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BIOGEOGRAPHICAL REMARKS ON *GYAS TITANUS* SIMON, 1879 (OPILIONES, PHALANGIIDAE) IN THE BALKANS

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On the basis of 33 locality records of *Gyas titanus* Simon, 1879 (Opiliones, Phalangiidae) it is stated that the species more or less continuously inhabits the western and middle Balkans. Thus the Alpine-Balkans-Carpathian range of the species is continuous.

Key words: the Balkans, biogeography, Bosnia and Herzegovina, Croatia, *Gyas titanus*, Montenegro, Opiliones, Serbia

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Na osnovu 33 nalaza *Gyas titanus* Simon, 1879 (Opiliones, Phalangiidae) utvrđuje se da vrsta kontinuirano naseljava zapadni i srednji Balkan. Zaključuje se da je alpsko-balkansko-karpatski areal vrste kontinuiran.

Ključne riječi: Balkan, biogeografija, Bosna i Hercegovina, Hrvatska, *Gyas titanus*, Crna Gora, Opiliones, Srbija

INTRODUCTION

Harvestmen of the European phalangiid genus *Gyas* are a mountanous species. *G. annulatus* (OLIVIER, 1791) is an Alpine species while *G. titanus* Simon, 1879, has been known to inhabit disjunctively the mountains of the Iberian Peninsula, the Alps and the Carpathian Mts. (MARTENS, 1978). Generally, it has been thought the species does not cross the Karavanke/Karawanken mountain chain to the South, although a few separate finding-places have been known in the Apennines and the

Balkan peninsula (ibid.). In Slovenia, there is a transitional region between the Alpine and the Balkan populations. The published (NOVAK *et al.*, 1984; 1995; LIPOVŠEK *et al.*, 1995) and some further localities from Slovenia are included in Fig. 1, but not cited in the list; they will be published elsewhere. The provisional actual geographical distribution of *G. titanus* in the Balkans is based on literature data and on determined specimens from the following harvestman collections:

- BABIĆ Collection, deposited at the Croatian Natural History Museum, Zagreb; HPMZ
- collections of the Slovene Museum of Natural History, Ljubljana; PMSL
- Coll. of the Institute of Biology University of Ljubljana
- Biological coll. of the Karst Research Institute – Research Center of the Slovenian Academy of Sciences and Arts at Postojna
- (remains of) HADŽI Coll.; JH
- Biol. coll. of the Museum of Notranjska at Postojna
- some small private collections
- personal collection.

Except for the BABIĆ Collection, the material is partly deposited with the authors and partly in the PMSL.

LIST OF THE AVAILABLE RECORDS OF *Gyas titanus* IN THE BALKANS

Literature data and new records of *G. titanus* at the Balkans are catalogued in the List and zoogeographically presented in Fig. 1. The UTM codes (10 x 10 km) are given for localities.

List of the available records of *Gyas titanus* Simon, 1879 in the Balkans

Croatia

Golik, **VL93**, Brod na Kupi, 22.04.1987, HORVAT, SIVEC leg.: 1 iuv. (det. TN 1175/1998; PMSL); **Kiclove jame**, **VL93**, Skrad, 700 m, 06.1914: 1 f (BABIĆ, 1916, sub *G. annulatus*); 22.07.1914: 1 f (TN 687/1984; HPMZ); **Kraljevi zdenac**, **WL77**, 529 m, Zagreb, 06.1915: 2 mm, 1 f (BABIĆ, 1916, sub *G. annulatus*); 13.05.1917: 1 iuv. (rev. TN 690/1984; BABIĆ det. sub *G. annulatus* juv.; HPMZ); **Sljeme**, **WL78**, 04.06.1903, 900 m: 1 m, 1 f (rev. TN 689/1984; BABIĆ, 1916, sub *G. annulatus*; HPMZ); **Slunj**, **WK49**, DEELEMAN leg. (MARTENS, 1978); **Lobor**, **WM81**, Ivančica, 02.05.1986, SIVEC leg.: 2 subad. (TN 1195/1998; PMSL); **Strmac**, **XL82**, Psunj, Nova Gradiška, 04.05.1985, SIVEC leg.: 1 subad. (TN 1193/1998; PMSL); **Kamengrad**, **XL94**, Papuk, Slavonska Požega, 03.05.1986, SIVEC leg.: 1 subad. (TN 1156/1998; PMSL); little **cave at Jankovac**, **YL03**, Velika, 657 m, 21.07.1916: 19 mm (BABIĆ, 1916, sub *G. annulatus*)

Bosnia and Hercegovina

Kupreška vrata, **XJ87**, Bugojno, 1200 m, 10.9.1983, Coll. BIOS 2606, SIVEC leg.: 1 m (TN 406/1985; PMSL); **Kozarac**, **XK48**, Prijedor, 06.05.1987, SIVEC, HORVAT leg.: 2 subad. (TN 1096/1998; PMSL); **Ravan**, **YJ38**, Busovača, Zenica, 13.05.1986, SIVEC, HORVAT leg.: 1 subad., 1 iuv. (TN 1234/1998; PMSL); **Konjuh planina**, **CQ00**, 890 m, 16 km N from Kladanj, 14.10.1990, SIVEC, HORVAT leg.: 2 iuv. (TN 1256/1998; PMSL); **Vranica pl**., **YJ27**, 1400 m, 5 km SW from Fojnica, 17.10.1990, SIVEC, HORVAT leg.: 2 iuv. (TN 1264/1998; PMSL); cave **Ponor Bijambare**, Čevljanovići, **BP37**, 28.07.1968, PRETNER leg.: 1 iuv. (TN 233/1985; JH); **Radačići**, **CP09**, Kladanj, 680 m, 15.10.1990, SIVEC, HORVAT leg.: 1 iuv. (TN 1271/1998; PMSL); **Maglić Mt**., **CN19**, 25 km S from Foča, AUSOBSKY leg. (MARTENS, 1978)

Yugoslavia
Serbia and Kosovo

Rugovska klisura, **DN32**, AUSOBSKY leg. (MARTENS, 1978); **Peć**, **DN42**, AUSOBSKY leg. (MARTENS, 1978); **Kopaonik**, **DN89** (?), 19.9.1964: 3 iuv. (TN 627/1983; HADŽI det. sub *Mitopus morio kopaonicensis* ssp. n.; JH); cave **Stopića pećina**, **DP00** (?), Rožanstvo, Zlatibor, 20.06.1923 (ROEWER, 1935, sub *G. annulatus*: 6 (m f), Nr. 1163; cf. MARTENS, 1978); **Golija**, **DP45** (?), Čačak, 2.6.1911, DUŠANOVIĆ leg.: 1 m, 1 f (TN 578/1984; JH); at a **tributary to Resava** river, **EP38**, Beljanica planina Mt., Despotovac, 07.10.1986, SIVEC, HORVAT leg.: 1 iuv. (TN 1088/1998; PMSL); **Plavna**, **FQ00**, Negotin, 09.10.1986, SIVEC, HORVAT leg.: 1 iuv. (TN 1132/1998; PMSL)

Montenegro

Kraljeske bare, **CN83**, Kolašin, 23.09.1987, SIVEC, HORVAT leg.: 1 iuv. (TN 959/1998; PMSL); **Biogradsko jezero, CN84**, Mojkovac, 21.09.1987, SIVEC, HORVAT leg.: 1 f (TN 944/1998, PMSL); **Kraljeske bare**, **CN92**, 24.09.1987, SIVEC, HORVAT leg.: 1 iuv. (TN 964/1998; PMSL); **Komovi, CN92**, AUSOBSKY leg. (MARTENS, 1978); **Gnjili potok**, **CN93**, Andrijevica, 27.04.1987, SIVEC, HORVAT leg.: 1 iuv. (TN 1076/1998; PMSL); **Kolašin**, **CN93**, 24.09.1987, SIVEC, HORVAT leg.: 1 iuv. (TN 993/1998; PMSL); **Trešnjevik**, **CN93**, Kolašin, 27.04.1987, SIVEC, HORVAT leg.: 1 iuv. (TN 1203/1997; PMSL); vicinity of **Plav**, **DN11**, 1918, WINNEGUTH leg. (Umgebg. Plav): 1 f (TN 155/1984; JH); **Kula**, **DN33**, Rožaje, 25.09.1987, SIVEC, HORVAT leg.: 1 iuv. (TN 939/1998; PMSL)

DISCUSSION AND CONCLUSIONS

Review of the BABIĆ and HADŽI collections has revealed that the published records of *G. annulatus* for Croatia (BABIĆ, 1916; HADŽI, 1973) and Serbia (HADŽI, 1973) relate to *G. titanus*. The same is true of ROEWER's (1935) records for Serbia (MARTENS, 1978), while ROEWER's notice (1957: 1 m, 1 f; RII/2807/52) of the species for Dalmatia in an unknown locality is uncertain. The mistaken determinations were caused by the use of an invalid specific character: it used to be thought that the trochanters of *G. titanus* are black and those of *G. annulatus* white, but specimens of *G. titanus* with pale trochanters also occur (MARTENS, 1978).

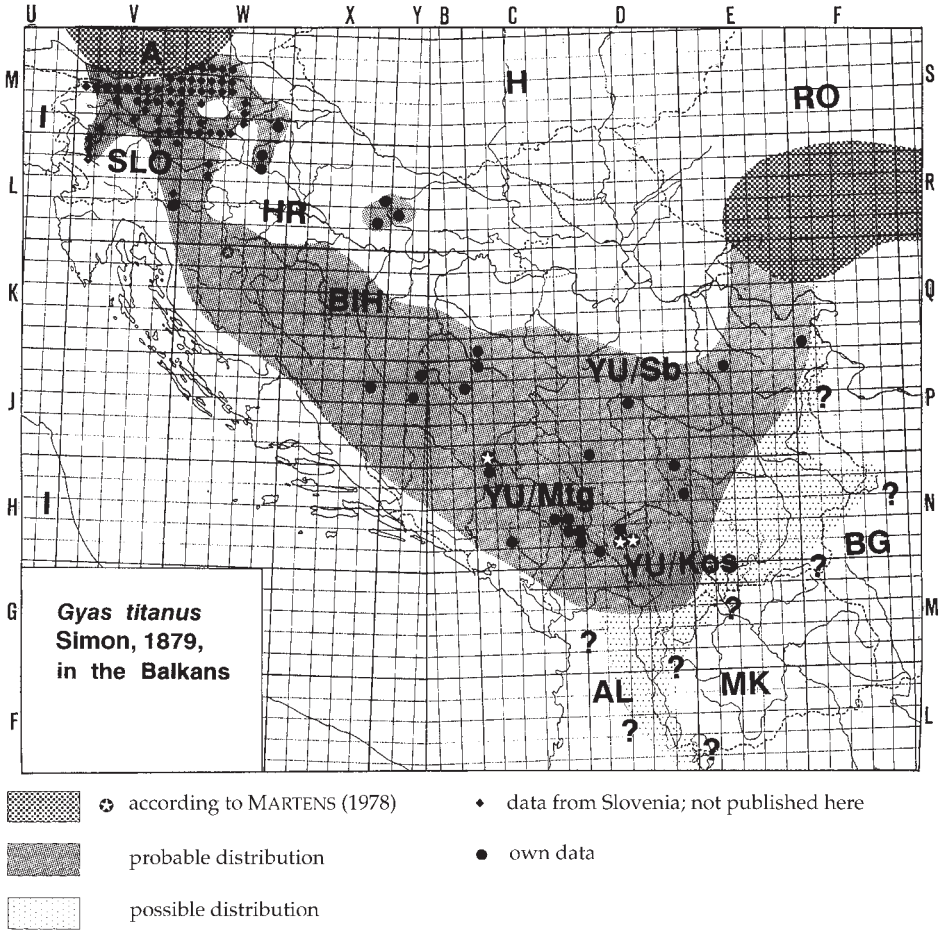

Fig. 1. The map of reliable records and presumed distribution of *Gyas titanus* in the Balkans

In the vicinities of Zagreb (Croatia), Sarajevo (Bosnia) and Plav (Montenegro) harvestmen have been collected several times. For these regions a nearly continuous distribution of *G. titanus* can be established. It is reasonable to assume that the species also inhabits regions that have not been intensely investigated and from which only single findings are known. On the other hand, KRATOCHVÍL (1946) did not find *G. titanus* in spite of intensive searching for arachnids in caves of northern Dalmatia, Bosnia, Hercegovina and Montenegro, probably because he did not visit (water-)caves in winter (cf. NOVAK *et al.*, 1999). In pre-alpine and montane regions the species occurs only by woodland stream banks. In addition, separate local populations occur, and this should be kept in mind where systematic mapping is to be carried out.

G. titanus has been recorded in Croatia, Bosnia and Herzegovina, Montenegro and Serbia. It is expected in northern parts of Albania (at least at Mt M. e Radohinës and Mt M. Hekurave) and probably in Macedonia (Mt Šar planina, Mt Korab) and some western Bulgarian mountains (e. g. Mt Stara planina), although it had not been found in Bulgaria before 1976 (STARĘGA, 1976). Along the border mountain chain between Albania and Macedonia (Mts Korab, Jablanica and Goličica) the range possibly extends just into the very north-western parts of Greece (e.g. Ayios Yermanós Mt.). In the southern countries it is expected to inhabit woodland stream banks above 800 m in altitude.

Considering the above findings it seems justified to conclude that *G. titanus* more or less continuously inhabits the western and middle Balkans. Except for some isolated mountains in the Pannonian lowland (Mt Ivančica, Mt Sljeme, Mt Papuk), populations of the species continuously extend throughout the Alps, along the mountains of the western and middle Balkans and in Transylvania. Thus the Alpine-Balkans-Carpathian range of the species is continuous.

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