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## NEW RECORDS OF THE INVASIVE SPECIES *MEGACHILE SCULPTURALIS*, SMITH, 1853 IN UKRAINE

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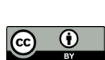
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**Background.** Biological invasions are one of the recognized causes leading to the loss of native diversity. Among wild bees in Europe, only three invasive species are known, one of them being *Megachile (Callomegachile) sculpturalis* Smith, 1853 (Hymenoptera: Megachilidae) – the rapidly spreading giant resin bee whose impact on local diversity remains unexplored. Not only scientists, but also many naturalists are involved in monitoring this invasive species in Europe. The unique appearance of this species and the lack of similar species in the family Megachilidae in Europe makes it easy to identify it even by photo. This oriental species was first recorded in Europe in 2008, in Ukraine in 2018. The aim of our work was to study the distribution of *M. sculpturalis* in Ukraine and some features of its ecology.

**Material and Methods.** The object of the study is the alien species of wild bees *Megachile sculpturalis*. For data analysis, we used records of amateur naturalists and their photographic evidence, as well as our own collection material. Insects were identified using binocular stereoscopic microscope Olympus SZX 12 and specialized keys.

**Results.** The article presents analysis of records of the invasive species *M. sculpturalis* in Ukraine. Five new sites of its distribution were revealed: in the territory Zaporizhzhia region (Zaporizhzhia, Khortytsia island), Odesa region (Odesa, Chornomorsk, Kuyalnyiyskiy estuary) and Mykolaiv region (Mykolaiv). This allowed us to change the chronology of its settlement in Ukraine and expand the map of its distribution. Bees exhibited relative ecological plasticity when choosing nesting sites, and consistency of nesting cavities recolonization.



**Conclusions.** Data analysis and observations have shown that the alien species *M. sculpturalis* was brought to Ukraine repeatedly and in different places, which enables it to establish itself in the secondary habitat, form viable offspring and successfully reproduce. Our study also shows the importance of citizen science and the importance of actively involving amateur naturalists in monitoring invasions.

**Keywords:** *Megachile sculpturalis*, invasion, Ukraine, new record

## INTRODUCTION

Invasions are common to modern ecosystems, thus studies of their impact on stable ecosystem functioning remain topical. Insects are no exception among invasive species, but among wild bees, the Megachilidae family has the highest number of invasive species, which is related to their nesting biology. *Megachile* (*Callomegachile*) *sculpturalis* Smith, 1853 (Hymenoptera: Megachilidae) is the giant resin bee, one of three invasive species in Europe that is spreading rapidly. This species has the eastern Palearctic and Oriental geographical range and is native from Eastern Asia (China, Korea, Taiwan, Japan) (Batra, 1998; Ascher & Pickering, 2020).

Over the past 20 years, *M. sculpturalis* has invaded new territories in North America (Mangum and Brook, 1997; Hinojosa-Díaz *et al.*, 2005; Parys *et al.*, 2015) and Europe.

In Europe, this species was first noted in France in 2008 (Vereecken & Barbier, 2009), then there were reports from Italy (Quaranta *et al.*, 2014; Poggi *et al.*, 2020; Ruzzier *et al.*, 2020), Switzerland (Amiet, 2012; Westrich *et al.*, 2015; Le Féon *et al.*, 2018; Ruzzier *et al.*, 2020), Germany, Slovenia, Austria and Liechtenstein (Westrich *et al.*, 2015; Dillier, 2016; Gogala & Zadavec, 2018; Lanner *et al.*, 2020; Westrich, 2019), France (Le Féon *et al.*, 2018), Spain (Aguado *et al.*, 2018; Ortiz-Sánchez *et al.*, 2021), Hungary (Kovács, 2015), Austria (Westrich, 2017), Serbia (Četković & Plečaš, 2017), Bosnia and Herzegovina (Bila Dubaić *et al.*, 2021). This species is also found on islands in the Mediterranean Sea (Ruzzier *et al.*, 2020; Marquès & Calafat, 2021).

In Ukraine, this species was registered in Crimea in 2018 (Ivanov & Fateryga, 2019).

The aim of our work is to study the current distribution of *M. sculpturalis* in Ukraine and some features of its ecology.

## MATERIALS AND METHODS

The object of the study was an alien species of wild bees *Megachile sculpturalis* and its distribution in Ukraine. The unique appearance of this species and the absence of similar species of the genus *Megachile* in the fauna of Ukraine make it easy to recognize it from photographs and actively involve naturalists and amateurs in monitoring finds of this species, as they do in most European countries (Flaminio *et al.*, 2021). Therefore, the combination of citizen science and a professional approach to data collection allowed us to expand the field of study and obtain exceptionally new results.

For data analysis, we used our own collection material, findings of amateur naturalists (private messages), and their photographic evidence published and identified by specialists in specialized communities (I Naturalist) and databases (Global Biodiversity Information Facility) (GBIF.org, 2022). To confirm the correctness of the definition, the additionally sent material was processed.

An Olympus SZX 12 binocular stereoscopic microscope and specialised keys (Sheffield *et al.*, 2011) were used to identify the species.

**Material:**

*Megachile (Callomegachile) sculpturalis* Smith: Ukraine, Mykolaiv, 46°57'52.02"N 31°59'15.49"E, 1 ♀, June 2018, leg. Viktor Strenada;

Ukraine, Odesa, 46°26'16.7"N 30°42'16.1"E, 1 ♂ 1 ♀, July, 2021; in the same place, 2 ♀, 28.07.2022, observation by Tetyana Martynenko;

Ukraine, Odessa, 46°27'31.70"N 30°45'50.61"E, 26.07.2022, leg. Mark Kormyzenko;

Ukraine, Zaporizhzhia, Khortytsia isl., 47°47'30.78"N 35°8'33.46"E, 2 ♀ 27.07.2022, leg. Mykhailo Mulenko;

Ukraine, Zaporizhzhia, Khortytsia isl, vill. Ovochivniki, 47°48'44.2"N 35°08'16.5"E, 10 ♀ 5 ♂, 13.08.2022, observation by Mykhailo Mulenko;

Ukraine, Odesa region, Kuyalnytsky estuary, 46°33'52.8"N 30°43'28.8"E 1 ♀ 1 ♂, 30.07.2022, observation by Grigory Demidov and Larisa Demydova;

Ukraine, Odesa region, Chornomorsk, 46°18'36.8"N 30°38'54.4"E, 17.07–01.08.2022 mass concentration, observation by Denys Gorenkov, Oleksandr Burkovsky, Kostiantyn Pylypiuk;

Material examination: *Megachile (Callomegachile) sculpturalis* Smith: 1 ♂, 1 ♀, 17.07.2022, Chornomorsk, 46°18'36.8"N 30°38'54.4"E, leg. Denys Gorenkov, Oleksandr Burkovsky, Kostiantyn Pylypiuk, det. Hanna Honchar.

**RESULTS AND DISCUSSION**

According to the results of observations, new locations of alien species *Megachile sculpturalis* were found in Ukraine. The findings were confirmed in Mykolaiv, Odesa and Zaporizhzhia regions (**Fig. 1**).



**Fig. 1.** Map of the records of *Megachile sculpturalis* in Ukraine

Based on the literature, this species was recorded in Ukraine in Crimea in 2018 (Ivanov & Fateryga, 2019). By our data, the species was found in the same year in Mykolayiv. Parallel finds of this invasive species in relatively distant parts of Ukraine support the hypothesis of its independent sporadic introduction into the secondary area. The main means of spreading this invasive species is through transport of wood containing cocoons with brood, and the first find was recorded in France near the seaport of Marseilles (Vereecken & Barbier, 2009). It should be noted that the first finds in Ukraine were also recorded in places close to major international shipping ports (Chornomorsk, Odesa, Mykolaiv). The finds in Zaporizhzhia on the recreational sites of Khortytsia Island presumably point to the expansion of this species, as it happened in Belgrade (Bila Dubaić *et al.*, 2021, 2022), nevertheless the possibility of the brood being brought in with building material, etc. cannot be excluded (**Fig. 2**).

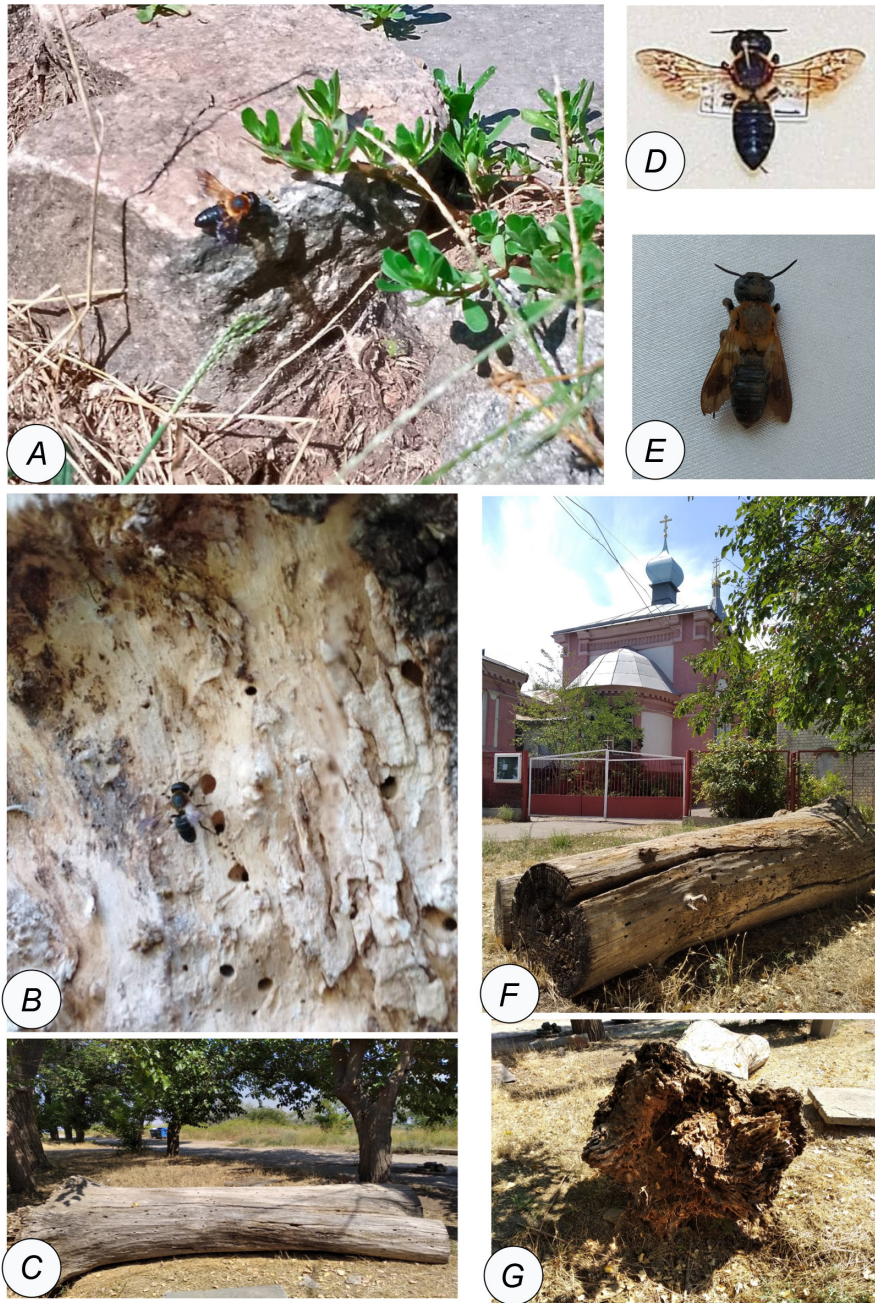
**Biology and trophic relationships.** According to the literature, *M. sculpturalis* females use ready-made plant cavities (deadwood) for nest construction, while resins of conifers are used for arranging nest cavities (Hinojosa-Díaz *et al.*, 2008; Quaranta *et al.*, 2014; Westrich *et al.*, 2015). In our observations, they were seen nesting in the dead wood of willows, ash trees, as well as in the building material of multi-storey houses, which emphasizes the ecological plasticity of this species. *M. sculpturalis* is considered a polylectic species, but in its secondary habitat it often favors plants of its primary habitat, such as *Styphnolobium japonicum* (L.) Schott, *Ligustrum* sp., and also visits *Lavandula* flowers or other plants of the genera belonging to Fabaceae or Oleaceae (Quaranta *et al.*, 2014; Andrieu-Ponel *et al.*, 2018). The period of flight activity in Europe is from June to September (Bila Dubaić & Lanner, 2021), in Ukraine the flight activity and nest-building activity of females in 2022 was observed from the beginning of July to the middle of August and coincided with the period of flowering of *Styphnolobium japonicum*.

We did not record a clearly defined habitat selection strategy or attachment to a particular biotope, the only common feature of all biotopes being the presence of *S. japonicum* flowering trees. For example, on the island of Khortytsia in Zaporizhzhia, settlements were found in the southern part of the island on the second above floodplain terrace of the Khortytsia floodplain on the boundary of permanent steam (I:1. 212 Herbaceous groups of deposits on abandoned lands of arid zones) of ancient artificial forest plantations of *Robinia pseudoacacia* with an admixture of hawthorn tricolored (I :3.211 Artificially created plantations with predominance of deciduous species) and tree and shrub thickets (I:1.222 Shrub and tree thickets on deposits of arid zones) (Didukh, *et al.*, 2020). Not far from the place of finding was a windbreak of *S. japonicum* trees, which were actively blooming at the time of the finding. In the Odesa region, Odesa, Chornomorsk, and Mykolaiv, settlements of these bees were found in urbanized biotopes and among dense urban buildings.

Since our work also used naturalist specimens, it is obvious that the most frequent finds come from habitual resting or living places, which to some extent distorts the information about the real distribution of this species.

It should be noted that *M. sculpturalis* may pose a potential threat to native bee species because of its relatively aggressive behavior (Lanner *et al.*, 2020; Straffon-Díaz *et al.*, 2021) and competition for nesting resources with bees of the genus *Xylocopa* Latreille, 1802 and others (Laport & Minckley, 2012; Parys *et al.*, 2015; Le Féon *et al.*, 2018).

Based on the results of modeling the distribution and ecological niche of this species (Polidori & Sánchez-Fernández, 2020), it was shown that the most favorable conditions



**Fig. 2.** Evidence of *Megachile sculpturalis* life activity in different habitats in Ukraine: *A* – ♀ *Megachile sculpturalis*, Zaporizhzhia, Khortytsia Island; *B* – ♀ *M. sculpturalis* during nesting in dead wood Zaporizhzhia, Khortytsia Island; *C* – nesting substrate, Zaporizhzhia, Khortytsia Island; *D* – ♀ *M. sculpturalis*, Mykolaiv, Victor Strenada's collection, photo Victor Strenada; *E* – ♀ *M. sculpturalis*, dead specimen found by Grigory and Larisa Demydova, photo Grigory and Larisa Demydova; *F*, *G* – nesting substratum and habitat, Kuyalnitsky estuary, Kotovka village, Odesa region, photo Grigory and Larisa Demydova. All photos are posted with the permission of the authors

for its dispersal are areas with lower temperature variations and moderate precipitation regimes, and almost the entire territory of Ukraine is suitable for the distribution of this species.

Thus, based on the analysis of the data and our own findings, we assume that this species is much more common in Ukraine, which, in general, requires more attention from researchers of different backgrounds.

We should note the important role of citizen science, which is just beginning to gain momentum in Ukraine, through which large areas can be covered for monitoring, and new finds of different insect species can be discovered.

## CONCLUSIONS

The invasive species, *Megachile sculpturalis*, actively spreads over the territory of Ukraine due to anthropogenic transport and ecological plasticity. To date, this is the first research work showing the distribution of the giant resin bee in Ukraine. Active involvement of activists and nature lovers in the monitoring of this species has a huge potential for collecting a large amount of data and obtaining the most relevant information.

## COMPLIANCE WITH ETHICAL STANDARDS

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Human Rights:** This article does not contain any studies with human subjects performed by any of the authors.

**Animal Studies:** All international, national and institutional guidelines for the care and use of laboratory animals were followed.

## AUTHOR CONTRIBUTIONS

Conceptualization, [H.H.]; methodology, [H.H.; M.M.]; validation, [-]; formal analysis, [-]; investigation, [H.H.; M.M.; D.G.; O.B.; K.P.]; resources, [H.H.; M.M.; D.G.; O.B.; K.P.]; data curation, [-]; writing – original draft preparation, [H.H.; M.M.]; writing – review and editing, [H.H.; M.M.]; visualization, [H.H.; M.M.]; supervision, [H.H.]; project administration, [H.H.]; funding acquisition, [-].

All authors have read and agreed to the published version of the manuscript.

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## REFERENCES

Aguado, O., Hernández-Castellano, C., Bassols, E., Miralles, M., Navarro, D., Stefanescu, C., & Vicens, N. (2018). *Megachile (Callomegachile) sculpturalis* Smith, 1853 (Apoidea: Megachilidae): a new exotic species in the Iberian Peninsula, and some notes about its biology. *Butlletí de la Institució Catalana d'Història Natural*, 82, 157–162.

[Google Scholar](#)

- Amiet, F. (2012). *Megachile sculpturalis* Smith, 1853 (Hymenoptera, Apidae) new for Switzerland. *Entomo Helvetica*, (5), 157–159.  
[Google Scholar](#)
- Andrieu-Ponel, V., Ponel, P., Le Féon, V., Geslin, B., & Duvallet, G. (2018). À propos du comportement de butinage de *Megachile sculpturalis* Smith, 1853, en France méditerranéenne (Nîmes et Montpellier) (Hymenoptera, Megachilidae). *Bulletin de La Société Entomologique de France*, 123(1), 49–54. doi:10.32475/bsef\_1984  
[Crossref](#) • [Google Scholar](#)
- Ascher, J. S., & Pickering, J. (2020). Discover Life bee species guide and world checklist (Hymenoptera: Apoidea: Anthophila). Retrieved from <https://www.discoverlife.org/mp/20q> (accessed on 19th August 2022).  
[Google Scholar](#)
- Batra, S. W. (1998). Biology of the giant resin bee, *Megachile sculpturalis* Smith, a conspicuous new immigrant in Maryland. *The Maryland Naturalist*, 42(1), 1–3.  
[Google Scholar](#)
- Bila Dubaić, J., Lanner, J., Rohrbach, C., Meimberg, H., Wyatt, F., Čačija, M., Galešić, M., Ješovnik, A., Samurović, K., Plečaš, M., Raičević, J., & Četković, A. (2022). Towards a real-time tracking of an expanding alien bee species in Southeast Europe through citizen science and floral host monitoring. *Environmental Research Communications*, 4(8), 085001. doi:10.1088/2515-7620/ac8398  
[Crossref](#) • [Google Scholar](#)
- Bila Dubaić, J., & Lanner, J. (2021). *Megachile sculpturalis* (Hymenoptera: Megachilidae): a valuable study organism for invasive pollinators and the role of beekeepers in ongoing monitoring programs. *Bee World*, 98(3), 78–82. doi:10.1080/0005772x.2021.1940580  
[Crossref](#) • [Google Scholar](#)
- Bila Dubaić, J., Plečaš, M., Raičević, J., Lanner, J., & Četković, A. (2022). Early-phase colonisation by introduced sculptured resin bee (Hymenoptera, Megachilidae, *Megachile sculpturalis*) revealed by local floral resource variability. *NeoBiota*, 73, 57–85. doi:10.3897/neobiota.73.80343  
[Crossref](#) • [Google Scholar](#)
- Bila Dubaić, J., Raičević, J., Plečaš, M., Lanner, J., Nikolić, P., Žikić, V., Stanisavljević, L., Četković, A. (2021). Further range expansion of the sculptured resin bee (*Megachile sculpturalis*) in Serbia and Bosnia & Herzegovina. *Acta Entomologica Serbica*, 26(2), 37–63.  
[Google Scholar](#)
- Četković, A., & Plečaš, M. (2017). Dalje širenje alohtone azijske pčele u Evropi: prvi nalaz *Megachile sculpturalis* na Balkanu (pp. 82–83). In *XI Symposium of entomologists of Serbia, Goč (Serbia)*. Retrieved from [http://www.eds.org.rs/SES/2017/SES\\_2017\\_Zbornik.pdf](http://www.eds.org.rs/SES/2017/SES_2017_Zbornik.pdf)
- Dillier, F. X. (2016). First observation of the invasive giant resin bee *Megachile sculpturalis* Smith, 1853 (Hymenoptera, Apidae) north of the Alps. *Entomo Helvetica*, (9), 153–156.  
[Google Scholar](#)
- Didukh, Y. P., Borsukevich, L. M., Davidova, A. O., Dziuba, T. P., Dubina, D. V., Emelyanova, S. M., ... Shiryayeva, D. V. (2020). *Biotopy stepovoi zony Ukrainy [Biotopes of Steppe zone of Ukraine]*. Kyiv; Chernivtsi: Druk-Art. (In Ukrainian)  
[Google Scholar](#)
- Flaminio, S., Ranalli, R., Zavatta, L., Galloni, M., & Bortolotti, L. (2021). Beewatching: a project for monitoring bees through photos. *Insects*, 12(9), 841. doi:10.3390/insects12090841  
[Crossref](#) • [PubMed](#) • [PMC](#) • [Google Scholar](#)
- Global Biodiversity Information Facility. Retrieved from <https://www.gbif.org/uk>
- Gogala, A., & Zadavec, B. (2018). First record of *Megachile sculpturalis* Smith in Slovenia (Hymenoptera: Megachilidae). *Acta Entomologica Slovenica*, 26(1), 79–82.  
[Google Scholar](#)
- Hinojosa-Díaz, I. (2008). The giant resin bee making its way west: first record in Kansas (Hymenoptera: Megachilidae). *ZooKeys*, 1, 67–71. doi:10.3897/zookeys.1.17  
[Crossref](#) • [Google Scholar](#)

- Hinojosa-Díaz, I. A., Yáñez-Ordóñez, O., Chen, G., Peterson, A. T., & Engel, M. S. (2005). The North American invasion of the giant resin bee (Hymenoptera: Megachilidae). *Journal of Hymenoptera Research*, 14(1): 69–77.  
[Google Scholar](#)
- Ivanov, S. P., & Fateryga, A. V. (2019). First record of the invasive giant resin bee *Megachile (Callomegachile) sculpturalis* Smith, 1853 (Hymenoptera: Megachilidae) in the Crimea. *Far Eastern Entomologist*, 395, 7–13. doi:10.25221/fee.395.2  
[Crossref](#) • [Google Scholar](#)
- Kovács, T. (2015). *Megachile sculpturalis* Smith, 1853 in Hungary (Hymenoptera, Megachilidae). *Folia Historico-Naturalia Musei Matraensis*, 39, 73–76.  
[Google Scholar](#)
- Lanner, J., Huchler, K., Pachinger, B., Sedivy, C., & Meimberg, H. (2020). Dispersal patterns of an introduced wild bee, *Megachile sculpturalis* Smith, 1853 (Hymenoptera: Megachilidae) in European alpine countries. *PLoS One*, 15(7), e0236042. doi:10.1371/journal.pone.0236042  
[Crossref](#) • [PubMed](#) • [PMC](#) • [Google Scholar](#)
- Laport, R. G., & Minckley, R. L. (2012). Occupation of active *Xylocopa virginica* nests by the recently invasive *Megachile sculpturalis* in upstate New York. *Journal of the Kansas Entomological Society*, 85(4), 384–386. doi:10.2317/0022-8567-85.4.384  
[Crossref](#) • [Google Scholar](#)
- Le Féon, V., Aubert, M., Genoud, D., Andrieu-Ponel, V., Westrich, P., & Geslin, B. (2018). Range expansion of the Asian native giant resin bee *Megachile sculpturalis* (Hymenoptera, Apoidea, Megachilidae) in France. *Ecology and Evolution*, 8(3), 1534–1542. doi:10.1002/ece3.3758  
[Crossref](#) • [PubMed](#) • [PMC](#) • [Google Scholar](#)
- Mangum, W. A., & Brooks, R. W. (1997). First records of *Megachile (Callomegachile) sculpturalis* Smith (Hymenoptera: Megachilidae) in the continental United States. *Journal of the Kansas Entomological Society*, 70, 140–142.  
[Google Scholar](#)
- Ortiz-Sánchez, F. J., & Baquero, E. (2021). *Megachile (Callomegachile) sculpturalis* Smith, 1853: nuevos e interesantes datos de distribución en la península ibérica (Hymenoptera, Megachilidae). *Boletín de la Sociedad Entomológica Aragonesa (SEA)*, 69(31/12), 257–258.  
[Google Scholar](#)
- Parys, K., Tripodi, A., & Sampson, B. (2015). The giant resin bee, *Megachile sculpturalis* Smith: new distributional records for the Mid- and Gulf-south USA. *Biodiversity Data Journal*, 3, e6733. doi:10.3897/bdj.3.e6733  
[Crossref](#) • [PubMed](#) • [PMC](#) • [Google Scholar](#)
- Poggi, R., Tavano, M. L., & Bonifacino, M. (2020). Reperti liguri di *Megachile (Callomegachile) sculpturalis* Smith, 1853 (Hymenoptera, Megachilidae). *Annali del Museo Civico di Storia Naturale Giacomo Doria*, 9, 1–6.  
[Google Scholar](#)
- Polidori, C., & Sánchez-Fernández, D. (2020). Environmental niche and global potential distribution of the giant resin bee *Megachile sculpturalis*, a rapidly spreading invasive pollinator. *Global Ecology and Conservation*, 24, e01365. doi:10.1016/j.gecco.2020.e01365  
[Crossref](#) • [Google Scholar](#)
- Quaranta, M., Sommaruga, A., Balzarini, P., & Felicioli, A. (2014). A new species for the bee fauna of Italy: *Megachile sculpturalis* continues its colonization of Europe. *Bulletin of Insectology*, 67(2), 287–293.  
[Google Scholar](#)
- Ribas-Marquès, E., & Díaz-Calafat, J. (2021). The Asian giant resin bee *Megachile sculpturalis* Smith 1853 (Hymenoptera: Apoidea: Megachilidae), a new exotic species for the bee fauna of Mallorca (Balearic Islands, Spain). *Journal of Apicultural Research*, 60(3), 506–511. doi: 10.1080/00218839.2021.1874177  
[Crossref](#) • [Google Scholar](#)



- Ruzzier, E., Menchetti, M., Bortolotti, L., Selis, M., Monterastelli, E., & Forbicioni, L. (2020). Updated distribution of the invasive *Megachile sculpturalis* (Hymenoptera: Megachilidae) in Italy and its first record on a Mediterranean island. *Biodiversity Data Journal*, 8, e57783. doi:10.3897/bdj.8.e57783  
[Crossref](#) • [PubMed](#) • [PMC](#) • [Google Scholar](#)
- Sheffield, C. S., Ratti, C., Packer, L., & Griswold, T. (2011). Leafcutter and mason bees of the genus *Megachile* Latreille (Hymenoptera: Megachilidae) in Canada and Alaska. *Canadian Journal of Arthropod Identification*, 18, 1–107. doi:10.3752/cjai.2011.18  
[Crossref](#) • [Google Scholar](#)
- Straffon-Díaz, S., Carisio, L., Manino, A., Biella, P., & Porporato, M. (2021). Nesting, sex ratio and natural enemies of the giant resin bee in relation to native species in Europe. *Insects*, 12(6), 545. doi:10.3390/insects12060545  
[Crossref](#) • [PubMed](#) • [PMC](#) • [Google Scholar](#)
- Vereecken, N. J., & Barbier, É. (2009). Premières données sur la présence de l'abeille asiatique *Megachile (Callomegachile) sculpturalis* Smith (Hymenoptera, Megachilidae) en Europe. *Osmia*, 3, 4–6. doi:10.47446/osmia3.3  
[Crossref](#) • [Google Scholar](#)
- Westrich, P. (2017). Erstnachweis der Asiatischen Mörtelbiene (*Megachile sculpturalis*) in Österreich [Projekte *Megachile sculpturalis* 7]. Retrieved from [https://wildbienen.info/forschung/projekte\\_17.php](https://wildbienen.info/forschung/projekte_17.php)  
[Google Scholar](#)
- Westrich, P. (2020). Neues zur Ausbreitung der Mörtelbiene *Megachile sculpturalis* Smith 1853 (Hymenoptera: Anthophila) in Deutschland – stand Oktober 2019. *Eucera*, 14, 12–25.  
[Google Scholar](#)
- Westrich, P., Knapp, A., & Berney, I. (2015). *Megachile sculpturalis* Smith 1853 (Hymenoptera, Apidae), a new species for the bee fauna of Germany, now north of the Alps. *Eucera*, 9, 3–10.  
[Google Scholar](#)

## НОВІ ЗНАХІДКИ ІНВАЗІЙНОГО ВИДУ *MEGACHILE SCULPTURALIS*, SMITH, 1853 В УКРАЇНІ

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**Обґрунтування.** Біологічні інвазії є однією із визнаних причин, що призводять до втрати різноманіття. Серед диких бджіл відомо лише 3 інвазійні види у Європі, один з яких – *Megachile (Callomegachile) sculpturalis* Smith, 1853 (Hymenoptera: Megachilidae), поширюється швидко, і його вплив на місцеве різноманіття залишається досконально не дослідженим. Для моніторингу цього інвазійного виду у Європі залучено зусилля не тільки науковців, а й багатьох натуралістів аматорів. Адже унікальність зовнішності цього виду та відсутність схожих видів родини Megachilidae у Європі дає змогу легко його ідентифікувати навіть за допомогою фотодоказів.

Цей орієнтальний вид уперше було зареєстровано в Європі у 2008 р., в Україні – у 2018 р. Метою роботи є дослідження поширення *M. sculpturalis* на території України та деякі особливості його екології.

**Матеріал і методи.** Об'єктом дослідження є чужорідний вид диких бджіл *Megachile sculpturalis*. Для аналізу даних використано знахідки натуралістів-аматорів і їхні фотодокази, а також власний колекційний матеріал. Для ідентифікації користувалися біноклярним стереоскопічним мікроскопом Olympus SZX 12 та спеціалізованими визначниками.

**Результати.** У роботі представлено аналіз знахідок інвазійного виду *M. sculpturalis* в Україні. Виявлено 5 нових пунктів його поширення на території Запорізької (м. Запоріжжя, о. Хортиця), Одеської (м. Одеса, м. Чорноморськ, Куяльницький лиман) та Миколаївської (м. Миколаїв) областей, що дало змогу змінити хронологію його заселення в Україні та розширити мапу його поширення. Під час вибору місць гніздування бджоли виявляли відносну екологічну пластичність, водночас константність у разі повторного заселення гніздових порожнин.

**Висновки.** За результатами аналізу даних і власних спостережень з'ясовано, що чужорідний вид *M. sculpturalis* занесений в України неодноразово та у різні місця, що дає йому змогу закріплюватися у вторинному ареалі, формувати життєздатне потомство й успішно відтворюватися. Наше дослідження також доводить надважливе значення громадянської науки та необхідність активного залучення натуралістів до моніторингу.

**Ключові слова:** *Megachile sculpturalis*, інвазії, Україна, нові знахідки