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Four Plecoptera species new for the Swiss fauna

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Isoperla oxylepis, *Leuctra ameliae*, *L. ravizzai* and *L. zwicki* are new for Switzerland. The repartition of *L. subalpina* in Switzerland is given in detail.

Keywords: Plecoptera, *Isoperla*, *Leuctra*, Switzerland, new records

INTRODUCTION

The revision of AUBERT's Plecoptera collection has permitted the separation of three *Leuctra* species that are new for the Swiss fauna: *L. ameliae*, *L. ravizzai* and *L. zwicki*. These species, recently described from the French or Italian Alps, were previously confused with sister species: *L. ameliae* with *L. rauscheri* or *L. teriolensis*, *L. ravizzai* with *L. helvetica* for the male and *L. sesvenna* for the female, and *L. zwicki* with *L. moselyi*.

Meanwhile, *Isoperla oxylepis* has been discovered for the first time in Switzerland, in the Areuse valley (Jura massif), by Jean-Paul REDING. In addition, we give details of the repartition of the recently described species *L. subalpina* (VINÇON *et al.*, 1995) in Switzerland.

For each species, we give ecological and biogeographical commentaries. In the collecting lists, if possible, we mention the station number (st.), referring to AUBERT (1989).

Isoperla oxylepis (DESPAX, 1936)

Isoperla grammatica ssp. *oxylepis* DESPAX, 1936

Distribution: Medieuropean. It was already reported from the French slope of the Jura (VERNEAUX, 1973), and in different mountainous massifs surrounding the northern side of the Alps.

Distribution in Switzerland: J. P. REDING collection: Jura massif, NEUCHÂTEL: Noiraigue river, Noiraigue village, 721 m, 1 ♂, 24.VI.89. Areuse river, Noiraigue village, 720 m, 1 ♂, 24.VI.89, Champ du Moulin, 630 m, 2 ♂, 1.V.92; 1 ♂, 7.VI.92; 2 ♂, 1 ♀, 1.V.93; 1 ♂, 15.IV.95; 4 ♂♂, 2 ♀♀, 1 ex., 26.IV.97; 5 ♂♂, 11 ♀, 22 ex., 10.V.97; 1 ♂, 5 ♀♀, 24.V.97. Areuse river, Boudry Chanet, 550 m, 1 ♂, 20.V.95.

Ecological notes: Within the longitudinal zonation of a stream, the species has its main occurrence in the epirhithral zone where it replaces *I. grammatica* living in the lower reaches. The two species can also occur together. In the Jura massif, it lives in torrents and brooks (500–1,000 m), and flies in spring (IV–VI). According

to KIS (1974), *I. oxylepis* lives between 300 m and 1,500 m and flies from April to August.

Leuctra ameliae VINÇON & RAVIZZA, 1996

Leuctra sp. 1 (groupe de *kempnyi*), VINÇON, 1996

Leuctra proche de *kempnyi*, AUBERT et al., 1996

Leuctra teriolensis, AUBERT, 1957, pro parte. The "local variety" coming from the Val Mesocco, near the San Bernardino village (AUBERT, op. cit., p. 295) belongs to *L. ameliae*.

Distribution: This species is endemic from the western Alps where it lives in the Pennines, Grees, Cottians and Maritimes Alps (Italy), the Queyras massif (France), the Ticino and the Grisons districts (Switzerland). Its Swiss distribution is limited to the southern slope of the Alps (tributaries of the Po river).

Distribution in Switzerland: TICINO: Maggia, Fusio, 1,290 m, 1 ♀, 31.VII.49. Vira 22, 890 m, 2 ♂♂, 8 ♀♀, 18.VII.88. Vira 24, 1,281 m, 1 ♀, 18.VII.88. Vira 26, 1,200 m, 1 ♀ 24.VII.86. Giona 26, 1 ♀, 24.VII.86. GRISONS: Val Mesocco: Mesolcina 4, San Bernardino village, 1,610 m, 29 ♂♂, 18 ♀♀, with 1 ♂, 1 ♀ in copula, 29.VII.49; 1 ♂, 1 ♀, 20.VII.88. Mesolcina 6, vieille route, 28 ♂♂, 11 ♀♀, 20.VII.88. Mesolcina 7, 60 ♂♂, 60 ♀♀, 20.VII.88. Mesolcina 8, 13 ♀♀, 20.VII.88. Col San Bernardino, 2,000 m, 8 ♂♂, 12 ♀♀, 29.VII.49.

Ecological notes: This crenophilous species lives in biotopes of high altitude: springs and rivulets (900–2,000 m a.s.l.). It flies at the end of spring and in early summer (VI–VII). Exceptionally, in big springs such as the Cenischia spring below the Mont-Cenis dam (France, Savoie, 1,800 m), the flight period extends until autumn (VINÇON, 1996, p. 68, sub. nom. *Leuctra* sp. 1).

Affinities: In the western Alps, this species is close to *L. teriolensis* and *L. rauscheri*, and has often been confused with them, but it presents more affinities with two Pyrenean species: *L. kempnyi* MOSELY, 1932, and *L. garumna* VINÇON & RAVIZZA, 1996.

Leuctra ravizzai RAVIZZA DEMATTEIS & VINÇON, 1994

Distribution: This species, endemic from the western Alps, lives in the Pennines, Cottians and Grees Alps (Italy), in the Vanoise and the Queyras massifs (France), and in the Valaisian Alps (Switzerland).

Distribution in Switzerland: VALAIS ALPS: Agenetal 4, 2,180 m, 1 ♂, 21.VII.86 (sub. nom. *L. helvetica*: «1 ♂, un peu aberrant», written by AUBERT on the label).

Ecological notes: *L. ravizzai* lives in brooks and torrents of high altitude, surrounded by alpine grassland: (1,800–2,300 m). With *L. sesvenna*, *L. festai* and *L. queyrassiana*, it is one of the most strictly orophilic species in the Alps (RAVIZZA DEMATTEIS & RAVIZZA, 1994). The flight period begins as soon as the snow melts and lasts from May to July. The adults are often caught on the snow.

Affinities: In the western Alps, the male could be confused with *L. helvetica* and the female with *L. sesvenna*.

Leuctra subalpina VINÇON, RAVIZZA & AUBERT, 1995

Leuctra alpina AUBERT 1946, 1959, 1985, 1989, pro parte.

Distribution: This apennino-prealpine species has a wide distribution area, extending from Calabria (Italy), through the whole of the Apennine Cordillera and the French Prealps, up to the Jura massif and the Swiss Prealps.

Distribution in Switzerland: J. AUBERT collection: VAUD JURA: Biblanc, La Burtinière, 1,040 m, (st. 1), 1 ♂, 27.V.78; 1 ♂, 3 ♀♀, 10.VI.78. Biblanc, Le Brassus, 1,050 m, (st. 2), 13 ♂♂, 9 ♀♀, 26.V.79;

4 ♂♂, 1 ♀, 8.VI.79; 5 ♀♀, 21.VI.79. Lionne, L'Abbaye, 1,010 m, (st. 3), 6 ♂♂, 3 ♀♀, 11.V.50; 1 ♂, 2 ♀♀, 26.VI.79; 3 ♂♂, 1 ♀, 15.V.89. Agiez, Orbe trib., 1 ♀, 27.V.44. Epoisats b., 943, (st. 4), 1 ♂, 1 ♀, 26.V.79; 3 ♂♂, 3 ♀♀, 15.V.89. Orbe, Vallorbe, 760 m, (st. 5) 13 ♂♂, 4 ♀♀, 11.V.50; 34 ♂♂, 19 ♀♀, 10.VI.57; 13 ♂♂, 12 ♀♀, 3.V.78; 15 ♂♂, 18 ♀♀, 31.V.78; 10 ♂♂, 15 ♀♀, 16.VI.78; 9 ♂♂, 2 ♀♀, 8.V.79; 3 ♂♂, 5 ♀♀, 14.V.79; 38 ♂♂, 17 ♀♀, 1.VI.79; 27 ♂♂, 46 ♀♀, 21.VI.79; 62 ♂♂, 31 ♀♀, 15.V.89. Orbe, Les Clées, 581 m, (st. 6), 2 ♀♀, 22.VI.78. Nozon, Vaulion, 925 m, 1 ♂, 26.V.79; 1 ♂, 15.V.89. Colline, Givrins, 504 m, 1 ♀, 12.V.79; 1 ♀, 12.VI.79. Toleure, Bière, 1 ♂, 4.V.53. Venoge, La Coudre, 1 ♂, 11.V.78. VAUD PLATEAU: Belmont, Paudèze, 580 m, (st. 49), 2 ♂♂, 28.IV.43. Palézieux, Broye, 660 m, (st. 72), 1 ♂, 5.V.43. VAUD and FRIBOURG PREALPS: Veveysse de Fégire: 1 ♀, 29.VI.57; Veveysse, Fontaine David, 1,137 m, 2 ♂♂, 31.V.78; 1 ♂♂, 3 ♀♀, 29.V.79; 1 ♀, 5.VI.79. Veveysse, Petit Caudon, 1,240 m, 2 ♂♂, 1 ♀, 5.VI.79; 4 ♀♀, 21.VI.79. Cergne de Saumon, 826 m, (st. 87), 1 ♀, 3.VI.79; Veveysse, Pléiades Ouest, 1 ♀, 25.V.42. Veveysse, Fruence trib., 833 m, 2 ♀♀ 25.V.42. Veveysse de Châtel, Châtel-St-Denis, 840 m, 1 ♂, 1 ♀, 26.V.78. Veveysse de Châtel, Les Paccots, (st. 95), 1,161 m, 1 ♂, 1 ♀, 30.V.78; 5 ♂, 3 ♀, 1.VI.78. Baye de Clarens, Alliaz, 1,044 m, (st. 91), 1 ♀, 20.VI.43; 1 ♂, 21.VI.79. L'Alliaz, 1er virage, 1 ♂, 29.V.79. Le Châ, La Raisse, 1,160 m, (st. 103), 1 ♂, 1 ♀, 1.VI.79. Mortive, Châble des Pueys, 1,289 m, (st. 108–111), 14 ♂♂, 11 ♀♀, 3.VI.79. Gryonne, (H), 1,500 m, (st. 119), 1 ♀, 20.VI.80; 3 ♂♂, 5 ♀♀, 20.VI.81. Gryonne (I), 1,480 m, 2 ♂♂, 16.VII.81. Gryonne, Arveves, Coufin, 1,211 m, 1 ♂, 2.VI.77. Gryonne (A), 1,440 m, 1 ♀, 22.VIII.88. Chésières, (résidence 1 et 2), 1,208 m, (st. 117–118), 3 ♂♂, 1 ♀♀, 20.VI.80. Tourneresse, L'Étivaz, 1,179 m, (st. 133), 3 ♂♂, 6 ♀♀, 17.V.80; 2 ♂♂, 1 ♀, 4.VI.80; 1 ♂, 11.VI.83. Hongrin, Vuichoudaz, 1,100 m, 1 ♀, 5.VI.43. Jaman, Les Cases, 1,040 m, (st. 137), 1 ♀, 5.VI.43; 1 ♂, 11.VI.83. LUCERNE PREALPS: Waldemme sur Sörenberg, 1,170 m, 1 ♀, 25.VI.81. J. P. REDING collection: VAUD JURA: Saut de l'Eau, 1200 m, 1 ♂, 31.V.93. Bied, Poëta Raisse, 1131 m, 18.VII.97. Dénériaz, 1130 m, 1 ♀, 19.IV.93; 8 ♂♂, 3 ♀♀, 27.IV.93; 1 ♂, 1 ♀, 9.V.93; 2 ♀♀, 26.VI.93; 5 ♂♂, 3 ♀♀, 30.IV.94; 1 ♀, 26.V.95; 2 ♀♀, 31.VII.96; 15 ♂♂, 11 ♀♀, 14.V.97; 6 ♂♂, 14 ♀♀, 15.VI.97; 12 ♀♀, 20.VII.97. Cambude brook, 950 m, 3 ♂♂, 3 ♀♀, 3.V.97. Areuse spring, 790 m, 1 ♂, 13.V.95; 1 ♀, 11.VI.95; 1 ♂, 4.VI.97; 1 ♂, 1 ♀, 18.VII.97. Breuil bridge, 757 m, 1 ♂, 19.VI.96. Môtiers, Sourde river, 750 m, 1 ♂, 21.V.95; 1 ♂, 4.VIII.96; 1 ♀, 6.VIII.97. Noiraigue spring, 740 m, 1 ♀, 24.V.97. Areuse river, Champ du moulin, 630 m, 1 ♀, 17.IV.95.

Ecological notes: *L. subalpina* is very common in the prealpine calcareous massifs where it lives in brooks and torrents, between 500 and 1,800 m. It flies in spring (IV–VII).

Affinities: This species is very close to *L. alpina* and has always been confused with it in Switzerland. The two species can be found in the same localities but *L. alpina* is more common in the Alps and *L. subalpina* in the Prealps (VINÇON *et al.*, 1995).

Leuctra zwicki RAVIZZA & VINÇON, 1991

Leuctra moselyi AUBERT, 1989, pro parte.

Distribution: This species is widespread in the western range of prealpine massifs: Maritime-Alps (Italy), Mercantour, Dévoluy, Vercors (France), and the southern slope of the Jura massif (Switzerland).

Distribution in Switzerland: VAUD JURA: Promenthouse, Bois de Chêne, 516 m, (st. 22), 2 ♀♀, 18.X.79; 2 ♀♀, 25.10.79. Toleure, Aiguette, Saubraz, 720 m (st. 29), 6 ♂♂, 4 ♀♀, 24.VIII.43.

Ecological notes: *L. zwicki* lives in rivulets and brooks, running on a calcareous substratum, in mountainous regions (500–1,700 m). It flies in autumn (IX–XI).

Affinities: This species is close to *L. moselyi* and the Italian species *L. pasquinii* (CONSIGLIO, 1958).

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