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Revision of Errhomeninae and Aphrodinae (Hemiptera, Cicadomorpha) in Italy with remarks on their variability and distribution in adjacent regions and description of three new taxa

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Abstract

A revision of the subfamilies Errhomeninae and Aphrodinae in Italy is presented. Two new species, *Anoscopus gorloppus* and *Anoscopus carlebippus*, and one new subspecies *Anoscopus albifrons mappus* are described. *Anoscopus dubius* Gębicki & Bednarzyk is established as subspecies of *Anoscopus flavostriatus* (Donovan) (stat. nov.), *Aphrodes siracusae* (Matsumura) is transferred to the genus *Anoscopus* (comb. nov.). *Anoscopus samuricus* Tshmir is recorded in Italy for the first time. Information concerning ecology and regional distribution is given for all taxa present in Italy. Genital morphology and variability of colouration are figured for many taxa. A morphometric analysis based on measurements of aedeagus and body is conducted for the taxa of the *Aphrodes bicincta* group. Keys for the Italian species of *Aphrodes* and *Anoscopus* are given. Distribution and specific characters of *Anoscopus assimilis* (Signoret) and *Anoscopus alpinus* (Wagner) are presented. Differences between Italian populations and conspecific ones in other European regions, and reasons for the particularly high variability in the Alpine areas of Italy are discussed. A list of 19 species and two subspecies, presently recorded from Italy is given.

Key words: Auchenorrhyncha, Cicadellidae, morphometric analysis, distribution, ecology, taxonomy

3. The extreme variability of colouration in the genus *Anoscopus* is evidenced in Figs. 12, 14E–G and 22. The pattern of white markings in *Planaphrodes* varies similarly (Fig. 26). There is not only a surprising variability within one taxon, and sometimes within one population, but on the other hand also the phenomenon of a completely identical colouration of different taxa (particularly evident in *A. histrionicus* (Fig. 23A) and *A. samuricus* (Figs. 23B–C)).

At present, the species identification in Aphrodinae should be based exclusively on the aedeagus morphology. It is clear, however, that a detailed study of the genetic basis that determines and regulates the complex colouration patterns in the genus *Anoscopus* offers an interesting field of research.

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APPENDIX. Material examined.

Anoscopus albifrons (L.)

ITALY: TRENINO-ALTO ADIGE: [Bolzano], Italien, S-Tirol, Schlern, Bad Ratzes; 1240 m; May–October/2006; M. Carl leg.; M. Carl det. 2007, as *Anoscopus limicola* (Edw.); INV/293; 1 male, 4 females. (MSNAA).

BULGARIA: Eastern Rhodopes Mountains, Chernichevo vill.; N41°21'12.60" E25°45'10.15"; 560 m; 05.07.2012; Bückle & Guglielmino leg.; 1 male.—Eastern Rhodopes Mountains, Bjala reka river, Juruci vill.; N41°22'45.88" E25°51'1.58"; 455 m; 05.07.2012; Bückle & Guglielmino leg.; 1 male.—Eastern Rhodopes Mountains, Ivajlovgrad town; N41°30'1.00" E26°6'46.54"; 205 m; 05.07.2012; light traps fig gardens; Bückle & Guglielmino leg.; 1 male. (CB).—FRANCE: Cette (Hes.); IX/27; 1 male, *Aphrodes albifrons*; MNHN(EH) 6968.—Banyuls (P.O.); 13–14/VI/1927; 1 male, *Aphrodes albifrons* var. *dimidiata*; MNHN(EH) 7124.—Fontfroide; 24–25/5/94; 1 male, *Aphrodes albifrons* var. *dimidiata*; MNHN(EH) 7125.—Saint-Béat; 25.VII.39; 1 male, *albifrons* v. *dispar*; MNHN (EH) 15920.—Launac (H.G.); 16.VI.24; 1 male, *albifrons* v. *dispar*; MNHN (EH) 15927.—Pyr. or., 8.VIII.05; 1 male, *Acocephalus albifrons*; MNHN (EH) 15928. (MNHN/CR).—GERMANY: Bayern (OAL), Hoher Trauchberg (H), Am Gfäll, Quelle im Einzugsgebiet Hofgraben; 4416695E 5279223N; 1159 m; 04.08.2008; Bückle & Gugl. leg.; *Anoscopus albifrons* (L.), Bückle det.; 1 male, 2 females.—Bayern (OAL), Hoher Trauchberg, Röthenbach oberh. Mündg. Sitzgraben; 4415621E 5276800N; 1100 m; 7.8.2008; leg. Bückle & Guglielmino; 2 males.—Bayern (BGL), Ramsau, Pfaffental; 950 m; 19.07.2003; leg. Bückle & Guglielmino; 4 males.—Baden-Württemberg, Öhringen, Pfedelbach; 5.7.2009; leg. Bückle; 2 males.—Baden-Württemberg (Tübingen), Talheim, Berggrutsch; 13.08.2011; leg. Bückle & Guglielmino; 1 male.—Hessen, Fulda, Schlosspark; 20.07.2009; 1 male. (CB).—Bayern, Fürth, Bay.; 25.VIII.32, K. Schmidt; 1 male, *albifrons* v. *dispar*; MNHN (EH) 15913. (MNHN/CR).—POLAND: GPS 52.0780630130 15.7874079980; Poland, ad. Smolno Wielkie, Barber Trap; 27.7.–24.8.2012; leg. T. Klejdesz; 1 male. (CB).—PORTUGAL: Madère, Pic d'Ariero; 1850 m; VIII.36; A. Balachowsky leg.; 1 male, 1 female, *albifrons* v. *dispar*; MNHN (EH) 15915. (MNHN/CR).—SPAIN: Barcelona; VIII/1941; 1 male, *Aphrodes albifrons* var. *arcuata*; MNHN(EH) 6969. (MNHN/CR).

Anoscopus albifrons mappus ssp. nov.

ITALY: VALLE D'AOSTA: [Aosta], Champoluc; 8/1933; G. Giannini; det. Dlabola, *Aphrodes albifrons* L.; 1 male. (MSNG/CM).—PIEMONTE: [Alessandria], Stazzano; 4.6.91; teste P.M. Ferrari, *Acocephalus trifasciatus* Fourcroy; 1 male.—[Alessandria], Stazzano; 30.7.80; teste P.M. Ferrari, *Acocephalus albifrons* Linnaeus; 1 male.—[Alessandria], Stazzano; 29.7.91; *Acocephalus serratulae* Fabricius, teste P.M. Ferrari; 1 male. (MSNG/CF).—LOMBARDIA: [Bergamo ?], S. Pellegrino; 16/7/1971; A. Servadei leg.; 1 male.—[Sondrio], Sondalo; 31/7/1970; A. Servadei leg.; 1 male. (MSNV/CS).—FRIULI-VENEZIA GIULIA: Udine, Prealpi Giulie occidentali, Gran Monte, southern slope (Monteaperta, Taipana), UM7026; ca. 700m; 10.IX.–10.X.1994; secondary meadow, 4 traps; G. Governatori leg.; 1 male. (MSFN).—LIGURIA: [Genova ?], S. Biagio; 6/1925; Dott. T. Casiccia; det. Lallemand, *Aphrodes bifasciatus* L.; 1 male.—[Genova], dint. di Genova; .6/1929; C. Mancini; det. Dlabola, *Aphrodes albifrons* L.; 1 male.—[Genova], [Santuario Nostra Signora della] Vittoria, Liguria; 05/06/1925; G. Mantero; det. Lallemand, *Aphrodes albifrons* L. var. *fuliginosus* Sign.; 1 male. (MSNG/CM).—[Genova], Genova; 10.7.91; Ferr.; teste P.M. Ferrari, *Acocephalus albifrons* Linnaeus; 1 male.—[Imperia], Diano [Marina]; .27.5.72; teste P.M. Ferrari, *Acocephalus albifrons* Linnaeus; 3 males.—[Genova], Genua [= Genova]; 14.6.73; teste P.M. Ferrari, *Acocephalus albifrons* Linnaeus; 1 male.—[Genova], Genova; 1.5.81; teste P.M. Ferrari, *Acocephalus albifrons* Linnaeus; 1 male.—[Genova], Genova; 3.6.75; teste P.M. Ferrari, *Acocephalus albifrons* var. *fuliginosus* Rey; 1 male. (MSNG/CF).—[Genova], Borzoli; 15.VI.1884; G. Doria; det. Dlabola, *Aphrodes albifrons* L.; 1 male.—[Genova], Amborzasco; VII.1912; G. Mantero; det. Dlabola, *Aphrodes albifrons* L.; 1 male.—[Genova], Genova; IV.1912; G. Mantero; Dlabola, *Aphrodes albifrons* L.; 1 male.—[Genova], Genova; 30.6.1885; G. Caneva; det. Dlabola, *Aphrodes albifrons* L.; 1 male.—[Genova], Genova; 4.7.70; Gestro; det. Dlabola, *Aphrodes albifrons* L.; 2 males.—[Genova], Genova, S.ta Tecla; 2.VII.1905; G. Mantero; det. Dlabola, *Aphrodes albifrons* L.; 1 male.—[Genova], Borzoli; 15.VI.1884; G. Doria; *Acocephalus albifrons* var. *fuliginosus* Rey; 1 male. (MSNG).—EMILIA ROMAGNA: [Bologna], Portonovo; 8/8/1942; A. Servadei leg.; 1 male. (MSNV/CS).—[Ferrara], Canale Val Trebbia; VIII.1911; E. Borgioli; det. Dlabola, *Aphrodes albifrons* L.; 1 male. (MSNG).—TOSCANA: [Firenze], Tavernuzze; 1/6/1946; A. Servadei leg.; *Acocephalus albifrons* var. *arcuata* Kbm.; Ribaut det.; 1 male.—[?], Toscana, 11/6/1944; A. Servadei leg.; *Acocephalus albifrons* L.; Ribaut det.; 1 male. (MSNV/