

***Dolomedes plantarius* (Araneae, Pisauridae) in Belarus: records, distribution and implications for conservation**

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Abstract. *Dolomedes plantarius* (Clerck, 1757) is becoming another iconic species within European conservation programmes. It is commonly accepted that the densest populations of this species are situated in Western Europe and many records confirm this. At the same time Eastern European populations are often not taken into account when assessing future dynamics of species distribution due to climate change. Here we provide data about *D. plantarius* in Belarus, which includes both an extensive literature survey and our own records in different parts of the country. The evidence provided suggest that Belarus is currently a large refugium for the fen raft spider, which was found during the last 30 years practically everywhere where specialists were interested in its study. We suggest that involvement of international research teams in studies of *D. plantarius* in Belarus will ensure the most efficient population management in Europe.

Keywords: protected areas, Red List, spiders, vulnerable species

Zusammenfassung. *Dolomedes plantarius* (Araneae, Pisauridae) in Weißrussland: Nachweise, Verbreitung und Folgerungen für ihren Schutz. *Dolomedes plantarius* (Clerck, 1757) wird als relevante Art in europäischen Naturschutzprogrammen zunehmend berücksichtigt. Dabei wird allgemein angenommen, dass der Schwerpunkt der Verbreitung der Art in Westeuropa liegt, was auf der Vielzahl der Nachweise von dort beruht. Die osteuropäischen Vorkommen wurden bisher meist nicht beachtet, wenn klimabedingte Verbreitungsveränderungen der Art modelliert wurden. Daten zu *D. plantarius* aus Weißrussland werden vorgestellt, einerseits aus intensiver Literaturarbeit und andererseits aus eigenen Nachweisen in verschiedenen Teilen des Landes. Damit wird deutlich, dass Weißrussland ein bedeutendes Reservoir für die Art darstellt. Sie wurde in den letzten 30 Jahren fast immer gefunden, wenn gezielt nach ihr gesucht wurde. Wir empfehlen dass die Vorkommen in Weißrussland in die internationale Forschung einbezogen werden, um die Schutzprogramme für die Art zu optimieren.

Dolomedes plantarius (Clerck, 1757) is the only protected spider in Belarus. It has conservational status III in the Red Book of Belarus (2006) and is considered as vulnerable (VU) according to the IUCN (World Conservation Monitoring Centre 1996). Despite its important status *D. plantarius* was not studied in Belarus in any detail and our current work is an attempt to put together all known records about this species as well as to present our own data. The distribution and status of *D. plantarius* in Europe was nicely discussed by Duffey (2012) and one of the points we also would like to emphasize is that this species is quite likely to have considerably more dense populations in various parts of Europe than was believed before. Recent discoveries in various countries confirm this idea (Duffey 2012). The information provided here about earlier records of *D. plantarius* in Belarus might seem to be excessive but most of the publications on which we based our research are in Belarusian or Russian and many of these works are conference presentations, hence unavailable for most of the arachnologists in the world. Also data about habitats and types of water bodies where this spider species was found might be of additional interest to ecologists and conservation biologists. We hope that provided data will be useful when planning conservation activities as well as will help to create more reliable models of *D. plantarius* population dynamics in Europe.

History of records of *D. plantarius* in Belarus

The first mention of *D. plantarius* in Belarus dates back to 1986 (Shlyakhtyonok 1986). In his study the author claimed

to have found this species in a dry (!) meadow with the help of a Barber trap. The meadow was located in the territory of the Biarezinski Biosphere Reserve, in the middle and north of the country. The identification was confirmed by the Russian arachnologist V. I. Ovcharenko. It is believed to be the first record of *D. plantarius* in Belarus, however, the close relative *D. fimbriatus* is known from previous work by Litvinova et al. (1980) where all the data about spiders of Belarus ever collected up to that time were systematized. It is quite possible that *D. plantarius* was caught earlier but identified as *D. fimbriatus* which used to be the typical situation in the first half of the 20th century (Helsdingen 1994). Unfortunately, the specimen collected by Shlyakhtyonok (1986) is not available so we could not examine it. In the Red Book of Belarus (2006) there is also a mention of a site in the territory of national park "Prypiacki" where *D. plantarius* was collected sometime between 1986 and 2006 (the date when the Red Book was issued). The observation was most probably made by J. Zhukovets and there is no specimen available to check it.

It is very strange that such an interesting and large species was missed by specialists in Belarus so, in fact, there is a gap in the records that lasted for almost 20 years. We doubt that this was connected with rarity of the *D. plantarius* because our own investigations showed rather dense populations at different sites in this country.

The third record was in 2002–2003, but the data was published only in 2007 which meant it was not included into Red Book of Belarus published in 2006 (Moroz & Shavanova 2007). *Dolomedes plantarius* was collected with help of a hydrobiological net in two of eight sites. Both of the sites were lakes (Lubień and Karosina) in the territory of the National Park "Prypiacki". The first lake, Lubień (52°03'49.2"N 28°12'35.2"E), where *D. plantarius* was present was flooded during the spring time. The shores were overgrown with *Typha*, *Phragmites* and *Carex*. The second lake, Karosina (52°04'09.9"N 28°11'58.7"E), was also flooded during snow

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melting in spring and its shore was also overgrown with *Typha*, *Phragmites* and *Carex*, however at the very water line *Stratiotes* was present as well. Moroz & Shavanova (2007) did not provide the exact number of specimens collected and just show the percentage of *D. plantarius* among other spiders sampled in all sites and within the two where it was present (2.8, 4.76 and 3.9 % respectively). In total, 14 species of 6 families were collected at all 8 sites. No specimens of *D. plantarius* are available now.

The next unequivocal record comes from V. Lukin (Lukin 2006a). *Dolomedes plantarius* was found on the bank of an irrigation channel, two kilometres to the north of the village of Bahušoŭka in 09.07.2004, 53°46'27.7"N 23°55'59.8"E. There were two females with egg sacs. One of them was taken to the laboratory and died within 5 days; no spiders emerged from the egg sac. In 2005, V. Lukin visited the same channel, but after the channel had been cleaned there were no *Dolomedes* at all (Lukin 2006b). We examined the specimen collected by Lukin and confirm its identity as *D. plantarius*; we also provide a photo of its epigyne (Fig. 1 a).

In the Brest region, in the south-western part of Belarus, Demjanczyk (2006) reported the presence of *D. plantarius* within the reserve "Prybužskaje Palešsie", but no further information was provided. We decided not to include this record on our map as it is very doubtful. No known arachnologist from Belarus or abroad has worked at this site or has at least published anything on the matter. The record exists as part of a list with no exact site, picture or other evidence.

The next site where *D. plantarius* was definitely present was in the near vicinity of the Pyški forest, in the Hrodna region on the bank of the river Nioman, 2006, coordinates 53°40'40.5"N 23°46'52.9"E (Ryzhaya & Kopysova 2007). We could not examine the specimen, however it might still be preserved in the personal collection of Ryzhaya at the Hrodna State University.

The only record from National Park "Braślauškija lakes" dates back to 2007. *Dolomedes plantarius* was mentioned in a preliminary report of the project devoted to development of the National Park (Maksimienkaŭ 2011). The site mentioned is the shore of lake Ryčy in the vicinity of the village of Mikałajuncy, 55°40'23.9"N 26°43'42.9"E. The spider was found and identified by Maksimienkaŭ. No data about exact date, distribution, density, sex and age were provided. If the record is valid it is the northernmost record of *D. plantarius* in Belarus. However, from the 09–20 September, 2013 we visited several other lakes and rivers in the territory of the National Park and found no trace of *D. plantarius*. Lake Ryčy was not investigated though so it is unclear whether the spider is really present there.

Another record was from the "Rare and protected species of invertebrates of National Park "Prypiacki" (Chizhevskaya 2009). The author indicated two specimens of *D. plantarius* that were present in the territory of the National Park. One of them was observed near the village of Simanickaja Rudnia near the river Svinavod in 01.05.2008 (Approximate coordinates 51°55'N 28°07'E). The second was found on 31.05.2008 in the Azeranskaje forestry, square 309, site 9 in birch forest with sedge and *Sphagnum* moss (51°59'14.4"N 27°58'43.8"E). The author did not provide data about the sex of the specimens or their age. In addition, we could not find the samples but the territory of the National Park "Prypiacki" seems to

include many places with favourable conditions for *D. plantarius*. On the map issued in 2012 (available at <http://www.npp.by/sertificat/map%20animals.php>), there are four places in the park where *D. plantarius* is present including two sites mentioned by Chizhevskaya (2009). The data about other two records is unknown. Probably these are the first sites mentioned in the Red Data Book of 2006. Also, the sites mentioned in Moroz & Shavanova (2007) are not present in this scheme.

In one of the most protected National Parks of the Republic – Bielaviežskaja forest – the records are few but reliable. In 2007 one female was collected by J. Hihiniak on river Pravaža Lasnaja (52°27'N 24°05'E) and in 2011 one female was registered on the river Višnia near the village of Dziedaŭka, 52°28'57.9"N 24°01'23.8"E (Bajčoraŭ et al. 2011). The first specimen was examined and photos were taken (Fig. 1 b). Within the same collection of conference papers we found records of *D. plantarius* from the vicinity of Hrodna and Ščučyn by Ryžaja et al. (2011). No exact sites were mentioned, but we believe that the data presented are the same as that already published in 2006.

Savarin & Ostrovsky (2011) published data about several records from the south-east of Belarus. Their investigation was devoted to two spider species *D. plantarius* and *Argiope bruennichi* (Scopoli, 1772) in the Homel region. It was rather fruitful and the information presented was about three sites on different rivers. The first record was in June 2007 on the left bank of river Dniepr at the place where river Biarezina flows into it (between the villages Smyčok and Berahavaža Slabada, Rečycki district, 52°32'58.8"N 30°15'04.9"E) and on the right bank of river Biarezina several hundred meters above junction of these two rivers (52°32'58.8"N 30°15'04.9"E). The second site was on the right bank of river Vuza, in the Buda-Kašaloŭski district (August 2009). The third one was near the bay of the river Sož in the temporary water body of a gravel road, Homel city edge (August 2010). In the last two cases it was difficult to figure out even approximate coordinates. The authors also provided photos of general appearance of the spider (Savarin & Ostrovsky 2011).

One female was registered 22.05.2013 by Moroz and Laenko on the bank of river Słuč near the village of Pracevičy (52°56'37.4" N, 27°34'63.1"E) while conducting a survey of the invertebrate fauna of the rivers Słuč and Lakneja. The spider was collected with a hydrobiological net (Moroz & Laenko 2013). We could not examine the specimen.

Finally, Ostrovsky published his records of *D. plantarius* from south-east of Belarus in 2014. This work included records previously mentioned and one new site in south-west edge of Homel on the bank of river Sož (52°23'N 31°00'E) (Ostrovsky 2014).

Recent findings of *D. plantarius* in Belarus

Our own findings are presented in Tab. 1, some of which were already published (Ivanov 2012). The genitalia of the available specimens are presented in Fig. 1. The only questionable record is a *D. plantarius* female from a pond near the biological faculty of the Belarusian state University. Therefore, the figures of the habitus and genitalia are presented separately for this case (Fig. 2). Also, the specimen collected by students from the Maksim Tank State Pedagogical University near Zialonaje village, Minsk region, approximately 30 km from Minsk, was an adult female but we could not track the precise

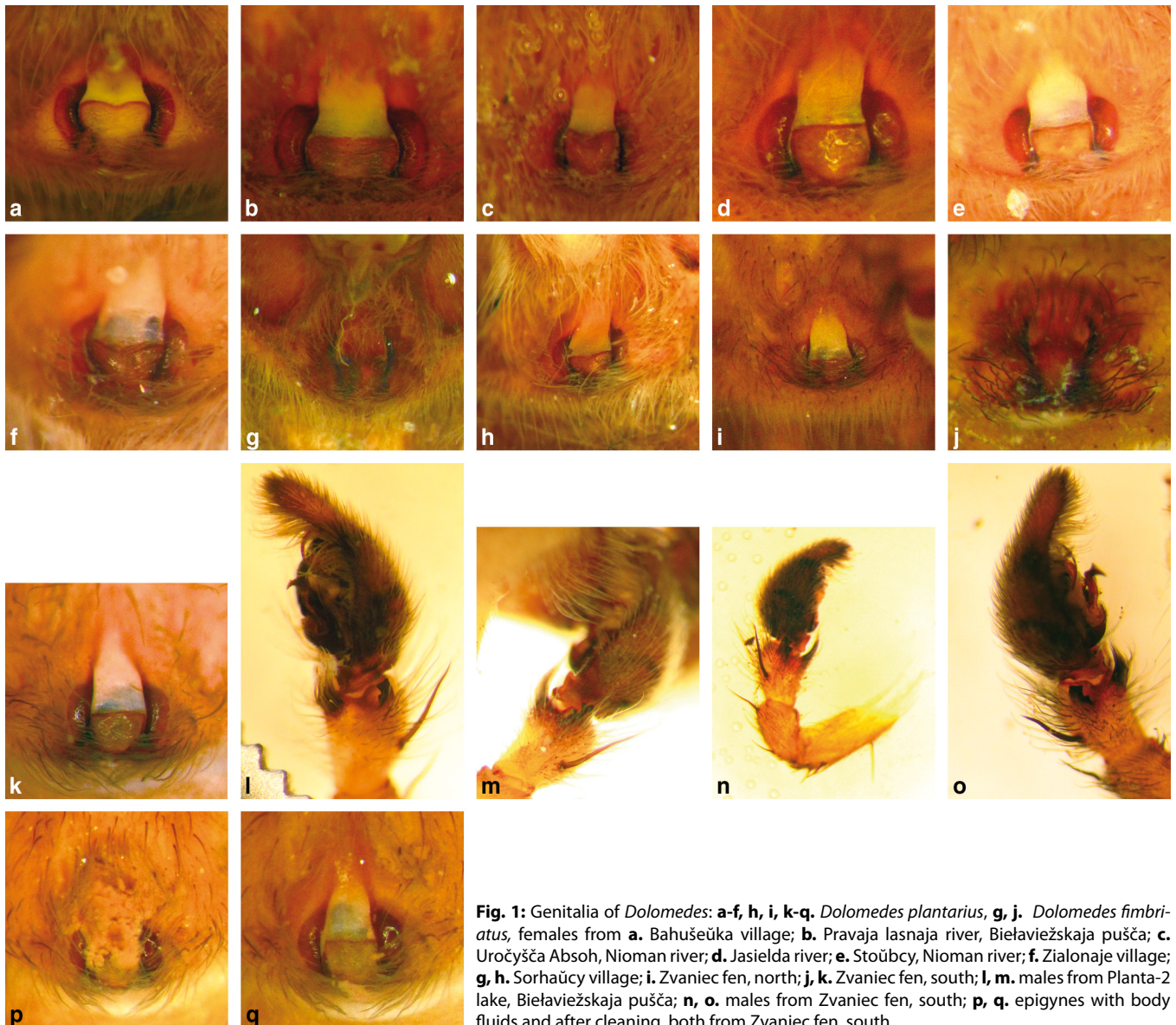


Fig. 1: Genitalia of *Dolomedes*: **a-f, h, i, k-q.** *Dolomedes plantarius*, **g, j.** *Dolomedes fimbriatus*, females from **a.** Bahušeŭka village; **b.** Pravaja lasnaja river, Bielaviežskaja pušča; **c.** Uročyšča Absoh, Nioman river; **d.** Jasielda river; **e.** Stoŭbcy, Nioman river; **f.** Zialonaje village; **g, h.** Sorhaŭcy village; **i.** Zvaniec fen, north; **j, k.** Zvaniec fen, south; **l, m.** males from Planta-2 lake, Bielaviežskaja pušča; **n, o.** males from Zvaniec fen, south; **p, q.** epigynes with body fluids and after cleaning, both from Zvaniec fen, south

site or conditions there. It is quite probable that the specimen was on the bank of river Čarnica, but we cannot be sure (epigyne, Fig. 1 f). We cannot provide exact coordinates, so the specimen is marked with “?” in the table.

The sites where *D. plantarius* was most abundant (though we did not collect many specimens due to conservation reasons) were the rivers Vilija (north-west), Rasta and Biesiedź (south-east) and Zvaniec fen (south). Within all of these sites both *D. plantarius* and *D. fimbriatus* occurred simultaneously. Near Planta-2 lake, which is situated in the National Park “Bielaviežskaja forest”, only *D. plantarius* was found.

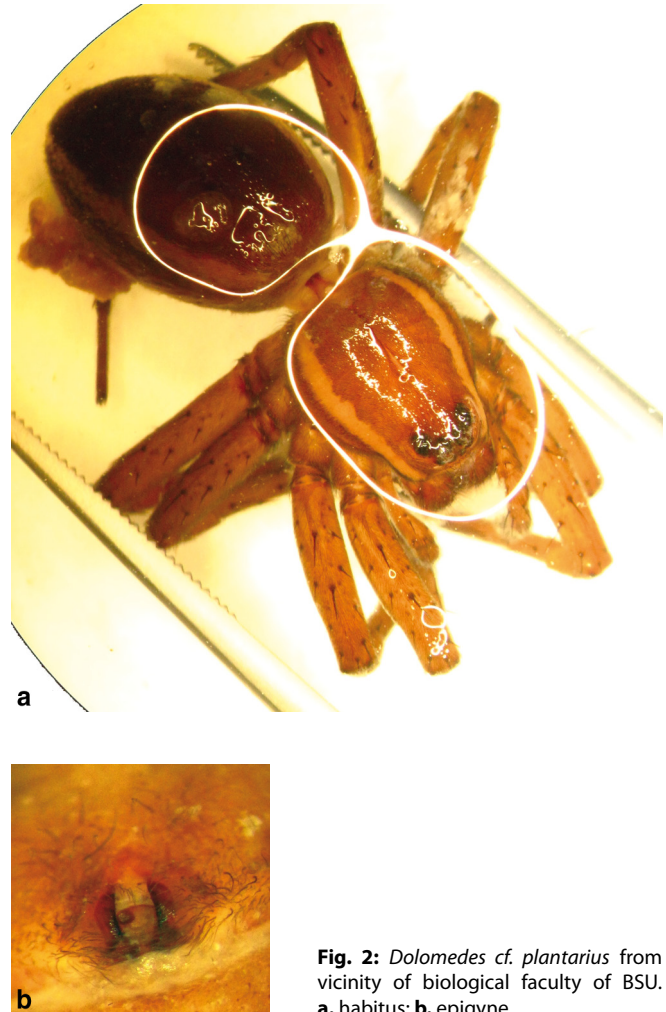
Interesting observation concerned the appearance of the epigyne in two cases of females from Zvaniec fen. The middle bright plate was covered with a pink-brown secretion which Harms et al. (2009) believe to be the remnants of some glandular activity while the female was laying eggs. Another possibility is that it was plain dirt. After removing the secretion there is no doubt about the characteristic features of the *D. plantarius* epigyne (Figs 1 p-q). However, such cases are mentioned rarely so unexperienced arachnologists might mistake examples with secretion as a *D. fimbriatus* epigyne without the bright white plate.

Distribution of *D. plantarius* in Belarus

According to the geography of our findings it seems that some groups of probable populations can be determined. Yet, it is impossible to set real boundaries between them now, as many records represent only the presence of a single specimen at a site, and distances between them are large. However, there might be one cluster of populations associated with the river Nioman and quite likely adjacent rivers and other water bodies. At least, *D. plantarius* was found practically along the whole length of the Nioman in Belarus. Another cluster seems to exist in the basin of the Dniepr river, including Sož, Biesiadź, and Biarezina of the large rivers that flow into it. Finally, there are populations within basin of the river Prypiać. The last two clusters are probably connected to each other. Population(s) on the river Vilija are quite likely to be isolated from other populations due to geographical barriers, as well as the northern ones if they really exist (Fig. 3). The majority of *D. plantarius* records in Belarus are associated with rivers or channels. At the same time the Zvaniec fen population of *D. plantarius* seems to be substantial and such biotopes may also be more favourable for this species. In Great Britain, all populations are associated with fens (Duffey 2012), similarly

Tab. 1: Summary of our records of *D. plantarius* in Belarus

| Date | Water body | Coordinates | <i>D. plantarius</i> ♂/♀ |
|-----------------------|-----------------|---|---|
| 09.07.2012 | Nioman river | 53°26'30.2"N 24°44'23.9"E | -/1 |
| 09.08.2012 | Jaselda river | 52°07'02.68"N 26°26'44.83"E | -/1 |
| 25.06.2013 | Planta-2 lake | 52°34'29.8"N 23°46'40.0"E | 3/- |
| 15.07.2013 | Nioman river | 53°29'57.0"N 26°39'03.8"E | -/1 |
| 09.2013 | ?, Minsk region | ? | -/1 |
| 12.09.2013 | Vilija river | 54°46'30.7"N 26°12'36.1"E | -/1 |
| 05.06.- 18.08.2014 | Zvaniec fen | 52°04'43.6"N 24°49'51.4"E and 52°05'42.0"N 24°52'55.2"E | 3/6 |
| 14.06.2014 | BSU, pond | 53°50'10.7"N 27°28'01.4"E | -/1? |
| 06.2015 | Rasta river | 53°45'93.41"N 30°42'43.61"E | 1 specimen per transect 100 × 5 m along both river banks |
| 06.2015 | Biesiedź river | 53°21'45.24"N 32°26'50.87"E | |
| 06.2015 | Biesiedź river | 53°11'91,839"N 31°54'09,550"E | |
| 06.2015 | Biesiedź river | 53°17'05,78"N 32°11'35,81"E | |
| 06.2015 | Biesiedź river | 53°19'50,78"N 32°00'67,70"E | |

**Fig. 2:** *Dolomedes cf. plantarius* from vicinity of biological faculty of BSU. **a.** habitus; **b.** epigyne

in the Czech Republic, the few known populations live in the littoral zone of ponds and cut-off meanders (Buchar & Růžicka 2002). It is known that practically no specialists in Belarus have ever tried to find *D. plantarius* intentionally and it was often collected occasionally while scientists were conducting other more general research. In fact, there was no specific work ever devoted to spiders of fens or bogs in Belarus.

Despite the fact that our, and previous, investigations have not yielded many specimens it is obvious that *D. plantarius* is widespread in Belarus. In short, it is present everywhere except for the north-east of the country. In 2013 we travelled through several districts of the Viciebsk region including the Western Dźvina and Dzisna rivers and did not find any specimens. However, our investigation was very short and we cannot be sure that *D. plantarius* is absent there. In addition, such large rivers as the Western Buh, Drysa, Uła, Ubarć, Druć, Pina, Łań, Ščara and many others have never been examined along with numerous fens and lakes in the territory of Belarus. Another important observation is that both species of *Dolomedes* may occur simultaneously within the same biotope. Such results were reported before (Holec 2000), but in this case the author was very careful in stating that the species coexist. We observed no differences in patterns of distribution of the two species and it seems that it is common for both of them to share the same biotope. At least within three of the most densely populated biotopes (the rivers Vilija, Biesiedź and Zvaniec fen) *D. plantarius* and *D. fimbriatus* were found

together. The next step is to look at the dynamics of both species in order to evaluate competition rates and their actual preferences in terms of abiotic factors.

It is our strong belief that Belarus has many potential sites where *D. plantarius* might be present and that its populations are big and healthy. Previous lack of records is explained simply by lack of interest from the side of specialists and amateurs as well as a lack of specialists themselves. It is obvious that the importance of Belarus for conservation purposes is underestimated by specialists from Western Europe, while the country has plenty of water bodies suitable for the species. There are more than 20 000 rivers, 10 000 lakes and numerous swampy areas (more than 14 % of the territory of the country!). The territory of Belarus is practically equal to the territory of Great Britain but the human population is 6 times lower which ensures the safety of natural biotopes simply by the inability to destroy it. Also, 8 % of the territory is already protected and as soon as *D. plantarius* is included in The Red Book of Belarus every record is a legal reason to confer conservational status to a particular territory and increase the total amount of protected areas. Models that predict distribution and dynamics of *D. plantarius* in Europe (Leroy et al., 2013) underestimated the presence of the species in Belarus and probably the calculations were slightly wrong, however, the general trend is correct. If the populations will shift in time to the east and north of Europe due to climate change, newcomers will find the sites already occupi-

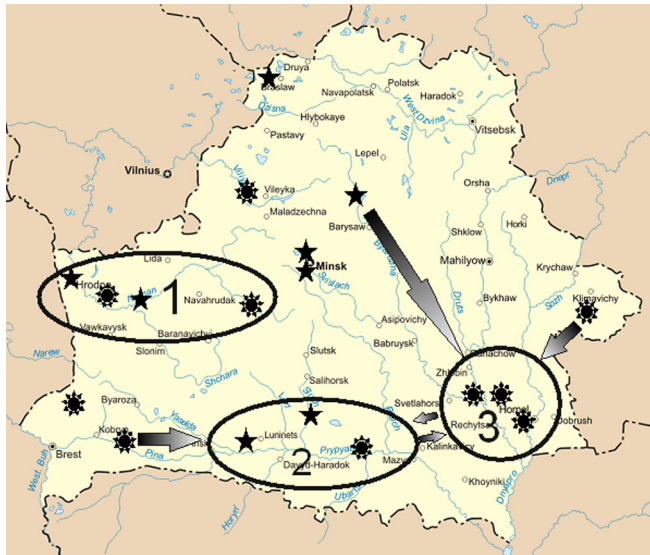


Fig. 3. The scheme of *Dolomedes plantarius* distribution in Belarus. Five-pointed stars – single specimen, multiple-pointed stars – several specimens. Areas marked with black lines – probable populations' clusters (1 – Nioman cluster, 2 – Prypiac cluster, 3 – Dniapro cluster). Arrows – probable connections between clusters.

ed and we can expect admixture between them. However the consequences are hard to predict.

To sum up, if there is a strong intention to save *D. plantarius* in Europe it is essential that not only Belarusian specialists will be involved in investigation of this species within Belarus itself, but all interested legal bodies and scientists across the Europe.

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References

- Bajčora U, Hihiniak J & Hihiniak I 2013 New records of species listed in the Red Book of Belarus and invasion of Eastern Crayfish to water bodies of National Park "Bielaviežskaja forest. In: Conference materials "Red Book of Republic of Belarus: State, Issues and Perspectives". Viciebsk. pp. 7-9 [in Russian]
- Buchar J & Růžicka V 2002 Catalogue of spiders of the Czech Republic. Peres, Praha. 351 pp.
- Chizhevskaya TP 2009 Rare and protected species of invertebrate animals of National Park "Prypiacki". In: Conference materials "Issues of conservation of biological diversity and management of biological resources", Minsk, SSPA "Scientific and practical centre of NAS of Belarus for biological resources" 1: 262-264 [in Russian]
- Demjanichik VT 2006 Biosphere reserve "Prybužskaje Palešsie". Academia publishing, Brest. pp. 143-144 [in Russian]
- Duffey E 1995 The distribution, status and habitats of *Dolomedes fimbriatus* (Clerck) and *D. plantarius* (Clerck) in Europe. – Proceedings of the 15th European Colloquium of Arachnology: 54-65
- Duffey E 2012 *Dolomedes plantarius* (Clerck, 1757) (Araneae: Pisauridae): a reassessment of its ecology and distribution in Europe, with comments on its history at Redgrave and Lopham Fen, England. – Bulletin of British Arachnological Society 15: 285-292 – doi: [10.13156/arac.2012.15.1.285](https://doi.org/10.13156/arac.2012.15.1.285)
- Harms D, Dunlop JA & Schütt K 2009 Neue Nachweise der Gerandeten Wasserspinne *Dolomedes plantarius* in Brandenburg (Araneae: Pisauridae). – Arachnologische Mitteilungen 37: 1-8 – doi: [10.5431/aramit3701](https://doi.org/10.5431/aramit3701)
- Heldsingen PJ van 1994 Ecology and distribution of *Dolomedes* in Europe (Araneida: Dolomedidae). – Bolletino dell' Accademia Gioenia di Scienze Naturali 26 (345, for 1993): 181-187
- Holec M 2000 Spiders (Araneae) of the fishpond eulittoral zone. In: Gajdoš P & Pekár S (eds.) Proceedings of the 18th European Colloquium of Arachnology v Stará Lesná. – Ekológia (Bratislava) 19, Supplement 4: 51-54
- Ivanou U 2012 Investigation of *Dolomedes plantarius* (Clerck, 1757) in Belarus. In: Proceedings of VIII Scientific and Practical Conference "Current Issues of Ecology", Hrodna. Janki Kupaty HrSU. pp. 86-87 [in Belarusian]
- Litvinova, AN, Shlyakhtyonok AS & Ovcharenko VI 1980 On the Fauna of Spiders (Aranei) of Belarus. Transactions of Academy of Sciences of Bielarussian Soviet Socialistic Republic. Biological Science Series (3114). Deposited in VINITI. pp. 1-12 [in Russian]
- Leroy B, Paschetta M, Canard A, Bakkenes M, Isaia M & Ysnel F 2013 First assessment of effects of global change on threatened spiders: Potential impacts on *Dolomedes plantarius* (Clerck) and its conservation plans. – Biological Conservation 161: 155-163 – doi: [10.1016/j.biocon.2013.03.022](https://doi.org/10.1016/j.biocon.2013.03.022)
- Lukin VV 2006a The spider fauna on the soil-reclamation Channel Bank. In: Proceedings of X Scientific Conference NIRS. Belarusian State University, Minsk. p. 110 [in Russian]
- Lukin VV 2006b Dynamics of the spider fauna on the soil-reclamation channel under the Influence of anthropogenic factors. – Proceedings of VI International Conference "Ecological Problems of XXI Century", Minsk 1: 320-322 [in Russian]
- Maksimienka M 2011 *Dolomedes plantarius*. In: Unpublished intermediate report "The Development of Management plan of National Park "Braslauskija lakes". Minsk. p. 20 [in Russian]
- Moroz MD & Layenko TM 2013 Aquatic invertebrate animals of rivers Shuč and Łakneja. – Proceedings of Viciebsk State University 7 (5): 76-82 [in Russian]
- Moroz MD & Shavanova TM 2007 Aquatic and semiaquatic spiders of flood-land oak forests in National Park "Prypyatskiy". – Bulletin of Belarusian State University (2) 3: 63-66 [in Russian]
- Ostrovsky AM 2014 Ecology and distribution of spiders of genus *Dolomedes* Latreille, 1804 (Araneae, Pisauridae) in south-west Belarus. – Young scientist 3 (1): 8-11 [in Russian]
- Red Book of the Republic of Belarus 2006 Animals. Ministry of natural resources and natural environment protection, Minsk. 318 pp. [in Russian]
- Ryzhaja AV & Kopysova TS 2007 New records of protected invertebrate species in Grodno region. In: Colloquium of scientific works "Ecological Issues of West Region of Belarus". Hrodna State University. pp. 166-167 [in Russian]
- Ryzhaja AV, Kopysova TS & Janurevich OV 2013 Rare and protected species of Grodno region. In: Conference materials "Red Book of Republic of Belarus: State, Issues and Perspectives". Viciebsk. pp. 150-151 [in Russian]
- Savarin AA & Ostrovsky AM 2011 Distribution of spiders *Argiope bruennichi* (Scopoli, 1772) and *Dolomedes plantarius* (Clerck, 1758) in south-west of Belarus. – Transactions of P.M. Masherov Vitebsk [Viciebsk] State University 1 (61): 55-58 [in Russian]
- Shlyakhtyonok AS 1986 The spider (Aranei) fauna of meadow biogeocenoses of Berezinskiy Biosphere Reserve. Transactions of Academy of Sciences of Bielarussian Soviet Socialistic Republic. Biological Science Series (2499). Deposited in VINITI. pp. 1-11 [in Russian]
- World Conservation Monitoring Centre 1996 *Dolomedes plantarius*. The IUCN Red List of Threatened Species 1996. – Internet: <http://www.iucnredlist.org/details/6790/0> (July 21, 2017) – doi: [10.2305/IUCN.UK.1996.RLTS.T6790A12806270.en](https://doi.org/10.2305/IUCN.UK.1996.RLTS.T6790A12806270.en)

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