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The historical mayflies (Insecta: Ephemeroptera) collection in the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences (Kraków, Poland)

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Abstract. A review of the old mayflies collection (total: 37 species, 425 specimens) of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków is presented. Description of paralectotype of *Rhitrogena gorganica* KLAPÁLEK, 1907 from Kraków is given.

Key words: Ephemeroptera, list of species, *Rhithrogena gorganica*, paralectotype description, Poland, Ukraine.

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I. INTRODUCTION

The collections of mayflies (Ephemeroptera), housed in the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences in Kraków, include primarily the materials collected in the 19th and first decades of the 20th century by four naturalists: Antoni WAGA, Konstanty JELSKI, Józef DZIĘDZIELEWICZ and Fryderyk SCHILLE. They collaborated together before becoming members of the Physiographical Commission of the Academy of Sciences and Letters. The mayflies collections are only a part of the larger entomological collections kept at the Museum of Physiographical Commission of the Academy of Sciences and Letters in Kraków, either as documentary material, deposited obligatorily by scientists who had in that way to account for money granted to them for the conduction of studies (J. DZIĘDZIELEWICZ, F. SCHILLE), or collected within

the framework of curator's duties (K. JELSKI), or acquired as a result of a purchase of collections, zoological library and archival materials (A. WAGA). In addition, the collection of mayflies housed at the Museum of Physiographical Commission of the Academy of Sciences and Letters was supplemented with a few specimens originating from a small local collection of insects held by Stanisław KAMIENIECKI from Rakułowa in Podolia. The collection was donated in 1913 to the Academy of Sciences and Letters by Maria KAMIENIECKA – the collector's widow.

Antoni WAGA (*1799 †1890), graduate of the University of Berlin, zoologist, educator, bibliophile, archivist, and curator of scientific collections in Warszawa, Paris and Montrésor sur Loire explored Europe, Western Asia, and West, East and North Africa in the years 1861-72, at the expense of his patrons (primarily counts of the BRANICKI family). His private collections originating from the visited areas were purchased after his death (owing to the endavours of curator, K. JELSKI) by the Physiographical Commission of the Academy of Sciences and Letters in Kraków (of which A. WAGA had been a member) and added to the collections of the Museum of Physiographical Commission, presently the Institute of Systematics and Evolution of Animals of the Polish Academy of Sciences. Mayflies from WAGA's collection originate from Mazowsze (mostly Warszawa and its environs, 1853), Jura Krakowsko-Wieluńska (Ojców and Złoty Potok, 1854-55), north-eastern Poland (Suwałki and Augustów), and the Western Carpathians (borderland between the Pieniny and Beskid Sądecki Mountains, the environs of Szczawnica, probably the 1870s). Single specimens also came from Germany (environs of Ulm in Schwäbische Alb: Biarnitz & Blaubeuren) and France (Alpes Maritimes – Nice env.; Gascogne – the Garonne River valley), between the years 1870-85.

Konstanty JELSKI (*1837 †1896) was a graduate of the University in Kiev, zoologist, traveler, collaborator of the Zoological Collection in Warszawa, explorer of the faunas of Guyana and Peru (at the expense of count Konstanty BRANICKI), curator of the Museum in Lima (1873-79), and later, of the Museum of Physiographical Commission of the Academy of Sciences and Letters in Kraków. His small collection of mayflies (like other entomological collections) originated mainly from the area of Kraków and its immediate surroundings, and was built up in the years 1885-87 to complete museum materials housed at the Physiographical Commission of the Academy of Sciences and Letters.

Józef DZIĘDZIELEWICZ (*1844 †1918), who studied law and graduated from the University in L'viv, was a self-taught entomologist and a collaborator of the Museum of the DZIEDUSZYCKI family. From 1896, he was the secretary of the DZIEDUSZYCKI family museum Council. On account of his studies on aquatic-terrestrial insects, he became a member of the Physiographical Commission as early as 1866 (NOWICKI, 1866). His collections are additions to the collections of both the Museum of the DZIEDUSZYCKI Family in L'viv (presently the State Museum of Natural History, National Academy of Sciences of Ukraine, L'viv) and the Museum of Physiographical Commission of the Academy of Sciences and Letters, Kraków (presently the Museum of Natural History of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków). The L'viv part of DZIĘDZIELEWICZ's collection was recently described by the other author (GODUŃKO 1998, 1999).

Mayflies collected and described in the years 1882-1909 by J. DZIĘDZIELEWICZ form the core of the Ephemeroptera collection in the Museum of Natural History of the ISEA PAS in Kraków. They were collected mainly in the Eastern Carpathians, in the following sites: Kołomyja and its environs (1882-1892), Gorgany (Mikuliczyn, Tatarów, Jabłonica, Chomiak; 1900-1907), Worochta (1907-1908), Czarnohora (Breskuł, Dancerz, Koźmieska, Pożyżewska; 1906-1909) (DZIĘDZIELEWICZ & KLAPÁLEK 1908a, 1908b). In addition, part of the materials originate from Podolia (Młodiatyn) and from L'viv and its environs (Janów, Wulka) from the years 1902-1908, and also from the Western Carpathians: the Tatra Mountains (1891-1902); Mt Babia Góra, Myślenice and Stróże (1909) (DZIĘDZIELEWICZ 1919). DZIĘDZIELEWICZ received a grant for these studies by the Physio-

graphical Commission of the Academy of Sciences and Letters in the years 1882-83, 1887-90, 1892-93, 1895, 1901-02, 1904-06, 1909[1].

Fryderyk SCHILLE (*1850 †1931), was a graduate of the Faculty of Forestry of the University in Marienbrunn in Moravia, entomologist, and member of the Physiographical Commission of the Academy of Sciences and Letters beginning from 1882. In the years 1872-1926 he worked as a forester in different sites in central Europe, but mainly in the Carpathians where he collected most of his scientific materials. A limited number of mayflies in his collection originate from the Beskid Sądecki Mountains where he was a forest inspector in the years 1882-1906 (in Rytro); in 1990 he obtained a grant from the Physiographical Commission for the inventory of some insect groups (including Neuroptera, hence also mayflies); J. DZIĘDZIELEWICZ[2] assisted him in studying the collected material.

All the discussed collections comprise of old materials, collected at least 90 years ago, and in the case of A. WAGA's collection, even 120-150 ago (or more, as dates are often lacking on labels). About 30% of the materials are damaged specimens; they were kept, from the very beginning, dry on entomological pins which, in many cases, makes their identification to species impossible. In the inter war period (1927) old collections were set in order and combined as a whole (only A. WAGA's collection remained separate), partly by Józef MIKULSKI. They comprise 37 mayfly species (specimens in a good state, identifiable to species) and 17 genera (damaged specimens; it was impossible to identify them to species). Number of taxa in the particular collections of mayflies, belonging to the collection of the ISEA PAS in Kraków, are listed in Table 1.

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The following abbreviations are used in the text:

Collectors:

JD – Józef DZIĘDZIELEWICZ; KJ – Konstanty JELSKI; SK – Stanisław KAMIENIECKI; FS – Fryderyk SCHILLE; AW – Antoni WAGA; CU – collector unknown;

Localities:

WPOD – Western Podillia (Ukraine); CCA – Ciscarpathians (Ukraine); GOR – Gorgany Mountains (Ukraine); CZ – Chornohora Mountains (Ukraine); KW – Krakowsko-Wieluńska Upland (Poland); MR – Małopolska Region (Poland); ML – Mazovian Lowland (Poland); PR – Pomerania Lake Region (Poland); ROZ – Roztochchia (Ukrainian part); SAD –Beskid Sądecki Mountains (Poland); ZYW – Beskid Żywiecki Mountains (Poland); TAT – Tatra Mountains (Poland).

Mayfly instars:

m – male; f – female; im – imago; sub – subimago; n – nymph.

Institutions:

ISEA PAS – Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków, Poland; SMNH NASU – State Museum of Natural History, National Academy of Sciences of Ukraine, L'viv, Ukraine; NMP – National Museum, Praha, Czech Republic.

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[1] *Sprawozdania Komisji Fizjograficznej*: XVII: 2-3; XVIII: 2-3; XXII: 6; XXIII: XXIV: 6; XXV: 5; XXVII: IV-V; XXVIII: V; XXIX: V; XXXI: XVII; XXXVI: XI; XXXVII: VII-VIII; XXXIX: VIII; XL: VII-VIII; XLI: IX; XLIV: IX.

[2] *Sprawozdania Komisji Fizjograficznej*: XXXVI: VIII; XXXVII: VII-VIII.

Table 1

Number of species and specimens in particular old collections of mayflies

Collector and collecting period	Number of species (*)	Number of specimens						Origin of materials
		imagines	subimag.	larvae	♀♀	♂♂	sex?	
A. WAGA 1850?-1880?	13 (+5)	44	10	–	18	30	6	mainly NE-, central and S-Poland (also SW-Germany & S-France)
K. JELSKI 1885-1887	3 (+2)	6	1	–	3	4	–	Kraków & environs
J. DZIĘDZIELEWICZ 1882-1909	33 (+10)	256	74	7	100	228	9	Eastern and Western Carpathians, Podolia, Lwów & environs
F. SCHILLE 1900	9 (+1)	10	3	–	4	9	–	Beskid Sądecki Mts. (Rytro & environs)
S. KAMIENIECKI before 1910	1 (+1)	–	2	–	2	–	–	Western Podolia (Rakułowa & environs)
unknown	4 (+1)	6	6	–	2	9	1	unknown
All collections together	37 (+17)	322	96	7	129	280	16	mainly central Europe

*) in the brackets: number of other taxons – with determination of the genus (or species group) only.

The place names mentioned in the text are Polish names used on topographic maps from the period of 1880-1930. For areas which since 1945 have been within the borders of Ukraine, Ukrainian names are now binding; their original record and English transcription are given in Table 2.

II. LIST OF MAYFLIES AND DECRIPTION OF PARALECTOTYPE FROM KRAKÓW's COLLECTION

Baetidae LEACH, 1815

Baetis buceratus EATON, 1870; 1 im, PR (Suwałki) (AW), very damaged specimen.

Baetis fuscatus (LINNAEUS, 1761); 9 m im, 1 f im, 1 f sub, 1 subimaginal skin, GOR, ROZ (JD).

Baetis rhodani (PICTET, 1843); 15 m im, 1 f im, 1 f sub, GOR, ROZ (JD), MR (Kraków) (KJ); 1 m im, PR (AW).

Baetis rhodani ? (PICTET, 1843); 1 m im, MR (Kraków) (KJ), very damaged specimen; 1 f im, PR (Suwałki) (AW).

Baetis vernus CURTIS, 1834; 2 m im, GOR (Mikuliczyn) (JD), SAD (Rytro) (FS).

Baetis sp.; 3 m im, 3 f im, 1 f sub, MR (Kraków) (KJ), very damaged specimens; 2 f im, 1 ? sub, PR (Suwałki) (AW), very damaged specimens; 1 m im, GOR (CU).

Centroptilum luteolum (MÜLLER, 1776); 5 m im, CCA (Kołomyja) (JD), two specimens with J. MIKULSKI's original label "*Centroptilum pennulatum* EAT. det. J. MIKULSKI".

Cloeon dipterum (LINNAEUS, 1761); 4 m im, 1 f im, 3 f sub, ROZ (Janów and environs of Lwów), GOR (JD); 1 f im, MR (KJ); 4 m im, 1 m sub, 6 f im, 6 f sub, ML (Warszawa), PL (Suwałki) (AW), some specimens identified and labelled by J. MIKULSKI; 1 m im, 1 f im labeled "Nice", 2 m im without labels designating the locality (AW); 2 f im, specimens labeled as "166/10" and "? 95/1" (CU).

Isonychiidae BURKS, 1953

Isonychia ignota (WALKER, 1853); 4 m im, all specimens are without labels and damaged (CU).

Table 2

Geographical names in Polish, original Ukrainian and English transcription from Ukrainian

Polish name	Original Ukrainian name (historical and actual)	English transcription from Ukrainian
Barani	Бараній	Baranii
Błotek	околиці села Кременець	environs of Kremenets' village
Bogdan	Богдан	Bohdan
Breskuł	Брескул	Breskul
Brzuchowice	Брюховичі	Briukhovychi
Chomiak	Хом'як	Khomiak
Podkarpacie	Передкарпаття	Ciscarpathians
Czarnohora	Чорногора	Chornohora
Dancerz	Данцеж	Dantsezh
Gorgany	Ґорґани	Gorgany
Jabłonica	Яблуниця	Yablunytsia
Janów	Івано-Франкове [Янів]	Ivano-Frankove [Yaniv]
Karpaty Wschodnie	Східні Карпати	Eastern Carpathians
Kołomyja	Коломия	Kolomyia
Koźmieska	Козьмещик	Koz'meshchyk
Lwów	Львів	L'viv
Mikuliczyn	Микуличин	Mykulychyn
Młodiatyn	Печеніжин	Pechenizhyn
Podole	Поділля	Podillia
Pohulanka	Погулянка	Pohulianka
Pożyżewska	Пожижевська	Pozhyzhevs'ka
Prut	Прут	Prut
Rakułowa na Podolu	Ракулова	Rakulova
Rebrowacz	Ребровач	Rebrovach
Roztocze	Розточчя	Roztochchia
Tatarów	Кременець [Татарів]	Kremenets' [Tatariv]
Wschodnie Podole	Східне Поділля	Eastern Podillia
Worochta	Ворохта	Vorokhta
Wulka	Вулька	Vulka

Oligoneuriidae ULMER, 1914

Oligoneuriella rhenana (IMHOFF, 1852); 5 m im, 1 m sub, 1 f sub, CCA (Kołomyja), MR (Myślenice) (JD); 3 m im, 1 f im, SAD, ML (AW), with J. MIKULSKI's identification label; 2 m im, 6 m n (CU), part of the specimens only have registration numbers, without the labels indicating the precise locality and collector. Two nymphs are pinned together with a number "120/5", two other nymphs are pinned together with the same number (one of them is *O. rhenana*, and the other is *Ecdyonurus venosus*).

Heptageniidae NEEDHAM, 1901

Epeorus assimilis EATON, 1885; 14 m im, 8 f im, 2 f sub, GOR (Mikuliczyn, Tatarów, Chomiak Mt., Rebrowacz Mt.), CZ (Pożyżewska Mt., Breskuł Mt.) (JD), 1 male imago collected in Czarnohora has a label by J. MIKULSKI "*Epeorus assimilis* EAT. Det. J. MIKULSKI"; 1 male imago (CU), specimen has a label "173/17" and was probably collected by J. DZIĘDZIELEWICZ in the Gorgany mountain range; 1 m im GOR (Chomiak Mt.) (AW).

Rhithrogena germanica EATON, 1885; 2 m im, 1 f im, SAD (FS), all specimens labeled as "Rytro" "34/13".

Rhithrogena iridina (KOLENATI, 1839); 21 m im, 1 f im, GOR (Mikuliczyn, Tatarów, Chomiak Mt.), CZ, CCA (Młodiatyn), TAT (JD), SAD (Rytro) (FS), a part of specimens very damaged; 1 m im (CU).

Rhithrogena semicolorata (CURTIS, 1834); 2 m im (AW), labels with locality: Biarnitz and Blaubeuren and J. MIKULSKI's determinations.

Rhithrogena sp.; 5 m im, 2 f im, 1 f sub, GOR (JD), SAD (AW) (FS), very damaged specimens, only one with a distinct label; 1 m im, 1 m sub, 4 f im, 1 f sub (CU), without labels, very damaged specimens.

Ecdyonurus dispar (CURTIS, 1834); 11 m im, 1 m sub, 2 f sub, CCA, GOR, MR (JD); 4 m im, 3 m sub, 1 f sub, CCA, GOR (CU), very damaged specimens, part on slides.

Ecdyonurus insignis (EATON, 1870); 1 m im, 3 f im, CCA (Kołomyja) (JD), SAD (Rytro) (FS), specimens of female imagines were collected by J. DZIĘDZIELEWICZ and F. SCHILLE, and were later identified and marked by J. MIKULSKI as "*Ecdyonurus* ♀ *insignis* EAT det. J. MIKULSKI".

Ecdyonurus picteti (MEYER-DÜR, 1864); 1 male imago, CZ (Dancerz Mt.) (JD); damaged specimen, genitalia and fore wings on slide.

Ecdyonurus subalpinus (KLAPÁLEK, 1907); 5 m im, CZ, GOR (JD), one specimen marked as "Tatarów. (Błotek.) 18.-7.-1905. DZ." "104/20", was collected in the same locality and period as the specimens of the type series (KLAPÁLEK, 1907); 1 m im, GOR (CU).

Ecdyonurus torrentis KIMMINS, 1942; 1 m im, GOR (JD); 1 m im, GOR (CU); very damaged specimens.

Ecdyonurus venosus (FABRICIUS, 1775); 4 m im, 1 f im, 3 m sub, GOR, CCA (JD); 4 m im, 1 m sub, 1 f im, GOR (CU).

Ecdyonurus sp.; 4 m im, 2 f im, 1 f sub, GOR (JD); 7 m im, 1 m sub, 1 f sub, CCA, GOR (CU), a part of specimens very damaged and without labels.

Electrogena lateralis (CURTIS, 1834); 1 male imago, GOR (JD).

Heptagenia flava ROSTOCK, 1878; 1 f im, ML (Warszawa) (AW).

Heptagenia sulphurea (MÜLLER, 1776); 1 m sub, SAD (Rytro) (FS); 1 m sub, ML (AW); 1 m sub (CU), without labels, part on slide.

Heptagenia sp.; 1 f sub, WPOD (CU), very damaged specimen.

Leptophlebiidae BANKS, 1900

Leptophlebia marginata (LINNAEUS, 1767); 1 m sub, 1 f im, 1 f sub, ROZ (Brzuchowice) (JD).

Leptophlebia ? sp.; 1 ? im (CU), without label.

Paraleptophlebia cincta (RETZIUS, 1783); 1 m im, GOR (Mikuliczyn vill.) (JD); 1 m im, (CU).

Paraleptophlebia submarginata (STEPHENS, 1836); 1 m sub, 1 f im, 5 f sub, GOR (JD).

Paraleptophlebia sp.; 2 f sub, GOR (JD), very damaged specimens.

Habroleptoides confusa SARTORI & JACOB, 1986; 2 m im, GOR (JD), SAD (FS); 1 m im, (CU), specimen labeled as "163/10".

Habrophlebia lauta EATON, 1884; 11 m im, 2 m sub, 1 f sub, GOR (Mikuliczyn) (JD), MR (Kraków) (KJ), besides the original labels by J. DZIĘDZIELEWICZ, some specimens have additional labels by J. MIKULSKI; 2 m im, PR (Suwałki) (AW).

Potamanthidae ALBARDA, 1888

Potamanthus luteus (LINNAEUS, 1767); 2 m im, 2 f im, 1 f sub, CCA (JD), all specimens were collected in the environs of the town of Kołomyja (the Prut river) and have identical registration numbers "162/10".

Polymitarcyidae BANKS, 1900

Ephoron virgo (OLIVIER, 1791); 6 f sub; ROZ, WPOD (JD, SK); all specimens are very damaged. Five specimens were collected in L'viv (apparently in the Poltva river) and have the registration number "156/17". The sixth specimen was collected in Western Podolia (Rakułowa) by S. KAMIENIECKI, identified by J. MIKULSKI and labelled as "*Polymitarcys virgo* OLV det MIKULSKI".

Ephemeridae LATREILLE, 1810

Ephemera danica MÜLLER, 1764; 7 m im, 6 f im, 2 m sub, 2 f sub, CZ, GOR, ZYW (JD), SAD (FS); 2 m im, 2 m sub (CU).

Ephemera lineata EATON, 1870; 2 m im, 1 f im, 2 f sub, CCA (Kołomyja) (JD), SAD (Rytro) (FS), very damaged specimens.

Ephemera vulgata LINNAEUS, 1758; 4 m im, CCA (Kołomyja), ROZ (Brzuchowice near Lwów) (JD); 2 m im, 1 f sub (CU).

Ephemera sp.; 3 im, 1 sub, 1 f sub, KW (Ojców) (AW), very damaged specimens, one of them with MIKULSKI's determination as *Palingenia longicauda*, second as *Ephemera vulgata*; 1 m im (CU), very damaged specimen (on slide).

Palingeniidae ALBARDA, 1888

Palingenia longicauda (OLIVIER, 1791); 8 m sub, (CU), all specimens are without labels.

Ephemerellidae KLAPÁLEK, 1909

Serratella sp.; 1 m im, GOR (JD), very damaged specimen; 1 m im, GOR (CU), very damaged specimen; 1 f sub (AW), label without locality.

Caenidae NEWMAN, 1853

Caenis horaria (LINNAEUS, 1758); 13 m im, 1 f sub, GOR, ROZ (JD); 1 m im, ML (Warszawa) (AW), with MIKULSKI's determinations.

Caenis luctuosa (BURMEISTER, 1839); 1 m im, (AW), label without distinct locality.

Caenis macrura STEPHENS, 1836; 7 m im, 5 f im, 2 m sub, 1 f sub, ROZ (Lwów and environs, Janów) (JD); 7 m im, ML (Warszawa) (AW), all specimens determined and labeled by J. MIKULSKI as *Caenis halterata*.

Caenis robusta EATON, 1884; 2 f im, 1 f sub, ROZ (Lwów) (JD).

Caenis sp.; 1 ? im, ML (AW), very damaged specimen.

Description of paralectotype of *Rhithrogena gorganica* KLAPÁLEK, 1907

Rhithrogena gorganica KLAPÁLEK, 1907; 1 m im, paralectotype (under the Cat. No 4/23), GOR (JD).

Paralectotype (male imago; specimen in alcohol, styliger and penis lobes on slide), originally labeled "Chomiak. pot. Bogdan. 1.-7.-1905. DZ."; "4/23" was identified as such by R. J. GODUNKO and M. KŁONOWSKA-OLEJNIK (April 2002) (ICZN, Article 74F, Recommendation 74.1.3.) and is housed in the collection of Museum of Natural History, Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków, Poland, under the Cat. No. 4/23 (Fig. 1).

Size: Length of body: 12.1 mm, length of fore wings: 14.7 mm. Cerci missing.

D e s c r i p t i o n. General colour of body brownish black. Head and thorax generally brownish black dorsally with paler ventral side. Eyes brownish black with a lateral paler stripe,

ocelli paler. Antennae brownish. Fore wings unicolorous, translucent, light brown. Costa and subcosta of fore wings brown. Longitudinal and cross veins light brown. Pterostigmatic area light brown with simple unbranched veins. Hind wings of the same colour as the fore wings. Fore right leg unicolorous, dark brown. Middle and hind legs slightly paler, brownish, with darker tarsi. Femora with an indistinct diffuse dark smudge. Tibia and tarsus of the fore left leg and middle left leg missing. Abdominal terga brownish black, unicolorous, without distinct marking but with light darker longitudinal stripes on the central part of the terga. Abdominal terga lighter than the head and thorax. Terga IX and X brownish black (darker than I-VIII). Tergite IX with two paler rounded spots near the anterior margin. Sterna lighter than the terga with well visible dark brownish nerve ganglia on IV-VII segments.

Styliger uniformly dark brown. Forceps segments 1 and 2 dark brown, segments 3 somewhat light, brown. Posterior margin of the styliger with two rounded lateral projections, medially shallow incurved (Fig. 2). Penis lobes brown with lighter spots on the medial part. Penis lobes slightly divergent, relatively short, not tapered; in ventral view bluntly pointed projection well visible. On mounted slide the apical part of the penis lobes is slightly curved dorsal-laterally. External tooth massive. External teeth of the left penis lobe are deformed and slightly curved dorsally. Internal tooth short, pointed, well visible in ventral view. Membraneous structure covering the middle part of penis with straight posterior margin (Fig. 3). Left titilator large, oblong-shaped, well-apparent with parallel lateral sides. Apical part of left titilator with 4 asymmetric well-visible teeth. One small tooth present on the subapical part (Fig. 4). Right titilator deformed in the oblique position with two well-visible asymmetric teeth apically, and one small subapical tooth (Fig. 3).

R e m a r k s. The original description by F. KLAPÁLEK (1907) includes 6 imago males *R. gorganica*, which were collected by J. DZIĘDZIELEWICZ in the Eastern Carpathians (Gorgany mountain-range) (KLAPÁLEK, 1907). Type series by KLAPÁLEK includes: "Chomiak, potok Barania, 14./VII. 1906 (3 male imagines), 10./VII. (2 male imagines), potok Bogdan 1./VII. 1905 (1 male imago), leg. Jós. DZIĘDZIELEWICZ". The author does not designate type specimens. Two syntypes from the collection of NMP were marked and designated as lectotype and paralectotype by GODUNKO and SOLDÁN (2001). Additionally, part of the Baranii stream within the altitude of 700-1200 m on the S slope of Khomyak Mt (Ukrainian Carpathians, Gorgany mountain-range) was defined as type locality of *R. gorganica* (GODUNKO & SOLDÁN 2001). The examination of mayfly collections in NMP and SMNH NASU hasn't revealed other syntypes. SOWA (1971) pointed out the availability of two type specimens in Prague. It is certain that he hasn't mentioned the type material from the collection of ISEA PAS. Similarly J. MIKULSKI, having reidentified a part of the mayfly collection in Kraków, did not mark in any way the type specimen found and examined by us (MIKULSKI 1935, 1936).

The described paralectotype, until placing in alcohol, was preserved unmarked together with other species of the Heptageniidae family as dried pinned specimen. Paralectotype male imago is in quite good condition and answers the diagnostic characters of *R. gorganica* presented by SOWA (1971) and GODUNKO & SOLDÁN (2001). The described deformation of genitalia of this specimen has also been noted in another paralectotype and is probably the result of long-term preservation as a dried specimen on pins (GODUNKO & SOLDÁN 2001).

According to the ICZN (Article 74.1.3.), lack of a determined holotype for *R. gorganica* takes the status of syntypes from all the specimens of a typical series; these specimens became paralectotypes. According to Recommendation 74F, after determining lectotype, one should label paralectotypes.

III. GENERAL REMARKS

The mayflies collection in the Museum of Natural History, Institute of Systematics and Evolution of Animals, Polish Academy of Sciences in Kraków comprises 425 mayfly specimens. A full list with detailed information for each specimen may be found at www.isez.pan.krakow.pl. This

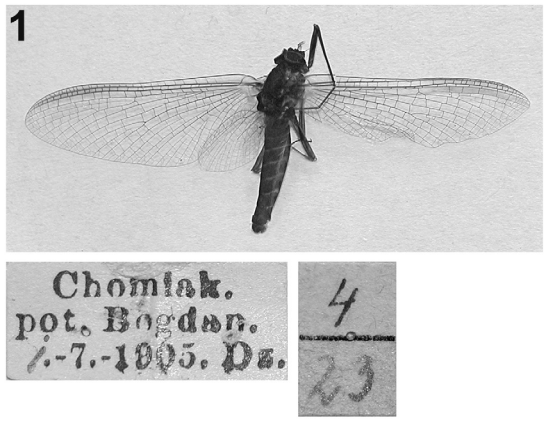
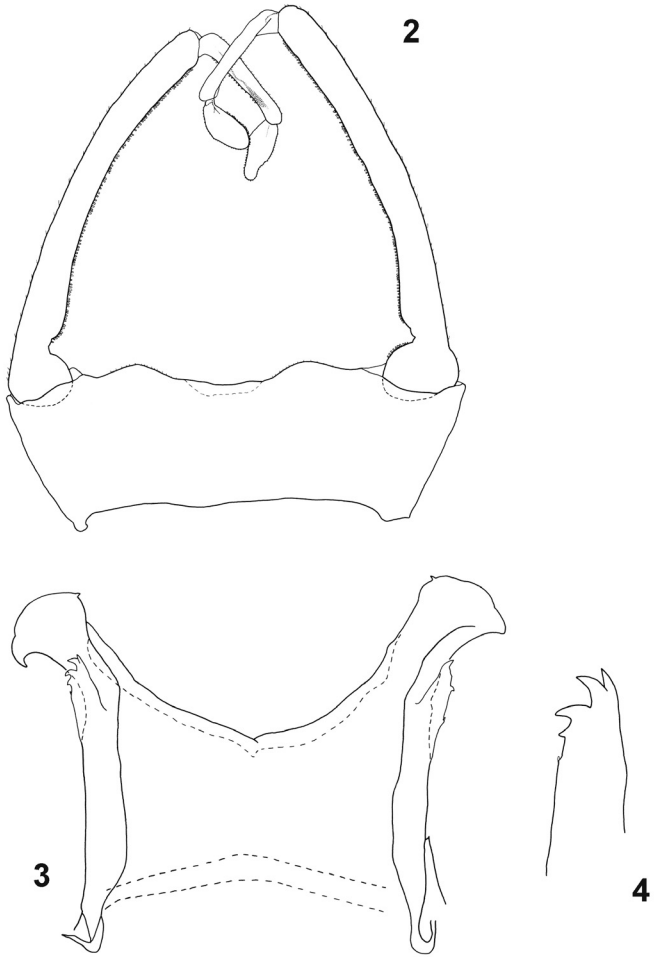


Fig. 1. *Rhithrogena gorganica*, paralectotype, male imago: general view and original labels.



Figs. 2-4. *Rhithrogena gorganica*, paralectotype, male imago: 2-styliger plate and forceps, ventral view; 3-male genitalia, dorsal view; 4-left titilator.

collection is of great scientific importance as it allows one to know the historical distribution of many mayfly species in different regions of Poland and the present western Ukraine. It may also be useful for concluding the range of changes in the fauna that have occurred in central Europe since the mid 19th century. This information is important, particularly with reference to species which are now included in the "Red list of threatened animals in Poland" (KŁONOWSKA-OLEJNIK 2002). "Extinct" species (EX) include *Palingenia longicauda*. Though all specimens are without labels, they were in all probability collected by J. DZIĘDZIELEWICZ in the environs of L'viv, from the Poltva River, as it is in the L'viv part of J. DZIĘDZIELEWICZ's collection that specimens of *P. longicauda* with label: "Lwów (Pohulanka) 17.-V.-1905" (GODUŃKO 1998) are found. The category of "critically endangered" (CR) species is represented in the collection by specimens of *Rhithrogena germanica*, collected by F. SCHILLE in Rytro, probably from the Poprad River, in about 1900 (or later). "Endangered species" (EN) in the collection include *Isonychia ignota* (but without labels) and *Ephoron virgo* collected by J. DZIĘDZIELEWICZ from the Poltva River in L'viv and in the environs of Rakułowa in Western Podolia by S. KAMIENIECKI. Lower categories of threat are represented in the collection by *Ephemera lineata* ("vulnerable"-VU); *Potamanthus luteus* ("near threatened"-VU); *Rhithrogena gorganica* and *Paraleptophlebia cincta* ("least concern"-LC). Particularly valuable (not only from faunistic but also from nomenclatural point of view) is the well preserved specimen of *R. gorganica* labeled paralectotype. Important are also male imagines of *Ecdyonurus subalpinus*, collected in the same period and at the same locality as specimens of the type series (KLAPÁLEK 1907; GODUŃKO 1999; GODUNKO & SOLDÁN 2003). Taxonomic studies on the above-mentioned specimens will allow the revision and identification of new distinguishing features of these species.

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