

## Note

### First record of an Italian Wall Lizard (*Podarcis siculus*) in British Columbia, Canada

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#### Abstract

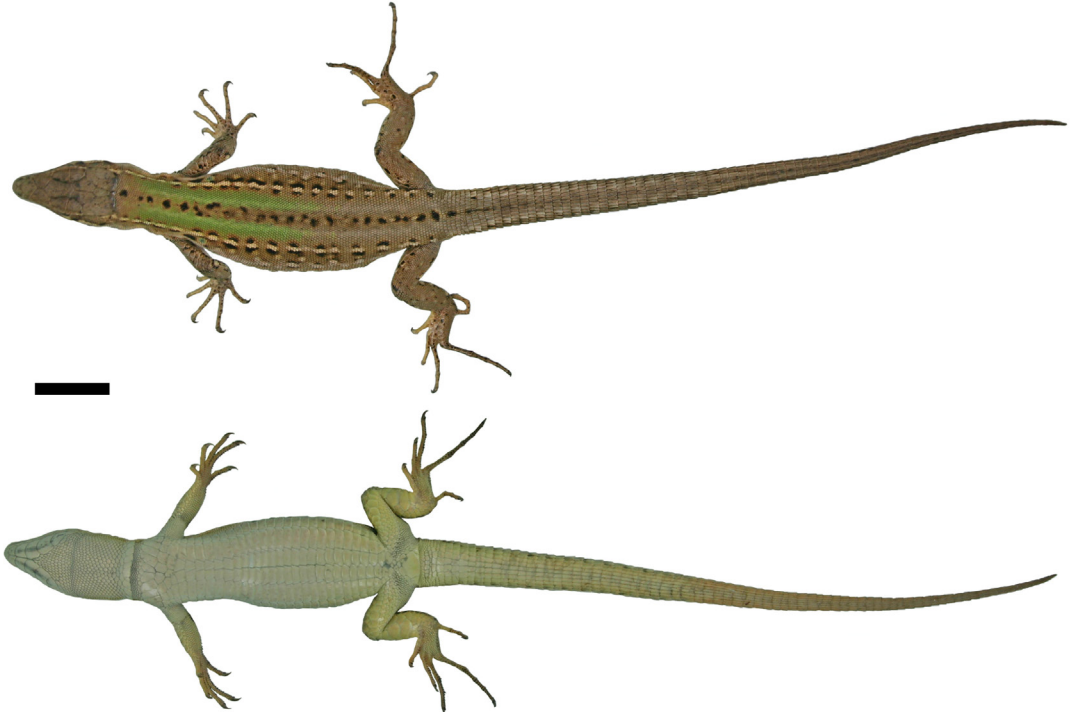
Italian Wall Lizard (*Podarcis siculus*) is known from scattered locations in the United States, including Orcas Island, Washington, where a population went unreported for about a decade, but was confirmed in 2017. On 19 June 2019, a single adult female *P. siculus* was caught in an industrial area along the northern arm of the Fraser River in Vancouver, British Columbia; this represents the first record of this species on the loose in Canada. No other *P. siculus* were sighted in the Vancouver area. We assume this Canadian *P. siculus* was a lone stow-away and had not deposited eggs. We could not determine how it entered the province.

Key words: British Columbia; first record; Italian Wall Lizard; introduced species; *Podarcis siculus*

Humans have purposely or accidentally introduced non-native reptiles and amphibians in many parts of the world (Lever 2003). European lacertids, including Western Green Lizard (*Lacerta bilineata*), Ocellated Lizard (*Timon lepidus*), Ibiza Wall Lizard (*Podarcis pityusensis*), Italian Wall Lizard (*Podarcis siculus*), and Common Wall Lizard (*Podarcis muralis*), have appeared in North America with all but *P. pityusensis* and *T. lepidus* establishing populations (Lever 2003; Burke and Deichsel 2008; Kraus 2009). Two *Podarcis* species occur along the Pacific coast of North America, with Common Wall Lizard arriving first, in 1967, and spreading rapidly in southwestern British Columbia (Deichsel and Schweiger 2004; Matsuda *et al.* 2006; Engelstoft *et al.* 2020). In 1994, Italian Wall Lizards were released in southern California, and the species is now known from several locations (Deichsel *et al.* 2010; Hollingsworth and Thomson 2016). This species is also established on Orcas Island, Washington (L. Hallock pers. comm. 15 October 2018). As of 2019, the Orcas Island *P. siculus*, which were mistakenly identified as *P. muralis*, had existed there for 12 years (C. Raimond unpubl. report, sent to A. Leaché). Here, we document the first occurrence of *P. siculus* in British Columbia.

A single female *P. siculus* (Figure 1; RBCM 2187) was caught by Cathy Judd on 19 June 2019, at Unit 8, 8385 St. George Street (49.208641°N, 123.094219°W), Vancouver, British Columbia (Figure 2). The location is bound by railroad tracks, the northern arm of the Fraser River delta, and residential areas, each representing a potential dispersal route for invading *Podarcis*. The lizard's presence was reported to A. Veldhoen, and a photograph was forwarded to the Royal British Columbia Museum for identification. On 25 June 2019, the lizard was hand carried to the Royal British Columbia Museum, anaesthetized using Oragel (20% benzocaine, Church & Dwight Canada Corp., Mississauga, Ontario, Canada), then frozen overnight once it was unresponsive. The lizard was thawed, a liver sample was taken and preserved in 95% ethanol for future genetic work, and the rest of the lizard was fixed in 10% formaldehyde. After a week, the lizard was transferred to 70% ethanol for permanent storage. Latitude and longitudinal coordinates for the collection locality were generated using Google Earth.

In the United States of America, *P. siculus* is known from Kansas, Missouri, New Jersey, Long Island, New York, Connecticut, Massachusetts, Penn-



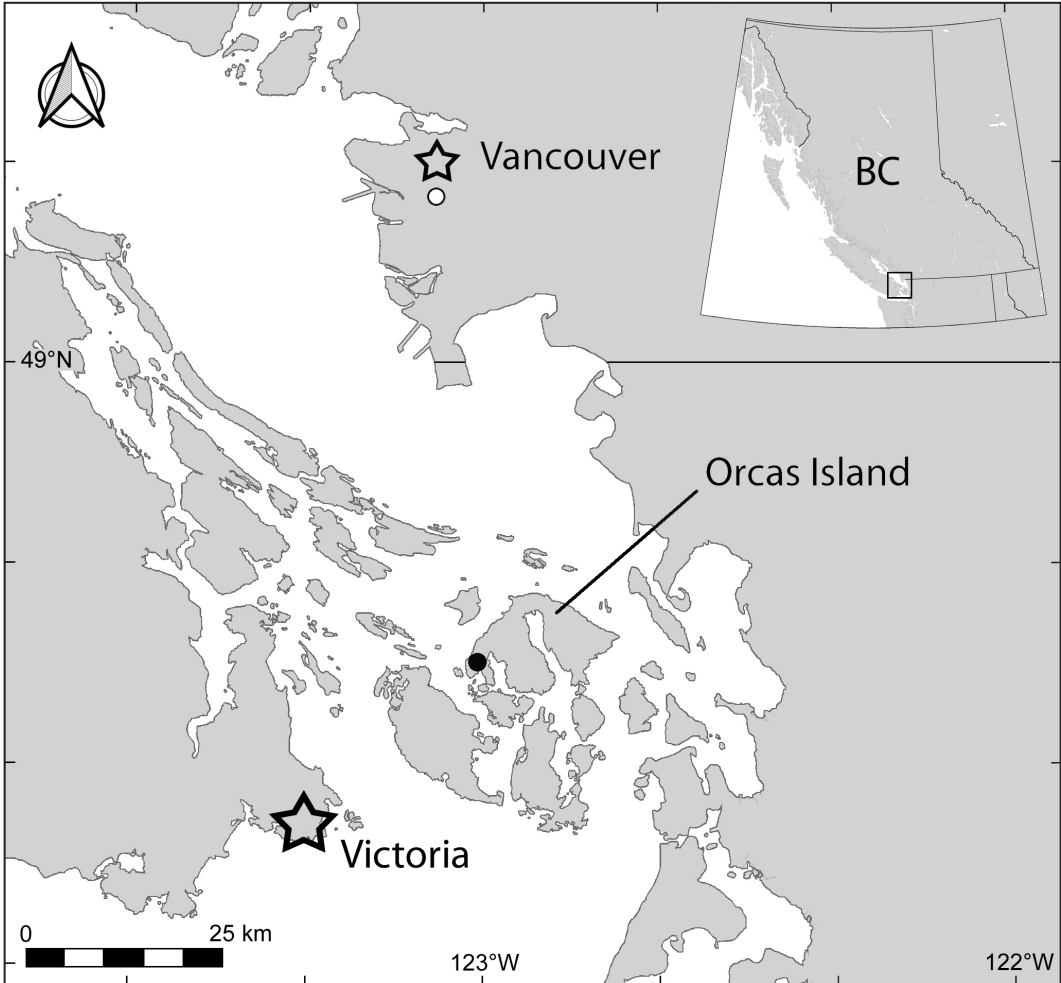
**FIGURE 1.** Dorsal and ventral views of a female Italian Wall Lizard (*Podarcis siculus*; RBCM 2187) found in Vancouver, British Columbia, Canada. Total length = 143 mm, snout to vent length = 59 mm, scale bar = 1 cm. Photo: G. Hanke.

sylvania, Virginia, California (Lever 2003; Kraus 2009; Burke 2010; Deichsel *et al.* 2010; Briggler *et al.* 2015; Donihue *et al.* 2015; Hollingsworth and Thomson 2016), and Washington (Orcas Island). According to A. Leaché (pers. comm. 16 October 2018), C. Raimond was the first to report wall lizards at Bullock's Permaculture Homestead, 0.7 km northwest of Deer Harbor Marina (48.626991°N, 123.011423°W), Orcas Island, Washington on 13 May 2017, with accompanying photographs uploaded to Flickr on 14 May 2017. Raimond suggested that the lizards he photographed were *P. muralis* from Vancouver Island; however, we have reidentified the photographed lizards as *Podarcis siculus campestris*. At least eight individuals of different age classes were seen on Orcas Island along a partly shaded, rocky, south-facing slope. According to Raimond's 2017 report, landowners knew that these lizards had been on the property for at least 10 years. In Figure 2, the dot on Orcas Island, centred on Raimond's original sighting, represents the potential range of *P. siculus* after a decade of unassisted dispersal, assuming range expansion rate is the same as estimated by Burke (2005) and Burke and Deichsel (2008).

To our knowledge, RBCM 2187 represents the first record of *P. siculus* on the loose in Canada.

The Canadian specimen was collected at the office of Honeycomb Direct Mail Inc., beside Rent-a-Tent Canada in Vancouver, about 65 km north of the *P. siculus* population on Orcas Island, Washington (Figure 2). As no hatchlings have been seen where RBCM 2187 was collected, we assume it was a lone stow-away and had not deposited eggs. It is possible that this Canadian specimen stowed away in camping gear used on Orcas Island, or arrived in a mail shipment from Europe or elsewhere in North America. The Orcas Island specimens photographed by C. Raimond and RBCM 2187 have colouration consistent with *P. s. campestris*, the northern subspecies ranging from easternmost France and the southern tip of Switzerland, throughout the northern two-thirds of Italy, east to the coasts and coastal islands of Slovenia, Croatia, Bosnia/Herzegovina, and all but the southern tip of Corsica (Speybroeck *et al.* 2016).

The rapid spread of *P. muralis* in British Columbia, including the Osoyoos specimen, which travelled from Vancouver Island to Osoyoos in a shipment of grapes (Engelstoft *et al.* 2020), and the recent appearance of *P. siculus* in Vancouver indicate that the potential for accidental transport of *Podarcis* is high. Because *P. siculus* is established on Orcas Island in the same climatic zone as southern Vancouver Island



**FIGURE 2.** Locations of Italian Wall Lizards (*Podarcis siculus*) captured in Vancouver, British Columbia (white dot), and sighted on Orcas Island, Washington (black dot). Note that the dot on Orcas Island has a radius of ~1 km representing the potential unassisted range expansion after one decade.

and Vancouver, is successful in cooler climates elsewhere in North America (Burke *et al.* 2002) and is known to eat other lizards and lizard eggs and attempt to ingest animals as large as shrews (Capula and Aloise 2011; Grano *et al.* 2011), it represents a high-risk invader in southwestern British Columbia. Given that *P. muralis* is already established as an invasive species in British Columbia, the addition of a second *Podarcis* species would intensify the impact on the native fauna of southwestern British Columbia.

#### Author Contributions

Writing—Original Draft: G.F.H. and G.D.; Writing—Review & Editing: G.F.H. and G.D.; Species identification: G.F.H. and G.D.

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