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Acanthocnemidae (Coleoptera), a family of beetles new to Russia

Acanthocnemidae (Coleoptera) – новое семейство жуков для фауны России

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Acanthocnemus nigricans (Hope, 1843), a single recent representative of the beetle family Acanthocnemidae, is reported from Russia for the first time. Distribution, probable ways of dispersion and the published data on the biology of *A. nigricans* are discussed.

Впервые для фауны России приводится жук *Acanthocnemus nigricans* (Hope, 1843), единственный рецентный представитель семейства Acanthocnemidae. Обсуждаются распространение и возможные пути расселения данного вида. На основании литературных данных кратко рассмотрены особенности его биологии.

Key words: Coleoptera, Acanthocnemidae, *Acanthocnemus,* fauna, Russia

Ключевые слова: Coleoptera, Acanthocnemidae, *Acanthocnemus*, фауна, Россия

One individual of *Acanthocnemus nigricans* (Hope, 1843), a single recent species of the beetle family Acanthocnemidae, was collected by author in Belgorod Province, Russia. Considering the biological characteristics of this species, it is most likely that the beetle was attracted to the author's bonfire. This is the first record of *A. nigricans* from Russia.

Order **COLEOPTERA**

Suborder POLYPHAGA

Superfamily CLEROIDEA

Family **ACANTHOCNEMIDAE** Crowson, 1964

Acanthocnemus Perris, 1866

Acanthocnemus nigricans (Hope, 1843) (Fig. 1)

Material. One female; **Russia**, *Belgorod Province,* Belgorod District, Pulyaevka, 9 July 2010, Ya.N. Kovalenko leg.; author's collection, Belgorod (the specimen will be deposited in the Zoological Institute, Russian Academy of Science, St. Petersburg).

Body small (3.5–6.0 mm; 5.0 mm in the female from Belgorod Province), dark brown, slightly shining, elongate, strongly flattened, covered with strong, rather long bristles (Fig. 1). In habitus, this species resembles the representatives of *Dasytes* Paykull, 1798 (Dasytidae) and was originally described as a member of this genus (Hope, 1843; see also Valcárcel & Piloña, 2009). The main distinctive characters of Acanthocnemidae discriminating it from other families of the Melyrid lineage sensu Majer, 1994 (Attalomimidae, Dasytidae, Malachiidae, Mauroniscidae, Melyridae and Prionoceridae) are: the antennae with well-marked three-segmented club; the hypomeron of prothorax with a characteristic pit adjacent to sternopleural suture; the elytra with rows of punctures; the claws simple and slender; the male tarsal formula 4–5–5 (in female, 5–5–5); the tegmen with forked phallobasic apodeme, separated tegminal struts and divided apex, the phallus not arcuate, and the phallic struts very long (Crowson, 1964; Majer, 1994). The family

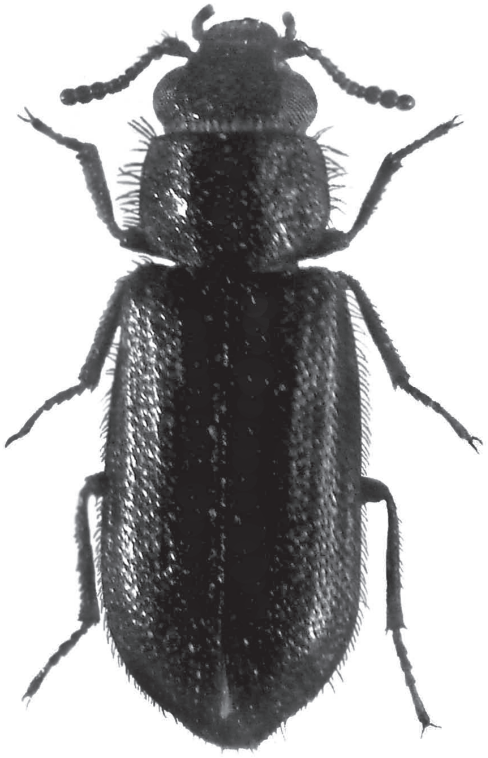

Fig. 1. *Acanthocnemus nigricans* (Belgorod District, Pulyaevka, collected on July 9, 2010), habitus.

Acanthocnemidae is rather isolated within the Melyrid lineage and can be considered as the most primitive taxon among Cleroidea. In addition to the recent genus *Acanthocnemus*, the Acanthocnemidae includes also the monobasic *Acanthocnemoides* Zherichin, 1977, which was described from the Upper Cretaceous (Taimyr).

Acanthocnemus nigricans is associated with forest fires and has the special prothoracal organs, sensitive to infrared radiation. According to the published data (Schmitz et al., 2002; Kreiss et al., 2007), the thermosensitive organs of *A. nigricans* differ substantially from the comparable organs of other pyrophylous insects [for example, *Melanophila acuminata* (De Geer, 1774) and *Merimna atrata* (Gory & Laporte, 1837) (Buprestidae)], and resemble the structures present in some reptiles, for example, the pit vipers (Crotalidae). Using these organs, *A. nigricans* can locate infrared radiation source as well as be oriented in a thermally-heterogeneous environment, thus evading a direct contact with the flame. Having flown to the fire, the beetles land in the immediate proximity to the open flame and cinder, but always keeping a safe distance. There is an assumption that local fires may serve as a place of courtship and subsequent mating, additionally there is evidence of females of *A. nigricans* ovipositing into the gaps on burnt trees (Kreiss et al., 2007). It is possible that the larva feeds upon the fungi growing on burnt wood (Liberti, 2009).

Distribution of *A. nigricans* which appears to originate in Australia is currently close to cosmopolitan, however the species is still not found in the North and South Americas. Apart from Australia (including Tasmania), it was recorded from New Caledonia, Myanmar, Thailand, India, Madagascar, Guinea, Zambia, Algeria, Portugal, Spain, France (mainland and Corsica), Italy (mainland, also Sardinia and Sicily) and Cyprus (Champion, 1922; Alonso-Zarazaga et al., 2003; Liberti, 2004).

Mechanisms and ways of dispersion of *A. nigricans* outside of its original range are not yet clarified. It is assumed that the expansion is associated with timber trade (Champion, 1922; Liberti, 2004). The ways of getting into Belgorod Province can only be speculated upon; an importation is quite likely. However, a natural immigration with moving air-masses can not be ruled out. Finally, the summer of 2010 in Central and Southern European Russia was characterised by anomally high temperatures, persisting for a long period of time. This may have, in some way, assisted the dispersal of thermophilous species with a migratory potential, from the south northwards.

The question whether a stable population of *A. nigricans* exists in Belgorod Province is still open. Up to now, there is only a single specimen known of this species, while an inventory of the entomological collection

of the Belgorod State University did not reveal any other specimens of the species.

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