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## **Flatties in Italy: Online Naturalist Networks Confirm a Wide Distribution of *Selenops Radiatus* (Araneae: Selenopidae) in Southeastern Sicily**

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Source: Arachnologische Mitteilungen: Arachnology Letters, 67(1) : 13-17

Published By: Arachnologische Gesellschaft e.V.

URL: <https://doi.org/10.30963/aramit6703>

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## Flatties in Italy: online naturalist networks confirm a wide distribution of *Selenops radiatus* (Araneae: Selenopidae) in southeastern Sicily

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doi: 10.30963/aramit6703

**Abstract.** In Italy, the selenopid spider *Selenops radiatus* Latreille, 1819, was hitherto only known from the Aeolian Archipelago (north-eastern Sicily), with a record from the island of Alicudi and plausible sightings from the island of Filicudi. In this paper, we present twenty-six new records from Sicily sensu stricto and its satellite islands, consisting of observations gathered from online naturalist networks and one adult specimen collected from the area where most observations were made. Nearly all records were made in buildings or similar artificial habitats, supporting the hypothesis that occurrences of *S. radiatus* are mainly limited to synanthropic environments in Sicily.

**Keywords:** alien species, anthropogenic habitats, synanthropic, wall crab spider

**Zusammenfassung. Flatties in Italien: Online-Netzwerke von Naturbeobachtern bestätigen eine weite Verbreitung von *Selenops radiatus* (Araneae: Selenopidae) im südöstlichen Sizilien.** *Selenops radiatus* Latreille, 1819, ein Vertreter der Selenopidae, war bisher aus Italien nur von den Äolischen Inseln (nordöstliches Sizilien) belegt, mit einem Nachweis von der Insel Alicudi und plausiblen Beobachtungen von der Insel Filicudi. In dieser Arbeit werden 26 weitere Nachweise der Art von der Insel Sizilien wie auch umgebenden Inseln vorgestellt. Diese bestehen aus Beobachtungen, welche auf Online-Netzwerken zusammengetragen wurden sowie einem gesammelten Exemplar aus dem geografischen Bereich, woher die meisten Beobachtungen stammen. Nahezu alle Nachweise stammen aus Gebäuden oder ähnlichen künstlichen Lebensräumen. Dies unterstützt die Hypothese, dass Vorkommen von *S. radiatus* hauptsächlich auf synanthrope Lebensräume in Sizilien beschränkt sind.

The genus *Selenops* Latreille, 1819 (Araneae: Selenopidae) currently includes 132 species (World Spider Catalog 2024), most of them distributed in the tropical and subtropical regions of the world. For the Mediterranean region, only two species have been reported so far: *Selenops bastet* Zamani & Crews, 2019, recently described from Egypt and based only on females (Zamani & Crews 2019), and *Selenops radiatus* Latreille, 1819, the species examined in the present paper.

*Selenops radiatus* is distributed in Africa, the Middle East, India, Myanmar and China (World Spider Catalog 2024). It has been reported from the following countries of the Mediterranean basin: Egypt (Audouin 1826, El-Hennawy & Sallam 2019, Pickard-Cambridge 1876, Pavesi 1878, Simon 1899), Greece (Pavesi 1878, van Helsdingen 2023), Israel (Pickard-Cambridge 1872), Italy (only in Sicily) (Lo Cascio & Grita 2010), Lebanon (Simon 1884), Libya (Bosmans unpubl. in Nentwig et al. 2023), Spain including the Balearic Islands (Branco et al. 2019) and Türkiye (Kunt et al. 2011, Danışman et al. 2023). Here, we offer several new records of this species for Sicily (Fig. 1), including for the main island of Sicily based on a single collected specimen, and several additional observations by naturalists posted on various online platforms.

### Material and methods

One specimen was collected by the author PG during field research activities. A Citizen Science approach was further used to gather all other data through photographic material kindly provided by the users of a zoology-oriented Facebook

group, named “Fauna Siciliana” (hereafter FS, <https://www.facebook.com/groups/faunasiciliana>), managed by one of the authors (FPF).

The FS users provided data and locations of different *S. radiatus* individuals observed and photographed in Sicily. The present authors analysed every original picture, verifying the species identification and the locality provided, which were sometimes accompanied by further information about the surrounding habitat. Furthermore, observations available on the iNaturalist platform (hereafter iN; <https://www.inaturalist.org/>) were also gathered.

The specimen observed and subsequently collected by PG was examined under a stereomicroscope and preserved in a centrifuge tube fixed in 75% ethanol (Levi 1966). It is currently stored in the private collection of one of the authors (AD). It was photographed using a Sigma 105 mm f/2.8 Macro DG OS HSM Macro photo lens along with a Nikon D300s reflex camera and identified following Corronca (2002) and Nentwig et al. (2023). The only two *Selenops* species currently reported from the Mediterranean area are *S. bastet* Zamani & Crews, 2019 and *S. radiatus* Latreille, 1819. Given that *S. bastet* has only recently been described and it is only known from Egypt (Zamani & Crews 2019), while *S. radiatus* is known from the Aeolian Islands (Sicily), Iberian Peninsula, Greece and Türkiye (Nentwig et al. 2023), it is very unlikely that photographed selenopids in Sicily belong to a different species.

For the altitude, the mean ( $\bar{X}$ ), the standard deviation (SD) and the range (min–max) were calculated and reported as  $\bar{X} \pm \text{SD}$  (min–max). To avoid any confusion, for the main island of Sicily the term “Sicily sensu stricto (s. str.)” is used.

### Results

*Selenops radiatus* Latreille, 1819

See World Spider Catalog (2024) for taxonomic references

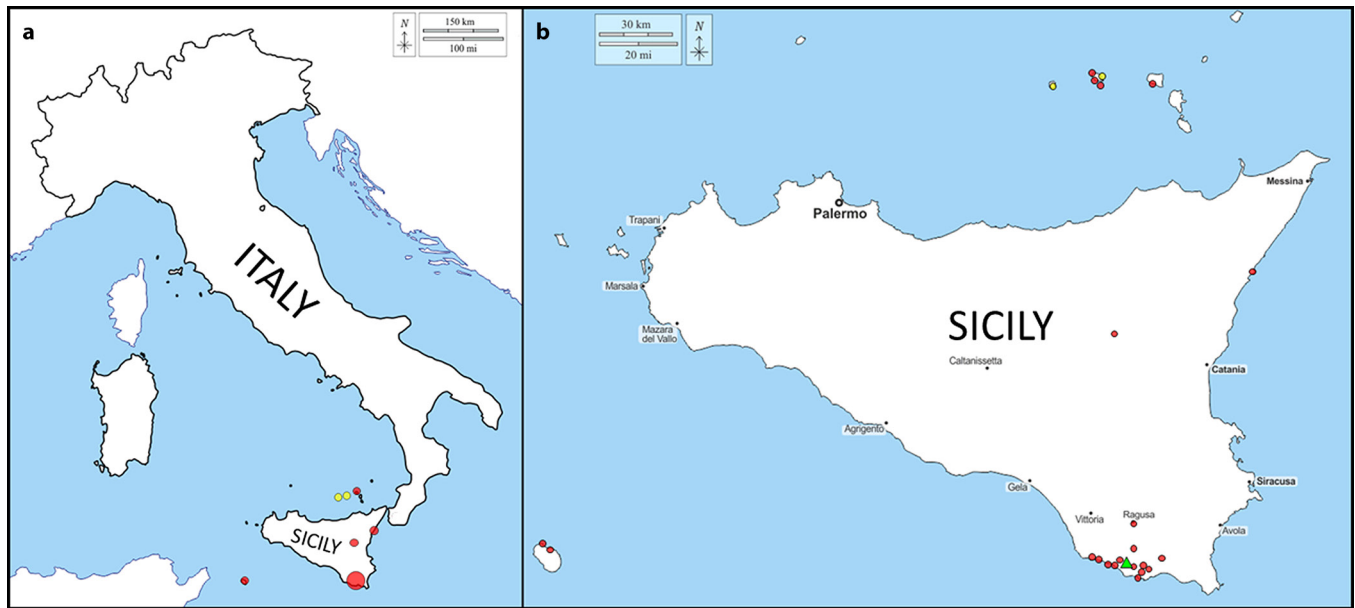
### Material

ITALY: Sicily, Ragusa, Scicli, 36.7455°N, 14.7636°E, 120 m a.s.l., inside a rural warehouse surrounded by a dry and rocky

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Academic editor: Tobias Bauer

submitted 12.7.2023, accepted 17.12.2023, online 14.6.2024



**Fig. 1:** Records of *S. radiatus* in Sicily (Italy). Localisation of Sicily south of the Italian Peninsula (**a**) and detail of Sicily (**b**): in yellow (circles), the first and only Italian records related to the Eolian Islands (Lo Cascio & Grita 2010); in red (circles), the new records found in Sicily; in green (triangle), location of the collected specimen. Maps by © d-maps.com, modified by means of Adobe Photoshop

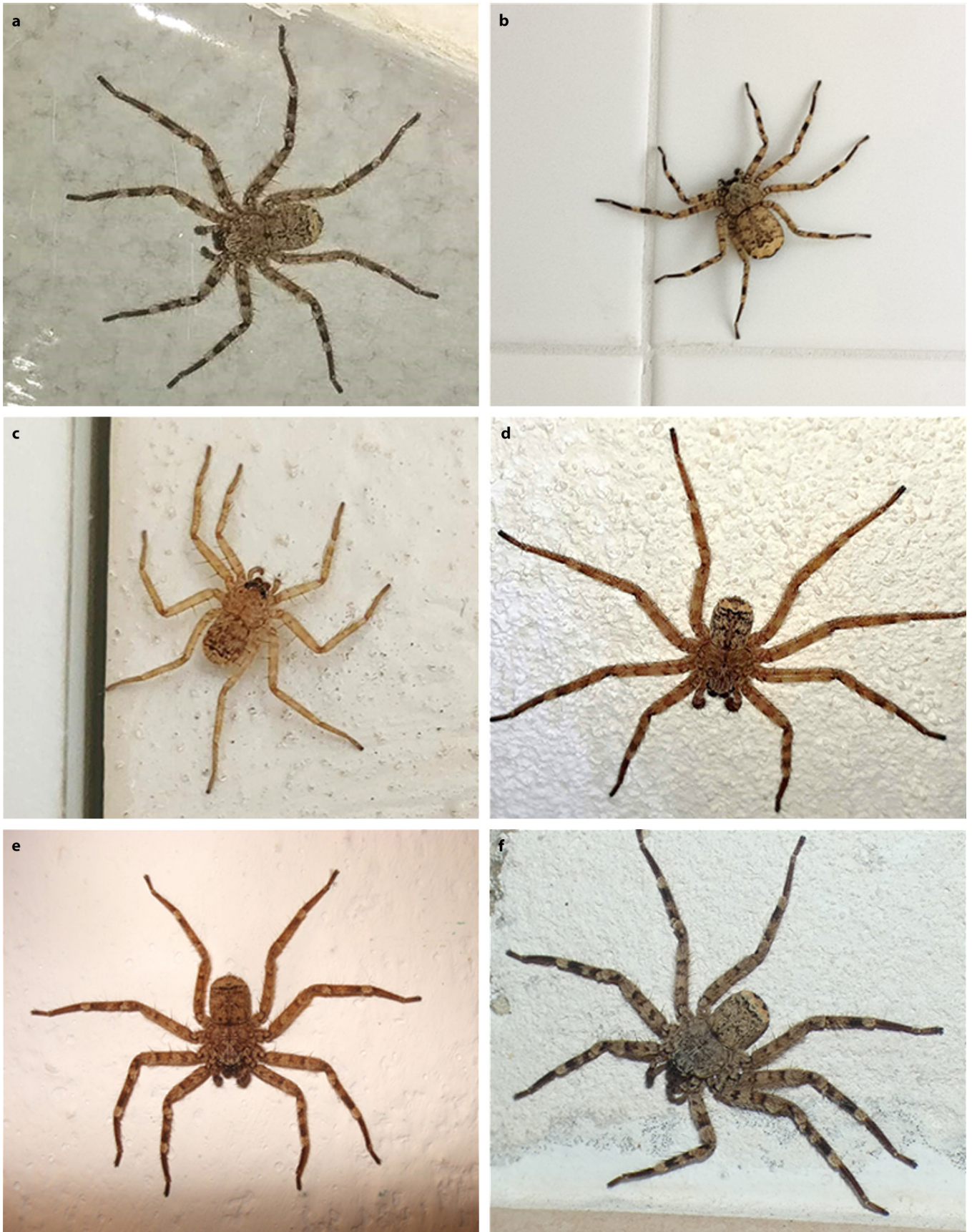
habitat with low Mediterranean scrub vegetation and garrigue with *Chamaerops humilis* and *Pistacia lentiscus* on 18. May 2022, 1 ♀, P. Galasso leg.

All the other 26 new records were obtained as result of our analysis of photos provided by social networks (FS), iNaturalist.org and personal communications by colleagues (Fig. 2), of which 16 (61.5%) are from locations in the province of Ragusa, south-eastern Sicily s. str. (see Fig. 1b). Five observa-

tions confirmed the presence of *S. radiatus* on Filicudi Island (see Lo Cascio & Grita 2010) and two of them, for the first time, prove its presence on the islands of Salina (Aeolian Archipelago; Fig. 3) and Pantelleria (Strait of Sicily) (Tab. 1, Fig. 1). The mean altitude of all the new records ( $n = 27$ ) is  $173.3 \pm 148.3$  (6–668) m a.s.l.; 26 out of 27 observations (96.3%) were made inside or immediately outside of buildings.

**Tab. 1:** Data related to observations of *S. radiatus* in Sicily. Username followed by (FS): data collected from Fauna Siciliana Facebook group; username followed by (iN): data collected from iNaturalist platform, individually detailed in the reference list. Note: all data collected from both FS and iN are exclusively based on photographic material. The date and coordinates related to records from Filicudi by Lo Cascio & Grita (2010) were not reported by the authors. The coordinates related to records from Salina, inaccurate on the iNaturalist platform (see benedettagamboli 2022), were corrected by the corresponding author (B. Gambioli, pers. comm.).

Date	Locality	X	Y	altitude (m a.s.l.)	N <sup>o</sup> specimen	Habitat	Source
not reported	Filicudi, Aeolian Archipelago	-	-	-	multiple records	-	Lo Cascio and Grita (2010)
2010	Alicudi, Aeolian Archipelago	-	-	-	2	-	Lo Cascio and Grita (2010)
4. Apr. 2010	Pantelleria	36.8191	11.9891	15	multiple records	rural house	A La Rosa (FS)
25. Aug. 2016	Scicli	36.7285	14.7582	26	1	rural house	C Laureanti (FS)
Mar. 2017	Donnalucata	36.7627	14.6360	6	1	house in urban area	A Vaccaro (FS)
31. Oct. 2017	Ragusa	36.9253	14.7284	500	1	house in urban area	L Emmolo (FS)
9. Jun. 2019	Jungi, Scicli	36.7812	14.6879	120	2	house in urban area	G Sammito (FS)
12. Aug. 2019	Scicli	36.7972	14.5833	75	1	rural house	G Lo Sauro (FS)
16. Aug. 2019	Filicudi, Aeolian Archipelago	38.5624	14.5777	130	1	rural house	A Cicerone (FS)
25. Aug. 2019	Marina di Ragusa	36.7990	14.5724	130	1	rural house	A Ditta (FS)
5. Sep. 2019	Ispica, Contrada Scorsone	36.8145	14.8712	270	1	olive grove with scattered rocks	R Giuca (FS)
27. Sep. 2019	Modica	36.7509	14.7815	136	multiple records	rural house	F Ottaviano (FS)
20. Aug. 2020	Modica, Cava Cugno	36.7611	14.7750	180	1	rural house	A Maltese (FS)
9. Nov. 2020	Ispica, Mangiagesso	36.8270	14.7153	300	1	rural house	I Romano (FS)
9. Sep. 2021	Donnalucata, C.da Torre Dammusa	36.7739	14.6494	83	1	rural house	M Zocco (FS)



**Fig. 2:** Some individuals of *S. radiatus* photographed in Sicily. **a.** Filicudi, photo by A. Cicerone; **b-c.** Scicli (RG), photo by N. Curcuraci; **d.** Modica, photo by A. Maltese; **e.** Pantelleria island (TP), photo by A. La Rosa; **f.** Ispica (RG), photo by I. Romano

Date	Locality	X	Y	altitude (m a.s.l.)	N <sup>o</sup> specimen	Habitat	Source
25. Sep. 2021	Centuripe, C.da Mandarano	37.6258	14.7442	668	1	urban area	A Reitano (FS)
23. Jul. 2022	Scicli	36.7873	14.6670	160	1	rural house	S Melluso (FS)
16. Aug. 2023	Taormina	37.8528	15.2874	208	1	house in urban area	S Spadaro (FS)
26. Mar. 2017	Taormina	37.8507	15.2869	138	1	house in suburban area	psimmons 2017 (iN)
2. Jan. 2019	Filicudi, Aeolian Archipelago	38.5665	14.5597	306	1	rural house	io-es 2019 (iN)
2. Jul. 2020	Filicudi, Aeolian Archipelago	38.5600	14.5638	92	1	rural house	io-es 2020 (iN)
3. Aug. 2021	Scicli	36.7398	14.7310	108	1	rural house	pietro146 2021 (iN)
15. Sep. 2021	Pantelleria	36.8194	11.9900	22	1	rural house	gian53 2021 (iN)
19. Sep. 2021	Filicudi, Aeolian Archipelago	38.5685	14.5706	285	1	rural house	elia35 2021 (iN)
26. Jul. 2022	Scicli	36.7618	14.6732	20	1	agricultural context	pemm 2022 (iN)
2. Sept. 2022	Scicli	36.7707	14.7170	183	1	rural house	adrtrv 2022 (iN)
28. Jun. 2022	Salina, Aeolian Archipelago	38.5527	14.8201	186	1	house	benedettagambioli 2022 (iN)
23. Oct. 2023	Filicudi, Aeolian Archipelago	38.5639	14.5756	213	6	rural house	I Romano (pers. comm.)
18. May 2022	Scicli	36.7455	14.7636	120	1	rural house	PG (sampled specimen)

## Discussion

All the results here presented demonstrate a much wider distribution for *S. radiatus* in Sicily, with most records coming from the southeastern area of Sicily s. str. So far, the species was reported in Italy only for the small Alicudi Island (Aeolian Archipelago, Messina, Sicily), where it was described as “extremely common” (Lo Cascio & Grita 2010). Other reliable observations were made in Filicudi, another Aeolian Island (Lo Cascio & Grita 2010). The latter is now confirmed by five recent observations from the years 2019, 2020, 2021 and 2023 (Tab. 1).

Most individuals were observed inside or around inhabited houses (Fig. 3), just like the first record in Sicily (Lo Cascio & Grita 2010). This is in accordance with many observations from the Afrotropical region (Lawrence 1940, Corronca 2000, 2002). Our data clearly demonstrate the synanthropic habits of this species. In addition, Lawrence (1940) described the genus as being attracted by light and to be found resting on inside walls at night, which might further explain why it is frequently observed by citizens, but rarely collected by scientists.



**Fig. 3:** One of at least six different individuals of *S. radiatus* observed inside the same inhabited house on the island of Filicudi (Aeolian Archipelago) in October 2023. Photo: I. Romano

This expansion pattern, linked to strictly anthropogenic environments, is very frequent in alien spiders (Nedvěd et al. 2011, Nentwig 2015) and can also be observed in several other non-native species in Europe (Faraone et al. 2019, Polidori et al. 2021, Sammet et al. 2021). The Sicilian records suggest that this species might be restricted to human settlement and an agricultural context in this region. On the other hand, other observations in the Mediterranean and Africa occurred in *Eucalyptus* plantations, where this species appears to be equally common in some areas (Corronca 1998, Kunt et al. 2011) demonstrating that *S. radiatus* might inhabit further heavily modified habitats in Sicily.

From the first Italian record (Lo Cascio & Grita 2010) to date, the known distribution of *S. radiatus* has substantially increased (Crews & Harvey 2011, Kunt et al. 2011, Bosmans & Van Keer 2017, Branco et al. 2019, El-Hennawy & Sallam 2019, Zamani & Crews 2019). Clearly, it remains unknown whether the species was introduced in some way to Sicily, for example through the transportation of goods, or whether its presence is to be considered historical on the island. With the exception of the sighting in Pantelleria in 2010 (see Tab. 1), the oldest observation in Sicily s. str. dates back to 2016, hence 6 years after the first Italian report from the Aeolian Islands.

All data collected, together with those presented here, suggest that this species is probably much more widespread in the Mediterranean area than previously thought. Future studies in other areas of the Mediterranean basin will most probably reveal new populations of *S. radiatus*.

## Acknowledgements

We want to thank everybody who provided information, photos and data: Alessia Cicerone, Nadia Curcuraci, Angelo Ditta, Luisa Emmolo, Benedetta Gambioli, Rita Giuca, Alfonso La Rosa, Costantino Laureanti, Giuseppe Lo Sauro, Armando Maltese, Sofia Melluso, Francesco Ottaviano, Iacopo Romano, Gianni Sammito, Angelo Vaccaro and Maria Zocco. We also thank the following iNaturalist users: adrtry, benedettagambioli, elia35, gian53, io-es, pietro146, pemm and psimmons for sharing their observations on the platform. We are also grateful to our families, whose support is essential to us. We particularly thank Tobias Bauer and Filippo Milano who improved and corrected this paper.

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