

## Redescription of *Leucozonia nigripila* Mik and description of *Leucozonia inopinata* spec. nov. (Diptera, Syrphidae)

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Doczkal, D. (2000): Redescription of *Leucozonia nigripila* Mik and description of *Leucozonia inopinata* spec. nov. (Diptera, Syrphidae). – Volucella 5, 115-127. Stuttgart.

The European sibling species of *L. lucorum* (Linnaeus) discovered by Doczkal (1998) has been assigned to *L. nigripila* Mik erroneously. *L. nigripila* is a distinct species currently only known from the Caucasus. It is redescribed and compared with the two Central European species of *Leucozonia* (s.s.). The name *L. inopinata* **spec. nov.** is proposed for *L. nigripila* sensu Doczkal (1998) nec Mik.

### Zusammenfassung

Die von Doczkal (1998) entdeckte europäische Zwillingart von *Leucozonia lucorum* (Linnaeus) wurde irrtümlich *L. nigripila* Mik zugeordnet. *L. nigripila* ist eine separate, gegenwärtig nur aus dem Kaukasus bekannte Art. Sie wird wiederbeschrieben und mit den beiden mitteleuropäischen *Leucozonia* (s.s.)-Arten verglichen. Für *L. nigripila* sensu Doczkal (1998) nec Mik wird der Name *L. inopinata* **spec. nov.** vorgeschlagen.

### Introduction

In a previous paper (Doczkal 1998) I demonstrated *L. lucorum* (Linnaeus) to be a species complex which includes the taxa *L. lucorum*, *L. nigripila* Mik, *L. americana* Curran, and additional species in the SE Palaearctic. Among the material from Central Europe two species have been recognized, which in that paper were provisionally assigned to *L. lucorum* and *L. nigripila*. Also in that paper, I referred to some differences between the Central European specimens of *L. nigripila* and the type specimen of that taxon, which is from the Caucasus. Due to a lack of any further material from the Caucasus it was not then possible to evaluate the taxonomic relevance of these differences. Subsequently, I have obtained the material reported in Tóth & Günther (1992). Examination of this material has revealed that the differences between the Central European "*L. nigripila*" and the Caucasian population reported in Doczkal (1998: 47f) are constant. Because of these differences, and the discovery of additional features that also help to separate the central European and Caucasian specimens, I now propose that they should be regarded as belonging to separate taxa, distinct at the species level. Thus "*L. nigripila*" sensu Doczkal (1998) needs a new name. As no older name is available it is described here as new.

### Material and methods

The material studied is listed under each taxon. Of *L. lucorum* nearly 200 specimens have been used for the character analysis.

The methods and terminology employed are as described in Doczkal (1998). In general, the morphological terminology of McAlpine (1981) has been followed. The term postpedicellus is used here for the 3<sup>rd</sup> antennal segment (cf. Stuckenberg 1999). Thompson (1999) has introduced the term lira for the lateral margin of a tergite which is separated from the median part by a premarginal sulcus. The term postgonite is used in the sense of Sinclair (2000).

The width of the face is taken at the upper ends of the anterior tentorial sulci. The length of the postpedicellus refers to the distance between the dorsoproximal end and the apex. The L/W ratio of the median process of the lunula is measured as shown in fig. 1.

The descriptions contain only those characters which differ interspecifically within *Leucozona* s.s. (cf. Doczkal 1998; Ghorpadé 1994).

Abbreviations: MA = anterior branch of media; bc, bm, c = wing cells (see McAlpine 1981: 30, figs. 68 and 69); f3 = hind femur; t3 = hind tibia; T = tergite(s); S = sternite(s); L/D = ratio length : depth; L/W = ratio length : width;  $\bar{x}$  = arithmetic mean; SD = standard deviation; n = sample size; p = level of significance; SMNS = Staatliches Museum für Naturkunde Stuttgart; ZMHB = Zoologisches Museum der Humboldt-Universität Berlin; NHMW = Naturhistorisches Museum Wien.

### *Leucozona nigripila* Mik, 1888

= *Leucozona lucorum* var. *nigripila* Mik, 1888: 141.

Type: ♀ (1) Circassia (Leder) [hand written] Mik [printed] [the specimen was collected by Leder, a known collector and trader of insects]; (2) a pink label 3x13 mm without text; (3) *lucorum* var. *nigripila* det. Mik; (4) *Leucozona nigripila* Mik det. Doczkal 1997. Deposited in NHMW.

In coll. NHMW 1 ♀ with the labels: (1) Caucasus Kussari Mik [collector?] 5.[18]84; (2) *L. lucorum* var. *nigripila* Mik [det. Mik]; (3) Caucasus, two illegible lines. Although from 1884 and correctly identified by Mik this specimen is not mentioned in the original description. In coll. ZMHB (all from NW Caucas, leg. R. Günther): oberes Dsamagat-Tal, 7 July 1979, 3 ♂ 3 ♀; unteres Dsamagat-Tal, 7 July 1979, 1 ♂; Ginseng-Plantage, 13 July 1979, 1 ♂; Tshuktshur-Wasserfall, 9 July 1979, 2 ♀.

### Redescription

♂: Head: face 0.49-0.5 times as wide as the head (table 4), yellow with a median black stripe and black oral margin. L/D of postpedicel 1.75 (1.68-1.86) (table 3). Eye hairs 0.18 mm (0.16-0.21) (table 5). Median process of lunula blunt (table 2; fig. 2). Frons black haired, usually mixed with a few yellow hairs. The bare black area between the anterior tentorial sulcus and the mouth edge partly microtrichose. – Thorax: colour of

scutal hair rufous or tawny. Scutellum yellow, the anterolateral corners and the anterior margin that is sloping towards the scutoscutellar suture dark, without black hairs. Scutal pruinescence dark greyish brown, lighter anterolaterally. Cell c proximally with a small area bare of microtrichia (5-15 % of cell c). 30-60 % of cell bm bare of microtrichia. The cell proximal to MA and bc slightly darker than the adjacent cells. Rim of lower calypter usually slightly darkened (intermediate between *L. inopinata* and *L. lucorum*). Tibiae on about the proximal half yellow, distally dark brown or black. f3 and t3 usually with predominantly yellow hairs. Femora ventrally microtrichose, f3 in the middle with a  $\pm$  large bare spot. Trochanter of mid leg ventrally microtrichose across full width. – Abdomen: posterior margin of T2 with a few black hairs. Anterior margin of T3 with  $\pm$  numerous yellow hairs. T4 including lira completely black haired (1 specimen with few light hairs). T5 with black and light hairs, the proportion varying between 30 % and 70%. T8 with mixed black and light hairs. Posterolateral corners of T3 undusted or with very scattered microtrichia, shining, contrasting with the dull surface of the tergite. S3 anteriorly dusted for about 10-30 % of its surface, S4 undusted. Genitalia very similar to *L. inopinata* and *L. lucorum* (cf. figs. 3-5 in Doczkal 1998) and without clear differences (3 specimens dissected). The posteroventral corner of the postgonite is not produced (as in *L. lucorum*), its upper anterior margin is more as in *L. inopinata*, and the distal part of the basiphallus bears posteromedially a weak carina. – Size: body length (without antennae) 10-12 mm; wing length 9-11 mm.

The ♀ differs from the ♂ in the following characters:

Head: width of face 0.47 (0.45-0.49) times the width of the head. L/D ratio of postpedicel 1.78 (1.72-1.88) (due to low n not significantly distinct from ♂, but as there is a distinct difference between ♂ and ♀ in the other taxa [tables 3, 6] the values are presented for each sex separately). Eye hairs 0.16 mm (0.14-0.19). Frons with yellow pile mixed with 20-50 % black hairs. – Thorax: scutal hair whitish, usually with an interalar band of yellowish hairs. Bare areas of cells c and bm slightly larger: c 5-20 %, bm 50-70 %. – Abdomen: posterior margin of T2 without black hairs (1 specimen with few black hairs). T4 black haired, except for the lira that is partly white haired. The proportion of black hairs on T5 is 10-20 %. T3 posterolaterally with a large area bare of pruinescence.

Diagnosis: The major differences between this species, *L. lucorum* and *L. inopinata* are listed in table 1. Characterized by the contrast between the black haired T4 and the predominantly white haired T5, the white scutal pile of the ♀ which has usually an interalar band of yellowish hairs, and the longer postpedicellus. f3 microtrichose ventrally but apparently always with a large bare spot in the middle. The colour of the scutal pruinescence is of a characteristic greyish brown. The latter three characters are of limited use for identification purposes because they exhibit overlapping intraspecific variability between the species. The condition of the remaining characters is partly as

in *L. lucorum* and partly as in *L. inopinata* and may be used for identification if the combination is considered.

### Distribution and Biology

*L. nigripila* is only known from the Caucasus. Apart from the notes on the collecting sites, given in Tóth & Günther (1992), nothing is known about its ecological requirements. The specimens were caught in the surroundings of Teberda and Dombai, in the NW Caucasus, at an altitude of 1300-2100 m. The collecting area is characterized by a very varied and mainly lush vegetation composed of deciduous and coniferous woods, tall herb stands and subalpine meadows.

### *Leucozonia inopinata* spec. nov.

= *Leucozonia nigripila*: Doczkal (1998) nec Mik, 1888

**Holotype:** ♂ with the following labels: (1) D, Baden-Württemberg, Ettlingen-Oberweier, Gefällwald, eogfw [= private code of the collector for the collecting site], 125-150m, 9.5.1999, leg. Doczkal, 7016SW [= number of the topographical map published by the Landesvermessungsamt (= state surveying department) of Baden-Württemberg and quadrant in which the collecting site is located]; (2) 240 [= number referring to a corresponding data set]; (3) Holotypus *Leucozonia inopinata* Doczkal 2000. Deposited in SMNS.

**Paratypes:** **Germany:** Baden-Württemberg (if not stated otherwise all leg. D. Doczkal and deposited in the collection of the collector): 1♂ 1♀ same data as holotype, coll. D. Doczkal; Weinheim an der Bergstraße, NSG Steinbruch, 180-230m, UTM MV79, 10 May 1990, 1♂; Muggensturm, Aulach, 120m, UTM MV41, 21 May 1989, 1♂; Bad Boll, Wutach, Rümmelesteg, 8 July 1968, leg. O. Hoffrichter, coll. D. Doczkal, 1♂ 1♀; Ebersbach near Aulendorf, Weiher, 590m, UTM NU41, 30 May 1990, 1♂; Gaggenau-Michelbach, Geisstatt, 350-382m, TK7116SW, 18 May 1999, 2♂; Gaggenau-Oberweier, Hasensprung, 230-250m, TK7115SE, 13 May 1999, 2♂ 1♀; Ringingen near Ulm, Hirscheler, Hudewald, 540m, TK7624SE, 16 May 2000, 3♂; Freiburg im Breisgau, Mooswald, UTM MU12, 9 June 1978, leg. O. Hoffrichter, coll. D. Doczkal, 1♀; Sinsheim, Steinbruch 1 km NW, 170m, TK6719NW, 1 June 1991, 1♀; Malsch, Rainäcker, 190m, 30 May 1987, 1♀; Malsch, Linnrück, 120m, 22 May 1986, 1♀; Muggensturm, Schmalhardt, 8 July 1985, 1♀; Malsch, Rohrbühl, 22 July 1985, 1♀; Allerheiligen, Bachtal SW Schwabenkopf, 680-740m, TK7415SW, 9 June 1993, 1♀; Gaggenau-Oberweier, Rott, 250m, 13 May 1999, 1♀; Malsch-Waldprechtsweier, Köhlrück, 290-350m, TK7116SW, 25 May 1999, 1♀; Malsch-Waldprechtsweier, Walpertstal, 270m, 8 May 1999, 1♀; Nürtingen-Oberensingen, Bauernwald, 310m, 7321SE, 15 May 1999, leg. U. Schmid, 1♀; ditto, 24 May 1999, 1♂; Wolfschlügen, Sauhag, 340m, 7321NE, 13 May 1999, leg. U. Schmid, 1♂; Gambach, June 1990, leg. M. Hauser, 1♂; Allgäu, Beuren, Taufachmoos, 16 June 1973, leg. P. Dynort, coll. SMNS, 1♂; Freiburg, Mooswald, 23 May 1992, leg. M. Hauser, 1♀; Schwäbische Alb, Bad Urach, 13 August 1916, leg. von der Trappen, coll. SMNS, 1♀; Walddorf (Kr. Reutlingen), 19 June 1979, leg. P. Westrich, coll. SMNS, 1♀. Bayern: Dachau, 27 May 1902, leg. E. Engel, coll. SMNS, 1♀. Rheinland-Pfalz: Böllernborn, MV2035, 2 June 1994, leg. O. Niehuis, coll. M. Hauser, 1♀; Ramsen, 8 June 1986, leg. M. Hauser, 1♂ 1♀. Hessen: Darmstadt, Messel, 24 May 1994, leg. M. Hauser, 1♂. Nordrhein-Westfalen: Siebengebirge, 2 July 1961, leg. K. Gruhl, coll. SMNS, 1♀. Schleswig-Holstein: Schrezerberg near Plön, 7 June 1992, leg. C.F. Kassebeer, coll. M. Hauser, 1♂.

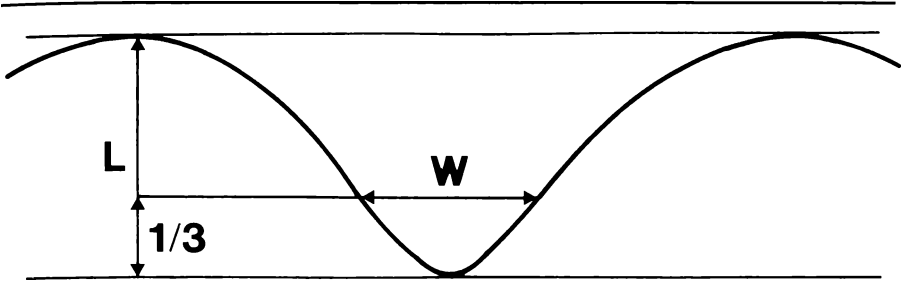
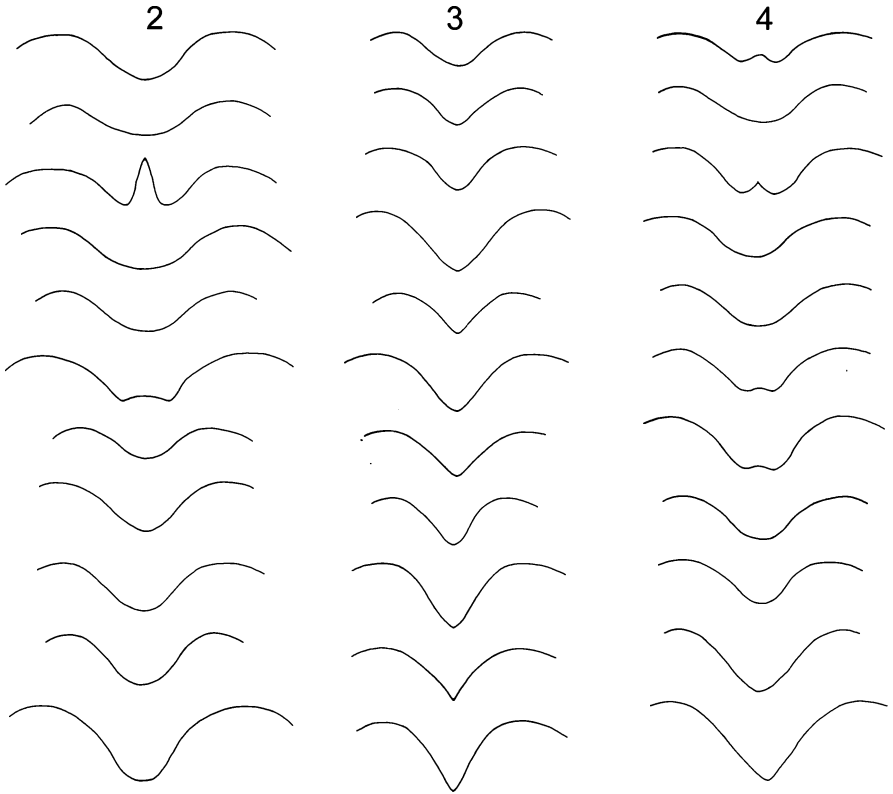


Fig. 1: L/W ratio of the median process of the lunula. The width is taken at 1/3 of the length of the process from its antero-ventral extremity.



Figs. 2-4: Variation of the outline of the ventral edge of the median part of the lunula. The first specimen figured of each taxon is showing the lowest L/W ratio in the material available, while the last shows the specimen with the highest L/W ratio, i.e. atypical specimens. The majority of specimens fit the figures shown in the middle of the columns. – 2. *L. nigripila* (the third fig. showing an aberrant specimen with a deep cleft); – 3. *L. inopinata*; – 4. *L. lucorum*.

character	<i>inopinata</i> spec. nov.
n =	28 ♂ 32 ♀
L/D of postpedicellus (cf. tab. 3)	♂ 1.6 (1.47-1.83) ♀ 1.69 (1.51-1.79)
length of eye hairs (mm) (cf. tab. 5)	♂ 0.15 (0.13 – 0.18) ♀ 0.12 (0.11 – 0.15)
shape of the median process of the lunula (for L/W cf. tab. 2)	pointed (fig. 3)
♀: colour of scutal pile	all pale yellowish brown, rarely darker or white
colour of scutal pruinescence	usually a pale greenish grey
colour of scutellum	yellow, rarely with a small dark spot dorsally at the outermost corner
colour of lower calyptal rim	yellow (not distinctly darker than the calyptal membran)
microtrichia of cell c	usually complete, some ♀ with a small bare spot that may occupy at most about 10% of cell c
microtrichia on ventral surface of mid trochanter	usually microtrichose across full width, but interrupted in some specimens
pruinescence on the ventral surface of f3	usually completely microtrichose or with only a small bare spot in the middle
♂: presence of white or yellow hairs at the anterior margin of T3	absent
♂: presence of a shining area at the posterolateral corner of T3 (absence of pruinescence)	absent
colour of hair on T4 medial to the premarginal sulcus	black
colour of hair on the lira of T4	black
colour of hair on T5	all black, no contrast to the pile on T4

**Table 1: Morphological differences between the adults of *Leucozona lucorum* (Linnaeus), *L. nigripila* Mik, and *L. inopinata* spec. nov.**

***lucorum* (Linnaeus)**

83♂ 110♀

♂ 1.61 (1.42-1.82)

♀ 1.67 (1.47-1.87)

♂ 0.17 (0.14 – 0.2)

♀ 0.15 (0.13 – 0.18)

blunt (fig. 4)

usually rufous, occasionally pale brown,  
never white

usually brown

yellow with lateral corners and the anterior  
margin narrowly blackmore or less darker than the calyptal  
membrane♂ usually, ♀ always with a ± extensive area  
(up to 80 %) bare of microtrichiaalways with a well-defined longitudinal bare  
stripebasal half with ± scattered microtrichia,  
distal half barevariable (present in about 80% of  
specimens)

present

usually predominantly white or yellowish, at  
least at the sides pale haired, in northern  
populations (Scandinavia) often nearly all  
blackusually white or pale yellow, in northern  
populations (Scandinavia) often mixed with  
some black hairswhite, usually mixed with ± numerous black  
hairs, not contrasting with the pile on T4***nigripila* Mik**

5♂ 7♀

♂ 1.75 (1.68-1.86)

♀ 1.78 (1.72-1.88)

♂ 0.18 (0.16 – 0.21)

♀ 0.16 (0.14 – 0.19)

blunt (fig. 2)

white, with a ± distinct, yellowish, interalar  
band

dark greyish brown

yellow with lateral corners and the anterior  
margin narrowly black

slightly darkened (intermediate)

all specimens with a bare area basally which  
occupies usually more than 10 % of cell c

microtrichose across full width

with a ± large bare area in the middle, basally  
and distally densely microtrichose

present (usually a few only)

present

black

♂ black

♀ black with ± numerous white hairs

pale, with about 10 to 70 % of the hairs  
being black, thus contrasting with the black  
pile on T4

taxon	sex	n	$\bar{x}$	SD	min	max
<i>inopinata</i>	♂	13	1.39	0.393	0.82	2.45
<i>inopinata</i>	♀	15	1.59	0.482	0.91	2.5
<i>lucorum</i>	♂	19	0.72	0.135	0.52	1
<i>lucorum</i>	♀	26	0.81	0.259	0.44	1.5
<i>nigripila</i>	♂	5	0.59	0.168	0.43	0.85
<i>nigripila</i>	♀	6	0.78	0.317	0.4	1.3

**Table 2: L/W of the median process of the lunula (fig. 1).**

taxon	sex	n	$\bar{x}$	SD	min	max
<i>inopinata</i>	♂	26	1.6	0.098	1.47	1.83
<i>inopinata</i>	♀	30	1.69	0.066	1.51	1.79
<i>lucorum</i>	♂	57	1.61	0.086	1.42	1.82
<i>lucorum</i>	♀	55	1.67	0.092	1.47	1.87
<i>nigripila</i>	♂	5	1.75	0.075	1.68	1.86
<i>nigripila</i>	♀	7	1.78	0.054	1.72	1.88

**Table 3: L/D of the postpedicellus.**

taxon	sex	n	$\bar{x}$	SD	min	max
<i>inopinata</i>	♂	14	0.491	0.0088	0.48	0.51
<i>inopinata</i>	♀	30	0.476	0.0093	0.47	0.5
<i>lucorum</i>	♂	20	0.507	0.0081	0.49	0.52
<i>lucorum</i>	♀	18	0.489	0.0155	0.47	0.53
<i>nigripila</i>	♂	5	0.494	0.0055	0.49	0.5
<i>nigripila</i>	♀	7	0.474	0.0151	0.45	0.49

**Table 4: Width of face / maximum width of the head.**

taxon	sex	n	$\bar{x}$	SD	min	max
<i>inopinata</i>	♂	28	148.5	15.79	128	179
<i>inopinata</i>	♀	32	122	7.2	111	145
<i>lucorum</i>	♂	78	173.3	13.37	136	204
<i>lucorum</i>	♀	96	154.8	11.13	128	179
<i>nigripila</i>	♂	5	183.8	21.28	162	213
<i>nigripila</i>	♀	7	160.5	16.61	136	187

**Table 5: Length of eye hairs ( $\mu\text{m}$ ).**



	L/W ratio of the lunula	L/D ratio of postpedicellus	width of face	length of eye hairs
<i>inopinata</i> ♂ / <i>inopinata</i> ♀	< 0.001	< 0.001	< 0.001	<< 0.001
<i>lucorum</i> ♂ / <i>lucorum</i> ♀	n.s.	< 0.01	< 0.001	<< 0.001
<i>nigripila</i> ♂ / <i>nigripila</i> ♀	n.s.	n.s.	< 0.02	< 0.05
<i>inopinata</i> ♂ / <i>lucorum</i> ♂	<< 0.001	n.s.	< 0.001	<< 0.001
<i>inopinata</i> ♀ / <i>lucorum</i> ♀	<< 0.001	n.s.	< 0.01	<< 0.001
<i>inopinata</i> ♂ / <i>nigripila</i> ♂	< 0.001	< 0.01	n.s.	< 0.001
<i>inopinata</i> ♀ / <i>nigripila</i> ♀	< 0.01	< 0.01	n.s.	<< 0.001
<i>lucorum</i> ♂ / <i>nigripila</i> ♂	< 0.1	< 0.001	< 0.05	< 0.1
<i>lucorum</i> ♀ / <i>nigripila</i> ♀	n.s.	< 0.01	< 0.01	n.s.

**Table 6: p-values for the differences shown in tables 2 –5.** n.s. = not significant at  $p > 0.1$  level.

Additional specimens examined:

**Austria:** Oberösterreich, Scharfling, 4 August 1991, leg. C.F. Kassebeer, 1♂; ditto, 500m, 26 July 1992, 1♀; Salzburger Alm, Postalm, 1400m, 4 August 1991, leg. C.F. Kassebeer, 1♀. **Denmark:** Grejsdalen, 1 July 1969, leg. E. Torp, coll. T. Nielsen, 1♀; Grejsdalen, Jylland, 19 August 1968, leg. T. Nielsen, 1♀. **Germany:** Baden-Württemberg: Knielingen, 4 June 1975, leg. K. Kormann, coll. C. Claußen, 1♂; Berghausen, 26 May 1975, leg. K. Kormann, coll. C. Claußen, 1♀. Rheinland-Pfalz: Ahrtal, Ahrhütte, TK5606, 30 July 1994, leg. A. Ssymank, 1♀. Sachsen: Erzgebirge, Satzung, Hirtstein, TK5445, 3 August 1995, leg. A. Ssymank, 1♂. Niedersachsen: NE Harz, Bad Grund, Iberg, 8 July 1984, leg. C. Claußen, 1♂. Schleswig-Holstein: near Mölln, 2 July 1972, leg. C. Claußen, 1♂; Satrup, Rehbergholz, 9 June 1975, leg. C. Claußen, 4♂; ditto, 11 June 1979, 2♂; Glücksburg, Friedeholz, UTM NF3677, 16 July 1996, leg. C. Claußen, 1♀; Glücksburg, 7 July 1982, leg. C. Claußen, 1♀. **Hungary:** Görfény, June 1892, leg. J. Mik, coll. NHMW, 1♂. **Japan** (all leg. M. Yokohama, coll. D. Doczkal): Yunosawa (near Toyoha mine), Sapporo, 28 June 1996, 1♂; Yunosawa (near Nakayamô Tôge), Sapporo, 17 August 1994, 1♀; Yunosawa, Sapporo, 5 August 1994, 1♀.

**Etymology:** The specific epithet is a Latin word meaning unexpected.

### Description

♂: Head: face 0.49 (0.48-0.51) times as wide as the head (table 4), yellow with a median black stripe and black oral margin. L/D of postpedicel 1.6 (1.47-1.83) (table 3). Eye hairs 0.14 mm (0.13-0.18 mm) (table 5). Median process of the lunula pointed (table 2; fig. 3). Frons black haired, usually mixed with a few yellow hairs, rarely extensively yellow haired. The bare black area between the anterior tentorial sulcus and the mouth edge usually extensively covered in microtrichia. – Thorax: scutal hair rufous or tawny. Scutellum entirely yellow or exceptionally the outermost corner a little darkened, without black hairs. Scutal pruinescence usually a pale greenish grey, but may be darker in some specimens. Cell c completely covered in microtrichia. About 50-80 % of cell bm covered in microtrichia (1 specimen ca. 95 %). The cell proximal to MA and bc usually

not darker than the adjacent cells. Rim of lower calypter usually not darkened. Tibiae on about the proximal half yellow, distally dark brown or black. f3 and t3 anteriorly and dorsally without or with only a few yellow hairs. Femora ventrally microtrichose, f3 most often without a bare spot in the middle (cf. *L. nigripila*), but exceptions occur. Trochanter of mid leg ventrally microtrichose across full width, or with a narrow bare longitudinal stripe (i.e. intermediate between *L. lucorum* and *L. nigripila*). – Abdomen: posterior margin of T2 with few or (usually) many black hairs. T3 entirely black haired. T4 and T5, including lira, completely black haired. T8 black haired. T3 completely and densely dusted. S3 dusted for about (20 -) 50-100 %. Many specimens also with a narrow, dusted band across the anterior margin of S4. Genitalia very similar to *L. lucorum* and without consistent differences. The small differences in the shape of the postgonite and the basiphallus between typical specimens are described and figured in Doczkal (1998).

Size: body length (without antennae) 8.5-12.5 mm; wing length 8-11.5 mm.

The ♀ differs from the ♂ in the following characters:

Head: width of face 0.48 (0.47-0.5) times the width of the head (table 4). L/D of postpedicel 1.68 (1.51-1.79) (table 3). Eye hairs 0.12 mm (0.11-0.14) (table 5). Frons with yellow hairs, with or without a few black hairs, exceptionally up to 20 % of the hairs black. – Thorax: scutal hair most often pale brown, occasionally darker (as in ♂, 5 specimens) or nearly white (2 specimens), without a darker interalar band (cf. *L. nigripila* ♀). f3 and t3 with predominantly yellow hairs. – Abdomen: posterior margin of T2 without black hairs or (4 specimens) with a few black hairs. T3 anteriorly with a band of yellow hairs. T3 posterolaterally with an area bare of pruinescence, shining.

Diagnosis: The major differences between this species, *L. lucorum* and *L. nigripila* are listed in table 1. Characterized by the short eye hairs, the pointed median process of the lunula, the entirely yellow scutellum, the usually completely microtrichose cell c, the missing yellow hairs at the anterior margin of T2 of the ♂, the completely dull T3 of the ♂, the absence of any light hairs at the lira of T4 of the ♀, and the usually completely microtrichose ventral surface of f3. Some of these characters are of limited use for identification purposes, because they exhibit overlapping intraspecific variability between the species. The condition of the remaining characters is partly as in *L. lucorum* and partly as in *L. nigripila* and may be used for identification if the combination is considered.

#### Distribution

*L. inopinata* is widely distributed in Europe. In Germany and The Netherlands it is abundant, whereas so far only a few records have been reported from Belgium (G. van de Weyer in litt.), France (M.C.D. Speight in litt.), Switzerland (G. van de Weyer in litt.), Austria (Doczkal 1998), Denmark (Doczkal 1998), Norway (Nielsen 1999), Sweden (H.

Bartsch in litt.), Hungary (see above), and Yugoslavia (A. Vujić in litt.). *L. inopinata* has a transpalaeartic distribution. Three specimens from Japan which I received from Mr Yokohama are in all characters indistinguishable from European specimens.

In the few collections containing old material I have checked so far, specimens of *L. inopinata* from Central and Western Europe are almost entirely absent. It seems the abundance of this species has increased in the course of the 20<sup>th</sup> century. In several regions of Germany it is now common or even more abundant than *L. lucorum* (cf. Lauterbach 2000b). However, this first impression should be checked thoroughly by collecting data from collections from various regions.

### Biology

After publication of my first contribution on *Leucozona* several colleagues checked their data in order to define the habitat of this species. Lauterbach (2000a,b) (under the name *L. nigripila* sensu Doczkal 1998) reported on a different local distribution in the surroundings of Bielefeld (NW Germany). He got the impression that *L. inopinata* prefers dry and warm places and possibly sandy soils. In a large dry *Pinus* forest on sandy soil he observed 66 specimens of *L. inopinata*, but only a single specimen of *L. lucorum* (Lauterbach 2000b: 9). He reports on a strong preference for visiting the flowers of *Rubus idaeus* but this is shared by *L. lucorum* (own observations). According to van Steenis & Zeegers (1999) *L. lucorum* and *L. inopinata* have different distribution patterns in The Netherlands. Extensive new material from South Tirol (coll. C. Claußen, D. Doczkal) all belongs to *L. lucorum* again (cf. Doczkal 1998: 39f). Only a single specimen of *L. inopinata* has been found from the northern edge of the Alps (Switzerland, Kanton Bern, Gstaad, 1050m, 4 July 1998), by G. van de Weyer (in litt.). These new observations support the existence of ecological differences between *L. lucorum* and *L. inopinata* predicted in Doczkal (1998), although we still do not know the nature of the different requirements.

### Nomenclature

During preparation of the text for Doczkal (1998) I failed to receive information about the type of *L. lucorum* from the Linnaean Society in London. Now Mr C.F. Kassebeer has examined the lectotype (designated by Thompson, Vockeroth & Speight 1982). The type of *Leucozona lucorum* var. *differens* Frey, 1946 has been examined by G. Ståhls. The information provided by these colleagues fits well with the description of *L. lucorum* given in Doczkal (1998). Thus the provisional assignment of the name *lucorum* Linnaeus to the taxon named so in Doczkal (1998) is proved and var. *differens* Frey is a synonym.

Key to distinguish the European taxa of *Leucozона* s.s.

- 1 Anterior margin of scutellum yellow; T5 without any light hairs; ventral surface of f3 usually entirely covered in microtrichia ..... *L. inopinata*  
 – Anterior margin of scutellum narrowly black; T5 ± extensively light haired; ventral surface of f3 with ± extensive areas bare of microtrichia ..... 2
- 2 T4 most often predominantly light haired, lira of T4 light haired (nearly all black haired specimens may occur in Scandinavia); ventral surface of f3 bare of microtrichia on distal half; mid trochanter ventrally with a well-defined longitudinal stripe bare of microtrichia; ♀: scutal pile rufous or pale brown ..... *L. lucorum*  
 – T4 medial to the premarginal sulcus black haired, lira of T4 black haired or with mixed black and white hairs; ventral surface of f3 distally densely covered in microtrichia; mid trochanter ventrally microtrichose across full width, ♀: scutal pile white, with a ± distinct yellowish interalar band ..... *L. nigripila*

## Acknowledgements

My sincerest thanks to: Dr M. Kotrba for the loan of the material of *L. nigripila* from the collection of the ZMHB; Dr R. Contreras-Lichtenberg (NHMW) for the loan of the type of *L. nigripila*; Mr C.F. Kassebeer who examined the type of *L. lucorum*; Dr G. Ståhls-Mäkelä for checking the type specimen of *Leucozона lucorum* var. *differens*; the many colleagues who send material or gave information; Mr M. Yokohama for the donation of specimens from Japan; Dr M.C.D. Speight for valuable comments on the manuscript and for checking the English.

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Band/Volume: [5](#)

Autor(en)/Author(s): Doczkal Dieter

Artikel/Article: [Redescription of \*Leucozonia nigripila\* Mik and description of \*Leucozonia inopinata\* spec. nov. \(Diptera, Syrphidae\) 115-127](#)