

***Phaenocarpa hirsuta* sp. n., *P. picinervis* (Haliday) and *P. angustiptera* Papp new to the fauna of Finland (Hymenoptera: Braconidae: Alysiinae)**

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Phaenocarpa (*Phaenocarpa*) *hirsuta* sp. n. is described from the sand dunes of Kalajoki in C. Finland on the eastern coast of the Gulf of Bothnia. The new species is closely related to *P. aurosetosa* Papp from Mongolia and related also to *P. vulcanica* Belokobylskij from Kamtchatka and *P. picinervis* (Haliday) with Holarctic distribution. *Phaenocarpa* (*Phaenocarpa*) *picinervis* and *P. (Discphaenocarpa) angustiptera* Papp are added to the fauna of Finland; the former is new also to Norway, the latter to Estonia. The male of *P. angustiptera* is described for the first time. A key is presented for these five species.

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1. Introduction

Phaenocarpa Förster is a large cosmopolitan genus of alysiine Braconidae which is represented in the Palaearctic region by more than 100 described species (Tobias 1986, Belokobylskij 1998). They are koinobiont endoparasitoids of cyclorhaphous Diptera larvae representing at least nine different families: Anthomyiidae, Scathophagidae, Tephritidae, Drosophilidae, Lonchaeidae, Chloropidae, Opmomyzidae, Sciomyzidae and Muscidae (van Achterberg 1998b, Wharton 1997), and they emerge as adults from the host puparium. The genus can be identified by using the keys in Tobias (1986) and Wharton (1997), and the characters of the genus were given also in van Achterberg (1998b).

Until now, eight species of *Phaenocarpa* have been recorded from Finland. *Phaenocarpa con-*

spurcator (Haliday) was reported by Kanervo (1936), who erroneously mentioned *Plutella maculipennis* (Curtis), a synonym of *Plutella xylostella* (Linnaeus) (Lepidoptera: Plutellidae) as the host. Hellén (1938) who called the genus *Phanerocarpa* [sic], reported localities for *P. arctica* Thomson (a synonym of *P. conspurcator*) from Petsamo, Trifona (which is now Petchenka in the Murmansk district of Russia), *P. eugenia* (Haliday), *P. pallida* (Curtis) [which is now regarded as a junior synonym or colour form of *P. ruficeps* (Nees)], *P. pratellae* (Curtis) and *P. pullata* (Haliday). *Phaenocarpa ruficeps* (Nees) was also reported from Finland by Fischer (1990; he synonymised *P. meritoria* Papp, 1981 with Nees's species, and the paratype female of *P. meritoria* came from Pallastunturi, Finland). Tobias (1986) mentioned *Phaenocarpa canaliculata* Stelfox from Finland without any lo-

cality, and two species, *P. chiastocetae* and *P. pellmyri*, were described from Kuusamo, NE Finland, by Fischer (1990).

The Finnish fauna of *Phaenocarpa* is still little explored and consists of about 20 species (some 30 species are known from Fennoscandia). In this paper we describe a new representative of the genus, the closest relatives occur in the eastern Palaearctic area, and also treat of two other species of *Phaenocarpa* which are new to the fauna of Finland.

2. Material and methods

Specimens of alysiine braconids were collected by sweeping bushes and lower vegetation in different biotopes in Finland, mostly in southern Finland during several decades. In many years, the collecting period lasted from early April to late September or October.

Specimens of *Phaenocarpa* were searched for in Finnish collections; the three largest of them are the Finnish Museum of Natural History, University of Helsinki (FMNH; curator Dr. Anders Albrecht), and the Department of Applied Biology, University of Helsinki (DABH, former DAZH; curator author MK) and the private collection of author VV, Turenki (VVPC).

Two paratypes were borrowed for comparison with Finnish specimens. Firstly, a female paratype of *Phaenocarpa aurosetosa* Papp, 2000 from Mongolia, Uburchangaj aimak, Changaj Mts., Ongijn gol, 10 km ENE from Arbačher, 1800 m, 29 June 1964, Exp. Dr. Z. Kaszab [loc. no. 220] (the Hungarian National Museum, Budapest, curator Dr. J. Papp), and secondly, a female paratype of *P. vulcanica* Belokobylskij, 1998 from Kamchatka, 10 km S of Kozyrevka, forest, volcanic ash area, 23 July 1985, S. Belokobylskij leg. (the Zoological Institute, Russian Academy of Sciences, St Petersburg, curator Dr. S. Belokobylskij).

The specimens were studied and measurements and drawings were prepared as described in Vikberg & Koponen (2001). The lengths of flagellomeres were measured along the dorsomedial line, flagellomere 1 with annellus. The length of the fore wing was measured from the apex of humeral plate to the apex of the wing, and the width of the wing compared against this longitudinal axis.

The nomenclature of the body parts follows

mainly Sharkey & Wharton (1997), and some terms are from van Achterberg (1988, 1993).

3. Results and discussion

3.1. *Phaenocarpa (Phaenocarpa) hirsuta* sp. n. (Fig. 1)

Holotype female (in coll. DABH) labelled SUOMI [=Finland], KP [=Om]: Kalajoki, [Grid 27*E] 7130:344, 29.VI.1978, M. Koponen leg. Specimen glued with left side on a card triangle; both antennae broken beyond flagellomere 15, two apical left fore tarsomeres missing and right fore tarsus glued on card, otherwise in good condition.

Description. Female. Holotype: length of body 3.1 mm, of fore wing 3.2 mm.

Head. Antenna (Fig. 1a): apex of scapus oblique and pedicellus rather large; ratios of lengths of flagellomeres 1, 2, 3 and 4 are 10:14:11:9; flagellomere 1 0.7 as long as flagellomere 2; lengths of flagellomere 1, 2 and 15 3.5, 5.2 and 2.6 times their widths, respectively. Length of maxillary palp 0.95 times height of head; OOL:diameter of lateral ocellus:POL = 8.5:2.4:3.6. Frons and vertex thickly setose, setae pale, adpressed, rather short, radiating from ocellar triangle. Occiput with dense, transverse setae on either side of medial line; head in dorsal view (Fig. 1b) transverse, 1.48 times as broad as long. Length of eye in dorsal view 1.15 times temple; temples distinctly broadening behind eyes; eye 1.2 times as high as wide, with sparse hairs. Face hairy, rather smooth, laterally with transverse striae (Fig. 1b–c) which reach 0.5 below antennal socket, lower only 0.3 to medial line; gena smooth. Face 2.7 times as wide as high; clypeus 1.8 times as wide as high. Width of anterior tentorial pit 0.05 mm. Length of malar space 0.4 times basal width of mandible (Fig. 1b); mandible slender, its medial length 2.0 times maximum width, second tooth longer than both other teeth, with incision between first and second tooth (Fig. 1d–e). Head 1.43 times as wide as mesoscutum.

Length of mesosoma (Fig. 1f) 1.5 times its height; side of pronotum largely smooth, but medio-anteriorly and posteriorly crenulate. Sternaulus complete, wide and coarsely crenulate. Metapleuron rather smooth medially and rugose

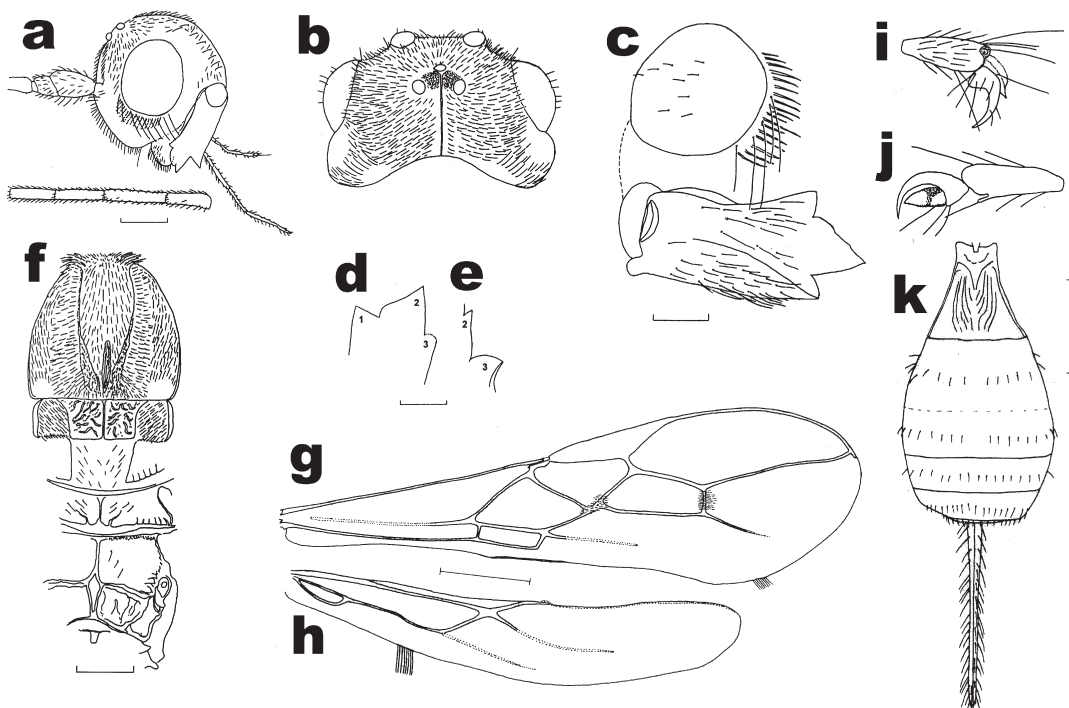


Fig. 1. *Phaenocarpa hirsuta* sp. n., holotype female. – a. Head, lateral view (insert: four basal flagellomeres). – b. Head, dorsal view. – c. Mandible and part of head, lateral view. – d. Apex of female mandible to show teeth 1 and 2 in maximal view. – e. Apex of female mandible to show teeth 2 and 3 in maximal view. – f. Mesosoma, dorsal view. – g. Fore wing. – h. Hind wing. – i. Apex of mid tarsus. – j. Apex of hind tarsus. – k. Metasoma, dorsal view. Scale bars 0.1 mm (c, d, e, i, j), 0.2 mm (a, b, f) and 0.5 mm (g, h, k).

ventrally. Notauli impressed throughout, broadening posteriorly, to form a broad, rugulose area on either side of long, deep midpit. Mesoscutum covered with dense, light and more or less adpressed pilosity, only outer hind corner of lateral lobe with a small glabrous area; scutellar sulcus with a medial keel, densely rugose. Axilla densely hairy; scutellar disk slightly convex, hairy; metanotum with a median carina which protrudes slightly posteriorly. Propodeum smooth in anterior half, with a strong median carina, in middle with transverse carinae, and posteriorly with a narrow medial area which is slightly broader anteriorly, posterior part of propodeum partly rugose.

Wings. Fore wing (Fig. 1g) 3.2 times as long as broad. Pterostigma narrow, 4.1 times as long as wide, issuing vein r beyond (0.66) its middle, r almost half as long as pterostigma is wide; $r:3RSa:3RSb = 3:16:34$; 3RSb rather straight and ending close to apex of wing; $1CUa:1Cub = 2:13$. First subdiscal cell 4.5 times as long as wide.

2Cub at level of 1Cub; meeting area of first subdiscal and second discal cell spot-like. 1M and m-cu slightly diverging anteriorly. Hind wing (Fig. 1h) with subbasal cell short. $M+CU:1M = 11:22$; m-cu not formed.

Legs. Hind coxa smooth; tarsal claws very slender (Fig. 1i–j), with only a small basal protuberance. Length of hind femur, tibia and basitarsus 5.6, 11.7, and 7.9 times as long as their width, respectively. Apex of hind tibia with a whitish comb on inner side; hind tibial spurs 0.2 times as long as basitarsus.

Metasoma (Fig. 1k). Tergum 1 1.05 times as long as apically wide, apex 2.3 times as wide as its narrowest subbasal part, its dorsal carinae present in basal third of tergum, united apically, surface medially longitudinally striate, its spiracle small before middle, not protruding. Dorsople large. Metasoma slightly depressed, its height 0.75 times its width. Second tergum smooth. Ovipositor almost straight, apex hardly upcurved; length of

ovipositor sheath 0.42 times fore wing and 0.99 times hind tibia, with long setae and an apical spine. Hypopygium rather short, apically obtusely angled when viewed from below.

Colour. Head brown; face, except orbit and triangular area below antennal sockets, temple behind eye and adjacent part of occiput infuscate; mandible brownish yellow, teeth dark brown; clypeus brownish yellow, slightly infuscate basally; ocellar area and posterior medial line blackish; scape and pedicel brown, brownish yellow beneath; 2–3 basal flagellomeres brownish, the following gradually more infuscate and from flagellomere 8 onwards brownish black. Mesosoma black; pronotum medially, mesonotum and most of metanotum brown; tegula and humeral plate brownish yellow. Legs yellowish brown, telotarsi infuscate. Fore wing membrane slightly darkened, covered with thick, brownish setae; pterostigma brown, venation brown to dark brown; a large patch of blackish setae on and around vein r–m, and a smaller patch at the junction area of first submarginal and second discal cells. Hind wing subhyaline. Metasoma black; hypopygium brownish; ovipositor sheath brownish black, ventrally paler.

Measurements (length in mm, if not stated otherwise). Body 3.1, fore wing 3.2, head width 0.83 (at eyes), 0.82 (at temples). Flagellomere 1: 0.20, 2: 0.28, 3: 0.21, 4: 0.18, 5: 0.16, and 15: 0.14. Mesosoma length 1.30, height 0.86. Mesoscutum width 0.58. Hind femur 0.96, hind tibia 1.36, hind tarsus 1.23 (basitarsus 0.48). Metasoma 1.47, tergum 1 (from tendon) 0.50. Ovipositor sheath (visible part) 1.35, (projecting beyond apex of metasoma) 1.00.

Male. Unknown.

Etymology. The specific name is given for the richly setose frons, vertex, occiput, and mesoscutum.

Biology. The only known female was swept from sand dune vegetation on the sea shore of the Gulf of Bothnia. Otherwise biology (including host) unknown.

Distribution. Finland (Fig. 2a). The coordinates of the type locality are 64°14' N 23°48' E.

The above-described new species is related to *Phaenocarpa vulcanica* Belokobylskij from Kamchatka (Belokobylskij 1998), and *P. aurosetosa* Papp from Mongolia (Papp 2000),

and also to *P. picinervis* (Haliday, 1838), the type species of the genus with Holarctic distribution. All four species belong to the *P. picinervis*-group and share a unique common character: the dark hairy area along vein r–m of the fore wing. *P. hirsuta* has the most hairy mesoscutum of all, and differs from the others by the transverse striae laterally on the face near the inner margin of the eye.

In Papp's (1968) key, the new species runs – because of narrow fore wing and transverse striae of the face laterally – to *Phaenocarpa angustiptera* Papp, 1968, described from Czechoslovakia (now Slovakia). In Fischer's (1970) key, it also runs to *P. angustiptera*. In Tobias' (1986) key, it runs to couplets 119–123, *P. (P.) angustiptera*, *P. (P.) styriaca* Fischer, and *P. (P.) orbicularis* Gurasashvili, but does not agree with any. [Fischer (1990) synonymised *P. orbicularis* with *P. eugenia* (Haliday)]. In Fischer's (1990, 1993) keys, it runs to the *P. angustiptera* group, and its characters fall between *P. angustiptera* and *P. styriaca* Fischer. Because of the transverse striae on the the face laterally, the new species runs in Belokobylskij's (1998) key to couplet 9 and further to couplets 10–15, but does not fit any of the six eastern Palaearctic species described there, or *Ph. (Ph.) eugenia* (Haliday) f. *orbicularis* Gurasashvili.

The above-mentioned four species of the *Phaenocarpa picinervis* group and *P. angustiptera* can be separated using the following key.

- 1 (2) Claws short, with large basal part covered by numerous small setae, and with small narrow apical part (Fig. 3a–c). First tergum 1.6–1.9 as long as apically wide. Fore-wing without dark hairs on and around vein r–m
P. angustiptera Papp
- 2 (1) Claws long, with small basal protuberance and long narrow apical part (Fig. 1i–j). First tergum 1.0–1.6 as long as apically wide. Fore wing with dark hairs on and around vein r–m (*picinervis*-group)
- 3 (6) Frons and vertex glabrous, only the anterolateral corner of frons setose
- 4 (5) Occiput behind vertex with a few long hairs (Fig. 3d). Head black. Sternaulus weak or absent posteriorly
P. picinervis (Haliday)
- 5 (4) Occiput behind vertex with numerous short hairs (Fig. 3e). Head with extensive brown

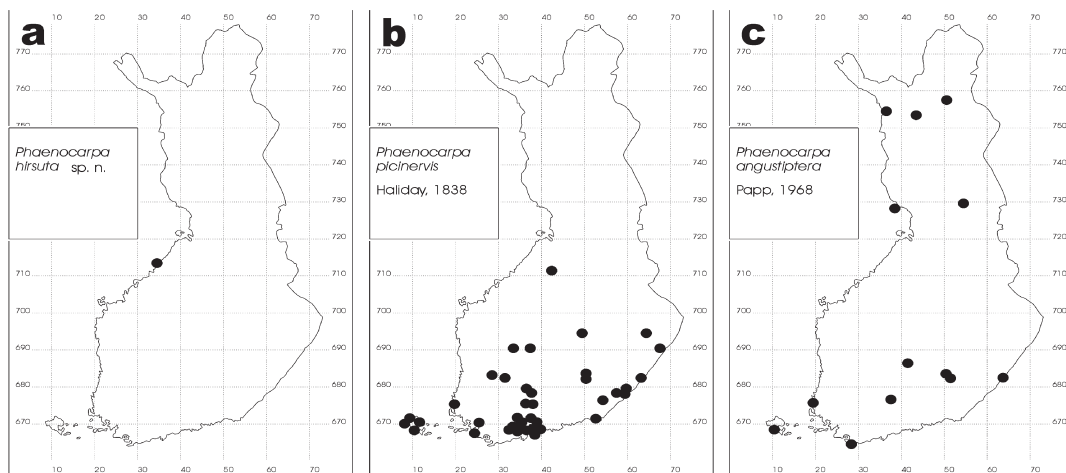


Fig. 2. Distribution maps for Finland. — a. *Phaenocarpa hirsuta* sp. n. — b. *P. picinervis* (Haliday). — c. *P. angustiptera* Papp.

coloration. Sternaulus strong to mid-coxa

P. vulcanica Belokobylskij

6 (3) Frons and vertex setose, setae radiating from ocellar triangle.

7 (8) Head black. Lateral mesonotal lobe mostly glabrous *P. aurosetosa* Papp

8 (7) Head extensively brown. Lateral mesonotal lobe mostly setose, only a small area at outer hind corner glabrous

P. hirsuta sp. n.

3. 2. Some characters of the female paratypes of *P. vulcanica* and *P. aurosetosa*

Phaenocarpa vulcanica. Frons and vertex glabrous; occiput behind vertex setose; OOL:diameter of lateral ocellus:POL = 8.3:2.3:3.8; 27 flagellomeres (right antenna); flagellomere 1 0.56 times as long as flagellomere 2; mandible medially 1.87 times as long as maximally wide, without incision between first and second tooth (Fig. 3f); eye in dorsal view 1.4 times as long temple; head 1.5 times as wide as mesoscutum; notauli complete, crenulate-rugulose, hairy; median mesonotal lobe with some hairs on anterior half; lateral mesonotal lobe mainly glabrous; midpit long, the area laterad of it rugulose and setose area; sternaulus strong, crenulate to mid-coxa; scutellar disk distinctly convex, medially glabrous; fore wing 2.9 times as long as wide, with vein r very short and thick; hind femur 5.6 times as long as wide; metasoma slightly later-

ally compressed; tergum 1 1.26 times as long as apically wide; ovipositor sheath 0.33 times as long as fore wing and 0.89 times as long as hind tibia.

Measurements. Body 2.85. Fore wing 3.3. Head width 0.82 (at eyes), 0.84 (at temples). Antenna ca. 4.6, flagellomere 1: 0.18, 2: 0.32, 3: 0.24. Hind femur 0.85, hind tibia 1.23, hind tarsus 1.15. Ovipositor sheath (visible part) 1.10.

Phaenocarpa aurosetosa. Frons, vertex and occiput behind vertex setose as in *P. hirsuta* sp. n., setae yellowish; OOL:diameter of lateral ocellus:POL = 6.9:1.5:3.1; 22 flagellomeres (right antenna); flagellomere 1 0.67 times as long as flagellomere 2; mandible medially 2.0 times as long as maximally wide, with an incision between tooth 1 and tooth 2, as in *P. picinervis*; eye in dorsal view 1.5 times as long as temple; head in dorsal view 1.5 times as wide as long, 1.5 times as wide as mesoscutum; notauli complete, impressed but rather smooth; median mesonotal lobe setose; lateral mesonotal lobe mainly glabrous; midpit long, the area laterad of it smooth; fore wing 2.6 times as long as wide; hind femur 5.6 times as long as wide; tergum 1 1.06 times as long as apically wide; ovipositor sheath 0.33 times as long as fore wing, 0.92 times as long as hind tibia.

Measurements. Body 2.35. Fore wing 2.5. Head width 0.64 (at eyes), 0.65 (at temples). Antenna 3.0, flagellomere 1: 0.15, 2: 0.23, 3: 0.18. Hind femur 0.63, hind tibia 0.90, hind tarsus 0.85. Ovipositor sheath (in lateral view) 0.83, (visible in dorsal view) 0.72.

When the characters of *P. hirsuta* sp. n. are compared with the characters of *P. vulcanica* and *P. aurosetosa*, it is obvious that *P. hirsuta* and *P. aurosetosa* are most closely related to each other. The frons, vertex and adjacent occiput are similarly richly setose in both species, the structure of mandible is rather similar, and tergum 1 has equal length/apical width index in both species. Their known localities are distant from each other but their real areas of distribution are most probably much wider.

3.3. *Phaenocarpa (Phaenocarpa) picinervis* (Haliday, 1838) (Figs. 3d, 3f, 2b)

Alysia (Alysia) picinervis Haliday, 1838: 233, ♀♂. Lectotype female (in the National Museum of Ireland, Dublin; not examined) was collected in Ireland by Haliday (van Achterberg 1998a).

Alysia americana Ashmead, 1889: 648, ♀. Synonymised by Muesebeck & Walkley (1951): 152.

Phaenocarpa picinervis: Foerster 1862: 267; Morley 1933: 160; Stelfox 1950: 355; Papp 1967: 212; Papp 1968: 575 (key), 592–593 (description); Fischer 1970a: 22; Fischer 1970b: 414 (key), 466–468 (description); Fischer 1990: 108 (key); Fischer 1993: 517 (key).

Phaenocarpa (Phaenocarpa) picinervis: Tobias 1986: 128 (key); Belokobylskij 1998: 236 (key).

Phaenocarpa picinervis was redescribed with many details by Papp (1968) and Fischer (1970), although these descriptions differ in some characters from each other. From other species of *Phaenocarpa* having dark hairs along the vein r-m of fore wing it can be differentiated with the key given above.

Some characters of the Finnish females ($n = 17$) are as follows. Body 2.2–3.6 (mean 3.0), fore wing 2.6–3.8 (mean 3.3), head width (at eyes) 0.63–0.98 mm (mean 0.85); number of flagellomeres 23–26; ovipositor sheath (visible part) 0.86–1.17 (mean 1.02) times as long as hind tibia or 0.35–0.47 (mean 0.40) times as long as fore wing. Head in dorsal view 1.4 times as wide as mesonotum, with eye 1.4 times as long as temple; fore wing 2.8 times as long as wide; first tergum 1.23–1.29 ($n = 4$) times as long as apically wide.

Some characters of the Finnish males ($n = 44$) are as follows. Body 2.0–3.8 (mean 3.0), fore wing 2.2–3.7 (mean 3.1), head width (at eyes) 0.55–0.90 mm (mean 0.78); number of flagellomeres 25–31; first tergum 1.41–1.60 ($n = 4$) times as long as apically wide.

Specimens examined. Finland (76 ♂♂, 47 ♀♀; DABH, FMNH, VVPC), AI: Eckerö (670:08), 29.VII–4.VIII.1955 1 ♀, 1.VII.1958 1 ♀, 16.VII.1959 1 ♂, 18.VII.1959 2 ♂♂, 21.VII.1959 1 ♂, W. Hellén. Hammarland (671:09), 23.VII.1953 1 ♀, W. Hellén. Jomala (669:10), 24.VI.1944 2 ♂♂, 22–28.VII.1955 1 ♂, 8–12.VIII.1955 1 ♀, 4.VII.1959 1 ♀, W. Hellén. Mariehamn (668:10), 17.VI.1919 1 ♀, W. Hellén. Saltvik (Kvarnbo, 670:11), 14.VII.1944 1 ♀, M. Hellén; 15–20.VII.1955 1 ♂, W. Hellén. Ab: Dragsfjärd (667:24), 16.VIII.1952 1 ♂ 1 ♀, W. Hellén. Karjalohja [= Karislojo] (668:32), 1.VIII.1911 1 ♀, W. Hellén. Karkkila (“Pyhäjärvi”, 671:34), 1.VIII.1959 1 ♀, V. Vikberg. Lohja [= Lojo] (668:33, 669:34), 1 ♀, Linnaniemi leg.; 8.VIII.1949 1 ♂, W. Hellén. Lohjan kunta (669:33), 19.VI.1992 1 ♂, M. Koponen. Piikkiö (670:25), 22.VII.1999 1 ♀, light trap, A. Lehtinen. Uusikaupunki (“Nystad”, 675:19), 1920 1 ♂, W. Hellén. Vihti (“Vichtis”, 669:35), 5.VIII.1956 1 ♂, W. Hellén; (668:36, 670:35), 7.VII.1955 1 ♀, 27.VI.1962 1 ♂, 9.VI.1963 2 ♂♂, 23.VI.1963 1 ♂, 10.VII.1963 1 ♂, 27.VII.1963 1 ♂, 9.VI.1965 1 ♀, V. J. Karvonen. N: Espoo (669:37), 25.VIII.1979 1 ♂, M. Koponen. Helsinki (“H: fors”, 667:38), 29.V.1920 1 ♂, 7.VI.1925 1 ♀, 15.VIII.1959 1 ♀, 25.VIII.1959 1 ♂, 10.X.1962 1 ♂, W. Hellén; (Kottby = Käpylä, 668:38), 15.VIII.1959 1 ♀, 25.VIII.1959 1 ♂, W. Hellén; (668:38), 10.VI.1979 1 ♂, 15.VI.1979 10 ♂, 12.VIII.1979 1 ♂, 14.VI.1980 1 ♀, 28.VII.1980 1 ♂, 10.VIII.1980 1 ♀, 30.VIII.1980 1 ♂, 25.VI.1981 1 ♂, 11.VI.1982 8 ♂♂; (Viikki, 668:39), 19.IX.1979 1 ♂, 2.IX.1980 1 ♂, 15.IX.1980 1 ♂, M. Koponen. Kirkkonummi (668:36), 6.VIII.1955 1 ♂, 28.VII.1963 1 ♂, V. J. Karvonen. Nurmijärvi (670:38), 5.VI.1986 1 ♂; (671:37), 16.5.1979 1 ♂, 24.VII.1992 1 ♂, M. Koponen. Vantaa (Tikkurila, 668:39), 12.VI.1920 1 ♀, Y. Hukkinen; (“Helsingin pitäjää” 668:39), 14.VII.1959 1 ♀, V. Vikberg; (669:37), 19.VIII.1978 1 ♂ 1 ♀, M. Koponen. Ka: Virolahti (671:52), 8.VI.2002 3 ♀♀, M. Koponen. St: Mouhijärvi (683:28), 29.VI.1993 1 ♂, M. Kopo-

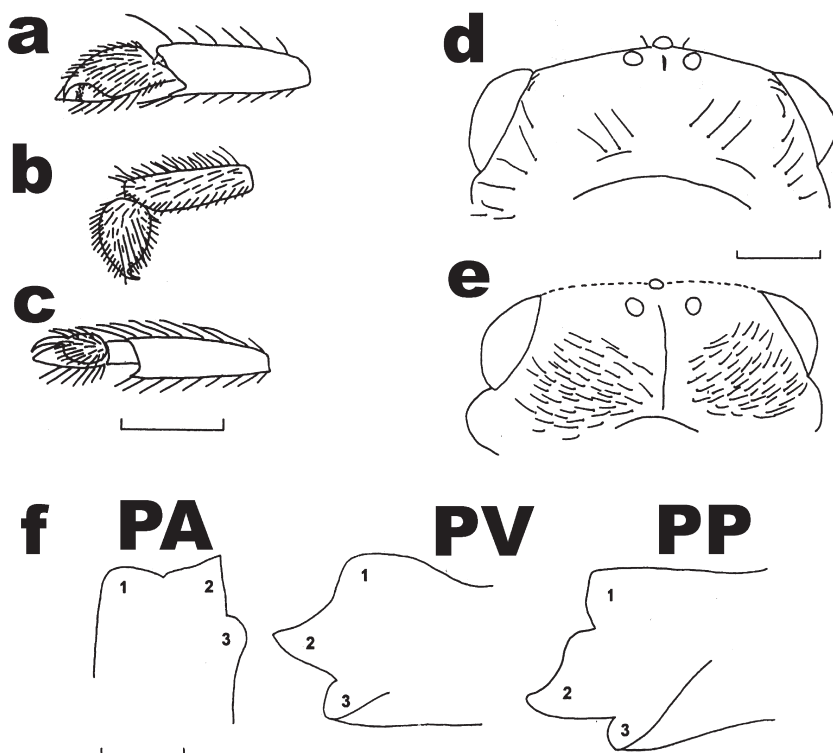


Fig. 3. *P. angustiptera* Papp, *P. picinervis* (Haliday) and *P. vulcanica* Belokobylskij. – a. *P. angustiptera*, female from Mikkeli, apex of hind tarsus. – b. *P. angustiptera*, female from Janakkala, apex of fore tarsus. – c. *P. angustiptera*, male from Taivalkoski, apex of hind tarsus. – d. *P. picinervis*, female from Turenki, posterior view of head. – e. *P. vulcanica*, paratype female, posterior view of head. – f. Apex of female mandible to show teeth 1 and 2 in maximal view. PA = *P. angustiptera*, from Mikkeli; PV = *P. vulcanica*, paratype; PP = *P. picinervis*, from Turenki. Scale bars 0.1 mm (a, b, c, f) and 0.2 mm (d, e).

nen. Ta: Hauho (678:37), 23.VIII.1941 1 ♂; (679:36), 8.VIII.1935 1 ♂, 11–12.VIII.1935 2 ♀♀, W. Hellén. Janakkala (675:36), on *Phalaris*, 18.VI.1975 1 ♀ (Turenki, 6759:372), 10.IX.2002 1 ♀, 12.IX.2002 2 ♂ 1 ♀, 13.IX.2002 1 ♀, V. Vikberg. Nokia (682:31), 5.VIII.1940 1 ♂, 7.VIII.1940 1 ♀, W. Hellén. Sa: Imatra (678:59), 10.VI.1920 1 ♂, M. Hellén. Joutseno (678:57), 20.VII.1945 1 ♀, W. Hellén. Luumäki (676:54), 14.VIII.1981 1 ♂, M. Koponen. Mikkeli (“Mikkelin mlk.” 683:50), 26.VIII.1978 1 ♂, 24.VI.1979 1 ♂, 3.VI.1989 1 ♀, M. Koponen. Ristiina (682:50), 23.VI.1979 3 ♂♂, M. Koponen. Ruokolahti (679:59), 14.VI.1948 1 ♀, W. Hellén. Kl: Parikkala, (682:63), 18.VI.1945 2 ♂♂, 23.VI.1945 1 ♀, 29.VI.1945 1 ♂, W. Hellén. Tb: Keuruu (“Keuru” 690:37), 12.VIII. 1928, 1 ♀, W.

Hellén. Rautalampi (694:49), 10.VIII.1941 1 ♀, W. Hellén; 11.VIII.1941 1 ♀, I. Hellén. Virrat (690:33), 5.VII.1999 1 ♀, M. Koponen. Kb: Joensuu (694:64), 27.VI.1963 1 ♀, 13.VII.1963 1 ♂, 4.VIII.1963 1 ♀, V. Vikberg. Tohmajärvi (690:67), 20.VII.1963 1 ♀, V. Vikberg. Om: Haapavesi (711:42), 8.VII.1995 1 ♀, M. Koponen. Norway (1 ♀; FMNH), Dovre, Vågåmo, 11.VII.1953 1 ♀, W. Hellén. Russia (1 ♂ 1 ♀; FMNH), St. Petersburg region: Kuokkala (667:66, now Repino), 11.VI.1936 1 ♂, W. Hellén; Muolaa, Äyräpäänjärvi (671:63, now Bolshoje Rakovoje ozero), 23.VII.1927 1 ♀, W. Hellén.

Distribution. Austria, Finland (Fig. 2b), Germany, Hungary, Ireland, Kazakhstan, Korea, Mongolia, Netherlands, Norway, Rumania, Russia (European part, Siberia, Chitinskaya oblast,

Jakutia, Primorskiy Province, Sakhalin, Magadan oblast, Kamchatka), Slovakia (Čapek et Lukás 1989), Sweden, Ukraine, United Kingdom (England), and former Yugoslavia; Canada, and U.S.A.

Notes. A Holarctic species new to Finland and Norway. In Finland, the captures are from 16 May (1979, Nurmijärvi) to 10 October (1962, Helsinki); 2 ♂♂ are from May, 37 ♂♂ 14 ♀♀ from June, 12 ♂♂ 11 ♀♀ from July, 17 ♂♂ 18 ♀♀ from August, 5 ♂♂ 3 ♀♀ from September and 2 ♂♂ from October. Reported hosts include *Hebecnema affinis* Malloch and *Lispe* sp. (Diptera: Muscidae) (Gersdorf 1962). According to Smith (1989), all larvae of *Hebecnema* species develop in humus-rich soil and cow and horse dung, they are obligate carnivores, and the larvae of all known *Lispe* species develop in wet sand or mud with a high organic content. Also, they too are obligate carnivores. The specimens from Turenki were swept along a small ditch (with polluted water in spring but nearly dry in autumn).

3.4. *Phaenocarpa (Discphaenocarpa) angustiptera* Papp, 1968 (Figs. 3a–c, f)

Phaenocarpa angustiptera Papp, 1968: 573 (key), 576–578, ♀. Holotype female from Czechoslovakia [now Slovakia]: Barlangliget, near Spisska Belá (= Szepesbéla), 1300 m a.s.l., 22.VIII.1900, Bíró leg. (in the Hungarian National Museum, Budapest; not examined)

Phaenocarpa angustiptera: Fischer 1970: 414 (key), 417 (redescription of the holotype female); Fischer 1990: 107 (key), Belokobylskij & Tobias 1997.

Phaenocarpa (Phaenocarpa) angustiptera; Tobias 1986: 143.

Phaenocarpa (Discphaenocarpa) angustiptera: Belokobylskij 1998: 226; Papp 2000: 40.

Belokobylskij (1998) noted the special structure of the claws and gave a new subgeneric name, *Discphaenocarpa*, for *P. angustiptera* and for *P. omolonica* Belokobylskij from the Omolon river, Chukotskiy AO. In Finnish females, the apical narrow part of the claw is sometimes very small (Fig. 3c).

Characters of the Finnish and Estonian females ($n=4$) are as follows. Body 2.2–3.3; fore wing 1.9–2.6; head width (at eyes) 0.62–0.82 mm; 22–26 flagellomeres; lateral face and lower gena with

transverse striae; fore wing narrow, 3.3–3.4 times as long as wide; claws (Fig. 3a–b); tergum 1 1.65–1.8 times as long as apically wide; ovipositor sheath 0.57–0.67 times as long as hind tibia or 0.25–0.37 times as long as fore wing.

First description of males ($n=5$): Body 2.1–2.8; fore wing 1.75–2.15; head width 0.61–0.75 mm; 26–29 flagellomeres; gena without transverse striae, and in the smallest male from Sodankylä also the lateral part of face smooth, without striae; tergum 1 1.6–1.9 times as long as apically wide; claws with longer narrow apical part than in female, sometimes as long as the hairy thick basal part (Fig. 3d). Otherwise similar to the female.

Specimens examined. Finland (7 ♂♂ and 15 ♀♀; DABH, FMNH, VVPC), Al: Mariehamn (668:10) 1 ♀, W. Hellén. Ab: Uusikaupunki (“Nystad”, 675:19), 11.VIII.1916 1 ♀, 15.VIII.1917 1 ♀, 27.VII.1919 1 ♀, 20.VIII.1919 2 ♀, 1920 1 ♂ 1 ♀, 6.IX.1923 1 ♀, W. Hellén. N: Hangö = Hanko (“Lappvik”, 664:28), 22.VII.1925 1 ♀, W. Hellén. Ta: Janakkala (Kalpalinna, 676:37), 14.VIII.1983, 1 ♀, V. Vikberg. Jämsä (Säyrylä, 6865:411), birch-dominant forest, 26.VIII.1991 1 ♂, M. Koponen. Sa: Mikkeli (“Mikkelin mlk.”, 683:50), 31.VII.1983 1 ♀, 6.VIII.1991 1 ♀, M. Koponen. Ristiina (6821:514), 23.VII.1994 1 ♀, M. Koponen. Kl: Parikkala (“Laurila” = Surumäki, 682:63), 7.VIII.1943 1 ♀, W. Hellén. Obu: Kemi (Ajos, 7288:386), 12.VIII.1982 1 ♀, M. Koponen. Ks: Taivalkoski (729:54), marshy meadow slope, 29.VI.1989 2 ♂, M. Koponen. Lkk: Kittilä (Kiistala, 753:43), road side meadow, forest edge, 8.VII.1989 1 ♂, M. Koponen. Muonio (754:36), 26.VII.1935 1 ♂, W. Hellén. Lks: Sodankylä (Purnumukka, 7570:502), old meadow, 3.VII.1989 1 ♂, M. Koponen. Estonia (1 ♀; DABH), Pärnumaa: Häädemeste-Jaagubi, 3.VI.1990 1 ♀, M. Koponen.

Distribution. Estonia, Finland (Fig. 2c), Korea, Lithuania, Mongolia, Russia (Magadan oblast, Khabarovsk Province, and Kunashir Island in the Kuriles), and Slovakia.

Notes. A Palaearctic species new to Finland and Estonia. In Finland, the captures are from 29 June (1989, Taivalkoski) to 6 September (1923, Uusikaupunki). 2 ♂♂ are from June, 3 ♂♂ 4 ♀♀ from July, 1 ♂ 7 ♀♀ from August, and 1 ♀ from September. The host is unknown.

3.5. Conclusions

The four species of *Phaenocarpa* that have a dark hairy spot on vein r-m of the fore wing obviously form a natural group of related species because they have many other characters in common. These include, for example, the similarity of the teeth of the mandible, complete notauli, distinct midpit, the richly setose axillar area laterad of the scutellar sulcus, superficially similar metanotum, propodeum and metasomal tergum 1, and the ovipositor sheath has an apical spine. However, the mandible of *P. vulcanica* lacks an incision between the first and second teeth. There are currently no cladistic studies or DNA analyses of the species of the world-wide genus *Phaenocarpa*. Therefore, we must await a sounder division of the species in the future.

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