

Railroads as anthropogenic dispersal corridors. Possible way of the colonization of Poland by a common wall lizard (*Podarcis muralis*, Lacertidae)

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Abstract. The common wall lizard is a new lacertid species in the Polish herpetofauna. However, the discovered populations seem to be introduced. In this article, I intend to describe a possible way of lizards dispersal through railways. I suppose that the common wall lizard may colonize new areas by freight trains as an incidental cargo from quarries they inhabit.

Keywords: dispersal, ecological corridors, introduction, railroads, transport.

A common wall lizard (*Podarcis muralis*, Laurenti, 1768) is a small lizard from Lacertidae family naturally inhabiting southern and central Europe, from eastern Spain to western Turkey. The northern population in central Europe comes from Czech Republic and Slovakia. In 2013 an article was published about a new population of this species behind the northern border of distribution in southern Poland (Wirga & Majtyka 2013). Additionally, it was the first report about this lizard species in Poland. The authors describe two years of observations of two stable populations in lower Silesia, Przeworno 50.6935° N, 17.1767° E, 185 m a.s.l. and Strzelin 50.7788° N, 17.0530° E, 167 m a.s.l. (Wirga & Majtyka 2013). These new populations are located 135 km from the nearest population in Czech Republic (Šandera 2013) and 220 km from the population in Germany (Schulte et al. 2011). The discoverers of the Polish population presumed that they must have been established in the last 25 years, as previous studies (Chlebicki 1988) in these areas did not report the existence of *P. muralis* (Wirga & Majtyka 2013). It is probable, that the establishment of this population was not a consequence of a natural dispersion due to the fact that the distance from the nearest known population is very long and lizards would have to extend their range by 6 km per year.

A common wall lizard is known thanks to the fact that it was successfully introduced in Europe (Covaciu-Marcov et al. 2006) and in America (Deichsel & Gist 2001). It was noted, that in order to spread this species use the man-made structures such as railway embankments, roads and settlements (Deichsel & Gist 2001; Gherghel et al. 2009). The presence of *P. muralis* on railway embankments is well known and is described as „railroads habitats” (Strugariu et al. 2008; Gherghel et al. 2009). This habitat offers a suitable place for lizards to bask, forage and hide (Covaciu-Marcov et al. 2006). Railways tracks are used for lizards as natural dispersion corridors connecting semi-isolated populations (Strugariu et al. 2008) and also as altered habitats after the decline of the natural ones (Covaciu-Marcov et al. 2006; Gherghel 2009). It is known that it is possible for *P. muralis* to settle in new railway areas thanks to freight trains. The lizards are accidentally loaded onto freight trains and then transported to other areas (Strugariu et al. 2008). Lizards of this species commonly inhabit quarries (Iftime 2005) and might be loaded on freight trains together with mining output.

Both populations discovered in Poland are connected by railroads (Fig. 1) number 304, 313 and 321. These lines have been operated since the end of 19 century and were

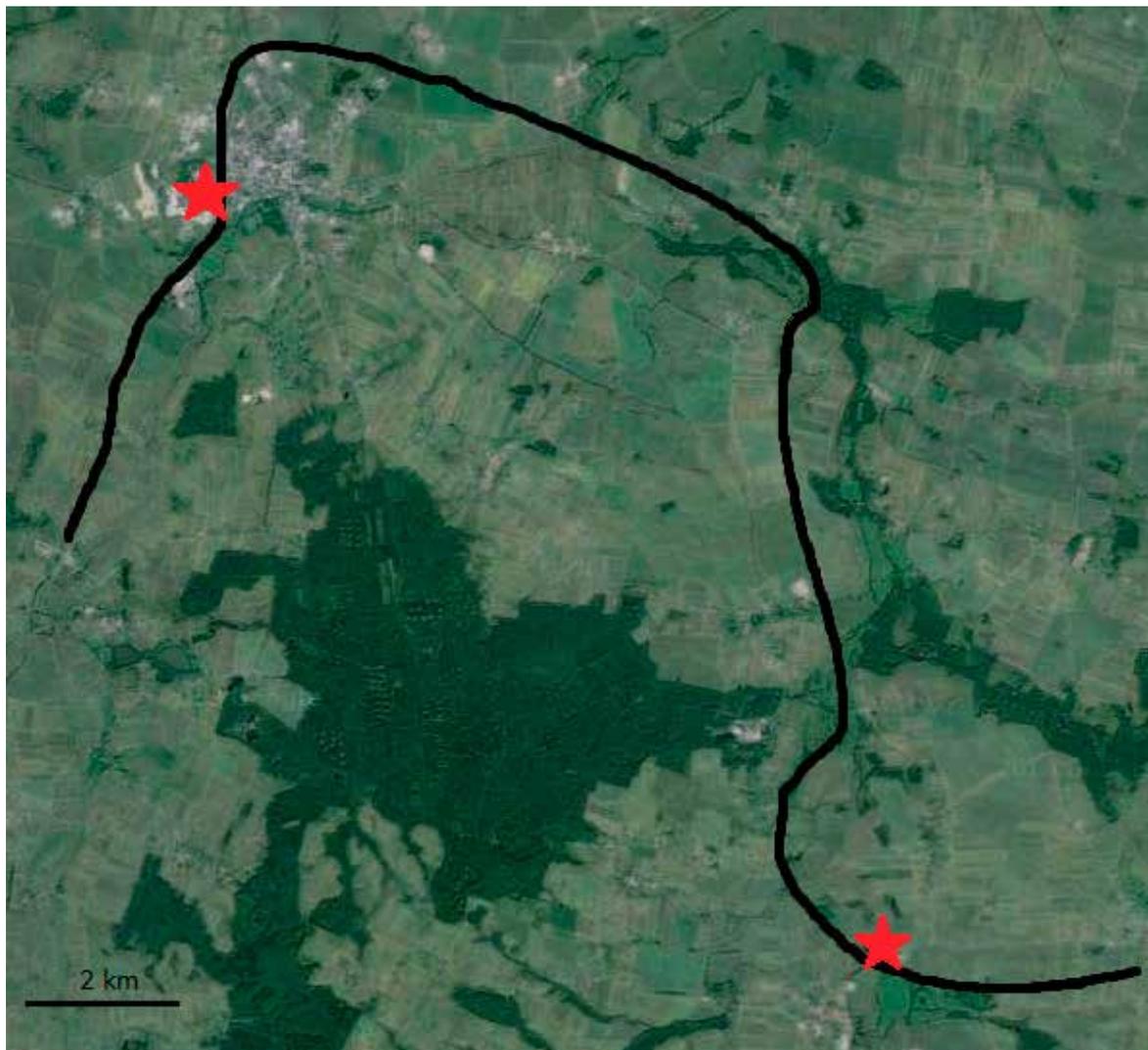


Figure 1. Know populations of polish common wall lizards were marked as stars, railway line was marked as bold black line

closed at the end of 20 century (no. 313 in 1993, no. 304 in 1992 and no. 321 in 2000). Therefore, these lines have been operated within the time of 25 last years, described by Wirga and Majtyka (2013) as the time of the *P. muralis* colonization. Moreover, these lines were also used by passenger and freight trains. This seems to be a possible way of *P. muralis* colonization by means of freight trains. The primary population may have been established by specimens who accidentally arrived on freight trains from Czech Republic or Germany. It is possible due to the biggest European quarry located in Strzelin – “ZPK Strzelin”, which provides transport to numerous countries. It seems probable that *P. muralis* established its first population in Strzelin and the second in Przeworno as a result of a further dispersal by freight trains.

There is a need of further studies, especially genetic analyses of Polish common wall lizards’ populations to

clarify the origin of these specimens and to determine the exact dispersal corridors. There is also a need to search other populations as it is possible that many more lizards were accidentally introduced in Poland. Seeking needs to be concentrated on railroads areas connected with the Strzelin and Przeworno lines.

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