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First report of consumption of the Italian Three-toed Skink, *Chalcides chalcides* (Linnaeus, 1758), by a European Pine Marten in Lazio, Italy

Alessia Mariacher[1,†], Lorena Di Benedetto[1,†], Francesca Maccagnan[1], Francesco Mariottini[1], Luca Colla[2], Sara Tonon[3], and Matteo R. Di Nicola[4,*]

For many herpetological species, the lack of specific ecological information, such as details regarding trophic interactions with their predators, is not uncommon. Understanding these interactions is crucial as they contribute, for example, to influencing survival strategies, behavioural patterns, and geographical distribution. Therefore, any new data becomes useful to add a piece to this knowledge. The Italian Three-toed Skink (*Chalcides chalcides*) is among the species whose relationships with predators are poorly known. This reptile is a serpentiform member of the family Scincidae, featuring four significantly reduced limbs, each with three toes. It ranges in total length from 19–35 cm, approximately half of which consists of the tail. The species exhibits caudal autotomy as a defensive mechanism in response to threats (Caputo, 1993; Caputo et al., 2011; Di Nicola et al., 2021).

The range of *Chalcides chalcides* includes Italy, Algeria, Libya, and Tunisia. In Italy, it is widely found throughout the peninsula south of the River Po, as well as in Sicily, Sardinia, and Elba Island. Here, it inhabits environments ranging from Mediterranean scrub and garigue to bushy pastures and even cultivated fields, primarily at elevations from 0–600 m, with occurrences recorded up to 1800 m. In Italy, it is a diurnal species, with activity periods mainly during spring and the early summer (Caputo, 2009; Caputo et al., 2011; Di Nicola et al., 2021).

Identified as potential predators of *C. chalcides* are snakes such as whipsnakes (*Hierophis viridiflavus*), vipers (*Vipera aspis*), and smooth snakes (genus *Coronella*; Caputo et al., 2011). Evidence of predation has been noted from *Coronella girondica* (Luiselli et al., 2001) and from diurnal raptors such as *Circaetus gallicus* (Campora and Alberti, 1997; Caputo and Silvano, 1999), *Falco tinnunculus* (Caputo, 1993; Alessandrelli, 2002; Trotta et al., 2015), *Falco biarmicus* (Angelini and Scotti, 2015), and *Buteo buteo* (Caputo, 1993; Bux et al., 1999; Alessandrelli, 2002). Additionally, remains have been found in the stomach contents of the wild boar, *Sus scrofa* (Pinna et al., 2007). The scientific literature lacks evidence of predation on the Italian three-toed skink by mesocarnivorous mammals, including mustelids such as the European Badger (*Meles meles*), Beech Marten (*Martes foina*), and European Pine Marten (*Martes martes*).

On 25 June 2024, along the edge of a paved road about 600 m from the western shore of Lake Vico (Ronciglione, Italy; 42.309°N, 12.206°E, elevation 578 m), a road-killed adult male European Pine Marten was collected and transferred to the Istituto Zooprofilattico Sperimentale del Lazio e della Toscana for necroscopic examination (Fig. 1A). Upon visual inspection of the stomach contents, remains of an adult *C. chalcides* were found (sex indeterminate; Fig. 1B), identified based on morphological criteria (see Caputo et al., 2011; Di Nicola et al., 2021), along with remnants of small mammals and a beetle.

The European Pine Marten is a small, solitary, opportunistic predator, with males typically weighing 0.8–2.4 kg and females 0.8–1.4 kg. It is widespread across central and western Eurasia, covering most of Europe,

[1] Istituto Zooprofilattico Sperimentale delle Regioni Lazio e Toscana, UOT Toscana Sud, Viale Europa 30, 58100 Grosseto, Italy.
[2] Dipartimento di Scienze Chimiche, della Vita e della Sostenibilità Ambientale, Università di Parma, Parco Area delle Scienze, 43124 Parma, Italy.
[3] Istituto Zooprofilattico Sperimentale delle Regioni Lazio e Toscana, UOT Lazio Nord, Strada Terme 4/a, 01100 Viterbo, Italy.
[4] Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta, Via Bologna 148, 10154 Torino, Italy.
[†] Joint first authors
[*] Corresponding author. E-mail: matteoriccardo.dinicola@izsplv.it

Figure 1. (A) Adult male *Martes martes* carcass. (B) Adult *Chalcides chalcides* remains from *M. martes* stomach contents, displayed on millimeter graph paper.

the Caucasus, Asia Minor, Iran, and western Siberia (Monakhov, 2022). Pine martens inhabit coniferous, deciduous, and mixed forests and their fragments, particularly where forests have an incomplete canopy and dense understory. It exhibits crepuscular and nocturnal habits but is also active during the day (Monakhov, 2022; Paolucci and Bon, 2022). Pine martens are omnivorous and generalist, varying geographically and seasonally. In Mediterranean regions, plant food constitutes a fundamental component of their diet, along with small mammals, birds, and insects. Amphibians and reptiles are infrequently found in scats or stomach contents and are generally considered secondary or auxiliary food sources. Moreover, carrion and anthropogenic waste occasionally supplement the pine marten diet, especially in areas with significant human presence (De Marinis and Masseti, 1995; Monakhov, 2022).

The lack of direct observation in our finding does not allow us to distinguish between scavenging and predation on the *C. chalcides* specimen. However, the absence of signs that the skink died from causes prior to potential predation, coupled with the diurnal activity of both pine martens and three-toed skinks, observed during a period of heightened activity of the latter, suggests that predation is a plausible event. This addition to the dietary records of *M. martes* enriches our ecological understanding of *C. chalcides*, offering insights into its interactions within Mediterranean ecosystems.

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