

RAMMEIHIPPUS DINARICUS (GÖTZ, 1970)
(ORTHOPTERA: ACRIDIDAE) – A NEW GENUS
AND SPECIES FOR THE ORTHOPTERAN FAUNA
OF CROATIA AND THE FIRST RECORD OF
THE SPECIES SINCE DESCRIPTION

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This paper presents the first data on the presence of the genus *Rammeihippus* Woznessenskij, 1996, species *Rammeihippus dinaricus* (Götz, 1970) (Orthoptera: Acrididae) in Croatia. The species was recorded on Dinara Mountain (south-eastern Croatia, middle Dalmatia) near Duler (1250 a.s.l.) on August 7th, 2012. This is also the first record since the description of the species near Vaganj pass on the same mountain, Bosnia and Herzegovina.

Keywords: *Rammeihippus dinaricus*, Orthoptera, grasshoppers, fauna, Croatia

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U radu se navodi prvi nalaz roda *Rammeihippus* Woznessenskij, 1996 s vrstom *Rammeihippus dinaricus* (Götz, 1970) (Orthoptera: Acrididae) u Hrvatskoj. Vrsta je pronađena 7. kolovoza 2012. godine nedaleko lokaliteta Duler na 1250 metara nadmorske visine na Dinari (jugoistočna Hrvatska, srednja Dalmacija). To je također prvi nalaz nakon opisa vrste pokraj prijevoja Vaganj na istoj planini, ali u Bosni i Hercegovini.

Ključne riječi: *Rammeihippus dinaricus*, Orthoptera, skakavci, fauna, Hrvatska

INTRODUCTION

The orthopteran fauna of Croatia was studied a long time ago. Research was particularly concentrated on the Istrian peninsula and the Dalmatian coast (NONVEILLER, 1999), mostly by foreign entomologists (GERMAR, 1817; OCSKAY, 1832; SERVILLE, 1838; FRAUENFELD, 1861; KRAUSS, 1878, 1888; BRUNNER VON WATTENWYL, 1882; GALVAGNI, 1902; KARNY, 1907; EBNER 1908; WERNER, 1919; RAMME, 1913, 1931). Furthermore, Orthoptera were the main subject of the work of some local entomologists, G. BUČIĆ (BUCCICH, 1886) and I. K. NOVAK (1888, 1891) from Hvar Island and F. DOBIJAŠ from Senj, using the pseudonym PADEWIETH (1900). Some later records from Dalmatia come from Us (1967), who worked on the first checklist of Orthoptera from former Yugoslavia.

The mountain regions of middle and southern Croatia, especially of the Croatian part of Dinara Mountain, have been poorly studied and there are only a few records of Orthoptera from these areas in the relevant literature (HARZ, 1969, 1975; HARZ & KALTENBACH, 1976). Some more comprehensive studies were made by MIKŠIĆ in the Bosnian part of the Dinaric Alps (MIKŠIĆ, 1969, 1973). The Dinaric Alps are one of the greatest centres of endemism of European Orthoptera but in a relatively late phase of fauna genesis (KENYERES *et al.*, 2009). However, in comparison to some other great centres of Orthoptera endemism in Europe (e.g. the Alps, the Carpathian Mountains and the Caucasian Mountains), the Dinaric Alps have a relatively small amount of endemic species, most probably due to the lack of systematic research. The majority of endemic taxa from these mountains are apterous, hypopteroous, squamipteroous and brachypteroous (non flying) genera (for example *Isophya*, *Poecilimon*, *Pholidoptera*, *Troglophilus*) of the suborder Ensifera (bush-crickets and crickets) (HARZ, 1969). However, there is a single species from the suborder Caelifera (grasshoppers), endemic to the Dinaric Alps, *Rammeihippus dinaricus* (Götz, 1970) (HARZ, 1975; HARZ & KALTENBACH, 1976).

Rammeihippus dinaricus belongs to the family Acrididae, subfamily Gomphocerinae, according to EADES *et al.* (2013). The type specimens were collected by Götz on Dinara Mountain near Vaganj Pass, on the road from Sinjski Obrovac (Croatia) to Prolog in Bosnia and Herzegovina (1200 a.s.l.) on July 28th 1936 and described 34 years later, in 1970. The species was originally placed in the genus *Microhippus* Ramme, 1939 and 26 years later moved to the genus *Rammeihippus* (WOZNESSENSKIJ 1996). The type series is formed of a holotype (♂) and 10 paratypes (3♂, 7♀), of which the holotype and 6 paratypes are located in Zoologisches Forschungsinstitut und Museum Alexander Koenig in Bonn, while the remaining 4 paratypes are in Museum für Naturkunde in Berlin. In the descriptive paper, the author remarked that the species was known only from the type locality (GÖTZ, 1970). No other records of this species are known.

MATERIAL AND METHODS

A single adult specimen (♂) of *R. dinaricus* was collected on Dinara Mountain, in middle Dalmatia, on August 7th, 2012, using the usual method with an entomological net, and was preserved in 69% ethyl-alcohol. The specimen is currently in the authors' private Orthoptera collection. Determination of the species relying on morphological characters (foveolae, tympana, wings, hind femora, cerci, epiproct and subgenital plate) was carried out using the diagnostic key of HARZ (1975) and comparing the specimen with photos of the holotype and paratypes (RIEDE *et al.*, 2013). Nomenclature and taxonomy are defined according to EADES *et al.* (2013).

RESULTS AND DISCUSSION

The specimen of *Rammeihippus dinaricus* was discovered on a mountain pasture near the small karst uvala of Duler (Fig 1 and 2) (44° 4' 43.51" N, 16° 21' 29.57") at 1250 a.s.l. on Dinara Mountain, on August 7th, 2012. This locality is located 53 km north-west of the type locality in Bosnia and Herzegovina and represents the second locality where this species has been found. Both findings are from dry, hot and sunny places with low



Fig. 1. Rough position of type locality (Vaganj) of *Rammeihippus dinaricus* (Götz, 1970) in Bosnia and Herzegovina (yellow triangle) and the newly recorded locality near Duler in Croatia (53km NW of type locality) (red circle)



Fig. 2. The grassland near Duler (1250 a.s.l.) on Dinara Mountain – locality of *Rammeihippus dinaricus* (Götz, 1970) in Croatia (photo: Dino Grozić, Biophoto Section)

grassland vegetation on relatively high altitudes more than 1100 a.s.l., but in the subalpine, not in the alpine belt (Götz, 1970). Both localities are located in areas with Mediterranean beech forests. Until now, this species has been found only on Mt Dinara, being probably endemic to this mountain.

Only one single male was collected (Fig. 3) in a sample with numerous other individuals. Because the adult specimens of this species are smaller than the nymphs of the majority of other species of grasshoppers recorded, no attention was paid in the field and only in the lab did the true identity of the material collected become evident. Therefore, it is likely that some other specimens were overlooked in the field; they are usually not collected because of the impossibility of determining them. Since the description of *R. dinaricus* (Götz, 1970) had only several drawings and photos of morphological characteristics, a more modern description of the important diagnostic characters of male is presented. Antenna is composed of 22 segments and it is 1/3 longer than the head and pronotum together. The foveolae of the fastigium have

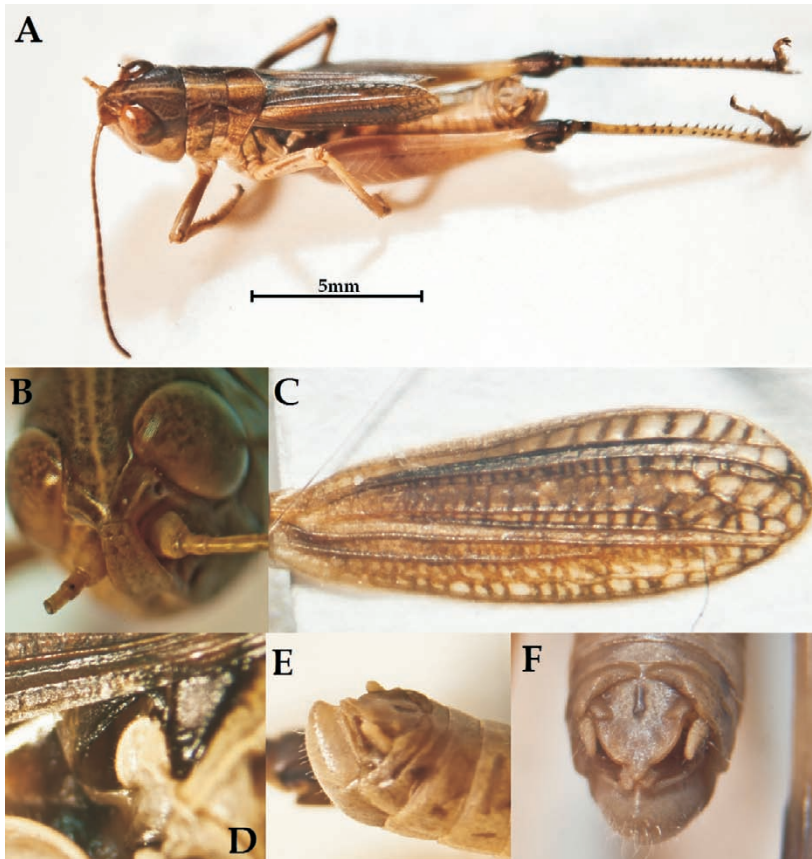


Fig.3. *Rammeihippus dinaricus* (Götz, 1970) – male habitus (A – dorsolateral) and important distinguishing characteristics (B – foveolae of the fastigium, C – right tegmen, D – tympanum, E – lateral view of subgenital plate, F – epiproct) (photo: Stipe Renje, Biophoto Section)

parallel margins. The fastigium is triangular (Fig. 3B). The head is only a bit shorter than the pronotum (Fig. 3A). Side keels of the pronotum are angularly incurved, sulcus is situated behind the middle and hind margin of the pronotum is broadly rounded. Tegmina are not completely covering the abdomen, brown, widened in the apical third, with tanned costal (C) and medial (M) area reaching the half of the hind femora length, for a third longer than hind wings and lacking the white stigma, a spot characteristic of a great number of Gomphocerinae genera (Fig. 3C). The basic colour of hind femora is orange-brownish and hind knees are black. The stridulatory pegs are present on the inner surface of hind femora. Tympana are slit-like (Fig. 3D). Epiproct has transverse callosities, continued on the 10th tergum, broadly emarginated (Fig. 3F). Subgenital plate is conical, with rounded apex (Fig. 3E). Basal abdominal tergites are black laterally. Basic body colour is brown.

Morphometrical data were taken by means of a vernier caliper, accuracy of 0.01 mm. Body length = 13.98 mm, pronotum length = 2.54 mm, pronotum width = 2.19 mm, hind femur length = 8.41 mm, hind femora width (on the widest part) = 2.21 mm, tegmina length = 4.83 mm, tympanum length: width ratio = 3 : 1.

The taxonomic position of the genus *Rammeihippus* Woznessenskij, 1996 is dubious (Eades *et al.*, 2013). It does not belong to any of the existing tribes and it was even uncertain whether it belonged to the subfamily Acridinae or Gomphocerinae; according to morphological features, such as the presence of foveolae of fastigium and stridulatory pegs, tegmen venation, and thoracic sterna, most likely it belongs to the subfamily Gomphocerinae. Thus, the main authors of Orthoptera Species File were contacted and the genus was transferred into the Gomphocerinae subfamily on March 24th 2013.

The following orthopteran species were also observed in the habitat of *R. dinaricus*, the grasslands near Duler in August 2012: *Ephippiger discoidalis* Fieber, 1853, *Platycleis intermedia* (Serville, 1838), *Tessellana orina* (Burr, 1899), *Montana stricta* (Zeller, 1849), *Modestana modesta* (Fieber, 1853), *Pholidoptera dalmatica maritima* Zeuner, 1931, *Bicolorana bicolor* (Philippi, 1830), *Gampsocleis abbreviata* Herman, 1874, *Saga pedo* (Pallas, 1771), *Decticus verrucivorus* (Linnaeus, 1758), *Pseudochorthippus montanus* (Charpentier, 1825), *Chorthippus (Glyptothrus) brunneus* (Thunberg, 1815), *Omocestus haemorrhoidalis* (Charpentier, 1825), *Stenobothrus rubicundulus* Krauseman & Jeekel, 1967, *Stenobothrus lineatus* (Panzer, 1796) and *Arcyptera (Pararcyptera) brevipennis* (Brunner von Wattenwyl, 1861).

As there are no data on the area of distribution or the population size of *R. dinaricus* in Bosnia and Herzegovina either, it is unknown if the species is threatened. Therefore, future investigations will be focused mainly on the complete distribution, ecology, behavioural pattern and threat level of this species in Croatia and Bosnia and Herzegovina.

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SAŽETAK

***Rammeihippus dinaricus* (Götz, 1970) (Orthoptera: Acrididae) – novi rod i vrsta za faunu ravnokrilaca Hrvatske i prvi nalaz vrste nakon njena opisivanja**

J. Skejo & F. Rebrina

Istraživanja faune ravnokrilaca (Orthoptera) Hrvatske započela su u 19. stoljeću (GERMAR 1817, OCSKAY 1832, SERVILLE 1838, FRAUENFELD 1861, KRAUSS 1878, 1888, BRUNNER VON WATTENWYL 1882, GALVAGNI 1902, KARNY 1907, EBNER 1908, WERNER 1919, RAMME 1913, 1931) i bila su većinom usmjerena na područje Istre i priobalne Dalmacije s otocima. Istraživanja su provodili uglavnom strani entomolozi, uz rijetke domaće ortopterologe (BUČIĆ 1886, NOVAK 1888, PADEWIETH 1900). Postoji tek neznatan broj podataka o ravnokrilcima s planine Dinare, iako su Dinaridi jedno od uočenih glavnih središta endemičnosti faune ravnokrilaca u Europi (KENYERES et al. 2009). Endemične vrste Dinarida većinom pripadaju beskrlinim rodovima skupine zrikavaca – dugoticalaca (podred Ensifera), dok samo jedna vrsta pripada podredu skakavaca – kratkoticalca (podred Caelifera) - *Rammeihippus dinaricus* (Götz, 1970) (KENYERES et al. 2009), a upravo je ona i nađena na planini Dinari. *R. dinaricus* je tako prvi put zabilježen na prostoru Hrvatske u srednjoj Dalmaciji pokraj lokaliteta Duler na 1250 metara nadmorske visine na planini Dinari 7. kolovoza 2012. To je također drugi pronalazak vrste od opisivanja (1970), odnosno prvog pronalaska pokraj prijevoja Vaganj na istoj planini, ali u Bosni i Hercegovini (1936). Nema podataka o veličini populacija *R. dinaricus* u Bosni i Hercegovini, kao ni u Hrvatskoj, stoga nije poznata razina ugroženosti vrste. Buduća istraživanja bit će usmjerena na utvrđivanje cjelokupne rasprostranjenosti, ekologije, etologije i eventualne potrebe za zaštitom vrste u čitavom njenom području rasprostranjenja.