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On the taxonomy and the host plants of North European species of *Eupontania*

(Hymenoptera: Tenthredinidae: Nematinae)

With 3 figures and 1 table

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Zusammenfassung

In Europa umfasst *Eupontania* die *vesicator-*, *viminalis-*, *aquilonis-* und *crassipes*-Artengruppen. Aus Nordeuropa werden 13 Arten der *Eupontania-viminalis*-Gruppe aufgeführt. *E. brevicornis* (Förster, 1854), sp. rev. und comb. n. (= *Nematus congruens* Förster, 1854, syn. n., *Pontania carpentieri* Konow, 1907, syn n., *Pontania pedunculi* auct., nec Hartig), die Gallen an *Salix cinerea* L. hervorruft, wird in Finnland nachgewiesen und mit der eng verwandeten *E. arcticornis* (Konow, 1904) verglichen, die Gallen an *Salix phylicifolia* L. bildet. Die Taxonomie und die Wirtspflanzen von *E. pedunculi* (Hartig, 1837) (= *Nematus bellus* Zaddach, 1876; *Pontania gallarum* auct. nec. Hartig) und *E. gallarum* (Hartig, 1837) (= *N. aestivus* Thomson, 1863, syn. n.; *Pontania varia* Kopelke, 1991, syn. n.; *Pontania norvegica* Kopelke, 1991, syn. n.) werden kurz diskutiert. *E. pedunculi* wird als Art betrachtet, die Gallen an verschiedenen Arten der Sektion *Vetrix* hervorruft, nicht aber an *S. cinerea*: *Salix aurita* L., *S. caprea* L., *S. starkeana* ssp. *starkeana* Willd. und ssp. *cinerascens* (Wahlenb.) Hultén (= *S. bebbiana* Sarg.). Der Status von *E. myrtilloidica* (Kopelke, 1991), die an *S. myrtilloides* L. in Finnland nachgewiesen wurde, bleibt unsicher. Die Wirtspflanze von *E. gallarum* ist *Salix myrsinifolia* Salisb. einschliesslich der ssp. *borealis* (Fr.) Hyl. Lectotypen werden festgelegt für *Pontania arcticornis, P. phylicifoliae* Forsius, 1920, *P. viminalis* var. *hepatimaculae* Malaise, 1920, *Nematus brevicornis, P. samolad* Malaise, 1920 (Wirtspflanze: *S. lapponum* L.), und *P. pustulator* Forsius, 1923. Für *Nematus gallarum* wird ein Neotypus aus Schweden, Uppland, festgelegt. *E. acutifoliae baltica* ssp. n. wird beschrieben aus Litauen, Estland, Russland, und Finnland, und *E. collactanea rosmarinifoliae* ssp. n. aus Finnland und Russland. Für 20 aus Nordeuropa beschriebene *Eupontania*-Arten werden die Wirtspflanzen aufgelistet, *E. pustulator* von *S. pulchra*, zum ersten Mal.

Summary

In Europe *Eupontania* is comprised of the *vesicator-*, *viminalis-*, *aquilonis-*, and *crassipes*-groups. From Northern Europe 13 species of the *Eupontania viminalis* group are recorded. *Eupontania brevicornis* (Förster, 1854), sp. rev. and comb. n. (= *Nematus congruens* Förster, 1854, syn. n., *Pontania carpentieri* Konow, 1907, syn. n., *Pontania pedunculi* auct., nec Hartig) inducing galls on the leaves of *Salix cinerea* L. is recorded from Finland and compared with closely related *E. arcticornis* (Konow, 1904) forming galls on *Salix phylicifolia* L. The taxonomy and host plants of *Eupontania pedunculi* (Hartig, 1837) (= *Nematus bellus* Zaddach, 1876; *Pontania gallarum* auct., nec Hartig), and *E. gallarum* (Hartig, 1837) (= *N. aestivus* Thomson, 1863, syn. n.; *Pontania varia* Kopelke, 1991, syn. n.; *Pontania norvegica* Kopelke, 1991, syn. n.) are briefly discussed. *E. pedunculi* is treated as a species inducing galls on several species of the section *Vetrix* other than *S. cinerea*: *Salix aurita* L., *S. caprea* L., *S. starkeana* ssp. *starkeana* Willd. and ssp. *cinerascens* (Wahlenb.) Hultén (= *S. bebbiana* Sarg.). *E. myrtilloidica* (Kopelke, 1991) from galls on *S. myrtilloides* L. is recorded from Finland but its taxonomic status remains uncertain. The host plant of *E. gallarum* is *Salix myrsinifolia* Salisb. including ssp. *borealis* (Fr.) Hyl. Lectotypes are designated for *Pontania arcticornis*, *P. phylicifoliae* Forsius,

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1920, *P. viminalis* var. *hepatimaculae* Malaise, 1920, *Nematus brevicornis*, *P. samolad* Malaise, 1920 (host plant *S. lapponum* L.), and *P. pustulator* Forsius, 1923. A neotype for *Nematus gallarum* is designated from Sweden, Uppland. *E. acutifoliae baltica* ssp. n. is described from Lithuania, Estonia, Russia, and Finland, and *E. collactanea rosmarinifoliae* ssp. n. is described from Finland and Russia. The list of host plants for 20 described species of *Eupontania* from Northern Europe is given. *E. pustulator* recorded for the first time on *Salix pulchra* Chamisso from the Polar Urals.

Keywords

Tenthredinidae, *Pontania*, *Eupontania*, sawflies, hostplants, *Salix*

New taxa

Eupontania acutifoliae baltica ssp. n., *E. collactanea rosmarinifoliae* ssp. n.

1. Introduction

The genus *Eupontania* Zinovjev, 1985 includes in Europe four species-groups: *vesicator*-, *aquilonis*-, *crassipes*-, and *viminalis*-group (Benson, 1960; Kopelke, 1999; Zinovjev, 1999; Vikberg, 2003). A key to the species-groups of *Eupontania* was presented in Zinovjev (1993a). The genus differs from *Pontania* A. Costa, 1852 and *Phyllocolpa* Benson, 1960 among other characters by the symmetrical mandibles of the adults (Zinovjev, 1985; Zinovjev & Vikberg, 1999). In studies of the allozymes by Nyman et al. (1998) and the DNA sequence from the mitochondrial cytochrome b gene by Nyman et al. (2000) *Eupontania* and *Euura* Newman, 1837 behave as sister genera well separated from *Pontania* and *Phyllocolpa*.

Eupontania vesicator-group includes only two species in Europe. The lectotype of *E. pustulator* (Forsius) is designated in this paper. The *aquilonis*-group with two species and *crassipes*-group with three species in Northern Europe are treated here according to Vikberg (2003).

The N. and C. European species of the *Pontania viminalis*-group were revised and treated by Kopelke (1991, 1999); altogether 18 described species (one with two subspecies) of the group induce galls on different willow species of the subgenera *Vetrix* and *Chamaetia*. In this paper we are recording 13 species of *Eupontania viminalis*-group from Northern Europe.

Zinovjev (1995) pointed out that the species named by Kopelke (1991) as *Pontania bella* and *P. gallarum*, being associated with related *Salix aurita* L. and *S. caprea* L., are conspecific. The valid name for this species is *Eupontania pedunculi* (Hartig) that closely corresponds to the traditional usage of this name, *Pontania pedunculi* (e.g. Enslin, 1918; Benson, 1958; Zhelochovtsev, 1988). On the other hand, the species named *P. pedunculi* by Kopelke (1991, 1999), being associated with *Salix cinerea* L. differs strikingly from the species on *Salix caprea* and *S. aurita*. It is closely related to *Eupontania arcticornis* (Konow) associated with *Salix phylicifolia* L. (Zinovjev, 1993a, 1995, 1999). Its valid name is *Eupontania brevicornis* (Förster, 1854). Taxonomic position of *E. gallarum* Hartig, 1837 (= *Nematus aestivus* Thomson, 1863, syn. n.; *Pontania varia* Kopelke, 1991, syn. n.; *Pontania norvegica* Kopelke, 1991, syn. n.) is clarified. The study of the original description of "Mouche-à-scie des galles rondes du Saule" (Degeer 1771) revealed that the host plant of *E. gallarum* (Hartig) is *Salix myrsinifolia* Salisb. A neotype for *Nematus gallarum* is designated in this paper to fix the nominal taxon.

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In all, we recognise 20 species of *Eupontania* in Northern Europe. They are associated with 23 willow species from the subgenera *Chamaetia* and *Vetrix*. Two new subspecies are described: *E. acutifoliae baltica* ssp. n. and *E. collactanea rosmarinifoliae* ssp. n. Most of these sawfly species are monophagous but as an exception even these species may produce galls on subsidiary plant species or hybrids.

2. Material and methods

The reared material for this study comes mainly from different areas of Finland and Leningrad area of Russia. Some reared specimens were collected also in Sweden, Norway and other parts of Russia.

Particularly in 1992, galls of many species of *Eupontania viminalis*-group were numerous in southern Finland; in August and September VV collected galls on 6 different species of *Salix* in South Häme: Janakkala. Galls on *Salix phylicifolia* were collected in September 1992 at five localities in southern Finland: Uusimaa: Hanko, Tvärminneträsk (rearing no. 2b), South Häme: Janakkala, Grid 27*E 6754:367 (rearing no. 2d), Kiianlinna, 6760:369 (rearing no. 2e), Suurisuo (676:38)(rearing no. 2c), and Sääjärvi (6765:374) (rearing no. 2). In addition galls on *Salix aurita* and *Salix aurita x repens* ssp. *repens* were collected in Hanko, Tvärminneträsk. The galls were put into plastic bags or glass jars. When the prepupae emerged, they were transferred to glass jars with rotten brown wood into which they bored. Overwintering occurred outdoor in a wooden box inside paper. On 15 March 1993 all glass jars with prepupae were brought inside at room temperature (ca. 20-22* C) and inspected 1-2 times per day. This large material allows comparison of the emergence time in different sawfly species.

The holotypes, lectotypes, syntypes and other specimens of the species of *Eupontania* were studied or are deposited in the following museums, institutions and collections:

DABH	Department of Applied Biology, University of Helsinki, Viikki, Helsinki (Martti Koponen, Matti Viitasaari) (now this collection belongs to ZMH)
FNMS	Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main (Jens-Peter Kopelke)
KB	coll. Karel Beneš, Prague, Czech Republic
MMB	Moravian Museum, Department of Entomology, Brno, Czech Republic (Jaroslav Stehlík)
NRMS	Naturhistoriska Riksmuseet, Stockholm (Bert Gustafsson, Bert Viklund)
RFT	coll. R. Forsius, Åbo Akademi, Turku (Jukka Vauras)
VV	coll. Veli Vikberg, Turenki, Finland
ZISP	Zoological Institute, St. Petersburg, Russia (Alexey Zinovjev)
ZMH	Zoological Museum, University of Helsinki (Anders Albrecht, Pekka Malinen)
ZML	Zoological Museum, University of Lund, coll. C. G. Thomson (Roy Danielsson)
ZSM	Zoologische Staatssammlung, Munich (Erich Diller, Stefan Schmidt)

The acronyms AZ for Alexey Zinovjev and VV for Veli Vikberg have been applied where one of the co-authors of this work is responsible for a comment.

The sawfly specimens and larvae were studied under a Leitz stereomicroscope at magnifications of 50x and 100x; the light source was a halogen lamp of 12V 20W with a light beam width of 10 degrees. The light was diffused by placing a piece of thick (0.2 mm) tracing acetate near the specimen. Measurements and drawings were made using a grid of squares (50x50, side 0.20 mm) in one eyepiece. Saws (lancets and lances) and male genitalia (penis valves) were treated with KOH at room temperature for 1-4 hours, prepared

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in distilled water. After treatment in lactic acid they were put into polyviol 17 on slides under cover glasses. They were studied with an ordinary microscope at magnifications of 6.3-400x under bright field and phase contrast illuminations.

This paper contains numerous measurements. One reason for that is that they were omitted in an earlier revision of the *Eupontania viminalis*-group (Kopelke 1991).

The length of the body was measured from the anterior frons to the apex of the abdomen, including the sawsheath of the female or hypopygium of the male. The length of the fore wing was measured from the humeral plate at the margin of the tegula to the apex of the wing (the apical part of the wing was raised with an insect pin to the same plane if needed), and the length of the costa from the same origin to the apex of the costa. The head width (HW) was measured as the distance between the lateral margins of the compound eyes; the head height as the distance between the anterior margin of the clypeus and the top of the vertex; the head length was measured in dorsal view from the upper part of supraclypeal area to the level of the temples. The minimum length of the malar space was measured. The values of longer diameter (height) and shorter diameter (width) of the compound eye were measured along facetted area. POL was measured as the distance between the inner margins of the posterior ocelli; OOL as the distance between the outer margin of one posterior ocellus and the inner margin of the compound eye of the same side. Ocellar diameter (OD) was measured as the width of the anterior ocellus. Postocellar area: the length was measured as the distance of the hind margin of one posterior ocellus to the hind margin of the vertex and the maximum width between the lateral furrows. The length of the flagellomeres were measured along the dorsal midline (the basal neck-like constriction was not included when flagellomere 1 was measured); the combined length of the flagellomeres is treated as the length of the flagellum. The maximum heigth of flagellomere 1 and 7 were measured in lateral view, perpendicular to the longitudinal axis of the segment. The length of the hind femur was measured on the outer or anterior side including the trochantellus. The hind tibial length was measured on the outer or anterior side as the maximum length. The length of the single hind tarsomeres were measured along their dorsal midline, tarsomere 5 to the level of its apical lateral parts, with pretarsus omitted; the combined length of the tarsomeres is treated as the length of the hind tarsus. The ovipositor sheath length was measured from the lower basal corner of the basal sheath (valvifer 2) just basad of the joint with the lance to the apex of the sawsheath; the length of the sawsheath (apical sheath or valvula 3) from the lower basal corner to apex and the width as maximum basal or subbasal width of both sides. The length of the lance was measured as the maximum length. The length of the lancet was measured as a distance between the lower basal angle of the radix and the apex of the lamnium, and the length of the lamnium of the lancet between the lower end of the basalmost annulus and the apex of the lamnium.

Similar measurements, except for hind femur without trochantellus, were used in *Eupontania* in Vikberg (2003). In this paper some earlier hind femur lengths were measured without trochantellus; this is mentioned in every such case.

In the measurements of the specimens the lengths of the body parts are in mm if not stated otherwise. The annuli of the lancet are counted from the basis towards the tip of the lancet starting with annulus 1.

Body part nomenclature is according to Goulet & Huber (1993), and Vikberg (2003). The names of *Salix* are according to Jonsell (2000) and Skvortsov (1999). The biogeographical provinces of Finland, Norway, and Sweden are according to Hämet-Ahti et. al. (1998: map on p. 12) and Jonsell (2000).

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3. Results

3.1. Emergence of the adults of *Eupontania viminalis*-group from rearings of the year 1992 and 1999

In March 1993 the emergence of adults started after 9 days of incubation at room temperature and the last specimen emerged after 35 days of incubation (Table 1).

The emergence of *Eupontania* species is obviously adapted to the phenology of their host plants: species which feed on an early host, develop earlier than species feeding on a late species of *Salix*. Early species or populations were feeding on *Salix phylicifolia*, *starkeana, caprea* and *myrsinifolia*, late species or populations were feeding on *Salix cinerea*, *S. aurita*, and *S. aurita x repens*. Galls on *S. aurita* were taken at two localities: locality 1 is an open sandy area in Uusimaa: Hanko, Tvärminneträsk, in spring time it is flooded with water from [melting] snow; locality 2 is on the shady sides of the bog Suurisuo in Janakkala. The spring comes there later because the thick moss (*Sphagnum*) layer prevents efficiently the warming effect of the sunshine. It is interesting to note that

Tab. 1: Emergence of adults of *Eupontania* in 1993.

Incubation [days]	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
S. caprea																											
28 males	2	3	5	3	4	4	4	1				2															
70 females	3	10	7	7	**12**	7	11	5	3	3	1						1										
S. aurita 1																											
43 males							1	2	2	6	2	10	10	7	4	12	7	4	2	2			1			1	
94 females									1	2	3	6	15	10	**16**	14	10	10	3	2	2						
S. aurita x																											
13 males								1	1			4	1	1	2	2		1									
20 females												4	1	1	**5**	3	2	3		1							
S. aurita 2																											
10 males												1	2			1	1	2		2							
14 females																	1	3	1	1	**1**	1	2	2	1		1
S. starkeana																											
1 male			1																								
4 females				**2**	1																						
S. phylicifolia																											
12 males	1	3	4	3	1																						
26 females	1	2	**10**	8	3	2																					
S. cinerea																											
14 males					1	1	1	1			2	2	1	1	4												
68 females				3	8	3	1	5	5	2	**5**	10	6	3	5	6	2	1									
S. myrsinifolia																											
9 males			1	1	3	3	1																				
23 females			1	3	6	**2**	2		3	2	2	2															

The lot when half of the females has emerged is in bold.

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Eupontania population from this location emerged from the galls of the same species of *Salix* later than in locality 1.

At the end of August 1999 galls of *Eupontania* were numerous on *Salix aurita* and *S. repens* ssp. *rosmarinifolia* (L.) Andersson in Janakkala, Punkka. They were taken for rearing in a similar way, as earlier; 9 males 10 females of *Eupontania* from galls on *Salix aurita* and 24 males 24 females from galls on *S. repens* ssp. *rosmarinifolia* were obtained in March 2000. Half of the females emerged from *S. aurita* galls after 21 days incubation at room temperature and from galls on *S. repens* ssp. *rosmarinifolia* after 20 days incubation.

The majority of emerged adults were females. If we count specimens of all species in 1992-1993 together, then of 479 adults 160 (33.4 %) were males. The proportion of males varies between species or populations: *Eupontania* on *Salix cinerea* 17 %, on *S. myrsinifolia* 28 %, on *S. caprea* 29 %, on *S. phylicifolia* 32 %, and on *S. aurita* 42 or 44 %.

We identified the populations on different *Salix* species as follows: *Eupontania collactanea rosmarinifoliae* ssp. n. on *Salix repens*, *E. pedunculi* on *Salix caprea*, *S. aurita* 1 and 2, *S. aurita x repens* [no *E. collactanea* (Förster, 1854) emerged from this sample but leaf petiole galls of *Euura venusta* (Brischke, 1883) were found] and *S. starkeana*; *E. arcticornis* on *S. phylicifolia*; *E. brevicornis* on *S. cinerea* and *E. gallarum* (= *E. aestiva*) on *S. myrsinifolia*. All these species belong to the *Eupontania viminalis*-group.

3.2. Comparison of adults of *Eupontania* reared from galls on *Salix cinerea (E. brevicornis)* and *S. phylicifolia (E. arcticornis).*

These species can be easily distinguished in females (and even in males) from any other species of *E. viminalis*-group by combination of the following two characters: The whole frons with strongly reduced (short and sparse) hairs in front of median ocellus up to and including anterior wall of frontal area. Antenna very short.

The galls of E. *brevicornis* on *Salix cinerea* (rearing no. 1/92 VV) were collected on 4 September 1992 on the shore of Lake Sääjärvi (Grid 27*E 6765:374), Janakkala. These galls were round, most of them densely hairy, some with few hairs. A small portion of galls were not typical, they were elongated and irregular and thus resembled a little galls on *S. phylicifolia*. Galls on *S. phylicifolia* (rearing no. 2/92 VV) were taken at the same locality and four other localities in southern Finland (rearing no. 2b-2e).

The adults of *Eupontania arcticornis* on *S. phylicifolia* emerged after 9-14 days with sharp peak on the 11th day. *E. brevicornis* emerged more slowly after 12-27 days of incubation, with a peak on the 21st day of incubation. The different emergence time of the two species reflects their inborn biological clock. *Eupontania arcticornis* is spread together with its host plant to the northernmost Fennoscandia and *Salix phylicifolia* is one of the earliest species in Finland. *E. brevicornis* occurs only in southern Finland and its host plant *S. cinerea* is one of the late willows in Finland in the spring.

Rearing no. 1 (from *S. cinerea*) produced 68 females and 14 males of *Eupontania* and rearing no. 2 (from *S. phylicifolia*) produced 10 females and 2 males. Other four rearings of *Salix phylicifolia* (no. 2b-2e) resulted in 16 females and 10 males of *E. arcticornis*.

Comparison of females: The females of *E. brevicornis* and *E. arcticornis* closely resemble each other, but the following characters were found useful to separate them from each other.

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1. Pubescence on lateral frons is better developed in *E. brevicornis* (from *S. cinerea*).

On median frons (= frontal area) setae in both species are short (shorter than diameter of median ocellus), but setae are shorter and less numerous in *E. arcticornis* (on *S. phylicifolia*). On the lower lateral frons adpressed setae partly cover the lateral part of the upper antennal hollow in *E. brevicornis* (on *S. cinerea*) (see Fig. 10, frontal view in Kopelke 1991) but this part is glabrous in *E. arcticornis* (see Fig. 2 in Kopelke 1991).

Rearing 1/92 (on *S. cinerea*): in 61 of 68 females the adpressed setae reach the antennal hollow. The 7 females which differed from the other emerged after 12-14 days of incubation, one after 17 days.

Rearing 2 and 2 b-e (on *S. phylicifolia*): in none of 26 females these setae reach the antennal hollow.

2. On average, setae on the first abdominal tergum are less numerous in specimens from *S. cinerea*.

The middle of tergum 1 is incised posteriorly - the number of setae on the left side and the right side of the incision was counted (light must come from anterior and then in lateral direction in order to see all setae). The highest number of setae on one side was recorded.

E. brevicornis (rearing 1 on *S. cinerea*): average number 1.3 (range 0-8); the highest numbers (8, 7, 6, 5) were present on females emerged after 12-14 days; in 54 females emerged later the average number is 0.9 setae (range 0-4).

E. arcticornis (rearings 2, *S. phylicifolia*): average number 7.2 (range 1-15).

3. The stigma is darker colored in specimens from *S. cinerea*.

The stigma in these species is uniformly pale brownish or the apical half is blackish brown and the base pale.

E. brevicornis (rearing 1/92 on *S. cinerea*): 62 of 68 females have a blackish apical half. Females with pale stigma emerged after 12-14 days incubation.

E. arcticornis (rearing 2/92 and 2b-e): none of 26 females has a distinctly bicoloured stigma, 3 females have a slightly infuscate apical part.

4. Brown colouration on upper mesepisternum and mesoscutellum was less frequent in specimens from *S. cinerea*.

E. brevicornis (rearing 1): 6 of 68 females have brown colour on the mesepisternum and/or the mesoscutellum; they emerged after 12-14 days incubation.

E. arcticornis (rearings 2): 19 of 26 females have brown colour on either or both parts.

5. Yellowish brown colouration on downturned parts of abdominal terga is more extensive in *E. arcticornis* than in *E. brevicornis* but variation is large in *E. arcticornis*.

6. Probably, distribution of ctenidia on basal segments of lamnium of lancet is slightly different in these species.

Kopelke (1991) wrote that ctenidia are present from 3rd or 4th basal annulus in *E. arcticornis*, on 4th or 5th annulus in *E. brevicornis* (*P. pedunculi* sensu Kopelke). Lancet is protruding in several reared females (they were killed with KCN) and the lamnium was studied with 100x magnification under the stereomicroscope to see, on which annulus counted from the base the ctenidia are present, and on which annulus they are present

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broadly down close to the ventral margin of the lamnium (this is more easy to see without making a slide preparation).

E. brevicornis: 26 saws were studied: broad ctenidia present on 4th annulus of 6 saws (these females emerged after 12-17 days incubation), on 5th annulus of 15 saws and on 6th annulus of 5 saws.

E. arcticornis (rearing 2/92 and 2b-e/92); 9 saws were examined: first ctenidia present on 3rd annulus and broad ctenidia on 4th annulus in all examined specimens.

It seems that the two species slightly differ in this character but it is hardly possible to use this character as the only one to separate them.

Note: Based on the characters above, it seems possible that in the rearing no. 1/92 from *S. cinerea* up to 5 or 6 females (on 12-17 days of incubation) belong to *E. arcticornis* instead of *E. brevicornis*. This could result from technical error (mixed samples) or *E. arcticornis* possibly can induce galls on *S. cinerea* as an exception. It is not known if they came from irregular galls or not. Further study is required to solve this question.

Comparison of males: males have darker thorax and abdomen than females so the colour characters are not suitable for species identification on basis of males. The stigma in both species is rather dark. Following characters appear useful:

1. Adpressed setae on lower lateral frons are numerous in specimens from *Salix cinerea*: in all 14 studied males of rearing 1 they extend to the upper lateral antennal hollow or close to it. In 12 males of rearings 2 they are absent or present only close to the orbital setae.

2. Highest number of setae on one half of tergum 1. Rearing 1: average number 2.2 (range 0-8). Rearings 2: average number 7.9 (range 5-17).

3. Shape of penis valve.

Rearing 1 (*S. cinerea*): apical margin of valviceps without deep incision and lower margin with small number of spinulae (see also fig. 55 in Kopelke (1991).

Rearings 2 (*S. phylicifolia*): apical margin of valviceps with deep incision and lower margin with several well developed spinulae (see also fig. 63 in Kopelke (1991).

3.3. Species of the *Eupontania viminalis*-group in Northern Europe

Thirteen species of the *Eupontania viminalis*- group are currently recorded from Northern Europe, nine of them are treated in this paper. *E. nivalis* (Vikberg, 1970), *E. hastatae* (Vikberg, 1970), *E. reticulatae* (Malaise, 1920), *E. glabrifrons* (Benson, 1960), and *E. viminalis* (Linnaeus, 1758) were dealt with earlier in more detail (Benson, 1960, Kopelke 1991, 1999; Vikberg 1970, 2003; Zinovjev 1994, 1995).

3.3.1. *Eupontania arcticornis* (KONOW, 1904)

Pontania arcticornis Konow, 1904: 230. Lectotype ♀, Russia, Kanin peninsula, in ZMH; examined (see designation below).

Pontania phylicifoliae Forsius, 1920: 165-168. Lectotype ♀, Finland, Helsinki, reared from gall on *Salix phylicifolia,* in RFT; examined (see designation below). Synonymized by Lindqvist (1955).

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Pontania viminalis L. var. *hepatimaculae* Malaise, 1920: 115-117,♂ ♀, gall. Lectotype ♀, in NHRM, reared in Torne Träsk area, Swedish Lapland from galls on *Salix phylicifolia*; examined (see designation below). Synonymized by Forsius (1932).

Female.

Measurements of the lectotype female of *Pontania arcticornis*. Body 4.0, fore wing 4.6, costa 2.55. Head width 1.14. Compound eye 0.45 x 0.35. Flagellomeres 1-7: 0.31 (height 0.10), 0.32, 0.31, 0.22, 0.20, 0.18, 0.22; total 1.76. Hind femur (without trochantellus) 0.89, height 0.20. Hind tibia 1.26, apical width 0.16, inner hind spur 0.20. Hind tarsomeres 1-5: 0.48, 0.18, 0.15, 0.08, 0.25; total 1.14. Ovipositor sheath 1.07. Sawsheath 0.65. Cercus 0.20. Saw not visible. -- In paralectotype female (no. 365; head width 1.07) lancet visible: lamnium 0.83, with 23 segments, ctenidia present from 3rd most basal annulus onwards.

Measurements of the lectotype female of *Pontania phylicifoliae*. Body 3.8. Fore wing 3.8, costa 2.1. Head width 1.00, head height 0.73. Malar space 0.10. Compound eye 0.38 x 0.33. Distance between eyes on frons 0.69, on face 0.70. POL 0.22, OOL 0.21, OD 0.06. Postocellar area 0.15 x 0.30. Flagellomeres 1-7: 0.26 (height 0.09), 0.25, 0.23, 0.20, 0.20, 0.18, 0.20 (height 0.08); total 1.52. Hind femur 0.92, height 0.21. Hind tibia 1.06, apical width 0.15, inner hind spur 0.16, outer spur 0.14. Hind tarsomeres 1-5: 0.44, 0.19, 0.15, 0.08, 0.22; total 1.08. Hind claw 0.12. Ovipositor sheath 1.03. Sawsheath 0.60 x 0.13. Cercus 0.20 x 0.04. Lamnium of lancet 0.77, with ctenidia from 3rd most basal annulus onwards, with 24 teeth.

Measurements of the lectotype female of *Pontania viminalis* var. *hepatimaculae*. Body 4.85, fore wing 4.9, costa 2.6. Head width 1.15. Compound eye 0.47 x 0.36. Flagellomeres 1-7: 0.31 (height 0.10), 0.30, 0.285, 0.27, 0.24, 0.23, 0.30; total 1.935. Hind femur (without trochantellus) 0.95, height 0.21. Hind tibia 1.32, apical width 0.15, inner hind spur 0.21. Hind tarsomeres 1-5: 0.48, 0.24, 0.175, 0.10, 0.29; total 1.285. Ovipositor sheath 1.13. Sawsheath 0.63. Cercus 0.22.

Measurements of a large reared female (rearing no. 2/92 VV) of *E. arcticornis*. Body 4.9, fore wing 5.0, costa 2.85. Head width 1.25. Compound eye 0.55 x 0.40. Flagellomeres 1-7: 0.35 (height 0.11), 0.30, 0.28, 0.23, 0.23, 0.22, 0.23; total 1.84. Hind femur (without trochantellus) 1.06, height 0.26. Hind tibia 1.44, apical width 0.17, inner hind spur 0.20. Hind tarsomeres 1-5: 0.55, 0.23, 0.17, 0.10, 0.27; total 1.32. Ovipositor sheath 1.10. Sawsheath 0.63. Cercus 0.22.

Male.

Measurements of the paralectotype male (no. 354) of *Pontania arcticornis*. Body 3.8, fore wing 3.8, costa 2.2. Head width 1.00. Compound eye 0.44 x 0.32. Flagellomeres 1-7: 0.31 (height 0.13), 0.34, 0.33, 0.29, 0.26, 0.24, 0.27, total 2.04. Hind femur (without trochantellus) 0.85, height 0.20. Hind tibia 1.15, apical width 0.15, inner hind spur 0.20. Hind tarsomeres 1-5: 0.50, 0.20, 0.15, 0.09, 0.22; total 1.16. Hypopygium 0.95.

Measurements of the paralectotype male of *Pontania viminalis* var. *hepatimaculae* (abdomen missing). Fore wing 4.0, costa 2.3. Head width 1.03. Compound eye 0.46 x 0.32. Flagellomeres 1-7: 0.33 (height 0.13), 0.35, 0.36, 0.35, 0.29, 0.255, 0.28, total 2.215. Hind femur (without trochantellus) 0.88, height 0.21. Hind tibia 1.19, apical width 0.15, inner hind spur 0.23. Hind tarsomeres 1-5: 0.50, 0.23, 0.18, 0.10, 0.25; total 1.26.

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Measurements of a large reared male (rearing no. 2/92 VV) of *E. arcticornis*. Body 3.8, fore wing 4.0, costa 2.3. Head width 1.12. Compound eye 0.50 x 0.40. Flagellomeres 1-7: 0.36 (height 0.13), 0.34, 0.34, 0.305, 0.27, 0.27, 0.29; total 2.175. Hind femur (without trochantellus) 0.96, height 0.22. Hind tibia 1.25, apical width 0.15, inner hind spur 0.20. Hind tarsomeres 1-5: 0.50, 0.23, 0.17, 0.10, 0.23; total 1.23. Hypopygium 0.97.

Type material. – *Pontania arcticornis*. Konow (1904: 230) described female and male. Syntypes are from Russia bor. (Kanin peninsula), leg. B. Poppius. Lectotype female, hereby designated, a pinned female labelled as follows: Kanin [printed; B. Poppius [printed]; 364 [printed, pale red label]; arcticornis Knw. ♀ typ Konow det. [insect name handwritten]; *Nematus viminalis* L. O. Conde det., 1938; *P. phylicifoliae* E. Lindqvist det.; Mus. Zool. H:fors, Spec. type. No 5375 *Nematus arcticornis* Knw; Lectotype ♀ *Pontania arcticornis* Konow, 1904. V. Vikberg & A. Zinovjev 1999. Specimen in good condition, except two apical segments of right antenna missing; rather pale specimen. Deposited in ZMH. Paralectotypes (2 ♀♀, 3 ♂♂, in ZMH) are all labelled: Kanin, B. Poppius, and with a *Pontania arcticornis* Konow type label by Konow and with following numbers (and now with our identification label): 354: ♂, *Eupontania arcticornis* (Konow); 363: ♀, *E. glabrifrons* (Benson); 365: ♀, a darker female of *E. arcticornis* (Konow); 707: ♂, probably *E. nivalis* (Vikberg); and 721: ♂, probably *E. nivalis* (Vikberg).

Pontania phylicifoliae. Forsius (1920) described female, male and gall. Syntypes: the "types" are from Helsingfors [= Helsinki] and were reared from galls on *Salix phylicifolia* and "cotypes" are from Lojo [= Lohja] and Karislojo [= Karjalohja], S. Finland. The specimen designed as a lectotype female (ZSM) by Kopelke (1991) was examined; it is from Helsinge. This designation is not valid because the specimen is not from the type locality or any localities mentioned by Forsius: in 1920s Helsingin pitäjä (Helsinge in Swedish) and Helsinki (Helsingfors in Swedish) were separate municipalities or communes. Lectotype ♀, hereby designated, bears the following labels: Finland, Helsingfors, R. Forsius [printed]; *Pontania phylicifoliae* Forsius ♀ Typ. [in Forsius' handwriting, red label]; Lectotype ♀ *Eupontania phylicifoliae* (Forsius, 1920), V. Vikberg & A. Zinovjev 2004. The female is a pinned specimen, in good condition except right flagellum without flagellomeres 4-7. Deposited in RFT.

Pontania viminalis var. *hepatimaculae*. Malaise (1920) described female, male and gall. Syntypes were reared from galls on *Salix phylicifolia* in Torne Träsk area, Swedish Lapland. Lectotype female, hereby designated, labelled: 17 [= rearing number]; Paratypus [red printed label]; *Pontania* viminalis var. hepatimaculae [handwritten by pencil]; 463/87; Naturhistoriska Riksmuseet Stockholm Loan no 2/02; Lectotype ♀ *Eupontania hepatimaculae* (Malaise, 1920). V. Vikberg 2002 (in NRMS). Paralectotypes: One female and one male with the same rearing no. in NRMS and two females in coll. R. Forsius, Turku.

3.3.2. *Eupontania brevicornis* (FÖRSTER, 1854), species revocata

Nematus brevicornis Förster, 1854: 335, ♀. Lectotype ♀, in ZSM, from Germany, near Aachen; examined (see designation below).

Nematus congruens Förster, 1854: 346, ♂. Lectotype ♂ designated by Kopelke (1991), in ZSM, from Germany, near Aachen; examined (see below).

Nematus foersteri André, 1880: 152. New name for *N. brevicornis* Förster, 1854, nec Dahlbom, 1835. Replacement name was not necessary, because *Nematus brevicornis* Dahlbom, 1835 is a nomen nudum.

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Pontania carpentieri Konow, 1907: 133-134, ♂, ♀, gall. Syntypes (not examined; collection unknown) from Amiens, France (reared from pea-shaped and pea-sized, hairy galls on underside of leaves of *Salix cinerea* by L. Carpentier) syn. n.
Pontania pedunculi Kopelke, 1991: 108-109, misidentification (nec Hartig, 1837).

Female.

Measurements of the lectotype female of *Nematus brevicornis*. Body 4.6, fore wing 4.8, costa 2.65. Head width 1.23. Compound eye 0.51 x 0.415. Flagellomeres 1-7: 0.35 (height 0.10), 0.31, 0.28, 0.25, 0.225, 0.22, 0.24; total 1.875. Hind femur (without trochantellus) 1.03, height 0.255. Hind tibia 1.46, apical width 0.16, inner hind spur 0.23. Hind tarsomeres 1-5: 0.53, 0.23, 0.17, 0.08, 0.25; total 1.26. Ovipositor sheath 1.10. Sawsheath 0.61. Cercus 0.25.

Measurements of a large reared female (rearing no. 1/92 VV) of *E. brevicornis*. Body 4.4, fore wing 4.9, costa 2.8. Head width 1.28. Compound eye 0.53 x 0.39. Flagellomeres 1-7: 0.36 (height 0.11), 0.33, 0.31, 0.26, 0.23, 0.21, 0.27; total 1.97. Hind femur (without trochantellus) 1.03, height 0.27. Hind tibia 1.48, apical width 0.17, inner hind spur 0.22. Hind tarsomeres 1-5: 0.55, 0.23, 0.18, 0.10, 0.25; total 1.31. Ovipositor sheath 1.07. Sawsheath 0.62. Cercus 0.25.

Male.

Measurements of the lectotype male of *Nematus congruens*. Body 3.6, fore wing 3.6, costa 2.0. Head width 1.04. Compound eye 0.43 x 0.35. Flagellomeres 1-4: 0.32 (height 0.12), 0.34, 0.33, 0.28, 3 apical missing. Hind femur (without trochantellus) 0.84, height 0.20. Hind tibia 1.10, apical width 0.15, inner hind spur 0.20. Hind tarsomeres 1-5: 0.50, 0.22, 0.16, 0.08, and 0.22; total 1.18. Hypopygium 0.94.

Measurements of a large reared male (rearing no. 1/92 VV) of *E. brevicornis*. Body 4.2, fore wing 4.4, costa 2.5. Head width 1.25. Compound eye 0.56 x 0.44. Flagellomeres 1-7: 0.37 (height 0.13), 0.355, 0.33, 0.30, 0.27, 0.245 and 0.26; total 2.13. Hind femur (without trochantellus) 1.07, height 0.27. Hind tibia 1.47, apical width 0.175, inner hind spur 0.23. Hind tarsomeres 1-5: 0.57, 0.25, 0.18, 0.10, and 0.24; total 1.34. Hypopygium 1.10.

Both with very short and sparse setae on the frons anterior to anterior ocellus.

The species is very similar to *E. arcticornis,* but in females it could be distinguished by the more triangular sawsheath (more similar to *pedunculi*), basally more angular, in dorsal view longer setae are reaching more basally (Kopelke 1991: Fig. 10, as *P. pedunculi*). In most specimens the pterostigma is darker than in *E. arcticornis:* in the apical half brownish black while it is usually almost entirely pale yellowish in *E. arcticornis* (apart from hind margin in basal half).

In lateral view *E. arcticornis* has a broader glabrous area on the saw sheath. The longest hairs in *brevicornis* are positioned more apically; dorsal hairs are more strongly developed, almost reaching the base of the sheath.

Hairs on the head are more numerous in *E. brevicornis*: on the lower lateral frons adpressed hairs partly cover the lateral part of the upper antennal hollows (which are glabrous in *E. arcticornis*).

Hairs of first tergum are less numerous in *E. brevicornis* (0-8) than in *E. arcticornis* (1-15).

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The species is formally new for the fauna of Finland, but it was already reported by Kangas (1985) as *P. arcticornis* reared from *Salix cinerea*, but Vikberg (1986) doubted that *P. arcticornis* could be associated with this willow. The confirmed localities in Finland up to now are following: Varsinais-Suomi: Karjalohja, Pipola (668:31), 2 females 31.5.1964, O. Ranín and V. Vikberg leg. South-Häme: Janakkala, Räikälänjoki (6755:369), galls on *Salix cinerea* on 16.9.2005, 4 females emerged in April 2006; Turenki (6758:372), galls on *S. cinerea* in 2003; Sääjärvi (6765:374, see 3.2), V. Vikberg leg. Pälkäne, Kollola (6802:356), 1 male 3 females reared from galls on *S. cinerea* taken in 1966, J. Kangas leg. The species has been reported from Kartesh in the Karelian Republic, Russia by Roininen & Nyman (1997). They found galls of the species on *Salix cinerea* on the first days of August 1996 and called it "*Pontania arcticornis*-type" (undescribed species). The co-ordinates of Kartesh are 66* 20'N 33* 39'E, and it is the northernmost locality for *E. brevicornis*. VV has examined some specimens of *E. brevicornis* from Czech Republic. Some specimens were in coll. MMB and two are in coll. KB. The data of the latter are: 1 female, Boh. Nov. Strasecí, ex larva *Salix cinerea* x ?, 2.VIII.1959, K. Beneš bred, and 1 male, Mor. Trest-Novomlýnskýr., ex larva *Salix cinerea*, 4.VIII.1928, Baudys bred, *Pontania pedunculi* Hartig, Benes det. 1960. The species is new to Czech Republic.

Type material. – *Nematus brevicornis.* Förster (1854) described the female and wrote: very rare near Aachen. Lectotype female, hereby designated, labelled: Type [printed red label]; "*Foersteri* Andre = *brevicornis* Foerst." [handwritten]; *Nematus foersteri* Andre [!] A. Förster det. [partly handwritten]; Sammlung A. Förster [printed]; *Pontania salicis* Christ. ♀, det. Fr. Konow [handwritten]; *Nematus pedunculi* Htg. O. Conde det. 1937 [printed label]; 7) *Pontania arcticornis* Knw. Lindqvist det. 1960 [insect name handwritten]; Lectotype ♀ *Nematus brevicornis* Förster, 1854. V. Vikberg & A. Zinovjev, 1999. Deposited in ZSM (a pinned specimen in good condition).

Nematus congruens. Förster (1854) described the male and wrote: very rare near Aachen. Lectotype male, designated by Kopelke (1991) labelled: Type [printed red label]; *Nematus incongruens* [!] Först. ♂ A. Förster det. [insect name handwritten]; *Pontania puella* Thoms. ♂ det. Fr. Konow [handwritten label]; *Nematus pedunculi* Htg. O. Conde det. 1937; Lectotypus *N. congruens* Förster det. Kopelke 1990 [red handwritten label]; *Pontania pedunculi* (Hartig) ♂ Kopelke det. 1990. Deposited in ZSM (a micropinned specimen: left flagellum missing, and three apical segments of right antenna missing, otherwise in good condition).

3.3.3. *Eupontania samolad* (MALAISE, 1920)

Pontania samolad Malaise, 1920: 117-119, ♂ ♀, gall. Lectotype ♀, in NRMS, reared from galls on *Salix lapponum* L. in Torne Träsk area, Swedish Lapland; examined (see designation below).

Female.

Measurements of the lectotype female of *Pontania samolad.* Body 5.1, fore wing 5.1, costa 2.8. Head width 1.24. Compound eye 0.53 x 0.38. Flagellomeres 1-7: 0.36 (height 0.12), 0.35, 0.32, 0.28, 0.235, 0.23 and 0.29; total 2.065. Hind femur (without trochantellus) 1.07, height 0.25. Hind tibia 1.52, apical width 0.18, inner hind spur 0.22. Hind tarsomeres 1-5: 0.52, 0.24, 0.175, 0.115, and 0.28; total 1.33. Sawsheath 0.57. Cercus 0.20. Lancet 1.01-1.04, lamnium 0.75-0.77, lamnium with 24 segments, 3rd basal annulus with 4 small ctenidia.

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Male.

Measurements of a paralectotype male (labelled "Allotypus") of *Pontania samolad.* Body 4.5, fore wing 4.3, costa 2.5. Head width 1.22. Compound eye 0.53 x 0.42. Flagellomeres 1-7: 0.36 (height 0.155), 0.40, 0.41, 0.35, 0.32, 0.30, 0.34; total 2.48. Hind femur (without trochantellus) 1.01, height 0.24. Hind tibia 1.33, apical width 0.17, inner hind spur 0.26. Hind tarsomeres 1-5: 0.57, 0.26, 0.21, 0.12, 0.25; total 1.41. Hypopygium 1.12.

Type material. – *Pontania samolad.* Malaise (1920) described female, male, larva and gall. Adult syntypes: 3 ♂♂ and 7 ♀♀ were reared from galls on *Salix lapponum* L. in Torne Träsk area, Swedish Lapland. [The three females reared from galls on *Salix hastata* (= rearing no. 74) belong to *Eupontania hastatae* (Vikberg, 1970); they are not regarded as syntypes because Malaise used words "Ein völlig gleichendes Tier" and on their larva "gleicht der von *P. samolad*" which means that he regarded them as possibly different from the species on *S. lapponum*; these specimens were labelled as *Pontania samolad* n. sp.; Var. by Malaise]. Lectotype female, hereby designated, labelled: 75 [= rearing no. from galls on *Salix lapponum*], Torne Träsk, Malaise; Type; *Pontania samolad* n. sp. [in Malaise's handwriting]; Typus [red printed label]; *Nematus viminalis* L., O. Conde det. 1937; PR.182(VV); Prep. 7031; Lectotype ♀ *Eupontania samolad* (Malaise, 1920). V. Vikberg 2002; Naturhistoriska Riksmuseet Stockholm Loan no 11/02. Deposited in NRMS. Paralectotypes: one female and three males having the rearing no. 75 were labelled as paralectotypes in NRMS and 2 females in RFT.

3.3.4. *Eupontania pedunculi* (Hartig, 1837)

Nematus pedunculi Hartig, 1837: 388, ♂ ♀, gall. Lectotype ♀ in ZSM, designated by Kopelke 1991, from Germany; examined (see below).

Nematus baccarum Cameron, 1876: 189, ♀, larva, galls on the leaves of a sallow, "probably" *Salix aurita* near Dunkeld. Syntypes lost? Type locality: Dunkeld, Perth, Scotland (56*34'N 3*36'W). Synonymized by Benson (1958: 205).

Nematus bellus Zaddach, 1876: table III(6) fig. 13, larva, gall on *Salix aurita*. Zaddach in Brischke (1884: 164, 170-171) keyed the species and described the adults; data on larvae and galls were given by Brischke (1884). Syntypes most probably lost. Synonymized by Benson (1958: 205).

Pontania pusilla Lindqvist, 1964: 122-124. Holotype ♀, in DABH, reared from galls on *Salix* in Sundholmen; examined (see below). Type locality: Sundholmen (belongs now to Helsinki), Finland. Synonymized by Vikberg (1970: 21).

Pontania gallarum: Kopelke 1991: 89. Misidentification, nec Hartig, 1837.

Female.

Measurements of the lectotype female of *Nematus pedunculi.* Body 3.25, fore wing 3.7, costa 2.05. Head width 1.00. Compound eye 0.43 x 0.34. Flagellomeres 1-7: 0.26 (height 0.10), 0.27, 0.275, 0.23, 0.20, 0.18, 0.18; total 1.595. Hind femur (without trochantellus) 0.75, height 0.20. Hind tibia 1.10, apical width 0.15, inner hind spur 0.18. Hind tarsomeres 1-5: 0.42, 0.20, 0.13, 0.07, 0.17; total 0.99. Ovipositor sheath 0.90. Sawsheath 0.47. Cercus 0.16.

Measurements of the holotype female of *Pontania pusilla.* Body 3.9, fore wing 4.0, costa 2.25. Head width 1.09. Compound eye 0.47 x 0.36. Flagellomeres from base on 0.31 (height 0.105), 0.29, 0.29, 0.25, 0.23, 0.21 and 0.25, total 1.83. Hind femur (without trochantellus) 0.90, height 0.21. Hind tibia 1.25, apical width 0.15, inner hind

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spur 0.19. Hind tarsomeres from base on 0.47, 0.20, 0.16, 0.07, and 0.22, total 1.12. Ovipositor sheath 0.90. Sawsheath 0.49. Cercus 0.16.

Male.

Measurements of the paralectotype male of *Nematus pedunculi.* Body 4.1, fore wing 4.0, costa 2.15. Head width 1.14. Compound eye 0.50 x 0.38. Flagellomeres 1-7: 0.42 (height 0.15), 0.44, 0.45, 0.37, 0.34, 0.30, 0.37; total 2.69. Hind femur (without trochantellus) 0.95, height 0.22. Hind tibia 1.27, apical width 0.16, inner hind spur 0.21. Hind tarsomeres 1-5: 0.54, 0.25, 0.19, 0.10, 0.22; total 1.30. Hypopygium 0.95.

Measurements of the paralectotype ('allotype') male of *Pontania pusilla.* Abdomen after tergum 5 missing, fore wing 3.9, costa 2.2. Head width 1.125. Compound eye 0.49 x 0.40. Flagellomeres 1-7: 0.40 (height 0.15), 0.43, 0.44, 0.38, 0.35, 0.33, 0.374; total 2.67. Hind femur (without trochantellus) 0.95, height 0.24. Hind tibia 1.35, apical width 0.17, inner hind spur 0.21. Hind tarsomeres 1-5: 0.54, 0.25, 0.19, 0.09, 0.23; total 1.30. Penis valve 0.95.

Hartig (1837) reared this species from "Saalweide", which usually means *Salix caprea.* The description of the galls fits to the galls we know from this species, too. At the end of the description Hartig mentioned that many larvae do not develop in the leaf blade galls but in the leaf petiole galls [which actually belong to *Euura venusta* (Brischke, 1883]. AZ reared the latter species either from *Salix aurita* or *S. caprea* but not from *Salix cinerea.* Also Kopelke (1999) listed 1349 galls of *Euura venusta* on *Salix aurita* or *S. caprea* but none on *S. cinerea.* Forsius (1920) wrote that the galls of *Euura venusta* are frequent on *Salix caprea* and *S. aurita* in southern and central Finland. VV has observed petiole galls once on *S. cinerea* in Kontiolahti, North Karelia, eastern Finland in 1967. Obviously this is a rare occasion which requires confirmation.

This species can be separated from other European species of the *viminalis*-group by the short and broad sawsheath with hairs not being semicircularly bent as in *E. kriechbaumeri*, by the short saw (see Vikberg 1970: fig. 1), by the complete fore front wall, the frons with dense erected hairs, the glabrous antennal hollows, the hairs arranged only along the eye margin. The coloration is variable, but at least in the northern half of its distribution area, the head is mostly black and the legs are pale.

Traditionally this name was used for a species making galls on willows of section *Vetrix* (*S. aurita, S. caprea, S. cinerea, S. atrocinerea,* and other closely related species) (see Benson, 1958, etc.). Kopelke (1991) has separated it into three distinct species: *P. bella* (Zaddach, 1884) on *Salix aurita*, *P. gallarum* (Hartig, 1837) on *S. caprea*, and *P. pedunculi* (Hartig, 1837) on *S. cinerea.* The species living on *S. cinerea* (*Eupontania brevicornis*) is quite different, but we did not find any differences between specimens reared from *Salix caprea* and *S. aurita.* Neither did we find any indication in the original description of *Nematus pedunculi,* that it has been associated with *Salix cinerea* (though, separation of the willows had never been considered as a simple task). The studied lectotype of *Nematus pedunculi* is quite similar to specimens we reared from *Salix aurita* and *S. caprea.*

In an egg-laying experiment (Zinovjev 1993a: 151) a female reared from *Salix aurita* laid eggs on the young plant of *Salix caprea*, and quite normal adults have been obtained next year. In 1993, we also found around Turenki two hairy galls on a single plant of the possible hybrid between *Salix viminalis* and *S. caprea* or *S. cinerea* (= *Salix dasyclados* Wimm., not *S. dasyclados* sensu Skvortsov 1999). In the laboratory, the female reared from one of these galls laid eggs on *Salix caprea*, the galls developed completely and two specimens

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emerged in 1994 (Zinovjev 1995: 52). Kokkonen (2000) studied the species in Inari Lapland, Finland and recorded as its food plants *Salix caprea*, *S. starkeana* ssp. *cinerascens* and their hybrids. Hence, we came back to an almost traditional treatment of *E. pedunculi* as an oligophagous species associated with species of *Vetrix* with an exception of the form associated on *Salix cinerea*. Nevertheless, the species still deserves further study.

Benson (1958) wrote about *Pontania pedunculi* (Hartig) (= *baccarum* Cameron, *bellus* Zaddach): "The densely pubescent pea-shaped galls, about 7 mm in diameter, are attached to the undersides of leaves, chiefly of *Salix aurita* L. but sometimes of *S. caprea* L., *S. atrocinerea* Brot. or *S. cinerea* L. Common throughout Britain to the Outer Hebrides; also in Ireland. IV-VI and VII-VIII. N. and C. Europe E. to Kamtchatka". We have not seen any specimens reared from *S. atrocinerea*. This willow is frequently treated as a subspecies of *Salix cinerea* (*S. cinerea* subsp. *oleifolia* Macreight 1837) (e.g., Jonsell 2000). However Argus (1997) gave evidence that it is a distinct species. Jalas & Suominen (1976) treated it also as a distinct species, *Salix atrocinerea* Brot. (= *Salix acuminata* Thuill. non Sm.). In Lacourt (1999) the willow is mentioned under the name *S. acuminata* Miller.

E. pedunculi may have a broad distribution throughout the Palaearctic Region but we have not seen enough material from Siberia. AZ collected galls in Yakutia and Magadan on *Salix bebbiana*, and in Sakhalin on *Salix caprea*. It is interesting to note that numerous *Eupontania* galls on *Salix caprea* from Sakhalin were frequently connected to the side veins instead of the midrib which seems to be extremely rare case in studied European populations. (Far Eastern populations of *Salix caprea* sometimes are treated as a distinct subspecies or species *S. hultenii* Flod., or *S. bakko* Kimura.)

According to Benson this species differs also from most of other *Eupontania* by having two generations at least in southern England. In Finland it has apparently only one brood. In general, existing of a second generation in *Eupontania* is very rare, because for egg-laying they would need buds developing in summer which is not common in willows. As one may see from the Table 1 the *Eupontania pedunculi* reared from different host plants emerged in different time, thus behaving like different species. However, without any other evidences we are treating them as only one species.

Note 1. *Nematus baccarum* was described from Scotland (North of Edinburgh) so its food plant cannot be *S. cinerea* as was written by Kopelke (1991, 1999), who based his opinion solely on the hairy galls. The only one reared female of *N. baccarum* is very dark (Cameron 1885): head black, with labrum and clypeus partly white, below and behind the eyes the head is obscurely testaceous. Thorax black, the pronotum thinly edged with white, tegula white. Abdomen obscure black, the anal segment above, and the ventral surface more or less, pale testaceous. Cercus white. Legs white; the coxae black at the base; the femora at base obscured with fuscous; posterior tarsi longer than the tibiae [which is hardly true] and faintly fuscous. Wings hyaline; costa and stigma white, nervures pale. Length scarcely 1 ½ lines. [When Cameron writes white, it can be assumed to be pale yellow or even brownish yellow: VV found this when he studied the syntype specimens of *Nematus femoralis* Cameron, 1876].

Note 2. Kopelke (1991, 1999) used the names *P. joergenseni* Enslin and *P. aestiva* (Thomson) as synonyms of his *P. gallarum* (= *E. pedunculi*). The first one is a valid species of the genus *Pontania* (see Zinovjev & Vikberg 1999), and the latter is treated as a synonym of the real *Eupontania gallarum* in this paper under 3.6.

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Note 3. Coulianos & Holmåsen (1991: 256, fig. 230) show a full grown gall of *E. pedunculi* on *Salix caprea*; also fig. 234 on page 258 presents two smaller galls of the same species on *S. caprea*, although in the text they are identified as galls of *Pontania bridgmanii* on *Salix cinerea*.

Type material. – *Nematus pedunculi.* Hartig (1837) described female, male, larva and gall. Type locality: "in hiesigen Gegend" [= Berlin or Braunschweig including environs, Germany]. Lectotype female, designated by Kopelke 1991, a pinned specimen, pinned together with a paralectotype male, in coll. ZSM, labelled: "Cotype" [printed red label with handwritten line over "Co"]; *Nematus pedunculi* Htg. Th. Hartig det. [insect name handwritten]; Sammlung Th. Hartig; pedunculi m [handwritten label, old collection label]; Lectotype ♀ + paralect. ♂ *Pontania pedunculi* det. Kopelke 1990 [red label].

Pontania pusilla. Lindqvist (1964) described the female and male. Holotype ♀, in DABH, is labelled: Sundholm, e larva, [em. on] 9.4.20 Lindqvist; Holotypus [red label]; *Pontania pusilla* Lqv. Lindqvist det. 1964; coll. Eitel Lindqvist; *Pontania gallarum* (Htg) J.-P. Kopelke leg.[!] 1990. Allotype male (DABH; examined) similarly labelled, except emerged on 4.4.1920.

3.3.5. *Eupontania myrtilloidica* (KOPELKE, 1991)

Pontania myrtilloidica Kopelke, 1991: 119-120. Holotype ♀, in FNMS, from Norway, Finnmark, S.-Varanger, Vaggatem, reared from galls on *Salix myrtilloides*; not examined.

The species was described from Vaggatem, S.-Varanger, Finnmark in North Norway, 9 females and 6 males were reared from galls on *Salix myrtilloides* taken on 23.VII.1985 (Kopelke 1991).

Vikberg (1970: 22) reported galls of *Pontania pedunculi* on *Salix myrtilloides*, but gave no locality. These galls were found in Kainuu: Kuhmo, Finland (Grid 27*E 708:63) in August 1967 in a bog, and next spring 8 females and 7 males emerged. These specimens are similar to specimens reared in Finland from galls on *Salix aurita* and *S. caprea*. The galls on *S. myrtilloides* were found also in more northern parts of Finland (Kainuu: Suomussalmi, Tommi Nyman, pers. comm.); rarely they were seen around St. Petersburg, and they are known also from the Amur and the Magadan Regions (Zinovjev, 1999).

In order to compare *E. pedunculi* reared from *Salix aurita* or *caprea* with *E. myrtilloidica,* a large Finnish female and male of each was measured.

Female of *E. pedunculi* from *Salix aurita*. Body 4.3, fore wing 4.7, costa 2.6. Head width 1.33, head height 0.93. Malar space 0.12. Compound eye 0.59 x 0.44. Distance of eyes 0.86. Postocellar area 0.20 x 0.40. POL 0.27, OOL 0.25, OD 0.09. Flagellomeres 1-7: 0.40 (height 0.12), 0.37, 0.36, 0.32, 0.28, 0.25, 0.29 (height 0.09); total 2.27. Hind femur 1.35, height 0.26. Hind tibia 1.60, apical width 0.19, inner spur 0.24, outer spur 0.20. Hind tarsomeres 1-5: 0.58, 0.26, 0.20, 0.10, 0.24; total 1.38. Hind claw 0.14. Ovipositor sheath 1.00. Sawsheath 0.52 x 0.165. Cercus 0.21 x 0.05. Lamnium of lancet 0.61.

Female of *E. pedunculi* from *Salix caprea*.Body 5.1, fore wing 5.2, costa 3.0. Head width 1.48, head height 0.98. Malar space 0.13. Compound eye 0.63 x 0.50. Distance of eyes 0.90. Postocellar area 0.21 x 0.42. POL 0.30, OOL 0.28, OD 0.11. Flagellomeres 1-7: 0.42 (height 0.13), 0.38, 0.36, 0.31, 0.28, 0.27, 0.27 (height 0.095); total 2.35. Hind femur 1.41, height 0.28. Hind tibia 1.69, apical width 0.21, inner spur 0.27, outer spur 0.23.

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Hind tarsomeres 1-5: 0.58, 0.26, 0.20, 0.10, 0.27; total 1.41. Hind claw 0.15. Ovipositor sheath 1.0. Sawsheath 0.55 x 0.16. Cercus 0.15 x 0.06. Lamnium of lancet 0.72.

Female of *E. myrtilloidica* from *Salix myrtilloides*. Body 4.9, fore wing 5.2, costa 3.0. Head width 1.40, head height 0.97. Malar space 0.11. Compound eye 0.61 x 0.45. Distance of eyes 0.90. Postocellar area 0.20 x 0.47. POL 0.30, OOL 0.26, OD 0.10. Flagellomeres 1-7: 0.42 (height 0.13), 0.38, 0.36, 0.31, 0.27, 0.26, 0.29 (height 0.09); total 2.29. Hind femur 1.35, height 0.30. Hind tibia 1.56, apical width 0.21, inner spur 0.25, outer spur 0.22. Hind tarsomeres 1-5: 0.56, 0.27, 0.21, 0.10, 0.25; total 1.39. Hind claw 0.15. Ovipositor sheath 1.03. Sawsheath 0.53 x 0.15. Cercus 0.18 x 0.05. Lamnium of lancet 0.66.

Male of *E. pedunculi* from *Salix aurita*. Body 4.5, fore wing 4.3, costa 2.4. Head width 1.34, head height 0.83. Malar space 0.10. Compound eye 0.57 x 0.43. Distance of eyes 0.83. Postocellar area 0.15 x 0.43. POL 0.26, OOL 0.24, OD 0.08. Flagellomeres 1-7: 0.43 (height 0.14), 0.42, 0.43, 0.40, 0.35, 0.30, 0.29 (height 0.10); total 2.62. Hind femur 1.25, height 0.265. Hind tibia 1.42, apical width 0.18, inner spur 0.27, outer spur 0.25. Hind tarsomeres 1-5: 0.58, 0.29, 0.22, 0.11, 0.23; total 1.43. Hind claw 0.125. Cercus 0.12 x 0.03. Hypopygium 1.05 x 0.59.

Male of *E. pedunculi* from *Salix caprea*. Body 5.0, fore wing 4.4, costa 2.5. Head width 1.41, head height 0.95. Malar space 0.10. Compound eye 0.62 x 0.50. Distance of eyes 0.86. Postocellar area 0.19 x 0.42. POL 0.28, OOL 0.25, OD 0.10. Flagellomeres 1-7: 0.48 (height 0.17), 0.50, 0.50, 0.44, 0.39, 0.35, 0.40 (height 0.11); total 3.06. Hind femur 1.32, height 0.29. Hind tibia 1.55, apical width 0.20, inner spur 0.27, outer spur 0.23. Hind tarsomeres 1-5: 0.67, 0.29, 0.23, 0.11, 0.24; total 1.54. Hind claw 0.14. Cercus 0.13 x 0.06. Hypopygium 1.06 x 0.65.

Male of *E. myrtilloidica* from *Salix myrtilloides*. Body 4.4, fore wing 4.2, costa 2.5. Head width 1.24, head height 0.88. Malar space 0.10. Compound eye 0.55 x 0.40. Distance of eyes 0.80. Postocellar area 0.16 x 0.40. POL 0.26, OOL 0.24, OD 0.09. Flagellomeres 1-7: 0.41 (height 0.15), 0.45, 0.45, 0.42, 0.37, 0.34, 0.37 (height 0.12); total 2.81. Hind femur 1.23, height 0.26. Hind tibia 1.37, apical width 0.19, inner spur 0.23, outer spur 0.20. Hind tarsomeres 1-5: 0.55, 0.26, 0.21, 0.12, 0.22; total 1.36. Hind claw 0.11. Cercus 0.11 x 0.05. Hypopygium 1.05 x 0.65.

Female from *Salix myrtilloides* has a slightly higher POL/OOL index and a slightly smaller hind femur L/H index than others. The male from *S. myrtilloides* does not differ from the other males.

At present we are unable to distinguish between the adults reared from galls on *Salix caprea*/*Salix aurita* and adults reared from *Salix myrtilloides*. Here, we treat *E. myrtilloidica* as a distinct species, a new one to Finland. However, it might be just a synonym of *E. pedunculi*. It is interesting to note that Skvortsov (1999) places *S. myrtilloides* in subgenus *Chamaetia* section *Myrtilloides* but states that this section might be merely a comparatively recent derivate of the subgenus *Vetrix*, particularly the section *Vetrix* or *Incubaceae*. Hedrén in Jonsell (2000) reports many hybrids of *Salix myrtilloides* but states that the hybrids with *S. aurita* and *S. lapponum* are fairly common, the other ones are rare. VV has seen *Salix aurita* and *S. myrtilloides* and their hybrids in the bog Muurainsuo, Janakkala. So, the possibility of host-plant shift in *E. pedunculi* from *Vetrix* species to *Myrtilloides* might not be so difficult. Further study, e.g. ovipositing experiments and DNA sequence study is needed to clarify the status of *E. myrtilloidica*.

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3.3.6. *Eupontania gallarum* (HARTIG, 1837) and designation of the neotype from Uppland, Sweden.

Nematus gallarum Hartig, 1837: 220-221 and 388, adult, larva, gall. Hartig did not see any specimens of this species which was reared and described on the basis of Götze (1779, II. 2, p. 274. no. 25. Table 38; figs. 26-31; cited as Degeer). Type locality: most probably Lövstabruk (place of residence of Degeer; cf. Taeger & Blank 1998: 252) or somewhere near in the province Uppsala, Sweden. No type material of *Nematus gallarum* or Mouche-à-scie des galles rondes du Saule (Degeer 1771: 1013-1016, no. 25) could be traced in the collection of Carl Degeer in NRMS; this was checked by Bert Gustafsson in February 2002.

The name *N. gallarum* was proposed by Hartig for a species reared by Degeer (1771) who described adults, galls and larvae. In the original description Hartig cited the German translation by Götze, printed in Nürnberg in 1779. In the description (after Degeer; p. 220-221) Hartig mentioned that he had some doubts if the galls he had found himself in Germany were conspecific with Degeer's species. In an appendix (p. 388), the German species was described by Hartig as *N. pedunculi*. As a host plant of *N. gallarum*, Hartig mentioned "Saalweide" [in Götze as Sahlweide], that usually is attributed to *Salix caprea*, but in the original French version of Degeer (1771: 1014) the species of *Salix* was mentioned as the species named by Linné as *Salix cinerea*, Flor. Suec. Ed. 2 no. 902. However, the willow species was misidentified by Degeer because the description of the galls does not fit the galls of *Eupontania brevicornis* on *S. cinerea* at all. Degeer observed the ball-like, slightly flattened galls in July, August and September on the lower surface of the leaves near and attached to the main veins and described the largest galls as large as berries of black currant, otherwise as large as berries of red currant. The colour of the galls varied from wholly deep red as cherry through half red and half green galls to pale green and yellowish with only one side slightly reddish and to completely green or yellowish galls. The surface was smooth, shining, as if polished and covered with small whitish or reddish warts. When the larva was small, two and half lines long (the full grown larva was over 4 lines long), the wall of the gall was rather thin, at most one line thick. The description of the galls fits best to galls of *Eupontania viminalis* (L.) on *Salix purpurea* or of *E. aestiva* (Thomson) on *S. myrsinifolia*.

Some earlier authors have dealt with *Nematus gallarum*. Thomson (1871: 160-161) treated *Nematus gallarum* Hartig and *Nematus aestivus* Thomson, 1863 as synonyms of his *Nematus cinereae* which name was derived from *Tenthredo salicis cinereae* (Retzius, 1783; this name is not binomial, and therefore not available). Zaddach in Brischke (1883: 189-192) mentioned it as a synonym of *Nematus viminalis* Linnaeus together with *T. salicis cinereae, N. aestivus* and *N. saliceti* Förster. Konow (1901: 128-129, 135) mentioned it as a synonym of *Pontania salicis* Christ, 1791 together with *N. saliceti* Förster and *N. cinereae* Thomson. Enslin (1915: 356) treated *Nematus gallarum* as the pale variety of *Pontania viminalis* and with *N. saliceti* Förster as its synonym. Kopelke (1991, 1999) had quite a different opinion: he treated *Pontania gallarum* as the valid name for the species feeding on *Salix caprea*. However, the galls on *Salix caprea* are distinctly different, they are not smooth, shining but rough and hairy.

The figures of the galls (Degeer 1771, vol. 2 (part 2), table 38, figs. 26-28) fit well to the galls of *Pontania viminalis,* see e.g. the photograph in Kopelke (1991: fig. 99); round gall with warts or of *Eupontania aestiva* which is rather similar. According to Kopelke (1999) *E. viminalis* does not occur in Scandinavia, although *Salix purpurea* is frequent even in

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the Stockholm area (Jonsell 2000). Nor do we know *E. viminalis* from Sweden. On the other hand galls of *E. aestiva* on *Salix myrsinifolia* and of *E. pedunculi* on *S. caprea* are not rare in the Stockholm area. Coulianos & Holmåsen (1991: 257, fig. 231 and 232) show two colour photographs of the galls of *Eupontania aestiva* on *Salix myrsinifolia*; in fig. 231 they are misidentified as "*Pontania collactanea*" galls on "*Salix repens*"; the galls are rounded, yellow with one side reddish and covered with brown or reddish and pale warts; in fig. 232 they are named as galls of *Pontania "viminalis"* on *Salix myrsinifolia*: there is a typical group of several yellow rounded, rather smooth galls (no warts) and two a little elongated deep red galls! (such red coloured galls were also mentioned by Degeer but they are rare; VV has seen deep red galls once in Janakkala, southern Finland and AZ at the East shore of Lake Ladoga). Because the description of the galls and adults by Degeer (1771) fits well with *Eupontania aestiva* and in Central Sweden only with this species, a female of this species is selected and designated below as a neotype for *N. gallarum.*

Neotype female (to be deposited in NRMS) for *Nematus gallarum* Hartig, 1837, hereby designated in order to fix the use of the nominal taxon, is labelled: Sweden, Uppland, Norrtälje, reared from galls on *Salix myrsinifolia* 30.8.2002, emerged in March 2003, V. Vikberg leg.; Neotype ♀ *Nematus gallarum* Hartig, 1837: V. Vikberg & A. Zinovjev 2004. The co-ordinates of the type locality are 59*46'N 18*43'E.

Female (neotype). Head black. Lateral vertex, frontal orbit and upper temple yellowish brown. Supraclypeal area and lateral face brownish yellow, clypeus, labrum and malar space pale yellow. Mandible pale yellow, apically reddish. Flagellum brownish, flagellomere 1 basally blackish. Thorax black. Lateral part of pronotum, prosternum, prepectus and tegula brownish yellow. Wings subhyaline, venation brownish. Pterostigma brown, slightly paler basally. Legs yellow, outer bases of coxae blackish. Hind tibia whitish, hind tarsus apically slightly infuscate. Abdominal terga blackish, downturned parts of terga 5-8 and terga 9-10 wholly brownish yellow. Cercus yellow, sawsheath blackish, ventrally slightly brownish, basal sheath yellow.

Frontal basin weakly defined laterally. Anterior wall distinct, rather broad, medially notched almost to bottom. Anterior to medial ocellus a small glabrous area, otherwise frons covered with 0.05-0.06 mm long, erect setae. Lower lateral face mostly glabrous, paratorular area beside orbital setae with 1-2 rows of adpressed setae. Adpressed setae on lower frons reach area of upper antennal hollow. Lamnium of lancet with 23 segments, few ctenidia present dorsally on 4th annulus, broad ctenidia present from 5th annulus onwards.

Measurements of the neotype female of *Nematus gallarum*. Body 5.2. Fore wing 5.2, costa 3.0. Head width 1.42, head height 1.00, head length 0.81. Malar space 0.15. Compound eye 0.61 x 0.46. Distance between eyes on frons 0.95, on face 0.96. POL 0.26, OOL 0.28, OD 0.10. Postocellar area 0.23 x 0.40. Flagellomeres 1-7: 0.41 (height 0.13), 0.42, 0.37, 0.31, 0.29, 0.27, 0.28 (height 0.10); total 2.35. Hind femur 1.35, height 0.295. Hind tibia 1.58, apical width 0.23, inner hind spur 0.23, outer spur 0.21. Hind tarsomeres 1-5: 0.59, 0.25, 0.20, 0.11, 0.27; total 1.42. Hind claw 0.13. Ovipositor sheath 1.10. Sawsheath 0.59 x 0.17. Cercus 0.21 x 0.05. Lamnium of lancet 0.85.

Male (reared together with the neotype). Head black. Lateral vertex with brown spot. Lateral face and malar space brownish yellow, supraclypeal area, clypeus, labrum and basal mandible yellow. Scape and pedicel blackish, flagellum pale brown, flagellomere 1 infuscate above. Thorax black, tegula yellow, upper lateral part of pronotum slightly brownish yellow. Wings almost clear, costa and stigma of fore wing brown, venation pale brown to brown. Legs brownish yellow, bases of coxae blackish, tarsi apically slightly

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brownish. Abdomen brownish black. Sterna and hypopygium brownish yellow. Cercus brownish yellow.

Measurements. Body 5.0. Fore wing 4.7, costa 2.7. Head width 1.37, head height 0.95. Malar space 0.11. Compound eye 0.61 x 0.45. Distance between eyes on frons 0.85, on face 0.90. POL 0.23, OOL 0.26, OD 0.10. Postocellar area 0.15 x 0.38. Flagellomeres 1-7: 0.46 (height 0.17), 0.46, 0.45, 0.40, 0.37, 0.33, 0.33 (height 0.10); total 2.80. Hind femur 1.32, height 0.28. Hind tibia 1.50, apical width 0.19, inner hind spur 0.29, outer spur 0.25. Hind tarsomeres 1-5: 0.61, 0.27, 0.20, 0.13, 0.27; total 1.48. Hind claw 0.13. 8th tergum: apical width of projection 0.15. Cercus 0.15 x 0.07. Hypopygium 1.15 x 0.56.

Nematus aestivus Thomson, 1863: 638, ♀ ♂. Syntypes from Lappland, Dalarne and Skåne. Specimens from Skalstugan, Jämtland (Kopelke 1991, Zinovjev 1993a) are therefore not syntypes. Because the earlier lectotype designation (Zinovjev 1993a, 1994: "designated by Kopelke 1991") is not unambiguous, the female (coll. Thomson, ZML) labelled "Dlc.; Bhn; Pont. viminalis ♀" is hereby designated as the lectotype of *Nematus aestivus*. It was labelled by AZ in 1986. Type locality: Sweden, Dalarna [Dlc. = Dalecarlia]. We regard the species as a junior synonym of *Nematus gallarum,* syn. nov.

Pontania norvegica Kopelke, 1991; type locality Ramfjorden, Troms, Norway, reared from galls on *Salix myrsinifolia* ssp. *borealis* (Fr.) Hyl., and most probably also *Pontania varia* Kopelke, 1991: type locality Les Hauderes, Valais, Switzerland reared from galls on *Salix nigricans* ssp. *alpicola* Buser = *Salix myrsinifolia*, were regarded as synonyms of *Eupontania aestiva* by Zinovjev (1994). We treat *P. norvegica* and *P. varia* as junior synonyms of *E. gallarum*, syn. n.

Note 1. *Nematus curticornis* Cameron, 1885 was synonymized with *Pontania pedunculi* by Konow (1901). Cameron (1885: 202, ♀, plate 26, fig. 6: saw) described this species from Rannoch, Scotland. The structure of apical lancet and bicoloured pterostigma shows clearly that the species is a member of *Eupontania viminalis*-group. Cameron says that it is not easy to distinguish this species from *Nematus salicis-cinereae* (*Eupontania viminalis* with galls on *Salix purpurea*) but the antenna is shorter and thicker, the body is broader, stouter and more pilose. These characters fit to *E. aestiva harrisoni* (Benson, 1940) (see Zinovjev 1994). Quinlan (1974) mentioned the holotype female of *Pontania harrisoni* but Benson (1940) did not write anything about the types. So in future the female labelled as the holotype should be designated as the lectotype of *Pontania harrisoni* and the paratypes are then paralectotypes! The holotype female or syntype females of *E. curticornis* have not been found so the synonymy cannot be ascertained. Benson (1958) does not mention *E. curticornis* at all.

Note 2. Kopelke (1999: 36, 138) assumed that the food plant of *Pontania harrisoni* was the hybrid *Salix phylicifolia x purpurea* and synonymized *P. harrisoni* with *P. arcticornis*.

3.3.7. *Eupontania viminalis* (LINNAEUS, 1758)

Cynips viminalis Linnaeus, 1758: 554; description based on Rösel (1749). Neotype, ♀, was designated by Kopelke (1989: 35) from Germany, Hessen, Griesheim bei Darmstadt (reared from gall on *Salix purpurea*).

Kopelke (1989) erroneously synonymized *Nematus crassipes* Thomson, 1871 with *Pontania viminalis* (Vikberg 2003).

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This species, according to the geographic distribution of its host-plant (*Salix purpurea* L.) belongs to the fauna of Central Europe. At least some of its populations have two generations per year.

The northernmost findings of *E. viminalis* were recorded by Kopelke (1999) from Kiel, Schleswig-Holstein, northern Germany and from Poland. We have seen this species from England, southern Scotland, Ireland (specimens from NHML), Ukraine (Crimea peninsula, Carpathians and on cultivated *S. purpurea* from Kiev and Belaya Tserkov), European Russia (vicinity of Pskov), Lithuania, and Latvia (Tsinovskii, 1953; Zinovjev, 1994). The host plant grows in southern Estonia (Skvortsov, 1999) but *E. viminalis* has not yet been recorded from Estonia (Viitasaari et. al. 1998).

Note 1. Tsinovskii (1953) reported this species from *Salix viminalis* which is a mistake. At least, the photo of the willow leaves with galls of this species and "*Pontania femoralis*" belongs definitely to *Salix purpurea*. We don't know any confirmed records of *Eupontania* of this group living on *Salix viminalis*.

Note 2. *Pontania viminalis* was reported in two recent publications from Central Finland (Nuorteva & Nuorteva 2003) and southern Norway (Nuorteva et al., 2005). These records were based on misidentification. The specimens from Finland (North Savo: Nilsiä, Juankoski) were examined by author VV; 17 of 25 belonged to *E. gallarum* and the rest to four other species.

3.3.8. *Eupontania collactanea rosmarinifoliae* ssp. n.

Holotype ♀ (to be deposited in ZMH). Finland, South Häme: Janakkala, Punkka (6743:374), reared from leaf galls on *Salix* [*repens* ssp.] *rosmarinifolia*, collected on 31 August 1999, emerged on 18 March, 2000, V. Vikberg leg. (rearing no. 13/1999). Paratypes: Finland, Varsinais-Suomi: "Reg. Abo", 1 ♀, Cajander leg. Uusimaa: Hanko, Tvärminne, 1 ♀, 10.6.1962, R. Iivarinen leg.; 2 ♀♀, 10.6.1962, 1 ♂ 23.5.1963, O. Ranin leg.; 1 ♂, 23.5.1963, J. Perkiömäki leg.; 6 ♂♂ 6 ♀♀, reared from galls on *Salix repens*, collected in 1967, emerged in February 1968, E. O. Peltonen leg. (rearing no. 23/1967). South Häme: Forssa, 1 ♀ 31.5.1966, 2 ♀♀ 29.5.1967, 2 ♀♀ 29.5.1969, E. Nylund leg. Hattula, 2 ♀♀, L. v. Essen leg. Janakkala, Punkka, 24 ♂♂ 23 ♀♀, reared together with the holotype. Russia, Leningrad district: Suida, 1 ♂ and 1 ♀, reared in May 1982 from galls on *Salix repens* ssp. *rosmarinifolia*, collected on 4.9.1981 (no. 1024); 1 ♂ and 2 ♀♀, reared in May 1985 from galls on *Salix repens* ssp. *rosmarinifolia*, collected on 26.8.1984, A. G. Zinovjev leg. (no. 1663) (paratypes in coll. ZISP, ZMH, VV).

Female (holotype). Head black. Upper temple and malar area slightly brownish. Clypeus brownish black. Base of mandible yellowish. Thorax black. Tegula yellow. Wings almost clear, venation brownish. Costa of fore wing and base of stigma yellowish, apical 0.6 of stigma posteriorly infuscate. Legs pale, with bases of femora blackish. Hind tarsus apically infuscate. Abdomen black, tergum 9 and venter slightly brownish.

Measurements. Body 4.8. Fore wing 4.9, costa 2.8. Head width 1.27, head height 0.85. Malar space 0.09. Compound eye 0.56 x 0.40. Distance between eyes on face 0.79. POL 0.25, OOL 0.24, OD 0.10. Postocellar area 0.17 x 0.38. Flagellomeres 1-7: 0.42 (height 0.13), 0.41, 0.40, 0.36, 0.31, 0.27, 0.32 (height 0.075); total 2.49. Hind femur 1.35, height 0.28. Hind tibia 1.65, apical width 0.20, inner hind spur 0.22, outer spur 0.20. Hind tarsomeres 1-5: 0.55, 0.26, 0.20, 0.10, 0.25; total 1.36. Hind claw 0.15.

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Ovipositor sheath 1.02. Sawsheath 0.55 x 0.15. Cercus 0.22 x 0.05. Lamnium of lancet 0.72.

Variation of female. Body 2.4-4.8. HW 0.73-1.26. Flagellomere 1/HW 0.30-0.35. Lamnium 0.53-0.72; lamnium/HW 0.54-0.75.

Male (paratype reared together with the holotype). Head black. Upper temple hardly brownish. Thorax black. Tegula brown. Costa of fore wing and stigma brownish, posterior half of stigma dark brown. Legs pale, with coxae, trochanters and bases of femora blackish, and tarsi apically infuscate. Abdomen black, hypopygium dark brown.

Measurements. Body 4.8. Fore wing 5.3, costa 2.8. Head width 1.26, head height 0.83. Malar space 0.09. Compound eye 0.56 x 0.42. Distance between eyes on face 0.75. POL 0.25, OOL 0.21, OD 0.09. Postocellar area 0.16 x 0.39. Flagellomeres 1-7: 0.54 (height 0.15), 0.59, 0.57, 0.50, 0.43, 0.38, 0.39 (height 0.095); total 3.40. Hind femur 1.40, height 0.29. Hind tibia 1.70, apical width 0.20, inner hind spur 0.26, outer spur 0.23. Hind tarsomeres 1-5: 0.68, 0.32, 0.25, 0.13, 0.25; total 1.63. Hind claw 0.15. Tergum 8: apical width of projection 0.15. Cercus 0.12 x 0.05. Hypopygium 1.12 x 0.57.

Variation of male. Body 2.9-4.9. HW 0.80-1.23. Flagellomere 1/HW 0.37-0.43. Flagellomere 1: length/width 3.2-3.7.

The new subspecies differs in female sex from *E. collactanea collactanea* by the distinctly bicoloured stigma of the fore wing, and the darker colouration of the body; the nominal subspecies occurs in Central Europe, especially on the coast of the North Sea, more northwards in Denmark and in South Sweden. It can be very pale and the stigma is always pale, unicolourous. Its food plant is *Salix repens* ssp. *repens* L. The boreal subspecies is found in southern Finland in the provinces Varsinais-Suomi, Uusimaa and South Häme, and in Russia, the Leningrad region, south of Sankt Petersburg. [Also the specimens reported from southeastern Estonia (Viitasaari et al. 1998) probably belong to the northern subspecies]. Its food plant is *Salix repens* ssp. *rosmarinifolia* (L.) Andersson, but in south-western Finland it is found also on *Salix repens* ssp. *repens*, and on their hybrid.

3.3.9. *Eupontania acutifoliae baltica* ssp. n.

In autumn 1998 Dr. Anders Albrecht told VV that in the previous summer he had seen numerous large galls on the leaves of cultivated *Salix daphnoides* in Espoo. The place (Uusimaa: Espoo, Pyöli- Bölsby, Grid 27*E 6683:372) was visited on 29 May 1999 by VV and some small galls were observed. The locality was visited again on 17.8.1999 and on 19.9.2000 and on both occasions 10-15 large galls were seen and collected. The characters of the willow fitted *Salix daphnoides* subsp. *acutifolia* (Willd.) Ahlfv. and it was up to 5 m high. The origin of the plant is not known to the authors. The galls were glabrous, greenish yellow, with plenty of reddish stripes. The size of 10 galls were measured: length (along the long axis of the leaf) 11-16 mm (mean 13.5), width 9-15 mm (mean 11.9), and height 9-12 mm (mean 10.8). In 1999 15 galls were taken for rearing and in 2000 10 galls which were measured. 11 males and 3 females emerged from galls of 1999 and 9 males and 1 female from galls of 2000. Using the characters in Zinovjev 1993b they fit to the Baltic form of *Pontania acutifoliae*. The species is new to Finland.

The geographic forms of *Pontania acutifoliae* Zinovjev, 1985 were treated by Zinovjev (1994). A subspecies *Pontania acutifoliae daphnoides* was described from Central Europe. Its populations from the Baltic See region were then considered as a separate form, f. *bal-*

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tica, which differed from both subspecies by shorter antennae and more rounded eyes and from *Pontania acutifoliae acutifoliae* by the longer ovipositor (Zinovjev, 1994). The specimens of the Baltic form were from Palanga (Lithuania), Tallinn (Estonia), from dunes of the Gulf of Finland near Sestroretsk, north of St. Petersburg and from the shore of Lake Ladoga in Karelia (Russia). Now we consider that it is better to treat this Baltic form as a distinct subspecies, *Eupontania acutifoliae baltica* ssp. n. and we select a female from near Sestroretsk as the holotype of the new subspecies.

The geographic distribution of this new subspecies is nearly confined to sandy dunes and shores of the Baltic Sea. It is noteworthy that Baltic populations of its host plant are sometimes treated also as a variety (*S. daphnoides* var. *pomeranica* (Willd.) Koch) or even as a subspecies. The subspecies of the sawfly, *E. acutifoliae acutifoliae* Zinovjev is distributed throughout the continental part of European Russia, northwards to Arkhangelsk Region. The studied populations from the Pskov district in Russia and Yurmala in Latvia are morphologically intermediate between two subspecies. The intermediate position of the population in Yurmala may have been caused by introducing *E. acutifoliae acutifoliae* together with *Salix acutifolia*.

The holotype female is labelled: Sestroretsk, NW Leningrada, galls on *Salix daphnoides* 3.IX.81, em. 29.IV.1982, Zinovjev 1023. It is in ZISP. Paratypes are the specimens mentioned as *Pontania acutifoliae daphnoides f. baltica*: Sestroretsk vicinity 15 ♂♂ 13 ♀♀, shores of Lake Ladoga 19 ♂♂ 16 ♀♀, Tallinn 2 ♀♀, Palanga 1 ♀ and 29 ♂♂ (ZISP) and 4 ♀♀ 20 ♂♂ from Espoo, Finland (coll. VV, see above).

Measurements of the holotype. Body 6.1. Fore wing 6.3, costa 3.6. Head width 1.70, head height 1.15. Malar space 0.11. Compound eye 0.75 x 0.59. Distance between eyes on frons 1.08, on face 1.05. POL 0.31, OOL 0.32, OD 0.11. Postocellar area 0.20 x 0.57. Flagellomeres 1-7: 0.47 (height 0.15), 0.42, 0.40, 0.34, 0.30, 0.29, 0.31 (height 0.10); total 2.53. Hind femur 1.61, height 0.33. Hind tibia 2.01, apical width 0.25, inner hind spur 0.27, outer spur 0.25. Hind tarsomeres 1-5: 0.75, 0.29, 0.23, 0.15, 0.35; total 1.77. Hind claw 0.17. Ovipositor sheath 1.27. Sawsheath 0.75 x 0.25. Cercus 0.20 x 0.05. Lamnium 0.975, with 27 teeth, ctenidia present from annulus 4 onwards.

3.4. European species of *Eupontania vesicator*-group

This group includes two species in Europe: *E. vesicator* and *E. pustulator*. In males they resemble *Nematus* or *Pteronidea* by the long setaceous antenna, by the entirely hairy antennal hollow and mesepisternum; they differ in the mandibular shape which is similar to the *Dineura* type, by the rectangular emargination of the clypeus and the penis valves which are similar to the *Eupontania* type with spines on the ventral margin. The female of *E. vesicator* has the head much darker: lower gena, lower lateral face and supraclypeal area are black and the antenna is blackish. They are well separated by the sawsheath setation (Figs. 1-3). In both sexes, *E. vesicator* can be separated by stronger punctation of the mesoscutum; small surface sculpture is missing so the mesoscutum is shining.

In reared material, both species may be unusually small (3.0-3.5-4.0 mm) and much darker. Those of *E. vesicator* were called var. *minor* by Zaddach (1884) or ab. *borealis* by Saarinen (1946). The normal size in *E. vesicator* is 3.9-6.2 mm in females, and 3.6-5.6 mm in males, in *E. pustulator* 4.5-6.1 mm in females and 5.0-6.6 mm in males. VV has examined dwarfish specimens of both species reared in southern Finland. Such forms belong to the variation range of the species and need no special name.

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3.4.1 *Eupontania vesicator* (BREMI, 1849)

Nematus vesicator Bremi, 1849: 93-94. Syntypes (sex?), gall. Switzerland, environs of Zürich. From galls found on *Salix purpurea*; not examined.

The species is associated in southern coast of Finland with cultivated *Salix purpurea* L. It was recorded for the first time by Forsius (1911: 102) in Uusimaa: Helsinki: the Botanical garden where galls on *Salix purpurea* were numerous in 1908-1909. It has been reared many times from galls on that *Salix* by 14 different collectors. VV has examined 221 females 188 males from Finland, Uusimaa: Helsinki, Vantaa (also labelled Helsingin pitäjä or Tikkurila), Loviisa and Liljendal, mostly reared specimens. Females have been captured between 9-18 June and on 9-12 August. The species has at least in some years two generations in South Finland. The species is recorded from Latvia by Tsinovskii (1953), but it is not known from Sweden, Norway, Estonia, and Leningrad area of Russia.

3.4.2. *Eupontania pustulator* (FORSIUS, 1923)

Pontania pustulator Forsius, 1923: 51, ♀ ♂, larva, gall. Lectotype ♀ (in RFT), Finland, Sompio Lapland, Sodankylä, Torpan Paavo (7514:490), examined (see designation below). The coordinates of the type locality are 67*43'N 26*46.6'E.

The species has been found in Finland in the provinces South Karelia, South Häme, South Savo, North Häme, North Savo (Nuorteva & Nuorteva 2003), North Karelia, Oulu Ostrobothnia, Kainuu, Sompio Lapland, and Inari Lapland. VV has examined 128 females 80 males, most of them were reared from galls on *Salix phylicifolia*. The females have been captured between 27 May and 13 June in South Finland. The species is known also from Scotland, North England, North Russia: Karelia, Murmansk and Arkhangelsk regions, Sweden (Härjedalen, Jämtland; Coulianos & Holmåsen 1991) and Norway (Nord-Tröndelag, Oppland; Kopelke 1999).

The host plant, *S. phylicifolia* exhibits a rather wide distribution range in northern Europe and West Siberia. It reaches southwards to Riga in Latvia, and Moscow in Russia (Skvortsov, 1999). However, the sawfly, *E. pustulator*, probably does not occur within the southern part of the geographic range of its host plant; for example, it has never been found in the Leningrad Region by AZ. The southernmost records of this species are known from Lake Ladoga in Karelia, and southeastern Finland, South Karelia: Hamina, Hevoshaka (Tiensuu 1964). The most eastern findings of this species are from the Polar Urals: the galls were found on the related *S. pulchra* Cham. (new host-plant) and probably on hybrids between *S. pulchra* and *S. phylicifolia* (unpublished observation by Heikki Roininen and AZ).

Female lectotype. Head yellowish brown. Antennal hollows, median frons broadly, ocellar and postocellar area and occiput black. Scape, pedicel and first flagellomere blackish, flagellum otherwise brownish, slightly infuscate basally and on upper side. Thorax black. Upper hind part of pronotum broadly and tegula yellow. Lateral lobe of mesoscutum laterally and posteriorly brownish, mesoscutellum partly brownish. Wings slightly yellowish; costa and stigma pale yellow, otherwise venation brownish to yellowish. Legs brownish yellow, coxae infuscate basally, femora reddish brown. Abdomen brownish yellow, tergum 1 blackish, bases of terga 2-4,(5) and sternum 1 and upper side of sawsheath infuscate. Clypeus broadly apically emarginate, bottom of emargination rounded. Front wall of frontal area entire. Mesoscutum with weak punctures, with faint surface sculpture, slightly shining. Mesepisternum entirely hairy. All tibial spurs thick, curved

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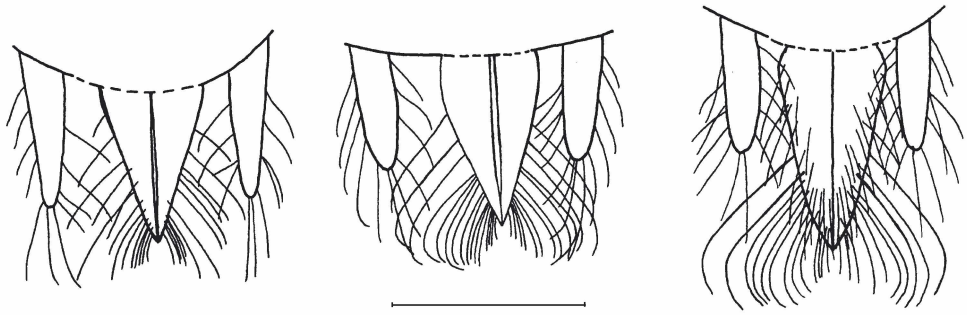
and much shorter than tibia wide apically. Sawsheath in dorsal view (Fig. 3) narrow, slightly broader basally, dorsal margin with several small setae which are directed almost backwards (lacking in *E. vesicator*), subapical long setae curved apically inwards (usually straight in *E. vesicator*) (Figs 1, 2).



Figs. 1-3. Sawsheath of female in dorsal view. – **1-2.** *Eupontania vesicator*, with straight long hairs (Fig. 1) and with curved long hairs (Fig. 2), both reared from galls of *Salix purpurea* in Helsinki, Finland. – **3.** *E. pustulator*. Female reared from galls of *Salix phylicifolia* in Lammi, Finland. Scale 0.3 mm.

Measurements. Body 6.3. Fore wing 6.7, costa 3.8. Head width 1.63, head height 1.10. Malar space 0.11. Compound eye 0.70 x 0.48. Distance between eyes on frons 1.10, on face 1.02. POL 0.35, OOL 0.29, OD 0.10. Postocellar area 0.19 x 0.50. Flagellomeres 1-7: 0.46 (height 0.16), 0.50, 0.46, 0.41, 0.39, 0.36, 0.40 (height 0.095); total 2.98. Hind femur 1.70, height 0.43. Hind tibia 2.00, apical width 0.29, inner hind spur 0.21, outer spur 0.20. Hind tarsomeres 1-5: 0.66, 0.34, 0.27, 0.15, 0.41; total 1.83. Hind claw 0.20. Ovipositor sheath 1.52. Sawsheath 0.85 x 0.165. Cercus 0.28 x 0.07.

Male (paralectotype from the type locality). Head black; upper temple brownish. Labrum and base of mandible yellow, palpi pale, brownish. Antenna basally blackish, flagellomeres 2-7 brownish, infuscate dorsally. Thorax black, upper hind corner of pronotum slightly brownish yellow, tegula yellow. Costa of fore wing and stigma brownish yellow. Legs as in female; base of fore femur and whole hind tarsus slightly infuscate. Abdomen blackish; hypopygium pale brown. Clypeus with almost rectangular emargination apically. Tibial spurs a little longer than in female.

Measurements. Body 5.7. Fore wing 6.4, costa 3.7. Head width 1.61, head height 1.07. Malar space 0.11. Compound eye 0.71 x 0.51. Distance between eyes on frons 1.05, on face 1.01. POL 0.34, OOL 0.28, OD 0.11. Postocellar area 0.20 x 0.50. Flagellomeres 1-7: 0.69 (height 0.205), 0.79, 0.77, 0.66, 0.60, 0.60, 0.65 (height 0.11); total 4.76. Hind femur 1.73, height 0.40. Hind tibia 2.12, apical width 0.29, inner hind spur 0.30, outer spur 0.25. Hind tarsomeres 1-5: 0.81, 0.39, 0.29, 0.15, 0.40; total 2.04. Hind claw 0.20. Tergum 8: apical width of projection 0.19. Cercus 0.16 x 0.05. Hypopygium 1.35 x 0.89.

Type material. – *Pontania pustulator*. Forsius (1923) wrote that the types are from Sodankylä and numerous cotypes from Petsamo. His brother Irmer Forsius found many galls on *Salix phylicifolia* in Lapponia kemensis, Sodankylä, Torpan Paavo, on 7.7.1922, and some weeks later in Petsamo (historical part of Finland, now it belongs to Russia). In next winter several adults were reared. The lectotype ♀ in RFT, hereby designated, is labelled: Sodankylä, I. Forsius [in R. Forsius' handwriting]; Finland Lkem Sodankylä, Torpan Paavo, Galls 7.7.1922 Irmer Forsius leg. [printed label]; Lectotype ♀ *Pontania*

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pustulator Forsius, 1923. V. Vikberg 2004. A pinned specimen in good condition. Paralectotypes are from Sodankylä, I. Forsius leg. (4 ♂ in RFT), and from Petsamo, I. Forsius leg. (6 ♀ 5 ♂ in RFT, and 2 ♀ 1 ♂ in ZMH). One female from Petsamo (in ZMH) bears label "*Nematus pustulator* Fors. ♀ O. Conde det. 1939 and the other "*Pontania pustulator* Forsius ♀ Kopelke det. 1986, and the genitalia of the male in ZMH were prepared by Kopelke (no. HY 4776).

4. Host plants of North European species of *Eupontania*

Below we give a list of the 20 *Eupontania* species known from Northern Europe together with their most important synonyms and their correct host-plant species. The unconfirmed, or incidental records (e.g. of definitely subsidiary host plants) are not mentioned. The names of the *Salix* species are here according to Jonsell (2000).

aquilonis-group (former "*polaris*-group")
E. aquilonis (Benson): *S. herbacea*, *S. polaris*
E. myrsiniticola (Kopelke): *S. myrsinites*
crassipes-group (= *herbaceae*-group)
E. arbusculae (Benson): *S. arbuscula*
E. crassipes (Thomson): *S. lapponum*
E. herbaceae (Cameron): *S. herbacea*, *S. polaris*.
vesicator-group
E. pustulator (Forsius): *S. phylicifolia, S. pulchra*
E. vesicator (Bremi): *S. purpurea*
viminalis-group
E. acutifoliae Zinovjev: *S. daphnoides* ssp. *acutifolia*, *S. daphnoides* ssp. *daphnoides*
E. arcticornis (Konow): *S. phylicifolia*
E. brevicornis (Förster) (= *congruens* Förster, *pedunculi* sensu Kopelke) : *S. cinerea*
E. collactanea (Förster): *S. repens* ssp. *repens*, *S. repens* ssp. *rosmarinifolia*
E. gallarum (Hartig) (= *aestiva* Thomson, *norvegica* Kopelke, *varia* Kopelke): *S. myrsinifolia* ssp. *borealis, S. myrsinifolia* ssp. *myrsinifolia*
E. glabrifrons (Benson): *S. lanata*
E. hastatae (Vikberg): *S. hastata*
E. myrtilloidica (Kopelke): *S. myrtilloides*
E. nivalis (Vikberg): *S. glauca*
E. pedunculi (Hartig) (= *bella* Zaddach, *gallarum* sensu Kopelke): *S. aurita*, *S. caprea*, *S. starkeana* ssp. *cinerascens, S. starkeana* ssp. *starkeana*
E. reticulatae (Malaise): *S. reticulata*
E. samolad (Malaise): *S. lapponum*
E. viminalis (Linnaeus): *S. purpurea*

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Besprechungen

CELARY, W.: **Melittidae (Hymenoptera: Apoidea: Anthophila) of Poland – their Biodiversity and Biology.** – Kraków: Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, 2005. – 177 S., 136 Fig., 81 Farbfotos, 27 Karten, 26 Tab. – ISBN 83-919407-1-3 broschiert.

Die Familie Melittidae umfasst die drei Gattungen *Melitta*, *Macropis* und *Dasypoda*, die in Polen mit insgesamt 11 Arten vertreten sind. Sie ist im Artenbestand eine der kleinsten Bienenfamilien, was auch weltweit zutrifft (170-180 Arten). Einige davon sind in Mitteleuropa häufig, dennoch ist die allgemeine Verbreitung, Abundanz, Phänologie und Bionomie bisher wenig bekannt. WALDEMAR CELARY beschäftigt sich seit Jahren mit der Gruppe und legt nun seine Forschungsergebnisse in einer bemerkenswerten monographischen Bearbeitung vor. In der Einführung wird die Gruppe allgemein morphologisch und phylogenetisch charakterisiert und ihre globale Verbreitung dargelegt. Den Schwerpunkt der Darstellung bilden die mitteleuropäischen Arten, die durch umfangreiche morphometrische Daten und ausführliche Fundlisten dokumentiert werden. Detailkarten zeigen jeweils die Nachweise aus Polen sowie die (bekannte) allgemeine Verbreitung in Eurasien. Die wesentlichen diagnostischen Merkmale, darunter die männlichen Terminalia, werden in Verbindung mit den Bestimmungsschlüsseln in ausgezeichneten Abbildungen wiedergegeben. Den Abschluss bilden die bionomischen Kapitel Phänologie, Blütenbesuch, Nestbau, Tagaktivität und Ontogenie. Das Verhalten der Geschlechter wird gesondert dargestellt. Instruktiv sind die zahlreichen Farbfotos der Tiere und ihrer Habitate, und auch die Referenzen lassen keine Wünsche offen. In der Nomenklatur der *Dasypoda*-Arten folgt der Autor kommentarlos BAKER (2002, DEZ 49/1), was so nicht allgemein akzeptiert ist. *D. hirtipes* (F., 1793) heißt danach *D. altercator* (Harris, 1776) und *D. suripes* (Christ, 1791) wird zu *D. aurata* Rudow, 1881. Von den Namen abgesehen – zur Klärung vieler Fragen in der eigentlichen Sache trägt das Buch sehr viel bei. Es ist ein beispielhafter, moderner Beitrag zur Erschließung der Biodiversität unserer Region.

H. H. DATHE

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