

© 2018 I. P. LEZHENINA, Yu. V. VASYLIEVA

***MEGABRUCHIDIUS DORSALIS* (FÅHREUS, 1839)
(COLEOPTERA: CHRYSOMELIDAE: BRUCHINAE)
IS A NEW ADVENTIVE SPECIES
IN THE KHARKIV REGION (UKRAINE)**

Леженіна, І. П., Васильєва, Ю. В. *Megabruchidius dorsalis* (Fåhrens, 1839) (Coleoptera: Chrysomelidae: Bruchinae) — новий адвентивний вид в Харківській області (Україна). *Вісник Харк. ентомол. т-ва*. 2018. Т. XXVI, вип. 2. С. 15–18.

У результаті обстеження бобів гледичії колючої (*Gleditsia triacanthos*) у дендропарку Харківського національного аграрного університету імені В. В. Докучаєва (Харківська обл.) у жовтні 2018 року виявлені личинки, лялечки та імаго *Megabruchidius dorsalis*. Зернівка заселяла 52 % бобів урожаю поточного року та 81 % бобів урожаю минулих років. 5 рис., 1 табл., 9 назв.

Ключові слова: зернівка, *Megabruchidius dorsalis*, адвентивний вид, гледичія колюча, Харківська область, Україна.

Леженіна, И. П., Васильева, Ю. В. *Megabruchidius dorsalis* (Fåhrens, 1839) (Coleoptera: Chrysomelidae: Bruchinae) — новый адвентивный вид в Харьковской области (Украина). *Изв. Харьк. энтомол. о-ва*. 2018. Т. XXVI, вып. 2. — С. 15–18.

В результате обследования бобов гледичии трёхколючковой в дендропарке Харьковского национального аграрного университета имени В. В. Докучаева (Харьковская обл.) в октябре 2018 года выявлены личинки, куколки и имаго *Megabruchidius dorsalis*. Зерновка заселяла 52 % бобов урожая текущего года и 81 % бобов урожая прошлых лет. 5 рис., 1 табл., 9 назв.

Ключевые слова: зерновки, *Megabruchidius dorsalis*, адвентивный вид, гледичия трёхколючковая, Харьковская область, Украина.

Lezhenina, I. P., Vasylieva, Yu. V. *Megabruchidius dorsalis* (Fåhrens, 1839) (Coleoptera: Chrysomelidae: Bruchinae) is a new adventive species in the Kharkiv Region (Ukraine). *The Kharkov Entomol. Soc. Gaz.* 2018. Vol. XXVI, iss. 2. P. 15–18.

Larvae, pupae and imagoes of *Megabruchidius dorsalis* have been found in October 2018 as a result of examination of the beans of the honey locust (*Gleditsia triacanthos*) in the arboretum of the Dokuchaiev Kharkiv National Agrarian University. The seed beetles colonized in 52 % of the beans harvested in the current year and in 81 % of the beans harvested in the previous years. 5 figs, 1 tab., 9 refs.

Key words: seed beetles, *Megabruchidius dorsalis*, adventive species, honey locust, Kharkiv Region, Ukraine.

Introduction. The problem of alien species penetration into the territory of Europe attracts more and more attention, and the number of publications to adventive species increases significantly every year (Орлова-Беньковская, 2017) are devoted.

The active penetration into Europe the seed beetles *Megabruchidius dorsalis* (Fåhrens, 1839) and *M. tonkineus* (Pic, 1904) (Chrysomelidae: Bruchinae) from Southeast Asia as native range from the end of the 20th–beginning of the 21st century is dated. For the first time for Europe, *M. dorsalis* is indicated in Italy in 1989 (Migliaccio, Zampetti, 1989). In publications on Asian bruchids (*M. dorsalis*, *M. tonkineus*), the history of their penetration into Europe and range expansion is highlighted in some detail (Korotyayev, 2011; György, 2007; Темрешев, Валиева, 2016; Kurtek et al., 2017; Ruta, Jałoszyński, Wanat, 2017; Мартынов, Никулина, 2016). In connection with this, we will not duplicate this information.

For the first time for Ukraine, an East Asian seed beetles indicated by V. V. Martynov and T. V. Nikulina in 2014 from the Donetsk Region (Avdeyevka) (Martynov, Nikulina, 2014). Later, in 2015, it was registered in Kyiv (Fursov, Nazarenko, 2015). Already in 2016, the Asian grain was found in all districts of the Donetsk Region (Мартынов, Никулина, 2016).

Information about this species for the Kharkiv Region is missing. Also, almost nothing is known about the biology of *M. dorsalis* in a new region. It is known that in Europe its larvae feed by the seeds of *Gleditsia* and *Gymnocladus* (György, 2007).

The aim of our work is study of *M. dorsalis* in the Kharkiv Region.

Materials and methods. Material was collected in October–November 2018 in the stands of honey locust (*Gleditsia triacanthos* L.) in the arboretum of the Dokuchaiev Kharkiv National Agrarian University. Preliminary examination of the beans of the honey locust showed the presence of exit holes in seed coat, which prompted us to examine the beans. For analysis, 100 beans were collected on the ground and 100 beans from trees. The beans were collected randomly. They were also collected for phenological observations and placed into cotton bag, which is stored in an unheated room.

We examined collected beans, registered the number of exit hole sand developed seeds, then cut the beans, collected living insects into Petri dishes, counted females, males, larvae and pupae.

Results and discussion. The initial examination of survey of honey locust beans showed that they had round exit holes, as is characteristic for seed beetles.

Since the beans of honey locust are poisonous to most insects due to the presence of 5-hydroxypipicolinic acid and triterpenoid saponins (György, 2007), it was obvious that they were damaged by seed beetles of the genus *Megabruchidius*, which host is honey locust. Cutting of the beans revealed adults, larvae, and pupae of *M. dorsalis* have been found (Fig. 1–5).



Fig. 1. *Megabruchidius dorsalis*, larva of the last instar (photo by M. O. Filatov).



Fig. 2. *Megabruchidius dorsalis*, larva of the last instar in *Gleditsia* seed (photo by M. O. Filatov).



Fig. 3. *Megabruchidius dorsalis*, pupa (photo by M. O. Filatov).



Fig. 4. *Megabruchidius dorsalis*, ♂
 (photo by B. A. Kolomoets).



Fig. 5. *Megabruchidius dorsalis*, ♀
 (photo by B. A. Kolomoets).

Megabruchidius dorsalis developed in 52 % of the beans harvested in the current year (collected from the trees in 2018). One or two specimens developed in one bean, no more than one larva in one seed (table).

As one can see from the Table, the beans, collected on the ground, were more infested — 81%. In such beans, one to fifteen exit holes were found, and 19.1% of seeds were infested on average. It is obvious, that over three exit holes per bean is explained by the fact that the bruchid oviposits on the beans harvested in the previous years. In the article devoted to biology of the relative species *M. tonkineus* (Pic, 1904) (György, 2007), it is also mentioned, that bruchids often oviposit into the beans harvested in the previous years, lying on the ground. Counting the number of beans with over three exit holes we found out, that about 68 % beans were infested repeatedly.

Table 1. Infestation of honey locust beans by *Megabruchidius dorsalis* in the arboretum of the Dokuchaiev Kharkiv National Agrarian University, 31.10.2018)

Amount of inspected beans, specimens	Average number of seeds in the bean, specimens	Amount of infested beans, specimens/%	Average number of infested seeds in the bean, specimens/%	<i>M. dorsalis</i> , specimens		
				adults	pupae	larvae
Beans collected from the tree						
100	21.1	52/52	1.5/7.1	3	0	0
Beans collected from the ground						
100	19.9	81/81	3.8/19.1	5	2	11

In the period from October 31 to November 20, five beetles emerged from beans that were kept indoors at a temperature of + 13 °C. The activity of beetles, the presence of larvae and pupae in late autumn indicates that acclimatization, adaptation to the weather conditions of the new region, the life cycle, including diapause, are still in the formative stage.

Of course, *M. dorsalis* as an adventive species needs further examination. Particular attention should be paid to its biology, which remains unexamined in Europe.

Acknowledgements. Authors would like to thank Dr. M. O. Filatov (Dokuchaiev Kharkiv National Agrarian University) and B. A. Kolomoets (Agrogen Novo Ltd.) for assistance in photographing insects.

REFERENCES

- Мартынов, В. В., Никулина, Т. В. 2016. Новые инвазивные насекомые-фитофаги в лесах и искусственных лесонасаждениях Донбасса. *Кавказский энтомологический бюллетень*, **12**(1), 41–51. DOI: 10.23885/1814-3326-2016-12-1-41-51.
- Орлова-Беньковская, М. Я. 2017. Основные закономерности инвазионного процесса у жесткокрылых (Coleoptera) европейской части России. *Российский журнал биологических инвазий*, **1**, 35–56. URL: <https://elibrary.ru/item.asp?id=29035786>.
- Темрешев, И. И., Валева, Б. Г. 2016. *Megabruchidius dorsalis* Fahreus, 1839 — инвазивный вид в фауне зерновок (Coleoptera, Chrysomelidae, Bruchinae) Казахстана. *Евразийский энтомологический журнал*, **15**(2), 139–142. URL: <https://elibrary.ru/item.asp?id=27397987>.
- György, Z. 2007. To the biology of the honey locust seed beetle, *Megabruchidius tonkineus* (Pic, 1904) (Coleoptera: Chrysomelidae: Bruchinae). *Folia Entomologica Hungarica*, **68**, 89–96. URL: http://publication.nhms.hu/pdf/foleentom/FoliaEntHung_2007_Vol_68_89.pdf.
- Fursov, V., Nazarenko, V. 2015. Invasive species *Megabruchidius dorsalis* (Coleoptera, Chrysomelidae, Bruchinae) — a new record in the fauna of Ukraine. *Vestnik Zoologii*, **49**(3), 286. DOI: 10.1515/vzoo-2015-0029
- Korotyaev, B. A. 2011. On invasion of an East Asian seed beetle, *Megabruchidius tonkineus* (Pic) (Coleoptera, Bruchidae), developing in *Gleditsia* seeds, in the northwest Caucasus. *Entomological Review*, **91**(9), 1167–1169. DOI: 10.1134/S0013873811090089.
- Kurtek, I., Zahirović, Ž., Turić, N., Vručina, I., Vignjević, G., Merdić, E., Sudarić Bogojević, M. 2017. First record of the invasive seed beetle *Megabruchidius tonkineus* (Coleoptera, Chrysomelidae, Bruchinae) in Croatia. *Natura Croatica*, **26**(1), 109–115. DOI: 10.20302/NC.2017.26.9.
- Martynov, V. V., Nikulina, T. V. 2014. The first finding of invasive species *Megabruchidius dorsalis* (Coleoptera, Chrysomelidae, Bruchinae) in the fauna of Ukraine. *Vestnik Zoologii*, **48**(3), 286. DOI: 10.2478/vzoo-2014-0034.
- Migliaccio, E., Zampetti, M. F. 1989. *Megabruchidius dorsalis* e *Acanthoscelides pallidipennis*, specie nuove per la fauna italiana (Coleoptera, Bruchidae). *Bollettino dell'Associazione Romana di Entomologia*, **43**, 63–69.
- Ruta, R., Jalozyński, P., Wanat, M. 2017. *Megabruchidius dorsalis* (Fähræus, 1839) — inwazyjny strąkowiec nowy dla Polski (Coleoptera: Chrysomelidae: Bruchinae). *Wiadomości Entomologiczne*, **36**(3), 162–166. URL: <http://pte.au.poznan.pl/we/2017/36-21-Ruta-i-in.pdf>.

Dokuchaiev Kharkiv National Agrarian University