Two new invasive alien spiders (Arachnida: Araneae) in Romanian arachnofauna

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Rezumat

Două specii invasive de păianjeni (Arachnida: Araneae) noi pentru fauna României

Un număr mare dintre araneele care trăiesc în case sau în alte tipuri de construcţii omeneşti sunt specii invazive, introduse de om.

Segestria florentina (Rossi, 1790) din familia Segestriidae şi *Achaearanea tabulata* Levi, 1980 din familia Theridiidae sunt două specii invazive semnalate pentru prima oară în fauna României.

Abstract

A great number of spiders living in houses and other human-made structures are invasive alien species, they are introduced by humans.

Segestria florentina (Rossi, 1790) from the family Segestriidae and *Achaearanea tabulata* Levi, 1980 from the family Theridiidae are two new invasive alien species (IAS) in Romania.

Key words: Romania, new records, invasive alien species (IAS), faunistics, araneae

Introduction

Introductions of species beyond their natural range are rising because of the increasing trade, transport, travel and tourism connected to globalization. These provide living plants, animals and biological materials with vectors and pathways crossing the biogeographical barriers that would usually block their way (Shine 2003).

Invasive alien species (IAS) are now considered to be the second cause of global biodiversity loss after the direct habitat destruction and among the top drivers of global environmental change (Sala et al., 2000).

The European Community has considered the proliferation of IAS as an emerging issue, nothing that IAS introductions are one of the main recorded causes of biodiversity loss and cause serious damage to economy and health. In order to have a consistent and pragmatic approach to tackle this urgent matter, there should be more cooperation among the countries and concerned conventions (International Plant Protection, Ramsar, Bern, etc.) and institutions (International Maritime Organisation, World Trade Organisation, etc.).

Therefore, it is important to prepare a black list of groups' species to be eradicated in Europe and list of species newly introduced - which have the greatest impact on biodiversity where eradication was proven to be feasible - including appropriate policies, control methods and financial resources to carry out the eradication action plans (Eighth Meeting of the Council for the Pan-European Biological and Landscape Diversity Strategy, 19-21 January 2004, Palacio de Congresos, Madrid, Spain).

Materials and methods

Spiders were sampled by hand, preserved in 70º ethylic alcohol and identified under the stereoscopic microscope.

The specimens were determined using various keys (Heimer & Nentwig 1991, Nentwig et al. 2003, Roberts 1985).

Results

Two invasive alien species were found to be new records for the Romanian fauna: *Segestria florentina* (Rossi, 1790) from the family Segestriidae and *Achaearanea tabulata* Levi, 1980 from the family Theridiidae.

In the family Segestriidae three species are to be found in NW-Europe, all in the genus *Segrestria*: *S. senoculata* (Linnaeus, 1758), *S. bavarica* C. L. Koch, 1843 and *S. florentina* (Rossi 1790). These spiders vary in size between 6 and 22 mm and have an elongated, cylindrical abdomen with clear markings (Watson & Dallwitz 2004). The first two species have already been mentioned in previous lists of spiders from Romania (Fuhn & Oltean 1970, Weiss & Petrişor 1999, Weiss & Urák 2000).

The tube web spider *Segestria florentina* (Rossi, 1790), the largest of them (male 15 mm, fe-

male 22 mm) can be found in the warmer regions of Europe and Southern-England. It has been recorded recently in Hungary, in urban area of Szeged (Kovács & Szinetár 2004). We collected an adult male specimen in 2004, in Cluj-Napoca (leg. Ciliboaie C.). In the storehouse where this species was captured, goods from France were stored. This is the way the specimen was probably introduced.

This species is usually black with some lighter markings on the abdomen. It is active at night and it can be seen at the entrance of its tube web. It has green iridescent jaws that reflect the light of a torch if you flash into a tube web. The female lays eggs in her tube web and stays until the young have hatched and dispersed. Sometimes the female dies and her young eat her (Nieuwenhuys, 2005).

These interesting spiders make a tube shaped web in old walls. At the opening of the tube, six or more lines of silk radiate in all directions and the spider sits with six of its legs touching the lines of silk. If an insect crosses one of these lines the spider rushes out of the tube, catches the insect and rushes back into the tube web where it eats the insect in safety.

Its venom mainly reduces the rate and amount of sodium inactivation. This effect is likely to be responsible for the prolongation of the action potential (Usmanov et al. 1985).

The Theridiidae or comb-footed spiders is a large and diverse family. They have comb or serrated setae (hairs) on the hind tarsi. The dangerous black widow (*Latrodectus mactans*) belongs to this family and these spiders are notorious for their very poisonous venom. Some species of this family are common in garden and characteristic of houses and other human-made buildings. Many of them are invasive.

Achaearanea tabulata Levi, 1980 known from New York (North America) and from the Far East (Japan and Korea) (Levi 1980, Yoshida 1983), were recorded in 1988 in the urban area of Berlin (Germany) as a new species for Europe (Moritz et al. 1988). In 1990 was found in urban habitats of Innsbruck (Austria) in both sexes (Knoflach 1991). In Romania two females of this species were recorded in 2001, in rural area of village Căpeni, in cellar (leg. Tompos G.).

The original source of *A. tabulata* is unknown. The spider has probably been introduced into both North America and Europe, given the state of knowledge of the Theridiidae on both continents. They may originate from Japan and Korea, but the source could be some other country or countries in Southeast Asia. It is likewise difficult to predict the actual range of *A. tabulata*; the spider may occur more widely than we know, owing to its similarity to *A. tepidariorum* (Dondale et al. 1994).

Adults of *A. tabulata* resemble very much those of *A. tepidariorum* in their general look, choice of web site and orientation within the web. They differ from the latter in being smaller and darker, and in the external genitalia. Concerning their measured characters, female samples overlap in range except for their total body length. Similar male samples showed no overlap concerning their basitarsus length, but the other characters were statistically different at the 0.1 level of significance (Dondale et al. 1994).

A peculiar retreat made by large juveniles and by females of *tabulata* has been observed and described by Yoshida (1983), Moritz et al. (1988), Knoflach (1991), and Dondale et al. (1994). The females are often found inside their retreat, sometimes with one or more males in close proximity. Later, the egg sac or sacs are placed there. No such retreat has been reported for *tepidariorum* (Dondale et al. 1994).

Conclusions

There is only an extremely small amount of knowledge about synanthropic spiders and invasive alien species in Romania. The spiders presented in this paper are not considered as a problematic species yet.

The new records of this species widen our information concerning their distribution in Europe. The studies about synanthropic spiders living in houses and other human-made buildings are extremely significant. They can provide essential information about this species, their potential impacts on humans and different native populations.

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References

Dondale Ch. D., Redner H .J., LeSage L. 1994. A comb-footed spider *Achaearanea tabulata*, new to the fauna of Canada (Araneae: Theridiidae). The Journal of Arachnology 22: 176–178.

Fuhn I. E., Oltean C. 1970. Lista Araneelor din R.S. Romania. Stud. Com., Muz. St. Nat. Bacău: 157-196. Bacău.

Heimer S. & Nentwig W. 1991. Spinnen Mitteleuropas. Paul Parey Verlag, Berlin und Hamburg.

Knoflach B. 1991. *Achaearanea tabulata* Levi, eine für Österreich neue Kugelspinne (Arachnida, Aranei: Theridiidae). Ber. nat.-med. Verein Innsbruck **78:** 59-64.

Levi H. W. 1980. Two new spiders of the genera *Theridon* and *Achaearanea* from North America (Araneae: Theridiidae). Trans. amer. micros. Soc., **99**: 334-337.

Moritz M., Lewi H. W., Pfüller R. 1988. *Achaearanea tabulata*, eine für Europa neue Kugelspinne (Araneae, Theridiidae). Dtsch. ent. Z. NF, **36**: 361-367.

Nentwig W., Hänggi A., Kropf C., Blick T. 2003. Spinnen Mitteleuropas (Bestimmungsschlüssel). Version **8**. Internet: http://www.araneae.unibe.ch.

Nieuwenhuys E. 2005. Araneae, Spiders of North-West Europe. http://www.xs4all.nl/~edniew/Spiders/spidhome.htm.

Roberts M. I. 1985. The spiders of Great Britain and Ireland. Volume 1. Harper Collins, London.

Sala O. E., Chapin F. S. III, Armesto J. J., Berlow R., Bloomfield J., Dirzo R., Huber-Sanwald E., Huenneke L. F., Jackson R. B., Kinzig A., Leemans R., Lodge D., Mooney H. A., Oesterheld M., Poff N. L., Sykes M. T., Walker B. H., Walker M., Wall D. H. 2000. Global biodiversity scenarios for the year 2100. Science, **287**: 1770-1774.

Shine C. 2003. Overview of the management of invasive alien species from the environmental perspective. In: Identification of risks and management of invasive alien species using the IPPC framework. 20-38.

Usmanov P. B., Kalikulov D., Nasledov G. A., Tashmukhamedov B. A. 1985. Effect of *Segestria florentina* spider venom on the mechanism of inactivation of sodium channels. Biofizika, **30**(4): 617-619.

Watson L., Dallwitz M. J. 2004. The families of spiders represented in the British Isles. http://delta-intkey.com/britsp/www/segestri.htm.

Weiss I., Petrişor A. 1999. List of the spiders (Arachnida: Araneae) From Romania. Trav. Mus. natl. Hist. nat. "Grigore Antipa", 41: 79-107.

Weiss I., Urák I. 2000. Faunenliste der Spinnen Rumäniens (Arachnida: Araneae). Internet: http://members.aol.com/Arachnologie/Faunenlisten.htm.

Yoshida H. 1983. A new species of the genus Achaearanea (Araneae: Theridiidae) from Japan. Acta arachn. Tokyo **32:** 37-42.

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