



FROM THE BLACK SEA COAST TO POLAND – AN INCREDIBLE JOURNEY OF *MONACHA CARTUSIANA* (O. F. MÜLLER, 1774)

KATARZYNA KUREK, KAMIL NAJBEREK

Institute of Nature Conservation, Polish Academy of Sciences, Mickiewicza 33, 31-120 Kraków, Poland
(e-mail: kkurek@iop.krakow.pl, najberek@iop.krakow.pl)

ABSTRACT: Though *Monacha cartusiana* (O. F. Müll.) is known to expand its distribution range through accidental introductions, the migration routes are usually unknown. The story of an individual which covered a distance of about 1,500 km from the Crimea to Poland, attached to a car, is one of the few examples of a fully documented migration pathway.

KEY WORDS: land snails, *Monacha cartusiana*, distribution, introduction, migration routes

The natural distribution range of *Monacha cartusiana* (O. F. Müller, 1774) includes western, south-western and a part of central Europe. It extends westwards to the south-eastern part of the British Isles, and eastwards to the southern parts of Ukraine, Crimea, and the western Caucasus. The species occurs in Hungary and the Balkans (STWORZEWICZ & GÓRKA 2008). Its isolated localities in Switzerland, Austria, Slovakia, the Czech Republic, Germany, the Netherlands, Belgium, Denmark and Poland result from introductions. During the last 15 years, its expansion has intensified (STWORZEWICZ & GÓRKA 2008). In Poland, the earliest record of *M. cartusiana* dates from 1971 (KOSIŃSKA 1973). Now it is known from a few localities, all of them synanthropic: Wrocław: Ślęza River bank (KOSIŃSKA 1973, record of 1971) and a few wasteland sites (records of 2006–2008; POKRYSZKO unpublished, pers. com.); Poznań: Cybina River banks (2002 record, CHOLEWA et al. 2003) and N. part of the city (2007 record, LESICKI & KORALEWSKA-BATURA 2007); Kielce: Wietrznia hill (2005 record, GÓRKA 2005); Nadole, W. bank of Lake Żarnowieckie (STWORZEWICZ & GÓRKA 2008); Janików near Inowrocław (LESICKI & KORALEWSKA-BATURA 2007). The probable sources of introduction are the former Czechoslovakia and Germany (STWORZEWICZ & GÓRKA 2008).

The routes of accidental introductions are largely unknown; this is true of 72% of snails introduced in the Pacific islands (RUIZ & CARLTON 2003). Little is known about the exact way of introduction of *M. cartusiana* into Poland. It is thought that the species reached Poznań with imported hay (HULME et al. 2008), while the nearby busy road facilitated the introduction (CHOLEWA et al. 2003). In another case *M. cartusiana*, accidentally introduced in the Detroit area, was found at re-loading stations, in containers with ceramic tiles, brought from the Mediterranean region (STWORZEWICZ & GÓRKA 2008).

On the 3rd of September 2008, a snail was found attached to a car (in the slit between the door and the car body) driven from the Crimea to Poland. During the two-week journey around the Crimea, snails of various species were found attached to the vehicle, and were removed prior to each subsequent stage of the trip. After the last overnight stay, about 100 km north-west of Sudak, the remaining distance of ca. 1,500 km was covered in approximately 30 hours, without any longer stops. The snail was found a few hours after crossing the Polish border, and identified as *M. cartusiana*. Its shell was ca. 12 mm wide and ca. 8 mm high. The snail was then kept at the Institute of Nature Conservation, Polish Academy of Sciences, Cracow. In about a month (8 October 2008) 12 juve-

niles appeared in its container, and five days later their number increased to 20.

Vehicles are known to be among the means of transport of terrestrial snails (HULME et al. 2008). In view of the fact that *M. cartusiana* has two stable popu-

lations in south-western Poland (STWORZEWICZ & GÓRKA 2008), appearance of its new localities in the country can be expected, particularly with the increasing intensity of transport between Ukraine and Poland.

ACKNOWLEDGEMENTS

We thank Dr. KATARZYNA ZAJĄC, ANNA LIPIŃSKA and Dr. WOJCIECH SOLARZ for their helpful comments. This paper is a part of the Integrated Project

“ALARM: Assessing Large scale environmental risks for biodiversity with tested Methods” funded by the European Commission (GOCE-CT-2003-506675).

REFERENCES

- CHOLEWA S., KORALEWSKA-BATURA E., BATURA M. 2003. A new locality of *Monacha cartusiana* (O. F. Müller, 1774) (Gastropoda: Pulmonata: Helicidae) in Poland. *Folia Malacol.* 11: 59–61.
- GÓRKA M. 2005. The invasion continues – a new locality of *Monacha cartusiana* (O.F. Müller, 1774) (Gastropoda: Pulmonata: Helicidae) in the Świętokrzyskie Mts (Central Poland). *Folia Malacol.* 13: 153–155.
- HULME P. E., BACHER S., KENIS M., KLOTZ S., KÜHN I., MINCHIN D., NENTWIG W., OLENIN S., PANOV V., PERGL J., PYŠEK P., ROQUE A., SOL D., SOLARZ W., VILA M. 2008. Grasping at the routes of biological invasions: a framework for integrating pathways into policy. *J. Appl. Ecol.* 45: 403–414.
- KOSIŃSKA M. 1973. *Monacha cartusiana* (Müller) i *Milax budapestensis* (Hazay) – dwa interesujące gatunki w faunie Polski. *Przegl. Zool.* 17: 59–62.
- LESICKI A., KORALEWSKA-BATURA E. 2007. *Monacha cartusiana* (O. F. Müller, 1774) (Gastropoda: Pulmonata: Hygromiidae) becomes more frequent in Poland. *Folia Malacol.* 15: 181–184.
- RUIZ G. M., CARLTON J. T. 2003. Invasive species vectors and management Strategies. Island Press, Washington, Covel, London.
- STWORZEWICZ E., GÓRKA M. 2008. Ślimak kartuzek *Monacha cartusiana* (O. F. Müller, 1774). In: GŁOWACIŃSKI Z., OKARMA H., PAWŁOWSKI J., SOLARZ W. (eds). *Księga gatunków obcych inwazyjnych w faunie Polski*. Wyd. internetowe Instytutu Ochrony Przyrody PAN w Krakowie.

Received: January 20th, 2009

Accepted: March 18th, 2009

