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BRIEF COMMUNICATIONS

First Record of the Lizard Genus *Podarcis* Wagler 1830 (Reptilia Lacertidae) in the Caucasus

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Abstract—Information on the first discovery of the Italian wall lizard, *Podarcis siculus campestris* (De Betta 1857), in 2019 is provided for Turkan settlement, Baku, Azerbaijan. The lizards are assumed to have unintentionally been delivered to the Caucasus from Tuscany Province, Italy, in 2016 or 2017 with garden plant seedlings. In the future the identified *P. siculus* micropopulation may become a source for the colonization of the Absheron Peninsula by this nonindigenous reptile species. We do not expect a negative impact of *P. siculus* on the aboriginal saurofauna.

Keywords: *Podarcis sicula campestris*, accidental introduction, Azerbaijan, Asia
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The natural range of a vast genus of wall lizards, *Podarcis* Wagler 1830, covers Northwest Africa and Southern and Central Europe. Certain species of the genus, primarily the Italian wall lizard (*Podarcis siculus* (Rafinesque-Schmaltz 1810)) and the Common wall lizard (*P. muralis* (Laurenti 1768)), thanks to human activity, they have spread beyond the boundaries of their natural ranges and now have numerous viable populations in Northwestern Europe, Western Asia, and North America (Schulte et al., 2012; Matveev et al., 2013; Silva-Rocha et al., 2014).

In the course of the herpetological studies of the authors in the southeastern part of the Absheron Peninsula (Azerbaijan) on June 15, 2019, on the territory of private land ownership located on the shore of the Caspian Sea in the village of Turkan (administratively included in the city of Baku) (40.3563 N, 50.2029 E, h = –27 m below sea level), individuals of *P. siculus* over an area of about 1000 m^2 among the ornamental bushes and on the walls of buildings were observed. Fifteen individuals were encountered, four of which were immature. During a repeat visit to this place on June 16, 2019, 11 mature individuals were counted, three of which were captured for the collection of the Herpetology Department, Institute of Zoology, National Academy of Sciences of Azerbaijan (collection no. Re 7-9).

The finding in Eastern Transcaucasia of an alien species of lizards, which is widespread mainly in the Mediterranean, is of considerable scientific interest. The natural range of the Italian wall lizard is limited to the Apennine Peninsula with adjacent islands and the Adriatic coast of the Balkan Peninsula (Henle and Klaver, 1986; Crnobrnja-Isailovic et al., 2009); introduced populations of the species live on the Iberian Peninsula and in southern France, England, Greece, northern Anatolia, northwestern Africa, and many states of the United States (Silva-Rocha et al., 2014; Ilgaz et al., 2013; Kolbe et al., 2013).

From the message of the gardeners of this land tenure, it became clear that in 2016–2017 a consignment of ornamental trees and shrubs was delivered from the region of Tuscany (northwestern Italy): *Olea europaea*, *Prunus* sp., and *Yucca* sp. Only after that were these brightly colored lizards observed on the site, which, apparently, were in the substrate during the transportation of plants. In the province of Tuscany, *P. siculus* is a widespread and numerous species of Lacertidae inhabiting a wide range of open landscapes, not excluding anthropogenically transformed ones (Vanni and Nistri, 2008). It should be noted that introduction with planting material is one of the most common ways of dispersal for small species of lizards, including *P. siculus* (Rivera et al., 2011).

When studying the morphology of the individuals caught, their subspecies was determined as *Podarcis siculus campestris* (De Betta 1857). This subspecies is distributed on the island of Corsica, the Apennine Peninsula, and the western Balkans, and, in addition, it has been introduced into the United States. It is significant that representatives of this particular taxon most often become the object of introduction (Brig-

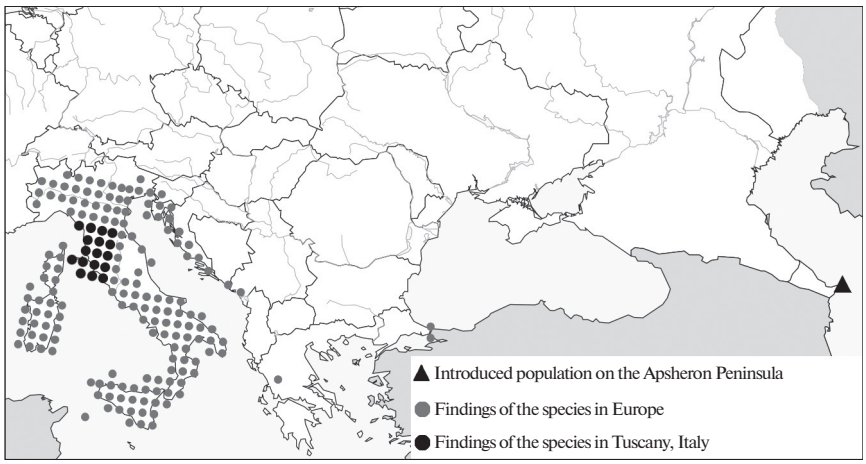

Fig. 1. Distribution map of *Podarcis siculus* (Rafinesque-Schmaltz 1810) (after (Gasc et al., 1997), with changes).

gler et al., 2015). The subspecies thrives in biotopes disturbed by human activity, and, like *P. muralis*, its promotion is most favored by stone structures, various types of green spaces within the boundaries of settlements, and railways (Burke and Deichsel, 2008). The high fecundity of females (a clutch can include up to 12 eggs, and during the season of activity one female has up to 5–6 eggs) and early onset of sexual maturity (at 1–2 years of life) contribute to a rapid increase in the number of introduced populations (Corti, 2006).

The locality identified is located at a distance of more than 2800 km from the species range on the Apennine Peninsula (Fig. 1). Our find is the first registration of this species in the Caucasus.

Discovered in the village of Turkan, this micropopulation of *P. siculus* in the future could become a source for the dispersal of the species on the Absheron Peninsula, primarily within the city of Baku, the largest urban agglomeration in the Caucasus. In settlements, the main limiting factor for this species is predation by domestic cats (Adamopoulou, Pafilis, 2019). This is also very important for Baku, where cats are the most numerous domestic animal. The climates of Absheron and Tuscany differ significantly in the amount and mode of precipitation (Museibov, 1986; Vanni and Nistri, 2008). According to Köppen's classification, the climate of the northwestern coast of the Caspian Sea is characterized as arid steppe cold (Bsk), while in the northwestern part of the Apennine Peninsula, as elsewhere in the Mediterranean region, a warm climate prevails with dry and hot summers or without a dry period with warm summers (climate types Csa and Cfb, respectively) (Kottek et al., 2006; Peel et al., 2007). However, we assume that the very arid climate of Absheron, close to the climate of semideserts, most likely will not hinder further expansion of the range of *P. siculus*, especially in areas where watering of trees and shrubs is used. In addition, against the background of other species of wall lizards, *P. siculus* stands out for its very effective thermoregulation (Kapsalas et al., 2016). Note that the synanthropic lifestyle largely neutralizes the influence of climatic factors. Among reptiles, examples of successful introduction of species far beyond their natural ranges are known, in conditions that are sharply different from the climate of their homeland (Krasylenko, Kukushkin, 2017).

The list of the fauna of real lizards of the Absheron Peninsula includes four species: *Eremias arguta transcaucasica* Darevsky 1953, *E. velox caucasia* Lantz 1928, *Ophisops elegans elegans* Ménétriés 1832, and *Lacerta strigata* Eichwald 1831. Taking into account the absence on Absheron of the species of Lacertidae similar in biology to the Italian wall lizard, we do not expect a negative impact of *P. siculus* on the local saurofauna. For this reason, we use the term "adventive" and not "invasive" species in the application to this species in Azerbaijan (in the understanding of the National Invasive Species Council, NISC, 2006, p. 1). At the same time, in a number of European countries, the Italian wall lizard was recognized as an undesirable invasive species, since upon introduction it enters into competitive relations with aboriginal species of the genus *Podarcis* and can even act as a predator in relation to them (Kraus, 2009).

It seems to us undesirable to stop the expansion or destroy this population, as was done, for example, in Buckinghamshire (southeastern England) (Hodgkins et al., 2012) and Athens (Greece) (Adamopoulou and Pafilis, 2019). When monitoring the settlement process, the Absheron population of *P. siculus* can become a valuable object of research on the biology of the Mediterranean species of reptiles in completely new conditions. Note that it was the Absheron Peninsula in the 20th century that became a place for experiments on reptile resettlement and expansion of the ranges of a number of aboriginal species due to

anthropogenic transformation of landscapes (Alekperov, 1973).

Due to its geographical position and landscape and climatic diversity, the Caucasus is one of the most vulnerable regions in relation to the invasion of alien reptiles within the former Soviet Union (Kukushkin et al., 2017). In the Black Sea region, in general, lizards of the genus *Podarcis*, along with representatives of the family Gekkonidae, manifest themselves as the most successful "colonists" among reptiles (Duz et al., 2012; Matveev et al., 2013; Silva-Rocha et al., 2014). Within the Caucasus region, in recent years, facts of the introduction of representatives of other genera of the Lacertidae family have also been revealed: for example, the Lebanese lizard (*Phoenicolacerta laevis* (Gray 1838)) (Tarkhnishvili et al., 2017). Taking into account the growth of trade between Turkey, the European Union, and the states located within the Caucasus, it can be expected that other cases of naturalization of alien species of lizards, including representatives of the genus *Podarcis,* will be identified in the region in the near future.

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