

Geographic origin of a population of the Italian Wall Lizard *Podarcis siculus* (RAFINESQUE-SCHMALTZ, 1810), introduced north of the Alps

The Italian Wall Lizard *Podarcis siculus* (RAFINESQUE-SCHMALTZ, 1810), naturally occurs in the Appennine Peninsula, Sicily, Sardinia and Corsica, and along the northeast Adriatic coast. The lizard, however, was introduced to numerous locations in the Mediterranean region, where it established self-sustaining populations (Iberian Peninsula, Balearic Islands, France, Montenegro, Turkey, Libya, Tunisia.- PODNAR et al. 2005; ZAWADZKI & SEEMAN 2009). Additionally, introduced and established *P. siculus* populations are known from North American locations situated at about the same parallel of latitude as their Mediterranean conspecifics (Topeka, Kansas; Long Island, New York; Mt. Laurel, New Jersey; Los Angeles county, California.- BURKE & DEICHSEL 2010; DEICHSEL et al. 2010). The most thriving population extended its range around Long Island, New York, along power lines, railroads and by human-facilitated jump dispersal, over 30 miles, since its introduction in 1966, now reaching Manhattan and the Bronx (BURKE 2005). Contrary to its congener, the Common Wall Lizard *Podarcis muralis* (LAURENTI, 1768), *P. siculus* generally failed to successfully colonize European regions outside its Mediterranean native range e.g., north of the Alps (SCHULTE et al. 2011). In Germany, the species was introduced around 1913 at the Schlossberg (castle hill) and river Dreisam in the town of Freiburg. However, the population became extinct here as a consequence of habitat destruction after roadwork or unfavourable climate conditions over a period of time in the early 1960s (TRAUTMANN 1924 in HENLE & FRITZ 2007). Also a population introduced to Offenburg must be considered extinct after a harsh winter in 1928/1929 (HENLE & FRITZ 2007). There are reports of introduced *P. siculus* of unknown fate from Basel, Remigen and Chiasso in Switzerland (HOHL 1985; KRAMER & STEMLER 1988).

At present, the largest introduced population of *P. siculus* living north of the Alps

is the population of Rapperswil, Switzerland (47.2274374°N, 8.8223648°E), where the first observation of *P. siculus* was close to the zoo in the vicinity of the local railway station and dates back to the 1980s (BILLING, pers. obs. in KLÖTZLI & ROSEN MAYR 2000). In 1996, the latter authors assessed the population and estimated its size at about 70 individuals. The center of expansion of this population was the ruderal embankment of the south-exposed railway. Although it was impossible to closely examine the railway embankment due to a fence, the second author counted at least 28 individuals at the end of March 2011. Whether this population stems from an accidental introduction by cargo or an intentional, human-mediated introduction remains just as unknown as its ecological impact on the native communities of the Sand Lizard *Lacerta agilis* LINNAEUS, 1758. Based on morphological criteria, KLÖTZLI & ROSEN MAYR (2000) suggested the specimens to belong to the subspecies *Podarcis siculus campestris* DE BETTA, 1857.

In the present study, the origin of the population was identified by means of a roadkill (DOR) specimen that was collected there accidentally at a roadside ditch and preserved in 70% ethanol. DNA was extracted from muscle tissue of the tongue using the Qiagen® DNeasy® Blood & Tissue Kit (Qiagen®, Hilden) following the manufacturers' protocol. We sequenced a 656 bp fragment using the primers LGluk (5'-AACCGCCTGTTGTCTTCAACTA-3') and HPod (3'-GGTGGGAATGGGATTTTG TCTG-5') (PODNAR et al. 2007; see SCHULTE et al. 2011). Sequencing was performed with the DYEnamic™ ET Terminator Cycle Sequencing Premixkit (GE Healthcare, Munich) for sequencing reactions run on a MegaBACE 1000 automated sequencer. The DNA sequence was corrected and aligned by eye. For lineage assignment, the sequence was aligned to sequences from individuals sampled within the entire native range of *P. siculus* provided by PODNAR et al. (2005). The analyzed specimen clearly belonged to the "Po plain group" within the *campestris-siculus* haploclade (PODNAR et al. 2005) and differed in only two substitutions from this haplotype. This subclade can be found in the Po plain (Italy) and the



Fig. 1: *Podarcis siculus campestris* DE BETTA, 1857, male from Rapperswil, Switzerland.

northern Adriatic region (Croatia) and forms the species' northern range border. The subclade does not trespass the Alps, which act as a natural topographical and possibly also a climatic barrier. The climate conditions prevailing in this subclade's range area and at the novel locality in Switzerland seem to overlap. Hence, it is likely that this clade might have been pre-adapted to the environmental conditions in Switzerland, like it is the case with its congener *P. muralis*, where those clades that most frequently colonized Central Europe are the northernmost clades (Southern Alps and Eastern France Clades.-SCHULTE et al. 2011).

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