

## A new species in the *intermedia*-group and a new synonymy in the genus *Pollenia* Robineau-Desvoidy, 1830 (Diptera: Calliphoridae)

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**ABSTRACT.** An *intermedia* species-group is defined within *Pollenia* Robineau-Desvoidy. *P.pseudintermedia* sp.n. is described from Greece, Yugoslavia and Spain and compared with its closest relative *P.intermedia* Macquart. *P.alajensis* Rodendorf, stat.rev. is established as a new senior synonym of *P.sytshenskajae* Grunin, syn.n.

### Introduction

Members of the genus *Pollenia* Robineau-Desvoidy are commonly known as cluster flies owing to their habit of clustering in crevices and corners of dark parts of buildings such as attics and closets. The genus is of general biological interest as many of its species, in the larval stages, are known to be parasites or predators of earthworms.

During examination of European material of *Pollenia* in the collections of the Hungarian Natural History Museum, Budapest (HNHM), Zoological Museum of the University, Copenhagen (ZMC), and British Museum (Natural History), London (BMNH), a new species was discovered which is described here. It is closely related to *P.intermedia* Macquart, 1835 as currently understood (Emden, 1954; Zumpt, 1956; Grunin, 1970b; Lehrer, 1972; Lobanov, 1976; Mihályi, 1976, 1979; and below (= *P.excarinata* Wainwright, 1940, male and female syntypes examined). Together, the two species form a group within *Pollenia* which I call the *intermedia*-group and which is characterized by the following combination of characters: (1) posterior thoracic spiracle shaped as in Figs. 1 and 2, and lappets dark brown; (2) occiput and most posterior parts of jowl with pale hairs, except for 1–3 irregular rows of black hairs

behind upper postocular cilia; (3) postalar wall with numerous long pale hairs; (4) basicosta black; (5) costa hairy below to junction with *sc*, elsewhere bare below (i.e. second costal sector bare below); (6) abdomen strongly dusted and with conspicuous shifting tessellations; (7) hind tarsus normal, i.e. as long as or slightly longer than hind tibia, and male with unmodified vestiture on hind tibiae and tarsi; (8) distiphallus with midventral rounded projection ('lobe hypophallique médian' of Lehrer, 1963); (9) hypophallic lobes triangular with central sclerotization, terminating in rather long acute prolongation; (10) paraphallic processes distally unarmed (also as seen at high, i.e. 450×, magnification) and curving conspicuously towards midline; (11) marginal setae on T8 in ovipositor absolutely marginal in position, no sclerotization forming part of T8 behind them; (12) ST8 of ovipositor with dense cover of microtrichiae on posterior third to half; (13) membrane between T8 and ST8 on each side of ovipositor fully covered by microtrichiae; (14) tip of ovipositor only with soft, slightly wavy and distally very thin hairs, no stiff blunt spines; (15) both cerci and supraanal plate in ovipositor clothed all over with microtrichiae.

At present no further *Pollenia* species are known to have this combination of characters. In the *tenuiforceps*-group (*P.tenuiforceps* Séguy and *P.dasyopoda* Portschinsky and *P.similis* Jacentkovský) the paraphallic processes are also curved inwards in a way resembling the condi-

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tions in the *intermedia*-group, but the hypophallic lobes are shaped differently, their tips being quite short and blunt, the median hypophallic lobe less projecting and evenly and more strongly sclerotized, the posterior thoracic spiracle yellow (at least much lighter than in the *intermedia*-group), the male has the hind tarsus shorter than the hind tibia, the male of some of the species have modified vestiture on parts of the hind tarsi and tibiae (*dasypoda* and *similis*), and the facial keel is always conspicuous and often broadened (see also Séguy, 1934, 1941; Zumpt, 1956; Lehrer, 1972; Mihályi, 1976, 1979).

*P. japonica* Kano & Shinonaga, 1966 is regarded as closely related to *P. intermedia* by Kano & Shinonaga (1966). However, a re-examination of this species shows that it belongs to an entirely different group of *Pollenia*, as shown e.g. by its costa being hairy below for almost all the way to the junction with  $r_{2+3}$ , far beyond the junction with *sc* (i.e. second costal sector hairy below) (among Holarctic *Pollenia*, I have only seen some occasional *P. atramentaria* Meigen with a varying number of irregularly placed hairs on the underside of the second costal sector), by the occiput being entirely black-haired, by the presence of black hairs on the postalar wall, by the lack of an outer *ph* seta, by differently shaped posterior thoracic spiracular lappets, of which the anterior one has some peculiar long black hairs, and by the ♂ terminalia which lack a median hypophallic lobe (Kano & Shinonaga, 1966, 1968). The node at the junction of  $r_{2+3}$  and  $r_{4+5}$  is stated by Kano &

Shinonaga (1966, 1968) to lack hairs on ventral surface of wing. I am not able to confirm this.

#### Note about preparation of genitalia

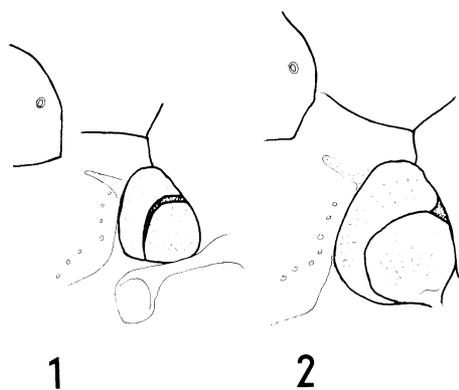
All descriptions of male terminalia below (and above) refer to their appearance (from all angles) in glycerol after the abdomen has been boiled briefly in 10% KOH, dissected in water, terminalia rinsed in ethanol and finally transferred to glycerol. The female terminalia have undergone the same treatment, except that ovipositors intended for permanent slide mounts were extended and cut open lengthwise for their full length with miniature scissors while in glycerol, rinsed in ethanol, and finally transferred to euparal.

#### *Pollenia pseudintermedia* sp.n. (Figs. 1, 3, 5, 7, 8, 11, 13, 15)

Holotype ♂, SPAIN (ZMC).

*Diagnosis.* This species belongs to the *intermedia*-group of *Pollenia* as defined above, with the following diagnostic characters: facial keel distinct, rather sharp; third antennal segment reddish posteriorly in basal half;  $t_2$  with 1 strong *ad*; ♂: surstyli in profile with distal constriction followed by apical dilation; paraphallic processes sclerotized to the extreme tip, curving inwards distally, their distal parts directed towards axis of distiphallus at much less than a right angle; most proximal point of clear area in middle of distiphallus as seen in profile close to dorsal wall (arrow in Figs. 7, 9); ♀: 1 row of setulae on parafrontalia outside the inclinate frontal setae; ovipositor with no middorsal 'incision' of weak sclerotization on the posterior edge of T6; T8 with microtrichiae for some distance in front of marginal setae.

*Description.* MALE. Head. Ground colour black; lunula, first, second and posterior and basal half of third antennal segments, facial ridges, area outside of vibrissae and subfacial setae reddish; frons narrow, 1–1.5× width of front ocellus, 0.022–0.059× head width (mean 0.035,  $n=10$ ); parafrontals contiguous; ocellar setae slightly longer than hairless part of frons; no *iv* or *ev* differentiated; parafacialia and genae with numerous moderately long black hairs, genae with some pale hairs posteriorly; occiput with pale hairs, except for 2–3 rows of black



FIGS. 1–2. Posterior thoracic spiracle (left). (1) *Pollenia pseudintermedia*; (2) *Pollenia intermedia*.

setulae behind postocular row of setae; palpi black.

Thorax. Black, with thin cover of pollinosity, no obvious stripes; numerous pale crinkly hairs; postalar wall with long pale yellow hairs; 3 *h* in a straight line; 2 *ph* (outer present); 2+3 *acr*; 2+3 *dc*; 1+2 *ia*; 1 *pra*, 2 *sa*; 2 *pa*; 2 *npl*; 3 strong marginal scutellars with 1–2 weaker in between, 1 discal scutellar; posterior thoracic spiracle (Fig. 1) dark brown.

Legs. Vestiture all black, except some yellow hairs on the coxae; *t*<sub>1</sub> with 2 (–3) *pv*, a complete row of *ad*; *t*<sub>2</sub> with 1 strong *ad* (rarely with an additional very much smaller *ad* above it), 1 *pd*, 2–3 *p* and 1 *v*; *t*<sub>3</sub> with 2–4 *av*, rows of *ad* and *pd*, no erect *av* hairs, only decumbent setulae, in between *av* setae, *d* and *ad* preapicals, and sometimes a weak *pd* preapical. Segment 5 of front tarsus about as broad as segment 4, claws about as long as segment 5.

Wings. Costa with black hairs below to junction with *sc*; *h-sc* node bare on under surface of wing; node at base of *r*<sub>4+5</sub> with a few black setulae on both sides of wing; basicosta black; subcostal sclerite with rather dark microscopic

pubescence only, no long pale hairs present; R5 broadly open; squamae variable in colour, from almost white to infuscated brown; halteres yellow.

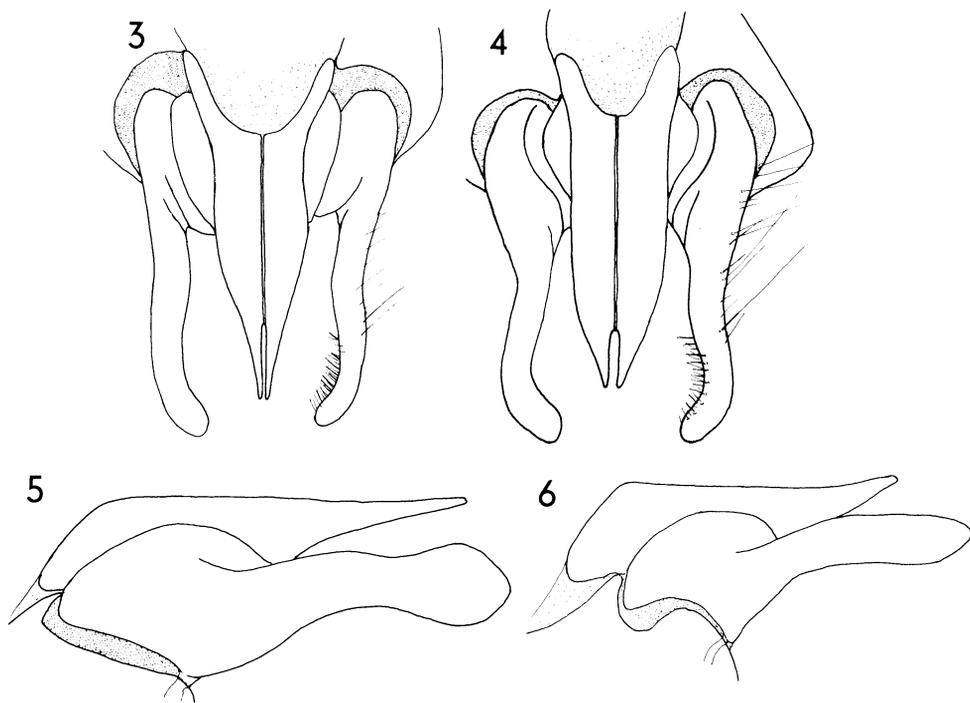
Abdomen. Ventral abdominal vestiture black, normally spaced and erect.

Terminalia. As shown in Figs. 3, 5, 7, 8, 11. Cerci acute; surstyli in profile with constriction beyond middle followed by apical dilation; paraphallic processes sclerotized to the extreme tip, curving inwards distally, their tips directed towards axis of distiphallus at much less than a right angle; most proximal point of clear area in middle of distiphallus as seen in profile close to dorsal wall (arrow in Fig. 7). Hypophallic lobes moderately prolonged distally.

Length. 4.9–7.4 mm from lunula to tip of abdomen (*n*=8).

FEMALE. As in male, except as follows:

Head. Frons at narrowest point much narrower than an eye when seen from above, at vertex 0.262–0.310× head width (mean 0.283, *n*=9), widening out considerably forwards; 7–10 strong inclinate frontals; 2 proclinate orbitals; 1 prevertical; usually only a single irregular row of



FIGS. 3–6. Cerci and surstyli, posterior view (3–4), left lateral view (5–6). (3), (5) *Pollenia pseudintermedia*; (4), (6) *Pollenia intermedia*.

setulae outside inclinate frontal; *ev* and *iv* strong, subequal, 2.5× as long as postocular setae which are rather short and strong; occiput with 3 rows of black setulae behind postocular row.

Legs. Segment 5 of front tarsus narrower than segment 4, claws much shorter than segment 5.

Terminalia. As shown in Figs. 13 and 15. No 'incision' of weak sclerotization on posterior border of T6. Usually more than anterior half of ST7 strongly sclerotized. T8 with microtrichiae also in front of the marginal row of setae. This row absolutely marginal in position, no sclerotization forming part of T8 behind it. Supraanal plate slightly longer than broad. Spermathecae 2–2.5× as long as wide. Lateral sacs of internal reproductive organs unsclerotized (two dissections).

Length. 5.4–7.8 mm from lunula to abdominal tip (*n*=6).

*Identification.* The species runs to *intermedia*

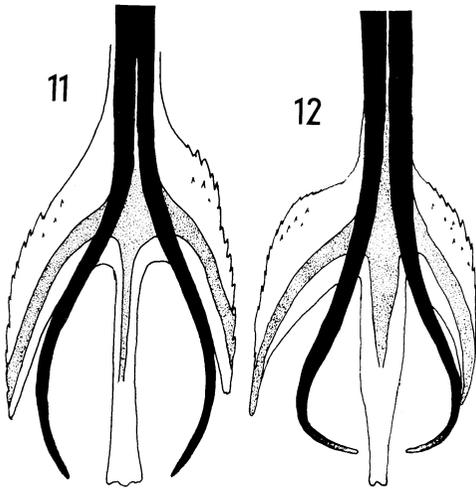
in the keys to European *Pollenia* by Zumpt (1956) or Mihályi (1976, 1979). It can be separated from *intermedia* by the following couplet:

- 1 (2)  $t_2$  with 1 strong *ad*; facial keel distinct; third antennal segment reddish posteriorly in basal half; ♂: cerci acute (Fig. 3); surstyli in profile with distal constriction followed by apical dilation (Fig. 5); paraphallic processes completely sclerotized and curved towards midline distally, but their extreme tips directed towards axis of distiphallus at much less than a right angle (Fig. 11); hypophallic lobes moderately prolonged (Fig. 7); most proximal point of clear area in middle of distiphallus as seen in profile close to dorsal wall (arrow in Fig. 7); ♀: 1 irregular row of setulae outside row of inclinate frontal setae; T6 without 'incision' of weak sclerotization on posterior edge (Fig. 13); usually more than anterior half of ST7 strongly sclerotized (Fig. 13); T8 with microtrichiae in front of marginal row of setae (Fig. 13); spermathecae elongate oval, narrower than in *intermedia* (Fig. 15)

*pseudintermedia*



FIGS. 7–10. Phallosome (7, 9) and pre- and postgonites (8, 10), left lateral view. (7), (8) *Pollenia pseudintermedia*; (9), (10) *Pollenia intermedia*.



FIGS. 11–12. Distal part of distiphallus, posterior (dorsal) view. (11) *Pollenia pseudintermedia*; (12) *Pollenia intermedia*.

2 (1)  $t_2$  with 2–4 strong *ad*; facial keel variable, most often absent or indistinct; third antennal segment mostly black, except for extreme base; ♂: cerci less acute (Fig. 4); surstyli with parallel sides (Fig. 6); paraphallic processes less sclerotized distally, but curved very strongly towards midline, so that their extreme tips point towards axis of distiphallus at right angles (Fig. 12); hypophallic lobes very strongly prolonged distally (Fig. 9); most proximal point of clear area in middle of distiphallus as seen in profile closer to ventral wall or midway between dorsal and ventral wall (arrow in Fig. 9); ♀: 2 rows of setulae outside row of inclinate frontal setae; T6 with a strong ‘incision’ of weak or absent sclerotization on posterior edge (Fig. 14); usually less than anterior half of ST7 strongly sclerotized (Fig. 14); T8 without microtrichiae in front of marginal row of setae (Fig. 14); spermathecae oval (Fig. 16) *intermedia*

*Type material*

*Holotype* ♂, SPAIN: Granada, Rio Guadalfeo, Orgiva, 300 m, 18.iv.1966 (Lyneborg, Martin, Langemark) (ZMC).

*Paratypes*, 13♂ 9♀, as follows: GREECE: 2♂ 4♀, Corfu, Margin of Lake Korission, 6.v.1980 (McLean) (1♂ 1♀ dissected) (BMNH); 1♂, Corfu, Linia–Lake Korission, 6.v.1980 (McLean) (BMNH); 1♂, Ipiros, Parga, 7–13.v.1972 (Stubbs) (BMNH); 1♂, Ipiros, Préveza, 9.v.1972 (Stubbs) (BMNH); 1♂, Thessalia, Kipséli, Kanallakion, 13.v.1972 (Stubbs) (dissected) (BMNH); 1♂, Pelopónnisos, 5 km S Monemvasia, 6.ii.–

30.iii.1984 (Christensen) (dissected) (ZMC); YUGOSLAVIA: 3♂, Makedonija, Ohridsko Jez., 4–7.vi.1955 (Coe) (2♂ dissected) (BMNH); SPAIN: 2♀ with same data as holotype (1♀ dissected) (ZMC); 1♂ 2♀ with same data as holotype, except for date which is 11.iv.1966 (♂ with the genitalia glued to card on pin) (ZMC); 1♂, Lerida, Valle de Arán, Arties, 1200–1800 m, 20.iv.1982 (Andersen, Lyneborg, Michelsen) (ZMC); 1♀, Lerida, Sierra de Boumort, 7–11.vii.1981 (Michelsen) (ZMC); 1♂, Malaga, Rouda, 600 m, 14.vii.1975 (Schacht) (BMNH).

*Discussion*

According to their labels and information given by Coe (1960: 169–170), the three specimens from Yugoslavia have previously been misidentified by van Emden, partly as ‘*Pollenia vagabunda* Meigen’ (a single male erroneously cited as a female by Coe and the record repeated by Mihályi 1980: 335) and partly as ‘*Pollenia intermedia* Macquart’.

*P.intermedia* and *P.pseudintermedia* probably form a pair of sister-species. The latter is at

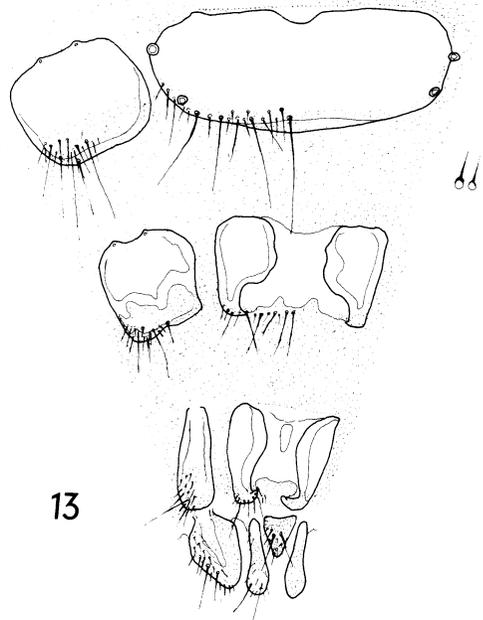


FIG. 13. *Pollenia pseudintermedia*, ovipositor. Setae shown on one side of sclerites only, stipple indicates distribution of microtrichiae.

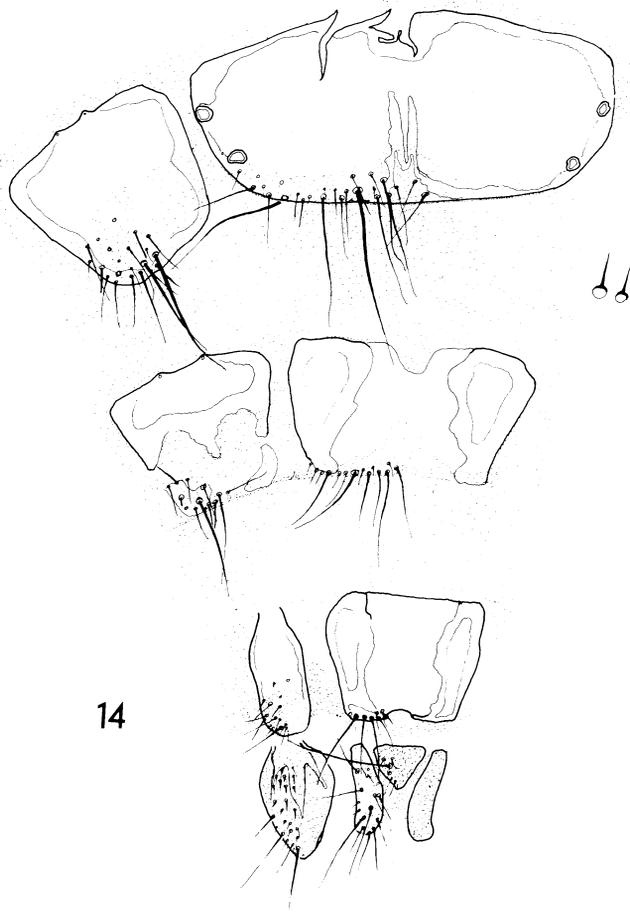


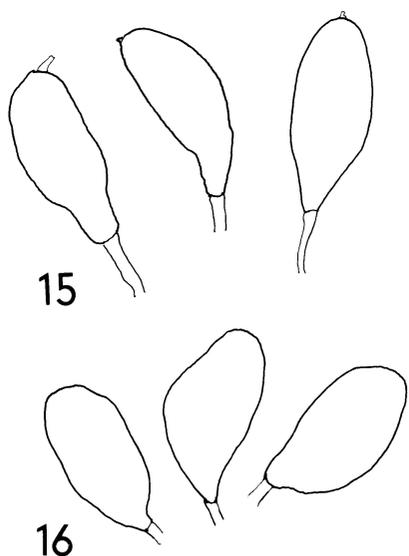
FIG. 14. *Pollenia intermedia*, ovipositor. Setae shown on one side of sclerites only, stipple indicates distribution of microtrichiae.

present known only from the Mediterranean region. The former is known mainly north of that region: Norway (up to tree-line), Sweden, Finland, Denmark, Britain, France, Germany, Poland, Switzerland, Austria, Czechoslovakia, Hungary, Romania, Ukraine, U.S.S.R. (European part), Spain, although it also occurs along the Mediterranean (1♂ FRANCE: Var, Le Troyas, 11.vii.1958 (Richards) (BMNH)) (Zumpt, 1956; Grunin, 1970b; Lehrer, 1972; Lobanov, 1976; Pont, 1975; Draber-Moňko, 1978; Hackman, 1980; own determinations). The record from North Africa (Algeria) by Séguy (1941) needs confirmation. Present knowledge of the distribution of these two species thus seems to suggest a vicariant distribution pattern in Europe.

***Pollenia alajensis* Rodendorf, stat. rev.**

*Pollenia alajensis* Rodendorf, 1926: 101 (as subspecies of *rudis* Fabricius), and Rodendorf, 1928: 338. Holotype ♂, U.S.S.R.: Kirgiz S.S.R., Alayskiy Range (Fergana, 'Kchi Alai' on label possibly refers to Kichik Alai river, range or mountain pass), date unknown (A. P. Fedtschenko) (Zoological Museum, Moscow State University, Moscow) (examined).

*Pollenia sytshevskajae* Grunin, 1970a: 287, Syn.n. Holotype ♂, U.S.S.R., Kirgiz S.S.R., Terskey-Alatau Range, Chon-Kyzylsu River, 2650 m, 8.ix.1963 (Sychevskaya) (Zoological Institute, Academy of Sciences, Leningrad) (not examined).



FIGS. 15–16. Spermathecae. (15) *Pollenia pseudintermedia*; (16) *Pollenia intermedia*.

The holotype of *alajensis* fits the description of *syshevskajae* very well, and even though the specimen lacks the postabdomen and Rodendorf's preparation could not be found in Leningrad or Moscow, the figure of the genitalia published by Rodendorf (1926: 101, Fig. 18) leaves no doubt as to its identity. Note especially the thickened apex of the paraphallic process and the blunt tip of the hypophallic lobe. The name *alajensis* is therefore removed from its current position in the synonymy of *dasyпода* (Zumpt, 1956; Schumann, 1986).

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