

# REVIEW AND CONTRIBUTION TO THE ODONATA FAUNA OF SĂLAJ COUNTY, ROMANIA

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**ABSTRACT:** An annotated list of 17 Odonata species from Sălaj county, Romania, collected in 2014 and 2015 are given. Twelve species (*Calopteryx virgo virgo* (Linnaeus, 1758), *Lestes viridis* Vander Linden, 1825, *Coenagrion pulchellum* (Vander Linden, 1825), *Ischnura pumilio* (Charpentier, 1825), *I. elegans pontica* Schmidt, 1938, *Aeshna affinis* Vander Linden, 1823, *A. cyanea* (Müller, 1764), *Cordulegaster heros* Theischinger, 1979, *Somatochlora meridionalis* Nielsen, 1935, *Libellula depressa* Linnaeus, 1758, *Orthetrum coeruleascens coeruleascens* (Fonscolombe, 1837), *Orthetrum brunneum* (Fonscolombe, 1837)) are new records for the area. The occurrence of *Cordulegaster heros* Theischinger, 1979 is the most important result, the rare *L. viridis* and *S. meridionalis* are also worth to mention.

**Keywords:** Dragonflies, faunistic, new records, *Cordulegaster heros*

## INTRODUCTION:

Up to the near past, the Odonata fauna of Romania was one of the most underinvestigated in Europe (De Knijf 2007), with the last paper that summarizes faunistic data dated back to 1979 (Lehrer & Bulimar 1979). However, during the last decade the investigation on Romanian dragonflies sped up, especially due to the activity of Cosmin-Ovidiu Manciu, and the fauna recently received a new summary with distribution maps on all the taxa known from the country (Manciu 2012).

Up to now, the Odonata fauna of Sălaj was practically unknown. There are seven species recorded from the valley of the Someș River (area shared with Satu Mare and Maramureș counties), and one from the Meseș Mts (border area with Cluj county) (Manciu 2012). With the research program "Invertebrate faunistic investigation of the Sălaj county" we had the opportunity to collect at various sites of the county during eleven tours between 2014 and 2015. The Odonata material of these collecting tours is worked up below.

## MATERIAL AND METHODS:

The specimens were collected with singling, butterfly net, water net or with sweeping net. The most of the material is stored in 70% ethanol but some specimens are dry pinned, and the material is deposited in the Collection of Smaller Insect Orders, Department of Zoology, Hungarian Natural History Museum and the collection of the University Vasile Goldiș.

The nomenclature follows Steinmann (1997a, 1997b). Type of distribution and ecological demands refer to Askew (1988, 2004), Belyshev (1973, 1974) and Illies (1978), distribution in Romania mainly refers to Manciu (2012).

### List of localities

The localities are given associated with mountain systems. Their numbers refers to Gubányi (2015)

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where more detailed information can be found on each. For the comparison with old records, we also give the Hungarian names in parentheses after the Romanian names.

Collectors are: AGr – Aranka Grabant; AGu – András Gubányi; AK – Attila Kenéz; AO – András Orosz; AP – Attila Podlussány; CK – Csaba Kutasi; DM – Dávid Murányi; GK – Gergely Katona; GP – Gellért Puskás; LD – László Dányi; MT – Mária Tóth; OM – Ottó Merkl; PGS – Péter Gábor Sulyán; VS – Viktória Szőke; ZB – Zsolt Bálint; ZE – Zoltán Erőss; ZS – Zoltán Soltész; ZV – Zoltán Vas.

Culoarul Someșului (Szamos völgye)

91: between Surduc (Szurduk) and Cliț (Csúrfalva), Someș (Szamos) River, 14.08.2014, N47.29° E23.367°; leg. AGu-GK-AO-GP.

92: Cliț (Csúrfalva), 14.08.2014, N47.29° E23.422°; leg. AGu-GK-AO-GP.

94: Cliț (Csúrfalva), 14.08.2014, N47.292° E23.432°; leg. AGu-GK-AO-GP.

168: Surduc (Szurduk), riverside, 11.05.2015, N47.291° E23.374°; leg. AGr-OM-AP-VS.

Dealurile Crasnei (Krasznamenti-dombság):

33: Aghireș (Egrespatak), drained mire, 20.05.2014, N47.153408° E22.986719°; leg. ZB-AGu-GK-CK.

54: Crasna (Kraszna), side of Crasna, at bridge, 24.05.2014, N47.16219° E22.87641°; leg. ZB-AGu-GK-CK.

55: Giurteleku Șimleului (Somlyógyörtelek), side of Crasna, at bridge, 24.05.2014, N47.29591° E22.78558°; leg. ZB-AGu-GK-CK.

58: Crasna (Kraszna), Vârșoț (Varsolc) Reservoir, 02.06.2014, N47.178° E22.908°; leg. AO-GP-ZS-MT.

59: N of Meseșeni de Jos (Magyarkecel), 02.06.2014, N47.163° E22.956°; leg. AO-GP-ZS-MT.

77: Cehu Silvaniei (Szilágycseh), 11.08.2014, N47.44° E23.16°; leg. AGu-GK-AO-GP. 236: Crasna (Kraszna), near Vârșoț (Varsolc) reservoir, willows

and wet meadow, 15.07.2015, N47.1776° E22.8891°, 238m; leg. ZE-AK-PGS-ZV.

#### Dealurile Sălajului (Szilágymenti-dombság)

90: Popeni (Szilágyaptelek), 14.08.2014, N47.25° E23.189°; leg. AGu-GK-AO-GP.

129: Benesat (Benedekfalva), Someș (Szamos) River, 03.10.2014, N47.41831° E23.31343°; leg. ZB-LD-GK-DM.

#### Depresiunea Almaș-Agrij (Almás-Egregy-medence)

87: between Băbiu (Bábony) and Almașu (Váralmás), shore of Băbiu Stream, 13.08.2014, N46.954° E23.099°; leg. AGu-GK-AO-GP.

89: Baica (Bányika), Băcuța Stream, 13.08.2014, N47.073° E23.269°; leg. AGu-GK-AO-GP.

117: between Băbiu (Bábony) and Almașu (Váralmás), shore of Băbiu Stream, 01.10.2014, N46.95291° E23.09595°; leg. ZB-LD-GK-DM.

176: Tihău (Tihó), Almaș valley, streamside, 11.05.2015, N47.232° E23.316°; leg. AGr-OM-AP-VS.

#### Munții Meseșului (Meszes-hegység):

36: Huta (Csákyújfalu), clearing, alder groove at stream, wet meadow, 21-23.05.2014, N46.99677° E22.93072°; leg. ZB-AGu-GK-CK.

45: Poic, alder groove, wet meadow, 22.05.2014, N46.97925° E22.92752°; leg. ZB-AGu-GK-CK.

99: Treznea (Ördögkút), main valley of the Treznea Stream, 29.09.2014, N47.11005° E23.06443°; leg. ZB-LD-GK-DM.

110: E of Meseșenii de Sus (Románkecel), 01.10.2014, N47.1059° E22.98988°; leg. ZB-LD-GK-DM.

115: Huta (Csákyújfalu), 01.10.2014, N46.99416° E22.92813°; leg. ZB-LD-GK-DM.

228: Treznea (Ördögkút), alongside creek, wet meadow, 14.07.2015, N47.1091° E23.0728°, 366m; leg. ZE-AK-PGS-ZV.

#### Munții Plopiș (Réz-hegység):

104: Iaz (Krasznajáz), peat bog and ruins of the bath, 30.09.2014, N47.111° E22.659°; leg. ZB-LD-GK-DM.

121: Tusa (Tuszatélke), Ponor, 02.10.2014, N47.0193° E22.69965°; leg. ZB-LD-GK-DM.

126: Tusa (Tuszatélke), valley of the Barcău (Berettyó) Stream, 02.10.2014, N47.04743° E22.7508°; leg. ZB-LD-GK-DM.

## RESULTS AND DISCUSSION:

### Calopterygidae

#### *Calopteryx virgo virgo* (Linnaeus, 1758)

New data: Depresiunea Almaș-Agrij: 87: 1♀ collected, further 5-6 adults observed; Munții Meseșului: 99: 3 larvae.

Eurosiberian species, the nominal subspecies occurs in Europe out of the Mediterranean, to southern Siberia. Frequent in streams and rapid rivers with dense submerged vegetation. A common species in Romania.

*Calopteryx splendens splendens* (Harris, 1782) (Fig. 1)

New data: Culoarul Someșului: 91: 1♂, 1♀ collected, further 2-3 ♂♂ observed; 94: 1♂ collected, further 2-3 ♂♂ observed; Dealurile Crasnei: 54: several males and females (observed); 55: several males and females (observed); Dealurile Sălajului: 129: 1 larva; Depresiunea Almaș-Agrij: 87: 1♂; 117: 2 larvae; Munții Meseșului: 228: 2♂, 1♀.

Eurosiberian species, the nominal subspecies occurs in Europe out of the Mediterranean, to SW Siberia. Frequent in slow, submontane streams and rivers with dense submerged vegetation. A common species in Romania.

### Lestidae

#### *Lestes viridis* Vander Linden, 1825

New data: Dealurile Sălajului: 90: 1♂.

Southern and Central European species that occurs also in North Africa. Lives in slow flowing, but also in still waters mostly in submontane regions. A rare species in Romania.

### Platycnemididae

#### *Platycnemis pennipes pennipes* (Pallas, 1771)

New data: Culoarul Someșului: 91: 2♂; 92: 1♀; Dealurile Crasnei: 58: 6♂, 8♀; 59: 1♂, 3♀; 236: 1♂, 3♀; Dealurile Sălajului: 90: 1♂, 1♀; Depresiunea Almaș-Agrij: 87: 1♂, 1♀; 89: 1♂; 117: 3 larvae; Munții Meseșului: 228: 1♂, 1♀.

Eurosiberian species, the nominal subspecies occurs in most of Europe to SW Siberia. Frequent in slow streams and rivers. A common species in Romania.

### Coenagrionidae

#### *Coenagrion pulchellum* (Vander Linden, 1825)

New data: Dealurile Crasnei: 58: 5♂, 4♀.

Eurosiberian species, occurs in Europe and SW Siberia. Frequent in different types of standing waters. A common species in Romania.

#### *Ischnura pumilio* (Charpentier, 1825)

New data: Dealurile Crasnei: 236: 1♂; Dealurile Sălajului: 90: 2♂, 1♀; Depresiunea Almaș-Agrij: 89: 1♂, 1♀.

Western Palaearctic species. Frequent of shallow standing waters, tends to be a pioneer species. A common species in Romania.

#### *Ischnura elegans pontica* Schmidt, 1938

New data: Dealurile Crasnei: 58: 3♂, 8♀; Depresiunea Almaș-Agrij: 87: 1♂, 1♀; 89: 1♀; Munții Meseșului: 228: 1♂, 1♀.

Eurosiberian species, *I. e. pontica* occurs from the Carpathian Basin and the East Balkans to Georgia. Frequent in different types of standing waters. A common species in Romania.

### Aeshnidae

#### *Aeshna affinis* Vander Linden, 1823

New data: Dealurile Crasnei: 77: 8-10 patrolling imagoes (observed); Depresiunea Almaș-Agrij: 117: few patrolling imagoes (observed).

Eurosiberian species but not spread to the North of the Palaearctic. Frequent in different types of standing waters. A common species in Romania.

*Aeshna cyanea* (Müller, 1764)

New data: Dealurile Sălajului: 90: 1 exuviae; Munții Meseșului: 110: few imagoes (observed); Munții Plopiș: 104: 1♂; 121: 3 larvae.

Western Palaearctic species. Frequent in different types of standing waters. A common species in Romania.

Gomphidae

*Gomphus vulgatissimus* (Linnaeus, 1758)

New data: Culoarul Someșului: 168: 1 exuviae.

Western Palaearctic species but rare in the southern part of the realm. Frequent in slow rivers and large streams. A common species in Romania.

*Onychogomphus forcipatus forcipatus* (Linnaeus, 1758)

New data: Depresiunea Almaș-Agrij: 87: 1♂ collected, further 10-12 adults observed; 117: 4 larvae; 176: 2 exuviae; Munții Meseșului: 99: 3 larvae; Munții Plopiș: 126: 2 larvae.

Western Palaearctic species, the nominal subspecies occurs in most of Europe but lacking from the Mediterranean. Inhabits small rivers and large streams. A common species in Romania.

Cordulegastridae

*Cordulegaster heros* Theischinger, 1979 (Fig. 2)

New data: Munții Meseșului: 115: 5 larvae.

Central and Southeastern European species. Lives in shaded mountain and submontane brooks and streams. A rare species in Romania.

Corduliidae

*Somatochlora meridionalis* Nielsen, 1935

New data: Dealurile Sălajului: 90: 1♂.

Southeast and Central European species that also occurs in Anatolia. Inhabits shaded, slow running waters but occasionally also standing waters. A rare species in Romania.

Libellulidae

*Libellula depressa* Linnaeus, 1758

New data: Dealurile Crasnei: 33: mating pairs (observed); Munții Meseșului: 36: 1♂ photographed, several mating pairs observed; 45: several mating pairs (observed).

Western Palaearctic species. Frequent in different types of standing waters. A common species in Romania.

*Orthetrum coerulescens coerulescens* (Fonscolombe, 1837)

New data: Munții Meseșului: 228: 1♂.

West Palaearctic species with a Mediterranean center, missing from the North. Inhabits slow flowing waters but sometimes also can be found in still water. A common species in Romania.

*Orthetrum brunneum* (Fonscolombe, 1837)

New data: Depresiunea Almaș-Agrij: 87: 1♂ collected, further 4-5 adults observed; 117: 3 larvae; Munții Meseșului: 228: 1♂, 2♀.

European species but is missing from the North. Inhabits slow flowing waters but sometimes also can be found in still water. A common species in Romania.

*Sympetrum sanguineum sanguineum* (Müller, 1764)

New data: Culoarul Someșului: 92: 1♂, 1♀; Dealurile Sălajului: 90: 1♂; Munții Plopiș: 104: 1♂.

Eurosiberian species, the nominal subspecies occurs in the Western Palaearctic region. Frequent in standing waters and also in slow running waters. A common species in Romania.



**Figs 1–2.** *Calopteryx splendens splendens* (Harris, 1782) and *Cordulegaster heros* Theischinger, 1979 from Sălaj – 1: *C. splendens splendens* male, Dealurile Crasnei, loc. 55, photo András Gubányi; 2: *Cordulegaster heros* Theischinger, 1979 terminalia of larva, dorsal view, Munții Meseșului, loc. 115.

## CONCLUSIONS:

The Odonata fauna of Sălaj county still should be considered as poorly known. There are only eight species previously reported from the borders of the area, that is one tenth of the species known from Romania (Manci 2012). The present study adds twelve species to the list (*Calopteryx virgo virgo* (Linnaeus, 1758), *Lestes viridis* Vander Linden, 1825, *Coenagrion pulchellum* (Vander Linden, 1825), *Ischnura pumilio* (Charpentier, 1825), *I. elegans pontica* Schmidt, 1938, *Aeshna affinis* Vander Linden, 1823, *A. cyanea* (Müller, 1764), *Cordulegaster heros* Theischinger, 1979, *Somatochlora meridionalis* Nielsen, 1935, *Libellula depressa* Linnaeus, 1758, *Orthetrum coerulescens coerulescens* (Fonscolombe, 1837), *Orthetrum brunneum* (Fonscolombe, 1837)) and rise the number to 19. We did not find two species previously reported from the Someş valley (*Ophiogomphus cecilia* (Fourcroy, 1785) and *Orthetrum albistylum* (Sélys-Longchamps, 1848)) and one from the the Meseş Mts (*Cordulegaster bidentata* Sélys-Longchamps, 1843). Most of the species hitherto found are common and widespread ones, and the number of the species inhabiting the area should be at least double, or even three times more.

On a faunistical and zoogeographical point of view, the occurrence of *Cordulegaster heros* Theischinger, 1979 is the most important result of our investigations. In Romania, hitherto it was known only from western part of the Southern Carpathians, the southern edge of the Apuseni Mts and from Moldavia (Manci 2012). The presence of *Lestes viridis* Vander Linden, 1825 and *Somatochlora meridionalis* Nielsen, 1935 also need special attention. Both of these are rare species in Romania, and having relatively small distribution area. *Lestes viridis* is the northern and western species of a widely hybridizing species pair, while *S. meridionalis* is the southern and eastern species of a closely related and partially sympatric species pair.

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