its apex .......... 5

4 (3) Tibiae with only slight indications of darker transverse bands. Length ratio of first tarsal
segment to other four segments altogether less than 0.7 on fore and hind tarsi. Male
genitalia as in Figs. 15—16. Medial rod with apically attached lateral rods, each of them
— Each tibia with three distinct transverse bands. Length ratio of first tarsal segment to other
segments exceeding 0.7 on fore and hind tarsi. Male genitalia as in Figs. 17—19. Medial
rod apically bifurcated, lateral rods absent. Japan .................. A. (P.) koppe sp. n.

5 (3) Dark caudal bands of abdominal tergites 3 to 5 not reaching lateral margins of tergites.
(exceptionally, a narrow dark connection to lateral margin developed on some tergites).
Male genitalia as in Figs. 5—6. Lateral rods simple, attached to apex of medial rod. Japan
............ A. (P.) okadae sp. n.
— Each of dark caudal bands of abdominal tergites 3 to 5 bifurcated to two strips on each
side; at least hind strips reaching lateral margins .................................. 6

6 (5) Tarsi with last joint, at least half of the penultimate joint and often apices of other joints
darkened. Occiput with lighter strip along whole hind margin of eye. Male genitalia (Figs
7—8). Lateral rods shorter than medial rod. Female genitalia (Figs. 12—13) with U-shaped
structure between pregenital lamellae. Czechoslovakia .................. A. (P.) seminerve sp. n.
— Whole tarsi yellow, exceptionally last joint darkened. Mature specimens with lighter strip
at hind margin of eye not reaching below upper half of eye. Male genitalia (Figs. 1—3); Lateral
rods extending beyond tip of medial rod and with ventral branch subapically.
Female genitalia (Figs. 3—4) without structures between pregenital lamellae. Sweden,
Great Britain, Czechoslovakia, Hungary, Bulgaria ............. A. (P.) variegata (FALLÉN)

Note: Two additional forms from Japan will be described by Okada; they differ from all
the above-mentioned species by the shape of phallic organs which is analogous in both forms.
Medial rod strong and unbranched apically, with a strong ventral spine subapically. Lateral
rods absent. Both forms shall be classified as subspecies of a new species.

Amiota (Phorica) variegata (FALLÉN, 1823)
(Figs. 1—4)


This species was redescribed by DUDA (1935), but some additions and cor-
rections are now deemed necessary, and a revised description is given
below.

5:3: Face tannish, carina small, pollinose, not reaching the edge of mouth
cavity. Frons yellowish to orange anteriorly and dark brown posteriorly; this dark area extends to the level of 2nd orbital bristle laterally and pro-
trudes almost to the lunula medially. Rarely (in the teneral adults) also the
area between orbits and ocellar triangle is light tannish. Several incon-
spicuous microtrichiae in dark area of frons. Ocellar triangle blackish brown.
Péricorbit yellowish white up to the level of 3rd (hind) orbital bristle,
darkened posteriorly. A short row of 4—6 microtrichiae in front of 1st orbital
bristle and one additional microtrichia between 1st and 2nd orbitals. Length
ratio of the orbital bristles (from front to rear) about 2.4 : 1 : 2.1. Ocellar
bristles and both inner and outer verticals about the same length as first orbital bristles. Postverticals very fine, shorter than $1/4$ of length of ocellar bristles; several additional short hairs on the ocellar triangle. Occiput dark except for two triangular lighter patches, each of which has the base-line between bases of postvertical and inner vertical bristles and apex directed
downwards. Sometimes both light patches are confluent and much enlarged
(teneral adults?). A pale strip along hind margin of eye, not extending below
upper half of eye. Only in teneral specimens may it be extended along whole
hind margin of eye, on the contrary, it may be almost absent in some very
dark males. The cheeks are dark. Eyes red, oval, their longer axis almost
rectangular to body axis. One strong vibrissa, an equally long bristle in the
buccal angle, other peristomals short. Clypeus yellow in the middle, dark
brown laterally. Proboscsis dark. Palpi yellow, on the outer side subbasally
darkened, with three bristles (the apical being strongest) and some basal
hairs. Antennae tan, the second segment with 2-3 short bristles in addition
to the normal hairs. Arista with 3-5 longer rays above, without end fork and
without lower rays.

Mesonotum brownish (usually dark brown), subsheining, with rather indistinct pollinose pattern. Acrostichal area with a pair of several times interrupted pollinose longitudinal strips which are strongly curved mediad at level of dorsocentral macrochaetae. Outside of the dorsocentral line each side with further indistinct strip. Sides of mesonotum with very indistinct pollinose spots. Mesonotal pattern often indeterminable (poorly preserved specimens?). Humeral callus light yellowish to rufous, lateral part of the mesonotal suture and the range of hind notopleural bristles usually yellowish or rufous. The precinete of preascutellar and strong dorsocentral bristles may be rufous in teneral specimens. The area behind the lateral part of mesonotal suture mostly dark and not lightened. Eight rows of acrostichal bristles, and
several extra bristles. Length of dorsocentral macrochaetae: 0.35 and 0.60 mm
(anterior and posterior bristle, respectively). Praescutellars as long as anterior pair of dorsocentral macrochaetae. About six short dorsocentral bristles between suture and anterior macrochaetae, some of them enlarged. Humeral bristle and anterior notopleural bristle equally long, posterior notopleural
bristle shorter. Praecalar bristle very short, the supraalar one as long as the
humeral, the postalar bristle much longer. Scutellum dark at major part,
paramedially at base with a pair of yellowish grey pollinose patches, each
with a darker spot inside. Further light patches usually at apex of scutellum
and sometimes also at insertions of bristles Scutellar index about 1.1.
Scutellum has no bristles in front of the laterals. Pleurae unicolorously brown
or very indistinctly marmorate. Two sternopleural macrochaetae, the
posterior one longer, and several hairs. Prosternum pollinose, with a longitudinal furrow mediad.

Legs yellow; coxae (and trochanters, in most cases), femora (except at base and apex) and three transverse bands on each tibia are dark brown; exceptionally, the last tarsal joint of legs is darkened. Fore femur with 5-8 strong bristles in a posterocentral row which continues with several shorter
bristles to the base of femur. Praecapital bristles present on all tibiae, but
indistinctly differentiated. Middle tibia with a pair of rather strong, unequal
apical bristles. Middle tarsus with a row of peg-like bristles on both inner
and outer sides. Hind tarsus with such bristles only on the outer side and
with a row of about 10 recurved hairs on metatarsus ventrad of these bristles.
Length ratio of metatarsus to the other tarsal joints altogether: 0.8; 1.0;
0.7-0.8 (on fore, middle and hind tarsi, respectively).

Wings clear, with yellow or brownish veins. R1 and stem of R usually
darker brown. Microtrichiae of wing membrane rather clustered along trans-
verse veins so that the surroundings of these veins seem to be dark. Extreme base of C with a patch of densely clustered microtrichiae; two similar patches on the base of R. Wing length: 2.9—3.4 mm at North and Mid European specimens, 2.2—2.85 mm at specimens from Bulgaria which are generally the smaller size; Ashina's rule (Ashina, 1950; Okada, 1971b) may apply. Wing indices are also geographically variable being dependent upon the wing length to a great extent (Okada, 1959, 1960). C-index 2.1 to 2.9; 4V-index 3.0—3.3; 4C-index 1.5—1.6; 5x-index 0.8—1.0. Apical bristles of the C1 indistinct. C3 range 0.7. Halteres yellowish.

First abdominal tergite narrow, tannish. Second tergite yellowish, semi-laterally with a dark spot and mainly with lateral margin darkened. Tergites 3 to 5 yellowish, each with mediadly and semilaterally protruding caudal band. Laterally, the band is bifurcated to two strips which lead to anterior and posterior corner of tergite, respectively. As the lateral margin of tergite is dark, a closed lighter patch remains above it; sometimes this patch is darkened too. 6th tergite dark, with lighter areas paramedially at anterior margin. Epannium dark. Sternites 1 to 5 of the type usual in the genus *A. amida* (see Wheeler, 1960). 6th sternite without bristles, drawn into a socket so that only its hind margin is visible in uncleared abdomen. It is about 1.5 times longer than wide, ± tetragonal with very broadly rounded fore corners. Abdominal spiracles on 1st to 6th segments. Four rectal papillae, rectal index 2.5.

Anal lamellae with bristles of uniform length. Phallic organs (Figs. 1—2): Anterior parameres with three sensillae on medial branch and one sensilla on dorsal branch. Lateral rods strong and each with a ventral branch subapically. Medial rod apically pointed, basally with two bent thorns, which converge ventrally.

♀♀: Similar to males but somewhat larger (wing length 2.9—3.8 mm) and with light patches above lateral margins of tergites 3 to 5 usually open on the anterior side. Postabdomen with modifications usual for the females of *P. amida* ssp. Pregenital lamellae as in Figs. 3—4.

**Distribution:** Sweden, Great Britain, Czechoslovakia, Hungary, Bulgaria.

**Material studied** (82 ♂♂, 17 ♀♀).

**Lectotype (hereby designated):** ♂, without locality label, bearing small white label with numeral 4, red label "Drosophila variegata Fbn. / Lectotype / Selected by E. B. Basden 1955"; also Basden’s determination label and my celluloid label with the preparation of gentilas; deposited in Coll. Fallén, MSt.

**Other material studied:** Sweden: 2 ♀♀, without locality label (designated by Basden, in coll., as syntypes of *Drosophila variegata Fbn.*), in Coll. Fallén, MSt. Långtrop, 2 ♂♂ (only one of them with locality label), Coll. Zetterstedt, ZLb.

**Great Britain:** Brockenhurst, Hants., 15. 8. 1934 — 1 ♂, 1 ♀, E. A. Fonseca lgt.


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Note: I have designated the lectotype on the basis of the following facts:

(a) Fallén's description of *Drosophila variegata* var. "Mas. femina... a Col. Zetterstedt bei Lärketorp paroecia Mjölby sat frequenter..."

(b) A lectotype could be selected from specimens in Coll. Fallén or in the Coll. Zetterstedt since Zetterstedt got Fallén’s collection after Fallén’s death and kept part of the material (Cox et al., 1952).

(c) Original determination labels, as well as the locality label, seem to be written by Zetterstedt (c.f. Horn & Kåhle, 1935—1937). One of the females from Fallén’s collection is designated as "♀ D. variegata" on this original label.

(d) Differences from coincidences in the geographical distribution and from mutually corresponding structure of the genitalia in both sexes that ♀♂ and ♀♀ from the abovementioned collections are conspecific.

It is obvious that Fallén probably used the material now deposited in his own collection as well as the material now deposited in Zetterstedt’s collection for the original description. Only material from Zetterstedt’s collection includes a specimen with locality label, on the other hand the material from Fallén’s collection must be a part of the type series because of reference to a female. Therefore I decided to designate as lectotype the same specimen that had already been indicated in an unpublished (in coll.) note by Basden.

*Amiota (Phortica) okadai* sp. n.

(Figs. 5–6)

*Amiota (Phortica) variegata*: Okada, 1956.

As only two specimens of this species are at my disposal, the extent of variability within this species cannot be discussed here. An outline of the morphology of this species was presented by Okada (1956), but some specific characters of a related species were apparently included, e.g. reference to arista having up to two ventral rays, which was later negated by Okada (1974) in his key of East Asian species. Seasonal size and colour variability have been observed in this species: specimens collected in summer are smaller and lighter than those collected in cooler periods (letter communication, Prof. T. Okada).

♀♂: Agreeing with *A. variegata* in majority of characters. A yellowish strip between occular triangle and orbits connects yellow anterior part of frons with light patches in the upper part of occiput (similarly as in teneral adults of *A. variegata*). Occiput diffusely lighter behind eyes and in the lower part. Length ratio of orbital bristles 2.5 : 1 : 2.6. Mesonotum mat, tannish, with pollinose pattern similar as that of *A. variegata* but somewhat more distinct. Lateral parts of mesonotum behind the suture not conspicuously paler than the disc of mesonotum. Scutellar index 1.0. Wing length 2.2—3.5 mm. C-index 2.5—2.7; 4V-index 2.9—3.2; 4C-index 1.5; 5x-index 0.8—1.1. C₃ range 0.7. Dark bands on tibiae rather conspicuous, tarsi yellow or with last joint darkened. Length ratio of metatarsus to other tarsal joints: 0.8 (on fore and hind tarsi; middle tarsi not preserved). Dark caudal bands of abdominal tergites 3 to 5 mostly not reaching lateral margins of tergites. 6th tergite light brown, with a dark patch medially. 6th sternite heart-shaped.
Bristles on upper half of anal lamellae slightly longer than these on lower half. Genitalia (Figs. 5–6). Anterior parameres with three sensillae on medial branch and one sensilla on dorsal branch. Spoon-shaped lobe of the posterior paramere long, narrow. Medial rod without basal processes, apically with a square flap, having a long recurved spur (lateral rod) both sides.

**Distribution:** Japan.

**Material studied** (2 ♂♂).


Other material studied. Komaikai (Chiba), 2. 7. 1970 1 ♂, H. Otsuki lgt.

**Note:** About 15 years ago, Y. Nagata of Miyazaki University, Japan, was engaged in the study of *A. variegata* which he found to transfer *Nematoda*, parasites on the eyes of dogs. Determination of the species was revised by T. Okada recently and it was found to be *A. oludai* (according to a communication of Prof. T. Okada). Summary of the investigations was published by Nagata; it is possible that they formed a basis for the statement of Britz (1968) — see “Notes on imaginal ecology and on early stages” in the present paper.

**Amiota (Phortica) semivirgo sp. n.**

(Figs. 7–14)

Similar to *A. variegata* but the undermentioned characters make its differentiation possible.

♂♂: Length ratio of orbital bristles 2.4 : 1 : 2.2. Light strip along whole hind margin of eye. Mesonotum pattern rather conspicuous, the pollinose pattern is distinct also laterally of dorsocentral bristles (Fig. 10). Whole disc of mesonotum rather mat. Scutellar index 1.0–1.1. Wing length 2.9–3.4 mm. C-index 2.7; 4V-index 3.1–3.2; 4C-index 1.5–1.6; 5x-index 0.8–1.1. Cu range 0.7. Last segment and at least half of the penultimate segment of all tarsi darkened, the apices of other tarsal joints often also darkened. Other parts of legs with the same pattern as in *A. variegata*. The darkening of the legs is usually more conspicuous on their outer side. Length ratio of metatarsus to other tarsal joints: 0.5; 1.0; 0.7 (on fore, middle and hind tarsi, respectively). Abdominal pattern as in *A. variegata*, but light patches above lateral margins of tergites always distinct (Fig. 11).

Anal lamellae with bristles of uniform length (Fig. 9). Phallic organs (Figs. 7–8): Anterior parameres with 3–5 sensillae (usually 4) on medial branch and one sensilla on dorsal branch. Lateral rods much shorter than the medial rod and apically attached to it about its mid-length. Medial rod basally with two short thorns close together, apically with a slight discoidal dilation.

♀♀: Agreeing with males in all characters except for larger average size (wing length 3.0–3.9 mm), for the abdominal pattern which is the same as that of ♀♀ *A. variegata*, and for the modifications of postabdomen usual for the females. In structure of genitalia it differs from ♀♀ *A. variegata* in the shape of pregenital lamellae (Figs. 12–13).

**Distribution:** Czechoslovakia. *

**Material studied** (25 ♂♂, 55 ♀♀).

* After finishing of this paper, *A. semivirgo* was found also in Roumania: Turda, 8. 7. 1976 — 2 ♂♂, 8 ♀♀, Măca lgt. et coll. (4).
Figs. 7–14. *Anton newcomby* sp. n.: 7 — Head organs, ventral aspect. 8 — Head organs, lateral aspect. 9 — Periphalic organs. 10 — Prothorax. 11 — Abdomen of male (bristles 0.3 mm). 12, 13 — Female abdomen.
Holotype (2): Veselí n. Luž., nr. nature reserve Doubí (Bohemia mer.). 18. 7. 1975, 
MŠO (3).
Paratypes: Týnec n. Labem (Bohemia centr.), 5. 7. 1972 — 1 ♀, V. Martinek lgt., MP, Chabory (Bohemia or.), 11. 8. 1966 — 1 ♀, V. Martinek lgt., MP (this specimen was recorded as A. variegata by Martinek, 1973). Strážnice (Moravia mer.), 28. 6. 1972 — 1 ♀, V. Martinek lgt., MP.

_Amiota (Phortica) erinacea_ sp. n.
(Figs. 15–16)

As in the foregoing species, especially characters enabling separation from _A. variegata_ are given.

♂♂: Arista bare on ventral side, with 9—3 rays on dorsal side. Pattern of frons mainly the same as in _A. oedai_. Length ratio of orbital bristles 2.4 : 1 : 2.1. A light strip along whole hind margin of eye. Mesonotum subshining, with very indistinct pattern similar to that of _A. variegata_. Lateral parts of mesonotum behind the suture usually broadly yellowish (tegular specimens?). Discal part of scutellum yellowish, with darker parabasal and marginal spots. Scutellar index 1.0. Wing length 2.3—2.9 mm. C-index 2.7—2.8 (rather great in comparison to other _Phortica_ spp. of similar size); 4V-index 3.1—3.2; 4C-index 1.4—1.5; 5x-index 1.0. C₅ range 0.7. Microtrichiae of the wing membrane not conspicuously clustered along transverse veins, so that the membrane does not appear to be darkened there. Femora not darkened, tibiae without dark bands or with only indications of apical and eventually subbasal darkening (_A. variegata_ has tibial bands well darkened even in tegular specimens). Tarsi not darkened. Fore femora posteroventrally with a row of bristles not conspicuously descending in length basally. Length ratio of metatarsus to other tarsal joints: 0.6; 1.0; 0.6—0.7 (fore, middle and hind tarsi, respectively). Abdominal pattern indistinct mainly in lateral area.

Genitalia (Figs. 15–16): Anterior parameres with 3 sensillas on medial branch and one sensilla on dorsal branch. Spoon-shaped lobe of posterior paramere short and wide, with a downward directed projection each side (base of lateral rods?). Medial rod apically with an attached formation composed of eight spines (apex of lateral rods?).

**Distribution:** Bulgaria.

**Material studied** (8 ♂♂).

*omitted*, lateral aspect, with ventral aspect of sternites, 12 — Female terminalia, ventral aspect, 13 — Female terminalia, lateral aspect, 14 — Spermatheca.

*Lettering:* al — anal lamella, el — elater, do — decasternum, ea — ejaculatory apodeme, sp — spandrium, pe — periphalic organs, po — phallic organs, s (1 to 6) — sternites 1 to 6.

**Holotype** (3): Arkutino nr. Primorsko, 23. 7. 1968, J. Ježek leg., MP (3). Gonitalia in a tube with glycerine, on the same pin.

Other material studied: Arkutino nr. Primorsko, 17. 7. 1968 — 1 ♂, 23. 7. 1968 — 6 ♀♀, J. Ježek leg., MP (5).

*Amiota (Phortica) kappa* sp. n.  
(Figs. 17—19)

This species seems to be rather close especially to *A. crinaea* but the structure of the phallic organs is distinct.

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3.3: Dark patch of frons not very protruding medially so that a rather broad yellow strip remains above lunula. Length ratio of orbital bristles 2.1 : 1 : 1.2. Lighter strip along hind margin of eye may be developed only along the upper half of eye or may continue along the lower half. Second segment of antennae with 2—3 rather strong bristles in addition to normal hairs. Arista with 3—5 rays above, bare below. Mesonotum dark brown, subshining, light pollinose strips seemingly narrower than in preceding species. Scutellum tannish, with usual yellowish grey pollinosine pattern, only on hind margin are there sometimes dark brown spots. Scutellar index 0.99—1.0. Wing length 3.9—3.3 mm. C-index 2.3—2.6; 4V-index 3.1—3.4; 4G-index 1.5—1.8; 5x-index 0.9. C3 range 0.75. Fore coxae and femora almost entirely dark, middle and hind coxae and femora with only indistinct darkening. Tibial dark bands well developed. Tarsi yellow, last joint sometimes slightly darkened. Length ratio of metatarsus to other tarsal joints: 0.8; 1.0; 0.8 (on fore, middle and hind tarsi, respectively). Abdominal pattern as in A. semivirgo but dark strips on middle tergites leading to their posterior corners are broader and more expressive than these leading to anterior corners. Anterior corner of tergites usually light coloured. 6th sternite pentagonal (Fig. 19).

Bristles on upper half of anal lamellae longer than those on lower half. Phallic organs (Figs. 17—18): Anterior parameres with three sensilla on medial branch and one sensilla on dorsal branch. Lateral rods undeveloped. Medial rod with a dilated base bearing two caudally directed pointed projections. Behind the base, medial rod is bent above and backwards, then at about one-third of its length down and forwards (¼ of a coil altogether); apex is bifid.

Distribution: Japan; according to personal (in a letter) communication of T. Okada it is distributed mainly in the highlands.

Material studied (4 ♂♂).


Note: Simultaneously, another new species was found at the same locality and will in due course be described by T. Okada.

Derivation of name: Kappa means in Japanese a hypothetical kind of creature dwelling in moist environments, which corresponds to presumable tree sap inhabiting habit of larve of this species.

4 Amiota (Phortica) magna Okada, 1960
(Figs. 20—22)


As the original description of this species is precise and recent, I do not propose to give a redescription. The species differs from other Palaearctic species in abdominal pattern: dark caudal bands of abdominal tergites are medially straight or somewhat contracted, not projecting forwards. The male genitalia (Figs. 20—21) are also very characteristic. 6th sternite in male is bristled along caudal margin, with a cranially directed pointed projection each side (Fig. 22).

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Distribution: Japan. Material studied (1 ♂, 1 ♀).

Kitadake (Yamanashi Pref.), 24.—27. 7. 1968 — 1 ♀, T. Okada et al. iigt. Mt. Yuzibar (Sasebo), 9. 10. 1970 — 1 ♂, T. Okada iigt. (4). Both specimens were determined by T. Okada.

— Amiota (Phortica) oldenbergi (Duda, 1924)
(Figs. 23—27)


Strikingly different from other species of the subgenus in having a suprunary pair of scutellar bristles and in the abdominal pattern; tergites 2 to 5 are dark, each with two pale patches paramedially at posterior margin and with additional pair of light patches semilaterally behind middle or tergite. A detailed description was given by Duda (1935). Additional diagnostic characters: middle orbital bristle rather long (length ratio of orbital bristles: 1.8 : 1 : 1.4), 5x-index low (about 0.6). Last (sixth) sternite of male (Fig. 27) divided into a bristled plate proximally and a V-shaped bare formation distally. This V-shaped formation may represent remnants of the 7th sternite which were not hitherto found in other Drosophilidae males (see Wheelke, 1960) or it may be a secondary sclerotization.

Male genitalia (Figs. 23—26): Periphalic organs minute, of usual construction. Casper seemingly bare. Phallic organs: Anterior parameres tapering and apically bifid, Posterior paramere broad, not narrowed at middle. Aedeagus straight, laterally bifid, covered by small nipples, with a laterally flattened apodeme.

Distribution: Environs of Berlin, German Dem. Republic. Material studied (1 ♂, 1 ♀).

Lectotype (♂): Berlin-Pichelsberg, 6. 8. 1908, Coll. Oldenberg, ITB. The specimen bears a locality label, Duda’s determination label "Phortica Oldenbergi n. sp. 2", a printed label ‘Coll. Oldenberg’, a small black square card, a red label ‘Typus’ and my label designating it a lectotype. Duda (1935) erroneously mentioned this specimen to be a male.

Other material studied: Spathan, 16. 1. 1924 — 1 ♀, Coll. Duda, MDc (with a blank red label).

Note: Only three specimens mentioned by Duda (1935) seem to be known. As Duda (1924) did not mention locality in the original description, the collecting date of the specimen has been taken as an indication in selecting the lectotype. Only a specimen from Coll. Oldenberg was collected previously to the date of issue of the description, which was June, 1924.

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