

Helix lutescens (Gastropoda, Pulmonata, Helicidae) is a new introduced species in malacofauna of the Moscow Region

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ABSTRACT. Three small but abundant in specimens isolated colonies of *Helix lutescens* have been found in the eastern part of Moscow City in the central part of European Russia for the first time. This is an easternmost known colony of the species. Differences from the related and similar small form of *H. pomatia* are given and discussed.

Helix lutescens (Gastropoda, Pulmonata, Helicidae), новый интродуцированный вид в малакофауне Москвы

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РЕЗЮМЕ. Три небольшие, но многочисленные изолированные колонии *Helix (H.) lutescens* были впервые обнаружены в восточной части города Москва. В настоящий момент это первые и единственные достоверно зарегистрированные интродуцированные колонии этого вида. Обнаруженные колонии являются максимально удаленными на восток от естественного ареала *Helix (H.) lutescens*. Видовая принадлежность найденных улиток подтверждена анатомическим исследованием. Обсуждены отличия обнаруженного вида от родственного ему и широко распространённому в рассматриваемом регионе *Helix pomatia*.

Introduction

Helix lutescens Rossmassler, 1837 is one of the smallest and narrow ranged species of the genus, with a range extending from Carpathians and neighboring regions, in the west to Krakow, eastern Slovakia and eastern Hungary, northward to Brest (Belorussia), while southward to northern Serbia, sporadically in central and southern Ukraine (Zhitomir, Vinnitsa, Odessa, Mykolayiv) in the east and south-east [Schileyko, 1978; Grossu, 1983; Kramarenko, Sverlova, 2001; Egorov, 2008; Welter-Schultes, 2012]. Published data on introduction of the species in other regions are absent [Neubert, 2014]. *H. lutescens* is most similar to *H. pomatia*, but can always be separated from the latter in its small, thin, yellowish or grayish and none or weakly banded shell. According

to Neubert [2014] both species may live together in their native locations. So, in the case of further dispersion of *H. lutescens* in Moscow, finding of both species together can not be excluded. Contrary to *H. lutescens*, *H. pomatia* has a wide distribution in Moscow city and the Moscow region [Egorov, 2015].

Collected material is stored in the Zoological Museum of the Moscow State University (Moscow, Russia; Lc-40938, Lc-40943), in the State Museum of Natural History, National Academy of Sciences of Ukraine (Lviv, Ukraine; Nr. 4702) and in the private collection of the author.

Results

In the beginning of 2020 I received an information from Moscow naturalist Denis Parshin about the presence of a numerous population of *Helix albescens* in the East of Moscow, Veshnyaki Municipal District, Kosinskaya Street (55°43'9"N, 37°50'0"E). I visited the mentioned location on July 16, 2020 and found the three isolated colonies of *H. lutescens*. The second visit in this site was made on August 21, 2020. Detailed scheme of location of all three colonies is presented on Fig. 1.

Two of the colonies (Fig. 1: A, B) are located on the territory of Moscow within the Moscow Ring Road (MKAD) and one (Fig. 1: C) is located outside of MKAD (Kosino-Ukhtomski Municipal District of the Eastern Administrative District of Moscow). It should be noted that information about the introduction of *H. albescens* from Crimea already had been published earlier [Lindholm, 1911: 46-47, as *Helix vulgaris*]. However, the possibility of acclimatization of this species in Moscow was questioned by the author.

The colony "A" is located between buildings 8 and 10 along Kosinskaya street on the narrow lawn along a concrete fence shaded by lindens and maples

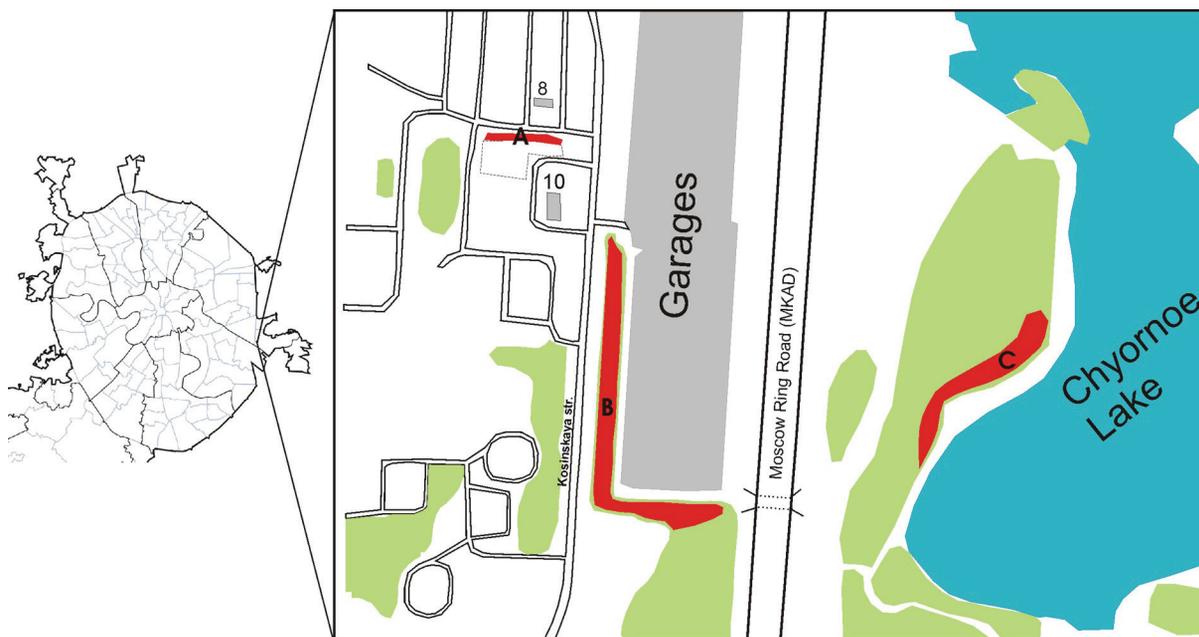


FIG. 1. Scheme of location of the colonies of *Helix lutescens* in the Moscow City (red filling).

РИС. 1. Схема расположения колоний *Helix lutescens* в Москве (красная заливка).

(Fig. 2A). Young individuals sitting mainly on the fence and under it predominated. Only a few adult specimens were found there (Fig. 2B).

The colony "B" is situated on the opposite side of Kosinskaya street (Fig. 2C). The snails live on a relatively wide lawn between the garage wall and the roadway; the vegetation is represented by maples (*Acer negundo*, *A. saccharinum*), lindens and birches; herbaceous plants are dominated by small balsam (*Impatiens parviflora*), nettle and burdock (*Arctium*). The latter is the main food source of the discussed snails in this location. At the time of observation, adult individuals predominated, with density up to 3-5 specimens per square meter. Some individuals were copulating (Fig. 2D).

The colony "C" is situated on the western shore of Chyornoe Lake. The snails live on the coast and in the adjacent forest belt. Aspen, boxelder maple (*Acer negundo*), blackthorn (*Prunus* sp.), common ninebark (*Physocarpus opulifolius*), white dogwood (*Cornus alba*) predominate among the tree and shrub vegetation. Among herbaceous plants, nettle, greater burdock (*Arctium lappa*), yarrow (*Achillea millefolium*), creeping thistle (*Cirsium arvense*) prevail. Burdock is also the basis of food for the considered snails. In addition, together with *H. lutescens*, slugs of the genus *Deroceras* and single *Fruticicola fruticum* (O. F. Müller, 1774) and *Trochulus hispidus* (Linnaeus, 1758) were noted in this site. At the time of observation, specimens of different age were found, their density reaching up to 12-14 specimens

per square meter. Of all three colonies examined, this one is the largest in area and number of individuals of different ages (Fig. 2B, D, F, G).

Discussion

Observed colonies are divided by anthropogenic barriers: the colony "A" is isolated from the colony "B" by Kosinskaya Street by wide (about 6 m) asphalt road, theoretically surmountable for large snails. However the colony "C" is placed outside of MKAD, which is absolutely not surmountable for snails. Nevertheless all the colonies probably had a single origin: most likely, snails were brought in with vehicles bringing agricultural products to a nearby market (was located nearby of the "Vykhino" metro station, the market was closed in 2008). According to D. Parshin, this colony has been known to him for at least 8-10 years. However if the appearance of the colony is connected with the market, colony's age is at least 12 years.

General conchological differences between *H. lutescens* and Moscow populations of *H. pomatia* are summarized in Table 1 and illustrated on the Fig. 3A, C. The main anatomical difference between both species is the length of penis flagellum: *H. pomatia* has significantly longer flagellum than *H. lutescens* (Fig. 3B, D).

Intraspecific variability among individuals of the discussed colonies is low. Specimens of these colonies have a dirty yellow, almost stripeless shells



FIG. 2. **A.** Landscape of the occurrence of the colony "A", 16.07.2020. **B.** Live specimen of *H. lutescens* on the base of the fence at the colony "A", 16.07.2020. **C.** Landscape of the occurrence of the colony "B", 16.07.2020. **D.** Copulating snails from the colony "B", 16.07.2020. **E.** Landscape of the occurrence of the colony "C", 16.07.2020. **F.** Adult snail eating burdock leaf in colony "C", 16.07.2020. **G.** Juveniles *H. lutescens* on burdock leaf in colony "C" with association of *Deroceras* sp., 16.07.2020.

РИС. 2. **A.** Ландшафт месторасположения колонии "А", 16.07.2020. **B.** Живая особь *H. lutescens* на основании бетонного забора в колонии "А", 16.07.2020. **C.** ландшафт месторасположения колонии "В", 16.07.2020. **D.** Копулирующие особи в колонии "В", 16.07.2020. **E.** Ландшафт месторасположения колонии "С", 16.07.2020. **F.** Взрослая особь, поедающая лист лопуха в колонии "С", 16.07.2020. **G.** Молодые *H. lutescens* на листе лопуха в колонии "С" совместно с *Deroceras* sp., 16.07.2020.

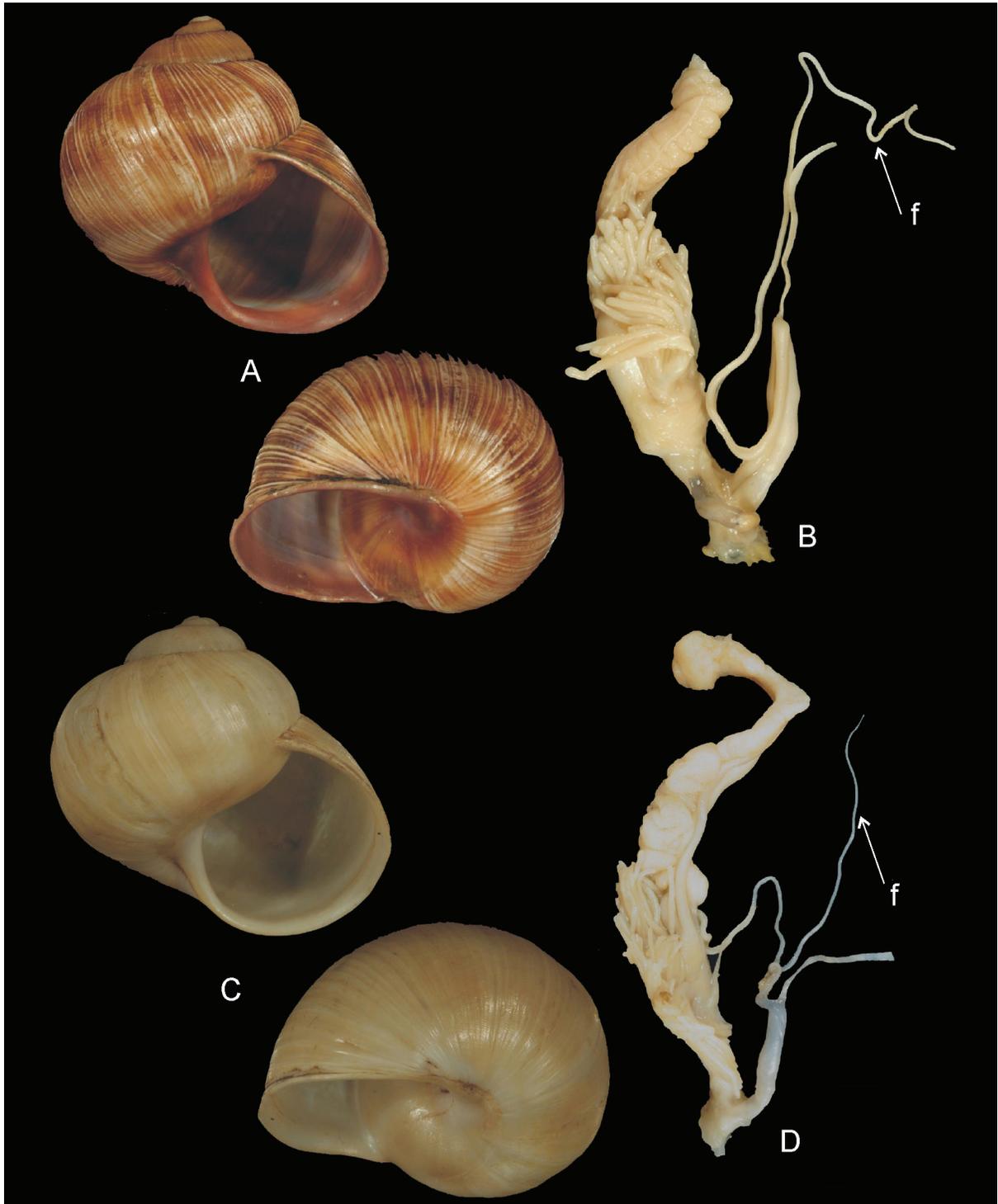


FIG. 3. **A-B.** *Helix pomatia*, Izmailovski forest park, eastern part of Moscow, Russia, July, 2020: **A.** Shell. **B.** Reproductive system. **C-D.** *Helix lutescens*, colony "B", Kosinskaya street, eastern part of Moscow, Russia, 16.07.2020: **C.** Shell. **D.** Reproductive system. (f – flagellum).

РИС. 3. **A-B.** *Helix pomatia*, Измайловский лесопарк, восточная часть города Москва, Россия, Июль, 2020: **A.** Раковина. **B.** Половая система. **C-D.** *Helix lutescens*, колония "B", Косинская улица, восточная часть города Москва, 16.07.2020: **C.** Раковина. **D.** Половая система. (f – бич).

of approximately the same size in adults. About half of the individuals have a gray body color, while the others have a dark dorsally almost black body.

Thus, today the genus *Helix* is reliably repre-

sented by three species in the malacofauna of Moscow and the Moscow Region: *H. pomatia* [Egorov, 2015], *H. l. lucorum* Linnaeus, 1758 [Egorov, 2017] and *H. lutescens*.

Table 1. Conchological differences between snails *Helix pomatia* (Fig. 3A) and *Helix lutescens* (Fig. 3C) from Moscow.

Табл. 1. Конхиологические различия между московскими особями *Helix pomatia* (Рис. 3А) и *Helix lutescens* (Рис. 3С).

Character	<i>Helix pomatia</i>	<i>Helix lutescens</i>
Shell diameter	39.1–47.0	31.1–33.9
Shell shape	Globose or globose-conical.	Globose-conical.
Shell colour	Light brownish or creamy white under periostracum; with distinct chestnut spiral bands.	Yellowish, without spiral bands.
Shell surface	Distinct lateral growth lines. Wrinkled surface giving the appearance of faint interrupted spiral lines.	Not wrinkled, with faint growth lines, covered by distinct spiral striations.
Aperture	Parietal callus well developed, cream to brown.	Parietal callus weak, white or cream.
Umbilicus	Narrow, partly covered by the reflected columellar margin.	Slit-like, completely closed by the reflected columellar margin.
Apex (protoconch)	Mat.	Glossy.

Acknowledgements

I would like to express my gratitude to Denis Parshin (Moscow Zoo, Moscow, Russia) for the first information about discussed colonies of the introduced snails. Also, I'm very thankful to Dr. Alexander Sysoev (Zoological Museum of the Moscow State University, Moscow, Russia) for making photos of the shells and reproductive systems used in the article. For determination of plants I'm deeply grateful to Dr. Anton Bakalov (Sudogda, Russia).

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