

The non-tetrigid Saltatoria (Insecta) of the regional park Viroin-Hermeton

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Abstract

An updated faunistic account of the non-tetrigid Saltatoria of the regional park Viroin-Hermeton is presented. Hitherto, 31 species have been recorded in this region. A description of the park is also provided. **Key-words:** Insecta; Saltatoria; faunistics; Viroin-Hermeton; Belgium.

Résumé

Un bref aperçu de la faune non-tetrigide du Parc naturel Viroin-Hermeton est présenté. Jusqu'à présent, 31 espèces ont été observées dans la région. Une description du parc est également présentée. **Mots-clés:** Insecta; Saltatoria; faunistique; Viroin-Hermeton; Belgique.

Introduction

The Saltatoria fauna of the regional park Viroin-Hermeton, was until recently very poorly known. Up to 1983, only five species were published for this region (SELYS LONGCHAMPS, 1868, 1888; GOETGHEBUER, 1953). In that year, however, DUYM & KRUSEMAN (1983) added six further species to this list, so that in total 11 species were known to occur in the park. Yet, subsequent investigations of HOFMANS & BARENBRUG (1984, 1985, 1986, 1987, 1988) have clearly shown that this figure is still an underestimation of the actual number of Saltatoria species living in the park. Therefore, we present here an up to date checklist of the non tetrigid crickets and grasshoppers of the regional park Viroin-Hermeton and adjacent regions. It is based on the references mentioned above and on new explorations of the authors during the years 1984-1989. In that period the non-tetrigid Saltatoria of nearly all 1x1 Km U.T.M. squares in the park were inventorised. In addition, a series of U.T.M. squares outside the park were explored too. Especially the areas around Givet, Frasnes-les-Couvin (respectively the western and eastern spurs of the Calestienne), the southern slope of the anticline of Philippeville between Merlemont and Romedenne (Condroz) and a part of the Fagne near Roly. The remaining parts of the Fagne and the Condroz, as well as the larger part of the Ardennes outside the park will be investigated in the nearby future.

The Saltatoria were inventorised as described elsewhere in this volume (HOFMANS et al., in press). At least one specimen of each species, captured in the park, is kept as reference in the collection of the Centre Marie-Victorin.

In addition to a checklist of the non-tetrigid Saltatoria of the park, the present contribution also gives a description of the region, as well as a global faunistic account. Detailed information on the distribution and ecology of the species will be provided in a forthcoming paper.

Description of the investigated area

The regional park Viroin-Hermeton is situated in south Belgium, near the French border (fig. 1), approximately between 49°59' - 50°14' N and 4°30' - 4°48' E. It has a surface of about 20000 ha. Yet, the area we investigated (49°59' - 50°16' N and 4°29' - 4°51' E) is somewhat larger, as we also took regions adjacent to the park into consideration (fig. 1).

Within the limits of the park, three main geomorphological regions are represented, viz. the Ardennes, the Condroz and the Fagne (FOURNEAU, 1980a, b; MICHOT, 1980; MAERNOUDT, 1987). Phytogeographically and phytosociologically the latter region may be divided further into the Fagne schisteuse and the Calestienne (fig. 1) (DUVIGNEAUD, 1971, 1980). The Calestienne mainly consists of limestone, marly shales and shales of Middle and Upper Devonian origin (Couvinian, Givetian and Frasnian). The Fagne schisteuse, however, is composed of two geological formations: a larger part consisting of shales (Upper Devonian: Famennian) and the small anticline of Roly, which is composed of limestone, dolomite and shale (Upper Devonian: Frasnian). Two geological formations can also be distinguished in the Condroz, viz. a northern formation consisting of shales, psammits and sandstone (Upper Devonian: Famennian) and a southern one, the anticline of Philippeville, which is composed of limestone and to a lesser degree of shales (Middle and Upper Devonian: Givetian and Frasnian). Finally, shales, sandstone, quartzites and phyllitic shales are the main

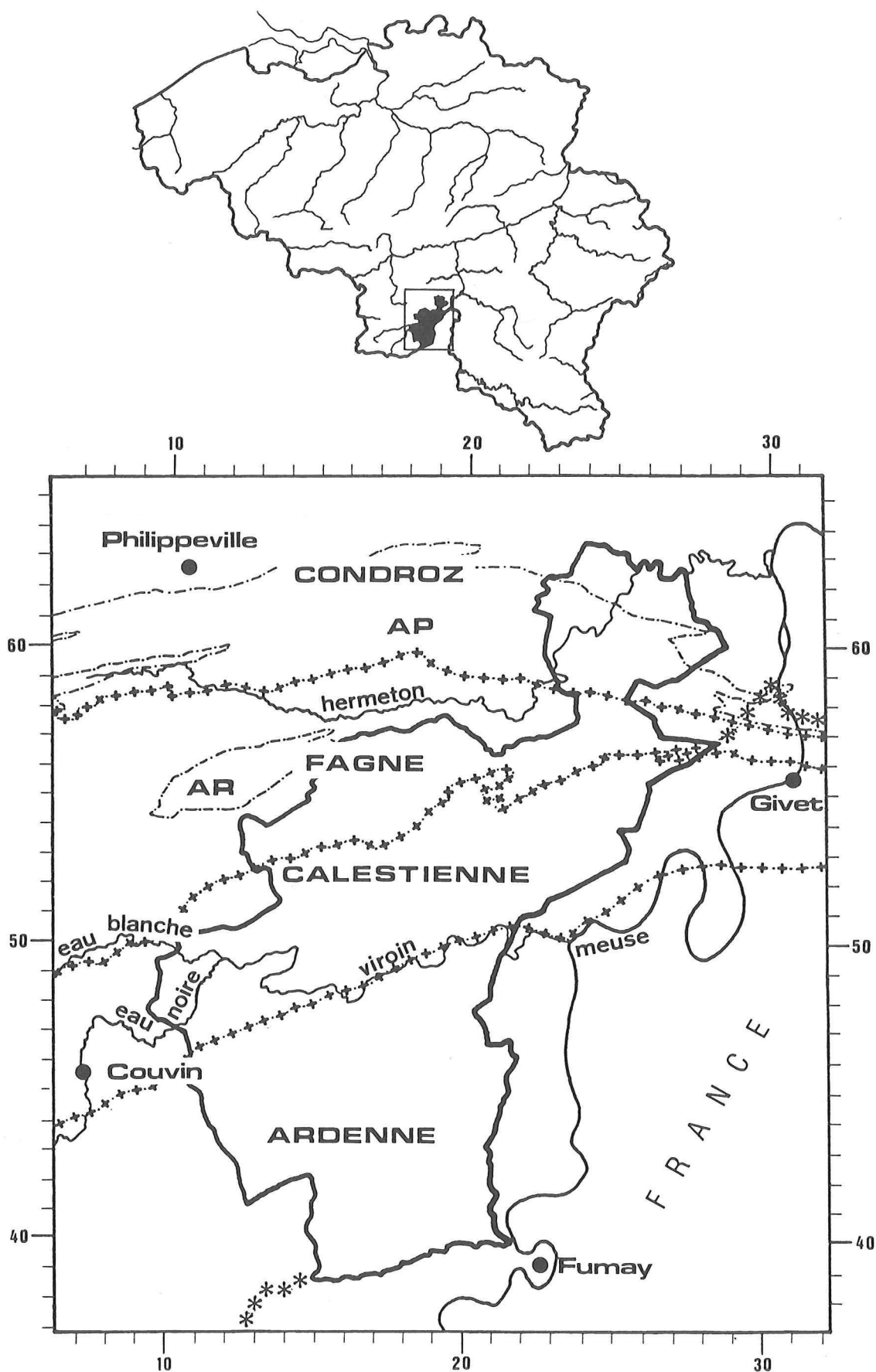


Fig. 1. Location and map of the park Viroin-Hermeton and adjacent regions. Symbols used : — — — : boundaries of the anticlines (AR: anticline of Roly; AP: anticline of Philippeville); + + + + : boundaries of the four mean regions; *****: political border. The map is divided in 1x1 km U.T.M. squares (indicated by the coordinates).

constituents of the Ardennes (in the north Upper Devonian (Emsian, Sigenian and Gedinnian) and in the south Cambrian).

The relief in the park is rather variable. The Condroz, for example, is strongly intersected by many small rivers of which the Hermeton is the most important one. The mean height of the terraces in this area varies between 200-300 m, whereas the Hermeton descends from 160 m to about 100 m. Its mean altitude varies between 160-220 m, although near the anticline of Roly heights of 265 m may be reached. Similarly, few rivers cross the Calestienne. The mean altitude of this region is about 240 m, but in a few places it may reach 280 m. The most important river here, the Viroin, descends from about 155 m to 110 m. The landscape in the valley of this river, is characterised by a series of limestone hills, the so-called "Tiennes", which' altitudes vary between 180-260 m. The Ardennes, at last, constitute the highest region in the park, with a mean altitude ranging from 300 m to 380 m. In France, however, they may even reach 500 m. Many rivers cross this region (e.g. Ri de Deluve, Ri d'Alise, etc.).

According to FOURNEAU (1980c) there are minor climatological differences between the regions in the park. These differences might be attributed to the different altitudes of the areas involved. The mean annual temperature in the Fagne (the lowest region in the park), for example, is 9-10°C, whereas in the Ardennes (the highest region) the mean annual temperature is slightly lower, viz. 8-9°C. In addition, there are on the average 90 days frost per annum in the north of the park, while in the south (Ardennes) this number increases to about 100. Moreover, the first frost in the Ardennes appears on the average 10 days earlier than in the north, whereas the last frost in the Ardennes occurs on the average 10 days later than in the north.

With respect to the precipitation, the regions in the park reveal larger differences. In the north, there is a mean annual precipitation of 800-900 mm. Yet, in the south this amount increases from 900 mm in the northern part of the Ardennes, to 1000-1100 mm in the southern Ardennes (Oignies) and even 1340 mm near Rocroi (AVRIL, 1984). As a consequence, there are on the average 170 days rain per annum in the Fagne, while in the Ardennes this number varies between 180-200. A similar tendency is seen for the mean numbers of days snow per annum: 20-25 in the Fagne vs. 25-30 in the rest of the park.

The terrace of the Condroz mainly consists of agricultural land and meadows (AVRIL, 1987). The latter are being used for intensive cattle breeding. In and around the valleys grow deciduous forests. The steep southern slope of the anticline of Philippeville is characterised by scattered limestone rocks. Here, one can find a few mesophilic chalk grasslands and even a thermophilic *Buxus* vegetation (Romedenne). Remains of chalk grasslands also occur in some of the smaller valleys. On top of the anticline, there are many quarries, while in

the north of the Condroz some schist grasslands have survived.

The lower parts of the Fagne schisteuse, are used as meadows and hayfields, which originally were rather wet. Yet, modern drainage methods have changed this situation considerably. Nowadays, wet hayfields only occur in Doische and Fagnolle, while in Roly there are even some small lakes with a marsh vegetation along their shores. The higher parts of the Fagne schisteuse, are covered with deciduous and conifer woods, of which large parts are each year cut off and reforested. There are also some rare moors. On the anticline of Roly, which is largely covered by woods, survives a mesophilic chalk grassland as well as a strongly overshadowed thermophilic *Buxus* vegetation. In Villers-en-Fagne, there is a small, dry schist grassland. The Fagne is also crossed by an abandoned railway.

On the terrace of the Calestienne prevail agricultural land and meadows (AVRIL, 1984, 1986). Both are intensively cultivated (mais, corn and cattle breeding). Small forests are scattered over the region and in the neighbourhood of the villages there usually are some old quarries where small mesophilic chalk grasslands survive. Larger chalk grasslands are found on the steep slopes of the Viroin valley and its many "Tiennes". Here, there are also several rock formations, which may be covered by xerophilic vegetations such as *Xerobrometa* and thermophilic *Buxus* vegetations. Large areas in the Viroin valley are aforested. Yet, there are also many large, old quarries. A similar landscape prevails in the French part of the Calestienne (Botte de Givet), where the height differences are more conspicuous and quarries and chalk grasslands more abundant. Humid habitats are rare in the Calestienne. There is a railway in the valleys of the Viroin and the Maas.

The Ardennes are for the major part covered with, mainly deciduous, forests (AVRIL, 1984, 1986). Only near Regniéssart, Oignies and Le Mesnil, there are some meadows and hayfields. Open and dry habitats are very rare in this region, although there are some scattered, well-exposed, schist, sandstone and shale quarries. Such sites are more common in the French parts of the Ardennes, where also well-exposed rock formations occur, while the highest parts are covered by a peat-moor vegetation. This vegetational type exists in Belgian part only in a few small relict areas. The Ardennes are intensively used for forestry and as a consequence, large areas are regularly deforested. Such sites are then characterised by a temporary, open moor vegetation.

Faunistic account

Currently 31 non-tetrigid Saltatoria species have been recorded in the park Viroin-Hermeton and adjacent regions (table 1). During this study, 29 of these species could be confirmed. For the two remaining species, viz.

Gryllus campestris and *Oedipoda germanica*, we have to rely on the literature and unpublished data (ALEXIS & DEVRIESE, in prep.). Indeed, the former species has been reported from the Condroz by SELYS LONGCHAMPS (1888), while there are four specimens from the area investigated in the collections of the K.B.I.N.: Agimont (1882; FR25), Hastière (1870; FR36), Hermeton (1882; FR26) and Maurenne (1876; FR26) (see DEVRIESE, 1988). The collection of the Centre Marie-Victorin contains one further specimen captured on 10-VII-1972 in Neuville (FR05). Of *Oedipoda germanica*, on the contrary, only one specimen from the park is known to the authors. It was collected in Nismes in August 1984 by G. ALEXIS (ALEXIS & DEVRIESE, in prep.) and has been deposited in the collections of the K.B.I.N.

Two species which have been mentioned in previous papers have not been included in the present list (table 1). Indeed, *Chorthippus dorsatus* was reported by HOFMANS & BARENBRUG (1984), but the specimens involved actually belong to the long-winged form of *Chorthippus parallelus*. *Chorthippus mollis*, on the other hand, is said to have been observed in Treignes (HOFMANS & BARENBRUG, 1987), but in the absence of reference material to support this record, we prefer, for the time being, not to include the species in our list.

Since the publication of our previous checklist (HOFMANS & BARENBRUG, 1984), six Saltatoria species have been added to the fauna of the park, viz. *Chorthippus vagans*, *Barbitistes serricauda* and *Phaneroptera falcata* (HOFMANS & BARENBRUG, 1985, 1986, 1988), as well as *Conocephalus discolor*, *Mecostethus grossus* and *Stenobothrus stigmaticus* (HOFMANS & BARENBRUG, 1987). In the present contribution, we add three further species to the fauna of the park: *Chorthippus montanus*, *Conocephalus dorsalis* and *Tettigonia cantans*. Yet, these species are hitherto only known from the regions adjacent to the park. Thus, *Chorthippus montanus* was collected in Hauts Buttés (FR 23, 09-VIII-1985, two males) and Rocroi (FR 03, 24-VIII-1987, one male + two females), two localities in the southernmost tip of the area investigated. *Conocephalus dorsalis* was found in Moulin Manteau (FR 03, 25-VII-1989, one male) and Rocroi (FR 03, 25-VII-1989, two males + one subadult), while *Tettigonia cantans* was captured in Montigny-sur-Meuse (FR 24, 30-VII-1989, one male + one female) and Hargnies (FR 24, 05-VIII-1989, one male). Except for Moulin Manteau, all these localities are situated in France.

Thus, from table 1 it follows that 27 non-tetrigid Saltatoria species are known to occur within the boundaries of the park, whereas 31 species are positively recorded in the whole area investigated here. In a forthcoming paper we will present detailed distribution maps of each species, in addition to a faunistic and ecological comparison between the different regions, subregions and formations we described here.

Table 1. Systematic arrangement of the non-tetrigid Saltatoria hitherto recorded from the regional park Viroin-Hermeton. (*): species not recorded by the authors; (°): species not yet found within the boundaries of park, but recorded in adjacent regions. Nomenclature after HARZ (1969-1975).

Family: TETTIGONIIDAE

1. *Phaneroptera falcata* (PODA, 1761)
2. *Barbitistes serricauda* (FABRICIUS, 1798)
3. *Leptophyes punctatissima* (BOSC, 1792)
4. *Meconema thalassinum* (DEGEER, 1773)
5. *Conocephalus discolor* THUNBERG, 1815
6. *Conocephalus dorsalis* (LATREILLE, 1804) (°)
7. *Tettigonia viridissima* LINNAEUS, 1758
8. *Tettigonia cantans* (FUESSLY, 1775) (°)
9. *Platyleis albopunctata* (GOEZE, 1778)
10. *Metrioptera brachyptera* (LINNAEUS, 1761)
11. *Metrioptera bicolor* (PHILIPPI, 1830)
12. *Metrioptera roeseli* (HAGENBACH, 1822)
13. *Pholidoptera griseoptera* (DEGEER, 1773)

Family: GRYLLIDAE

14. *Gryllus campestris* LINNAEUS, 1758 (*) (°)
15. *Acheta domestica* LINNAEUS, 1758
16. *Nemobius sylvestris* (BOSC, 1792)

Family: ACRIDIDAE

17. *Oedipoda caerulescens* (LINNAEUS, 1758)
18. *Oedipoda germanica* (LATREILLE, 1804) (*)
19. *Mecostethus grossus* (LINNAEUS, 1758)
20. *Chrysochraon dispar* (GERMAR, 1831)
21. *Omocestus viridulus* (LINNAEUS, 1758)
22. *Omocestus ventralis* (ZETTERSTEDT, 1821)
23. *Stenobothrus lineatus* (PANZER, 1796)
24. *Stenobothrus stigmaticus* (RAMBUR, 1838)
25. *Myrmeleotettix maculatus* (THUNBERG, 1815)
26. *Gomphocerus rufus* (LINNAEUS, 1758)
27. *Chorthippus vagans* (EVERSMAN, 1848)
28. *Chorthippus brunneus* (THUNBERG, 1815)
29. *Chorthippus biguttulus* (LINNAEUS, 1758)
30. *Chorthippus parallelus* (ZETTERSTEDT, 1821)
31. *Chorthippus montanus* (CHARPENTIER, 1825) (°)

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