

***Podarcis siculus latastei* (Bedriaga, 1879) of the
western Pontine islands (Italy) raised to the
species rank, and a brief taxonomic overview of
Podarcis lizards**

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2 **the species rank, and a brief taxonomic overview of *Podarcis* lizards**

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16
17 **Running title:** New *Podarcis* species from western Pontine Islands

18
19 **Abstract.** In recent years, great attention has been paid to many *Podarcis* species for which
20 the observed intra-specific variability often revealed species complexes still characterized by
21 an unresolved relationship. When compared to other species, *P. siculus* underwent fewer
22 revisions and the number of species hidden within this taxon may have been, therefore,
23 underestimated. However, recent studies based on genetic and morphological data highlighted
24 a marked differentiation of the populations inhabiting the western Pontine Archipelago. In the

25 present work we used published genetic data (three mitochondrial and three nuclear gene
26 fragments) from 25 *Podarcis* species to provide a multilocus phylogeny of the genus in order
27 to understand the degree of differentiation of the western Pontine populations. In addition, we
28 analyzed new morphometric traits (scale counts) of 151 specimens from the main islands of
29 the Pontine Archipelago. The phylogenetic analysis revealed five principal *Podarcis* groups
30 with biogeographic consistency. The genetic distinctiveness of the *Podarcis* populations of
31 the western Pontine Islands is similar or even more ancient than those observed in numerous
32 other pairs of *Podarcis* sister species. In the light of these evidences we raise the western
33 Pontine lizards to specific rank; thus they should be referred to as *Podarcis latastei*.

34

35 **Keywords.** Reptilia, *Podarcis latastei*, *Podarcis siculus*, insular lizards, Mediterranean

36

37

INTRODUCTION

38 The wall lizards belonging to the genus *Podarcis* Wagler, 1830 are among the most speciose
39 vertebrates in Europe, representing one of the most important faunistic elements of the
40 Mediterranean insular biota. Originally, two opposite taxonomic viewpoints (“lumping“ and
41 “splitting“) were – partly emotionally – discussed in the late 19th and early 20th centuries. At
42 that time the most prominent representative of the “lumpers“ was George A. Boulenger
43 (1859-1937) who joined numerous wall lizards together under the name “*Lacerta muralis*“
44 distinguishing, as some predecessors did, only “varieties“ within this species (Boulenger,
45 1887, 1905, 1913, 1920). His main antagonist, representing the taxonomic “splitter“ faction,
46 was Ludwig von Méhely (1862-1953) who considered many of Boulenger’s “varieties” to be
47 distinct species (Méhely, 1907, 1909). He wrote: «Like a night-mare, the so-called *muralis*
48 question is burdening the mind of herpetologists» (Méhely, 1907). Despite modern

49 approaches, molecular genetics included, Méhely was closer to the current concept than his
50 more influential contemporary colleague; however, the number of *Podarcis* species is still
51 debated. For example, 21 taxa were recognized as valid species by Speybroeck et al. (2010),
52 whereas other authors have suggested 23 (Sindaco et al., 2013; Uetz and Hošek, 2016; but see
53 Psonis et al., 2017). The taxonomic wavering of the genus *Podarcis* is mainly due to the
54 presence of marked intra-specific variability with multiple species complexes characterized
55 by unresolved relationships (Harris and Arnold, 1999; Oliverio et al., 2000; Harris et al.,
56 2005; Lymberakis et al., 2008). Table 1 summarizes this taxonomic/nomenclatural history of
57 the currently recognized *Podarcis* species.

58 In contrast to the great taxonomic attention paid to numerous *Podarcis* species, *P.*
59 *siculus* has undergone fewer revisions and the number of species hidden within this taxon
60 may have been underestimated. *Podarcis siculus* (Rafinesque-Schmaltz, 1810) was originally
61 described as *Lacerta sicula*. However, because of its distribution over a large part of Italy
62 (Sicily, Sardinia and numerous minor islands, islets and rocks) and Dalmatia, several
63 subspecies were described. Some of them were originally assigned to „*Lacerta*“ *muralis*
64 (more than 90 were listed together with their type localities by Henle and Klaver, 1986). This
65 situation led some authors to hypothesize the presence of a species complex similar to those
66 observed in other *Podarcis* assemblages (Oliverio et al., 1998, 2000; Harris and Sa-Sousa,
67 2002). More recent studies based on mitochondrial (Podnar et al., 2005) and nuclear (Senczuk
68 et al., 2017) markers have supported the monophyly of *P. siculus* and revealed surprisingly
69 high genetic divergences between the main constituent evolutionary lineages, most
70 comparable to those observed between many recognized *Podarcis* species (Harris et al.,
71 2005). In addition, recent studies using molecular markers (mitochondrial and nuclear DNA)
72 and geometric morphometrics have revealed that the populations from the western Pontine

73 Islands represent an evolutionarily independent unit (Senczuk et al., 2018a; 2018b). The
74 genetic distances of these populations with respect to mainland ones were extraordinary high
75 (*p*-distances of 7-10% for the mtDNA *cytb* gene), and the head morphology was clearly
76 distinguishable with respect to the mainland and Sicilian populations (Senczuk et al., 2018a;
77 2018b).

78 The Pontine Archipelago is located 40 km from the Tyrrhenian coast and comprises the
79 western Pontine islands Ponza, Palmarola, Zannone and Gavi, and the eastern Pontine islands
80 Ventotene and Santo Stefano. From the Pontine Archipelago, the following nominal insular
81 intraspecific taxa have been described: *Lacerta muralis* var. *latastei* = *Podarcis siculus*
82 *latastei* (Bedriaga, 1879 a, b) from Ponza; *Lacerta muralis parkeri* = *Podarcis siculus parkeri*
83 (Mertens, 1926) from Santo Stefano; *Lacerta sicula sancti-stephani* = *Podarcis siculus*
84 *sanctistephani* (Mertens, 1926) from Santo Stefano; *Lacerta sicula ventotenensis* = *Podarcis*
85 *siculus ventotenensis* (Taddei, 1949) from Ventotene; *Lacerta sicula pasquinii* = *Podarcis*
86 *siculus pasquinii* (Lanza, 1952) from Scoglio Cappello near Palmarola; *Lacerta sicula patrizii*
87 = *Podarcis siculus patrizii* (Lanza, 1952) from Zannone; *Lacerta sicula lanzai* = *Podarcis*
88 *siculus lanzai* (Mertens, 1967) from Gavi and *Lacerta sicula palmarolae* = *Podarcis siculus*
89 *palmarolae* (Mertens, 1967) from Palmarola (cfr. Lanza and Corti, 1996; Corti et al., 2010).

90 *Podarcis siculus parkeri* was synonymized with *P. s. sanctistephani* (Mertens and
91 Wermuth 1960; Mertens, 1965), which is believed to have become extinct during the first
92 decades of the last century (1914 at the latest), and replaced by *P. s. siculus* (Mertens 1965).
93 Henle and Klaver (1986), reviewing the intraspecific taxa, followed Mertens (1965) in
94 considering *P. s. ventotenensis* as a synonym of the nominotypical form, and listed *P. s.*
95 *latastei*, *P. s. lanzai*, *P. s. pasquinii*, *P. s. patrizii* and *P. s. palmarolae* as valid subspecies.
96 These five taxa occur in the western Pontine Islands, which are believed to have been

97 connected to the mainland in the Pleistocene, whereas the eastern Pontine Islands (Ventotene,
98 Santo Stefano) seem never to have been, being located along the 500 m isobath (Woldstedt
99 1958; Mertens 1965, 1967).

100 The deep genetic distance recently found between the eastern and the western Pontine
101 Islands populations (Senczuk et al., 2018a), geometric morphometrics (Senczuk et al., 2018b),
102 classical morphometric and meristic data, as well as an updated time calibrated multilocus
103 phylogeny of *Podarcis* (Wagler, 1830), all suggest that the western Pontine lizards deserve
104 their own specific status and should be referred to as *Podarcis latastei* (Bedriaga, 1879),
105 which we characterize and redescribe here.

106

107 MATERIALS AND METHODS

108 *Molecular phylogenetics*

109 To obtain a robust and time calibrated phylogeny of *Podarcis* as a whole, three mitochondrial
110 (*16s*; *cytb*, and *nd4*) and three nuclear (*mc1r*, *pod15b* and *pod55*) gene fragments from 25
111 *Podarcis* species, including several subspecies, were retrieved from GenBank (all samples are
112 reported in Fig. 1 and Table 1, locality and accession number are reported in Appendix 1,
113 Table A1). Most of the retrieved sequences for each species belong to the same individual,
114 when not possible we selected individuals of close geographic origin. All final consensus
115 alignments were computed for each gene separately using BioEdit 7.2 (Hall, 1999). Coding
116 gene fragments (*cytb*, *nd4* and *mc1r*) were translated into amino acids to assess the lack of
117 stop codons.

118 For each alignment we used jModelTest v.2.1.3 (Darriba et al., 2012) to assess the best
119 model of nucleotide evolution under the corrected Akaike Information Criterion (AICc). To
120 reconstruct phylogenetic relationships we used a Bayesian coalescent framework

121 implemented in BEAST v.1.8 (Drummond et al., 2012). To calibrate the tree in absolute time
122 we used two vicariant calibration points: the separation between the Peloponnesus (*P.*
123 *peloponnesiacus*) and the islands of Crete and Pori (*Podarcis cretensis* and *P. lewendis*); and
124 the separation between the islands of Menorca and Mallorca (*P. lilfordi*) and the Pytiusic
125 Islands (*P. pytiusensis*). Both episodes occurred following the Messinian salinity crisis (MSC,
126 at about 5.2 Mya) yielding the sudden separation of these landmasses (Poulakakis et al., 2003;
127 Brown et al., 2008). A normal distribution using the mean in real space option ($\mu = 5.325$; SD
128 = 0.2) has been incorporated for each of the aforementioned nodes. We used a Yule process in
129 a linked tree partition and a lognormal relaxed model maintaining unlinked clock partitions.
130 As substitution models we used GTR+I+G for *16s* and *cytb*; TVM+I+G for *nd4* and *mclr*;
131 HKY for *pod15b* and HKY+I for *pod55*. We performed three independent runs of 10^8
132 generations sampling every 10^4 steps. Convergence was checked using the software TRACER
133 v 1.5 (Rambaut and Drummond, 2007) and after combining the trees using LogCombiner, the
134 final consensus tree was computed in TreeAnnotator (Drummond et al., 2012).

135

136 *Morphology*

137 We used the measurements and scale counts published by Mertens (1967) for diagnosing the
138 subspecific taxa of *P. siculus* recognized by him and compared them with our own data taken
139 from the holdings deposited in the Florence Museum (MZUF). We measured and counted the
140 scales of 151 specimens (60 females and 91 males) from the main islands of the Pontine
141 Archipelago preserved at the Natural History Museum of the University of Florence (MZUF)
142 (see Table 2). Specimens previously studied by Lanza (1952, 1967) and used for his
143 descriptions of *P. s. patrizii* and *P. s. pasquinii* were also included. We analyzed sex, snout-
144 vent length (SVL), and the following meristic characters: a) number of mid-body dorsal scales

145 (DORS); b) number of ventral plates counted longitudinally along the intermediate row
146 (VENT); c) number of gular scales counted along the throat mid-line from the collar to the
147 confluence of maxillaries (GUL); d) number of collar scales (COLL); e), number of femoral
148 pores on the right leg (PORF).

149 To test for significance of differences between sexes and islands, we used a two-way
150 analysis of variance (ANOVA). An additional two-way ANOVA was performed to test
151 differences between Ventotene Island and Santo Stefano Island sampled in 1954, and the
152 western Pontine and Santo Stefano Island sampled in 1878.

153

154

RESULTS AND DISCUSSION

155 The final alignment of 3117 bp included 27 taxa (Supplementary Information). The three
156 independent runs showed Effective Sample Size (ESS) for each parameter of more than 200.
157 All nodes except three showed posterior probabilities higher than 0.95. The phylogenetic tree
158 obtained is shown in Fig. 2. The tree topology is rather well supported (with exception of the
159 most basal nodes) and the relationships among species only partly corresponds to previous
160 phylogenetic reconstructions. Within the *Podarcis* radiation we found five principal groups
161 with biogeographic consistency (Fig.1-2).

162 1 – The *Podarcis hispanicus* complex currently includes seven species distributed from
163 North Africa to the Iberian Peninsula and south-western France. All species from the *P.*
164 *hispanicus* complex were first described as intraspecific taxa of the collective species *P.*
165 *muralis* and later raised to species rank in order to resolve paraphyly (see Table 1) (Oliverio et
166 al., 2000; Sá-Sousa and Harris, 2002; Geniez et al., 2007, 2014). Our phylogenetic analysis
167 support a similar phylogenetic relationships among species as previously reported, and

168 suggested, albeit with moderate support (0.91), *P. muralis* as the sister species of all the
169 Iberian *Podarcis*.

170 2 – The “*erhardii*” group comprises species of the Balkan Peninsula and the Greek
171 islands. Because of a paraphyletic relationship between *P. erhardii* (Bedriaga, 1882) and *P.*
172 *peloponnesiacus* (Bibron and Bory, 1833), two new insular endemics *P. cretensis* (Wettstein,
173 1952) and *P. lewendis* (Lymberakis et al., 2008) were raised to species rank (Poulakakis et al.,
174 2003; 2005a; Lymberakis et al., 2008).

175 3 – The “*tauricus*” group includes two species *P. tauricus* (Pallas, 1814) and *P.*
176 *melisellensis* (Braun, 1877) distributed over a large part of the Balkans and two endemic
177 insular species: *P. gaigae* (Werner, 1930) from Skyros and surrounding islands, and *P.*
178 *milensis* (Bedriaga, 1882) from Milos and surrounding islands (Poulakakis et al., 2005a,
179 2005b). However, a recent species delimitation approach (Psonis et al., 2017), suggested the
180 presence of nine species within the *tauricus* group: *P. melisellensis*, *P. gaigae*, *P. milensis*,
181 and six in the *P. tauricus* complex. Based on the absence of support to the monophyly of *P.*
182 *tauricus*, the authors proposed to raise the subspecies *P. t. ionicus* (Lehrs, 1902) to species
183 rank (Psonis et al., 2017). Our phylogenetic analysis confirms this scenario indicating an
184 ancient divergence between *P. ionicus* and *P. tauricus* (Fig. 2).

185 It is interesting to note that although the geographic distribution of *P. filfolensis*
186 (Bedriaga, 1876) would suggest a close relationship with the other two endemic species of the
187 Siculo-Maltese area, *P. waglerianus* (Gistel, 1868) and *P. raffoneae* (Mertens, 1952),
188 previous molecular analysis has resulted in contrasting phylogenies regarding the position of
189 these three species (Harris et al., 2005; Psonis et al., 2017; Salvi et al., 2017). Our
190 phylogenetic reconstruction supports a tangled evolutionary history indicating *P. filfolensis*
191 as the sister species of the *Podarcis* “*tauricus*” group (Fig. 2).

192 4 – *Podarcis* from the western Mediterranean islands include *P. tiliguerta* (Gmelin,
193 1789), *P. lilfordi* (Günther, 1874) and *P. pityusensis* (Boscá, 1883). *Podarcis tiliguerta*
194 distributed in Sardinia, Corsica and surrounding islands, has also been argued to be a species
195 complex showing very deep phylogeographic discontinuities (Harris et al., 2005; Rodriguez et
196 al., 2017; Salvi et al., 2017). On the other hand, *P. lilfordi* and *P. pityusensis* from the
197 Balearic and Pityusic islands showed closer phylogenetic relationship as a consequence of
198 vicariance following the Messinian salinity crisis (Brown et al., 2008). The phylogenetic
199 reconstruction reported here, confirms the close relationship of these endemic western
200 Mediterranean species.

201 5 – *Podarcis* from the Italian Peninsula and Sicily and surrounding islands forms a
202 monophyletic assemblage that includes *P. siculus*, *P. waglerianus* and *P. raffoneae*. The last
203 of these was raised to the species rank on the basis of allozyme analysis although further
204 studies showed relatively low genetic distances from *P. waglerianus* (3.3% at cytochrome b),
205 far lower than those observed between many other *Podarcis* species (Capula, 1994; Harris et
206 al., 2005). Based on our data, the lineage including *P. waglerianus* and *P. raffoneae* is sister
207 to *Podarcis siculus* and the lizards of the western Pontine Archipelago. The western Pontine
208 *Podarcis* are separated from *P. siculus* by approximately 4 Mya based on our results. The
209 genetic distinctiveness of these insular populations is comparable or even greater than several
210 other pairs of *Podarcis* sister species (i.e., *P. bocagei*/*P. guadarramae*, *P. carbonelli*/*P.*
211 *virescens*, *P. cretensis*/*P. lewendis*, *P. gaigeae*/*P. milensis*, *P. tauricus*/*P. ionicus*).

212 Our morphological analysis substantially confirms what Bedriaga (1879a) and Mertens
213 (1965) already observed. Indeed, we found significant differences comparing the specimens
214 of the western Pontine islands and the Santo Stefano Island collected in 1878, with those
215 collected in Santo Stefano in 1963 and Ventotene Island (Tables 3, 4, and 5; Fig. A1).

216 Furthermore, we also found significant differences when considering sexes and islands as
217 factors (Tables 3 and 4; Fig. A1). Smaller dorsal scales (resulting in higher dorsal scales
218 counts) were already reported by Bedriaga (1879a) to characterize his new taxon *latastei*.
219 Slight discrepancies between the scale counts taken by Mertens (1967) as compared with ours
220 (Tables 3 and 4) are likely due to a different counting method, which was not precisely
221 defined in Mertens' (1967) paper, e.g., in the number of oblique ventral rows which is
222 dependent on whether only complete or also incomplete rows are counted.

223 Based on multiple sources of evidence from genetics (herein and Senczuk et al., 2018a),
224 morphology (herein and in Senczuk et al., 2018b) we believe that this insular endemic taxon
225 deserves specific rank and should be referred to as *Podarcis latastei* (Bedriaga, 1879).

226 In accepting the specific status for the lizards of the western Pontine Islands, under the
227 oldest name available *Podarcis latastei* (Bedriaga, 1879), type locality Ponza Island, we
228 nevertheless accept the infraspecific subdivisions within the western Pontine Islands assigned
229 by earlier authors to *P. siculus*. This means that the former subtaxa of the latter taxon, viz.
230 *patrizii*, *pasquini*, *lanzai* etc. now become subspecies of *P. latastei*. The various island
231 populations of *Podarcis latastei* in the western Pontine Archipelago exhibit variable color
232 patterns. The patterned color morphs often show a tendency for longitudinal stripes to
233 dissolve into oblique bands, thus forming a reticulate pattern with light ocelli included (Fig. 4,
234 5 and 6). In other individuals, particularly from Gavi Island (Fig. 5a, 5b) there is a strong
235 tendency for a reduction of black-pigmented color pattern elements, corresponding to the
236 “concolor” mutation that also occurs in other *Podarcis* species. These differences in body
237 dimensions, scalation and color pattern justify, in our opinion, the maintenance of their
238 subspecific names, at least for conservation purposes (Senczuk et al., 2018a).

239 Bedriaga (1879a) based his nomen *latastei* on an unknown number of individuals – “in
240 Anzahl” which means “in a certain quantity” – collected by himself on Ponza Island in
241 Summer 1878, plus one individual from a rock west off Ponza which he called Faraglioni of
242 Ponza. Obviously, he kept all specimens in a cage alive during his travel and brought them via
243 Nice (Nizza), France, from where he sent a part of them to F. Lataste to Paris, to his
244 residential town of Heidelberg, Germany, where he continued to observe them in life, mainly
245 in respect to colour change phenomena (Bedriaga, 1879a). In 1879 and 1902 he sent
246 preserved specimens to some German museums, including Frankfurt and Munich as well as
247 the Zoological Museum of the University of Göttingen (whose herpetological holdings have
248 been in Bonn since 1977), and one specimen of his Ponza lizard is still documented in the old
249 Göttingen catalogue, although unfortunately it was lost some time before 1968 (Böhme, 2014,
250 Fig. 3). So, there seems to be no extant type material of this taxon, and the single colour
251 image provided by Bedriaga (1879b), showing one syntype of his new taxon, may be regarded
252 as the figure of the individual designed as the lectotype of this taxon (Fig. 4).

253 According to the genetic and geometric morphometric data published by Senczuk et al.
254 (2018a, b) and to our data, the wall lizards of the western Pontine Islands, so far classified as
255 belonging to *Podarcis siculus*, clearly merit their own specific status und should be treated
256 under the oldest available name for these western Pontine populations, i.e., *Podarcis latastei*
257 (Bedriaga, 1879). Because of the marked morphological differences between these
258 populations, their former insular subspecific names (Ponza: *latastei*, Gavi: *lanzai*, Zannone:
259 *patrizii*, Palmarola: *palmarolae*, and Scoglio Cappello: *pasquini*) which were ranked as
260 subspecies of *P. siculus* before, should be maintained but now attached as subspecific names
261 to *Podarcis latastei*. Each of these island populations has its own characteristics and may well
262 turn out to be a distinct conservation unit.

263

264

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272 Zannone Island populations (N.487, 16/02/2015).

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274

SUPPLEMENTARY MATERIAL

275 Supplementary material associated with this article can be found at
276 <<http://www.unipv.it/webshi/appendix>> manuscript number 25159.

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394

395

396 **Table 1.** Currently accepted *Podarcis* species and their original description name and reference. The geographic localities are shown in
 397 Fig.1.

398

Loc.	Species (Author and year of description)	described as	Reference
1	<i>P. hispanicus</i> (Steindachner, 1870)	<i>Lacerta oxycephala</i> var. <i>hispanica</i>	Geniez et al. 2007
2	<i>P. carbonelli</i> Pérez-Mellado, 1981	<i>Podarcis bocagei carbonelli</i>	Sá-Sousa and Harris, 2002
3	<i>P. bocagei</i> (Lopez-Seoane, 1885)	<i>Lacerta muralis bocagei</i>	Sá-Sousa et al., 2000
5	<i>P. liolepis</i> (Boulenger, 1905)	<i>Lacerta muralis</i> var. <i>liolepis</i> <i>Lacerta muralis atrata</i>	Geniez et al., 2014
6	<i>P. vaucheri</i> (Boulenger, 1905)	<i>P. hispanicus vaucheri</i>	Oliverio et al., 2000
7a, 7b	<i>P. guadarramae</i> (Boscá, 1916)	<i>Lacerta muralis guadarramae</i> , <i>Podarcis hispanicus</i> “type 1A, 1B”	Geniez et al., 2014
8	<i>P. virescens</i> (Geniez et al., 2014)	<i>Podarcis hispanicus</i> “type 2”	Geniez et al., 2014
9	<i>P. muralis</i> (Laurenti, 1768)	<i>Lacerta muralis</i>	
10	<i>P. lilfordi</i> (Günther, 1874)		
11	<i>P. pityusensis</i> (Boscá, 1883)	<i>Lacerta muralis</i> var. <i>pityusensis</i>	

12	<i>P. tiliguerta</i> (Gmelin, 1789)	<i>Lacerta tiliguerta</i>	
13a, 13b	<i>P. siculus</i> (Rafinesque-Schmaltz, 1810)	<i>Lacerta sicula</i>	
14	<i>P. latastei</i> (Bedriaga, 1876)		
15	<i>P. waglerianus</i> (Gistel, 1868)	<i>Podarcis muralis</i> var. <i>wagleriana</i>	
16	<i>P. raffoneae</i> (Mertens, 1952)	<i>Lacerta sicula raffonei</i>	Capula, 1994
17	<i>P. filfolensis</i> (Bedriaga, 1876)		
18	<i>P. melisellensis</i> (Braun, 1877)		
19a, 19b	<i>P. tauricus</i> (Pallas, 1814)		
20	<i>P. gaigeae</i> (Werner, 1930)	<i>Lacerta taurica gaigeae</i>	
21	<i>P. milensis</i> (Bedriaga, 1882)	<i>Lacerta muralis fusca</i> var. <i>milensis</i>	
22	<i>P. peloponnesiacus</i> (Bibron and Bory, 1833)		
23	<i>P. erhardii</i> (Bedriaga, 1882)	<i>Lacerta muralis fusca</i> var. <i>erhardii</i>	
24	<i>P. cretensis</i> (Wettstein, 1952)	<i>Lacerta erhardii cretensis</i>	
25	<i>P. lewendis</i> (Lymberakis et al., 2008)		

399

400

401 **Table 2.** Population number and relative sample size for both males and females for each island.

N°	Island	Females	Males
1	Ponza	18	22
2	Gavi	3	9
3	Palmarola	11	21
4	Zannone	6	6
5	Santo Stefano (1878)	5	5
	Santo Stefano (1956)	5	14
6	Ventotene	8	12
7	Scoglio Cappello	4	2
	Tot.	60	91

402

403 **Table 3.** Scale counts after Mertens (1965) (minimum – **mean** – maximum) of the insular populations of *P. latastei* (the six left columns)
 404 and *P. siculus* (the two right columns). **b)** scale counts of specimens preserved at the Natural History Museum of the University of Florence
 405 (MZUF). DORS = no. of mid-body dorsal scales; VENT = no. of ventral plates; COLL = no. of collar scales; PORF = no. of femoral pores
 406 on the right leg; m. = males; f. = females.

407

		Ponza	Gavi	Zannone	Palmarola	Sc. Cappello	S. Stefano 1878	S. Stefano 1963	Ventotene
DORS	m	68- 70.4 -75	71- 76.3 -81	66- 72.8 -78	69- 76.6 -86	72- 73.2 -76	72- 75.8 -79	60- 65.6 -72	61- 66.8 -78
	f	62- 67.7 -73	70- 73.2 -78	63- 68.0 -74	66- 68.7 -71	66- 68.7 -71	71- 75.3 -79	59- 61.2 -63	60- 60.3 -68
VENT	m	25- 26.1 -27	26- 26.3 -27	25- 26.7 -28	24- 25.2 -26	25- 25.7 -26	25- 26.3 -27	24- 24.8 -26	22- 24.6 -26
	f	27- 28.1 -29	27- 28.0 -30	27- 28.4 -30	27- 28.2 -29	28- 28.7 -30	27- 28.1 -30	27- 28.0 -29	25- 26.9 -29
COLL.	m	9- 10.8 -12	9- 10.0 -11	9- 10.5 -12	9- 10.4 -13	10- 10.5 -11	12- 12.1 -13	8- 9.1 -11	9- 10.6 -12
	f	10- 10.7 -11	9- 10.2 -11	9- 10.5 -11	10- 10.7 -11	11- 11.0 -11	10- 11.0 -12	7- 8.2 -09	8- 9.8 -11
PORF.	m	22- 24.8 -29	22- 24.3 -26	22- 25.1 -28	21- 24.9 -29	22- 24.7 -28	24- 25.3 -28	19- 23.8 -26	20- 23.5 -27
	f	21- 23.8 -28	22- 24.7 -26	19- 23.0 -25	22- 24.1 -26	23- 24.5 -26	22- 24.8 -27	20- 21.6 -24	20- 22.0 -23

408

409

410 **Table 4.** Snout-vent length (SVL) and scale counts (minimum – **mean** – maximum) of specimens preserved at the Natural History Museum
 411 of the University of Florence (MZUF). DORS = no. of mid-body dorsal scales; VENT = no. of ventral plates; GUL = no. of gular scales;
 412 COLL = no. of collar scales; PORF = no. of femoral pores on the right leg; m. = males; f. = females.

		Ponza	Gavi	Zannone	Palmarola	Sc. Cappello	S. Stefano 1878	S. Stefano 1954	Ventotene
SVL	m.	58- 68.6 -78.8	70.5- 73.2 -78	70.4- 67.1 -76.2	58- 67 -75	62.5- 65 -67.5	69- 76.1 -81.5	67- 73.5 -81.6	60- 70.7 -77
	f.	50- 58.6 -68.6	61- 63.5 -67	52.6- 62.7 -76.1	57.8- 52 -63	56.5- 57.9 -60	55- 63.1 -69	59- 63.5 -70	53.5- 60.4 -66
DORS	m.	67- 70.1 -76	73- 74.3 -77	69- 70.1 -73	68- 72.4 -76	72	68- 71 -74	59- 64.1 -69	62- 66 -70
	f.	62- 68.2 -74	67- 72 -75	63- 67.3 -74	63- 68 -74	65- 67 -69	69- 71.8 -75	55- 58 -63	57- 61.4 -67
VENT	m.	18- 19.9 -21	22- 23 -24	19- 21.3 --20	18- 19.3 -21	20- 20.5 -21	20- 20.3 -21	17- 18.9 -21	17- 19.2 -20
	f.	22- 22.7 -24	18- 19.9 -23	22- 22.2 -23	21- 22.4 -24	24	19- 21 -23	20- 21.4 -23	21- 21.6 -23
COLL	m.	11- 12.7 -14	11- 12.3 -13	10- 12.1 -13	10- 12.4 -15	12- 13 -14	13- 14 -15	9- 12.3 -16	10- 12.6 -15
	f.	11- 13 -15	11- 13 -15	10- 11.5 -13	11- 12.8 -14	12- 12.8 -13	12- 13.4 -15	9- 11.2 -12	11- 12.9 -16
GUL	m.	28- 32.4 --37	31-34. 8 -38	31- 33.7 -40	27- 33 --39	31	34- 34.3 -35	23- 26.8 -32	27- 30.1 -34
	f.	27- 31.2 --35	32-33. 3 -35	31- 33 -36	27- 33 --36	23- 24 -25	33- 36.4 -40	23- 25.4 -28	25- 27 -29
PORF	m.	22-24. 5 -26	23- 24.7 -26	23- 25 -26	21- 24.8 -28	25- 25.5 -26	26- 26.5 -27	21- 22.2 -24	21- 23.7 -27
	f.	21- 23.9 -27	22- 24.4 -27	21- 23.3 -27	21- 22.8 -26	23- 24 -25	23- 27.4 -30	20- 20.8 -21	20- 22 -25

413

414 **Table 5.** Analysis of variance (ANOVA) for SVL and meristic characters of the MNZF
 415 specimens. Significant *p*-value at 0.05 are marked in bold. Degrees of freedom (d.f.) are also
 416 reported. In the last column, ANOVA results using the endemic insular taxon (*P. latastei* +
 417 the extinct *P. s. sanctistephani*) and introduced *P. siculus* as factors, are reported. SVL =
 418 snout-to-vent length; DORS = no. of mid-body dorsal scales; VENT = no. of ventral plates;
 419 GUL = no. of gular scales; COLL = no. of collar scales; PORF = no. of femoral pores.
 420

		SEX	Islands	S. Stefano 1878 + W. Pontine/ S. Stefano 1954 + Ventotene
	d.f.	1	7	2
SVL	F	152.96	8.73	4.54
	<i>p</i>	<0.001	<0.001	<0.05
DORS.	F	40.73	27.15	57.42
	<i>p</i>	<0.001	<0.001	<0.001
VENT.	F	259.4	9.88	5.4
	<i>p</i>	<0.001	<0.001	<0.01
COLL.	F	1.74	2.9	4.44
	<i>p</i>	0.18	<0.01	<0.05
GUL.	F	5.71	24.86	62.13
	<i>p</i>	<0.05	<0.001	<0.001
PORF.	F	15.41	10.71	57.42
	<i>p</i>	<0.001	<0.001	<0.001

421

422

423 **Figure legends**

424

425 **Fig. 1.** Distribution of the genus *Podarcis* and location of the samples used for the
426 phylogenetic analysis, as reported in Table 1. Geographic distribution of *Podarcis latastei* is
427 also reported at the top right.

428

429 **Fig. 2.** Bayesian phylogenetic tree based on multilocus data (*cytb*, *16s*, *nd4*, *mcl1r*, *pod15b* and
430 *pod55*) using BEAST v. 1.8. Black filled circles indicate nodes used to calibrate phylogeny
431 (Poulakakis et al., 2003; Brown et al., 2008). The times of the most recent common ancestor
432 are reported for each node as well as the posterior probability.

433

434 **Fig. 3.** Detail of the entry of a *P. latastei* specimen from Ponza collected by J. v. Bedriaga, in
435 the catalogue of the Göttingen Zoological Museum.

436

437 **Fig. 4.** Detail of plate IX. (Bedriaga, 1879b) with a specimen (right) of his “*Lacerta muralis*
438 var. *latastei* (= *Podarcis latastei*) which can be regarded as the figure of the individual
439 designed as the lectotype of this *nomen*.

440

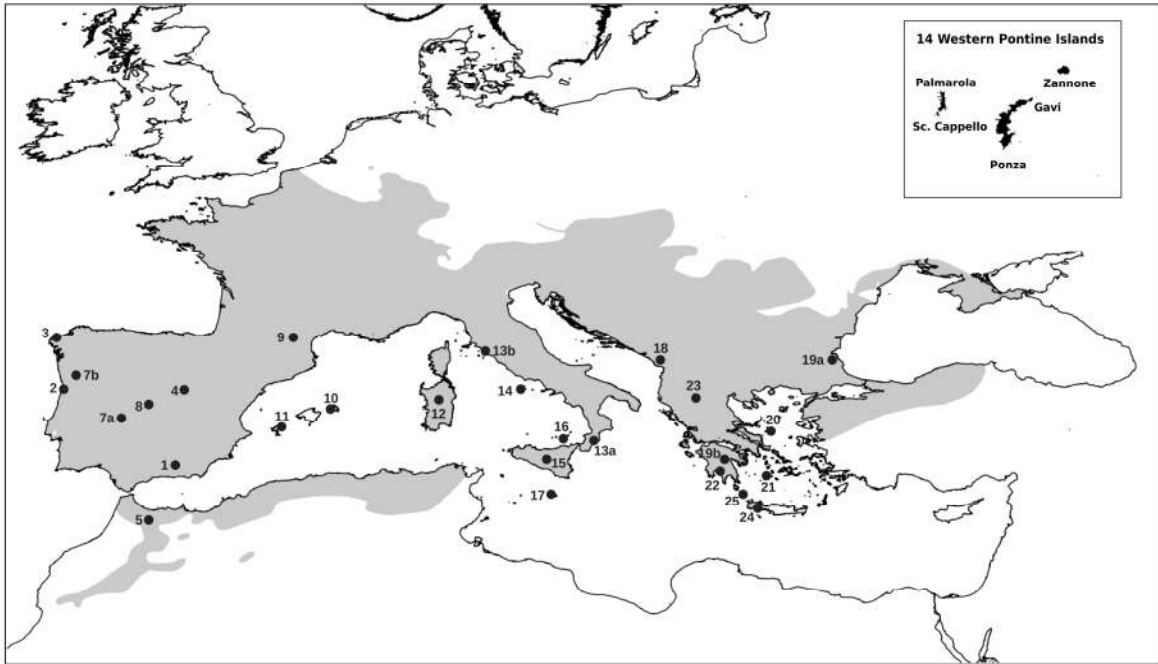
441 **Fig. 5.** Examples of living representatives of the Pontine Islands populations. Gavi: a, b, c;
442 Ponza: d, e; Palmarola: f.

443

444 **Fig. 6.** Two different color morphs from Zannone Island: a “quasi” concolor individual above
445 and a dark reticulated individual below.

446

447 Fig. 1



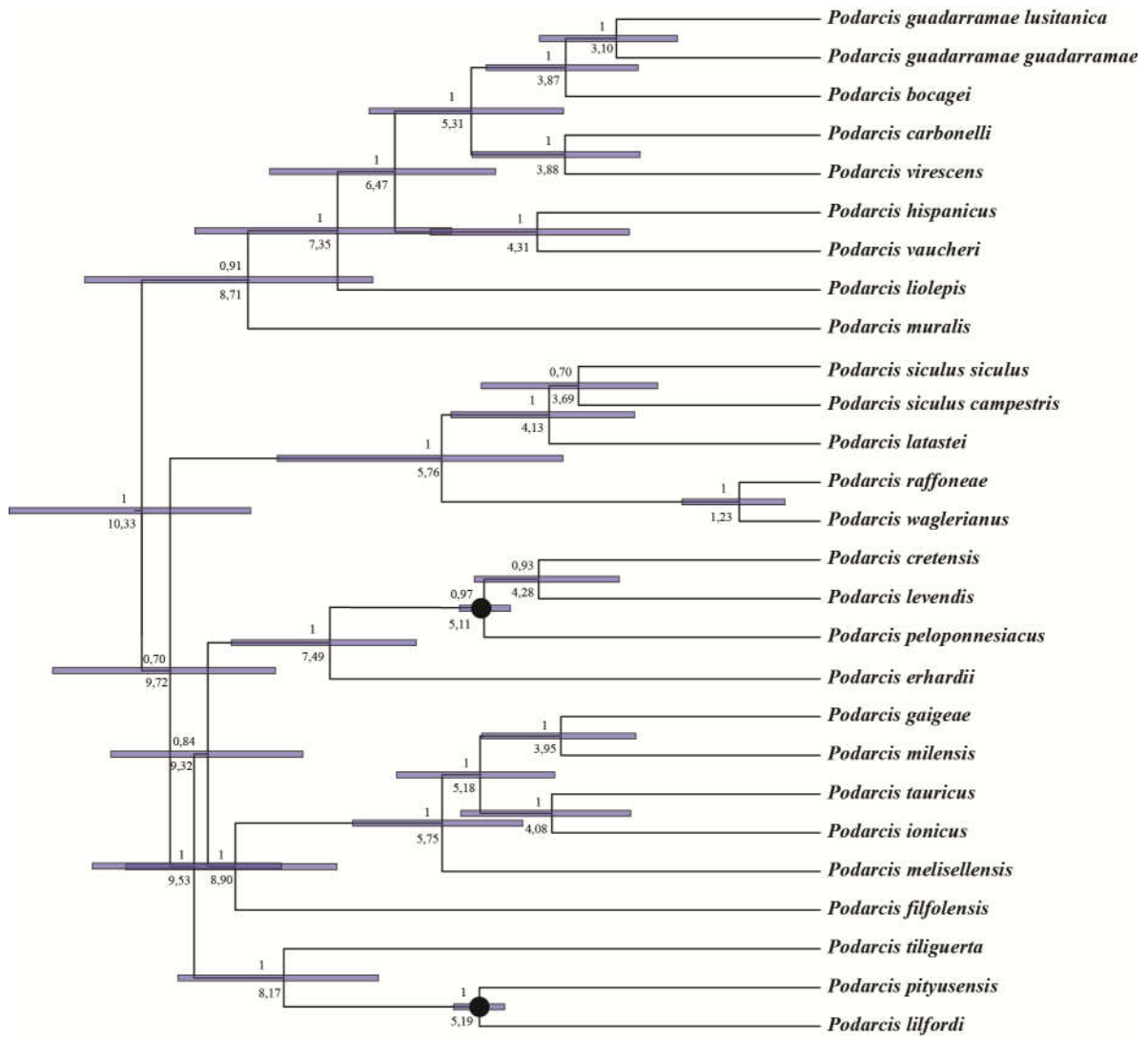
448

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accepted manuscript

451 Fig. 2



452

453

454

455 Fig. 3

Lacerta (Lacertidae)						Lac
*	<i>k</i> (<i>oxycephala</i>)	Constantinopl	1847	M. Wagner	sic ut inter <i>L. oxycephala</i>	22. ocellat a.
⊗	<i>l</i> (var. <i>coerulea</i> Eömer) (Original Exemplare geschenkt von H. Eömer an Döberl 1873.)	Fraglioni bei Capri	1876	Döberl		⊗ b. 19
⊗	<i>m</i> (var. <i>ead.</i>) ♀ 1868 var. <i>fraglioniensis</i> = <i>albiventris</i> Bonaparte	Capri	1879	H. o. Bedriaga		⊗ c. 19
⊗	<i>n</i> var. <i>L. fastidiosa</i> = <i>albiventris</i> Bonap	Ins. Ponza	1879	H. o. Bedriaga		⊗ d. 19
⊗	<i>o</i> var. <i>Lilfordi</i> Günther	Isla del Ayre Balearica	1879	H. o. Bedriaga		⊗ e. var.
-	<i>p</i> .	Serra Estrella Portugal	1880	N. Döberl coll. et det.		⊗ f. Sk
-	<i>q</i> .	Baños de Ledesma bei Salamanca.	1884	Prof. Ehlert.		
-	<i>r</i> var. <i>jonica</i> Döberl	Langhade Friedland	1898	H. Wimmer Wien Bedriaga		
⊗	<i>s</i> var. <i>fusca</i> Bedriaga = <i>melisellensis</i> Krüger	Telali	1902.	Nizzoli	4 Expl.	

456

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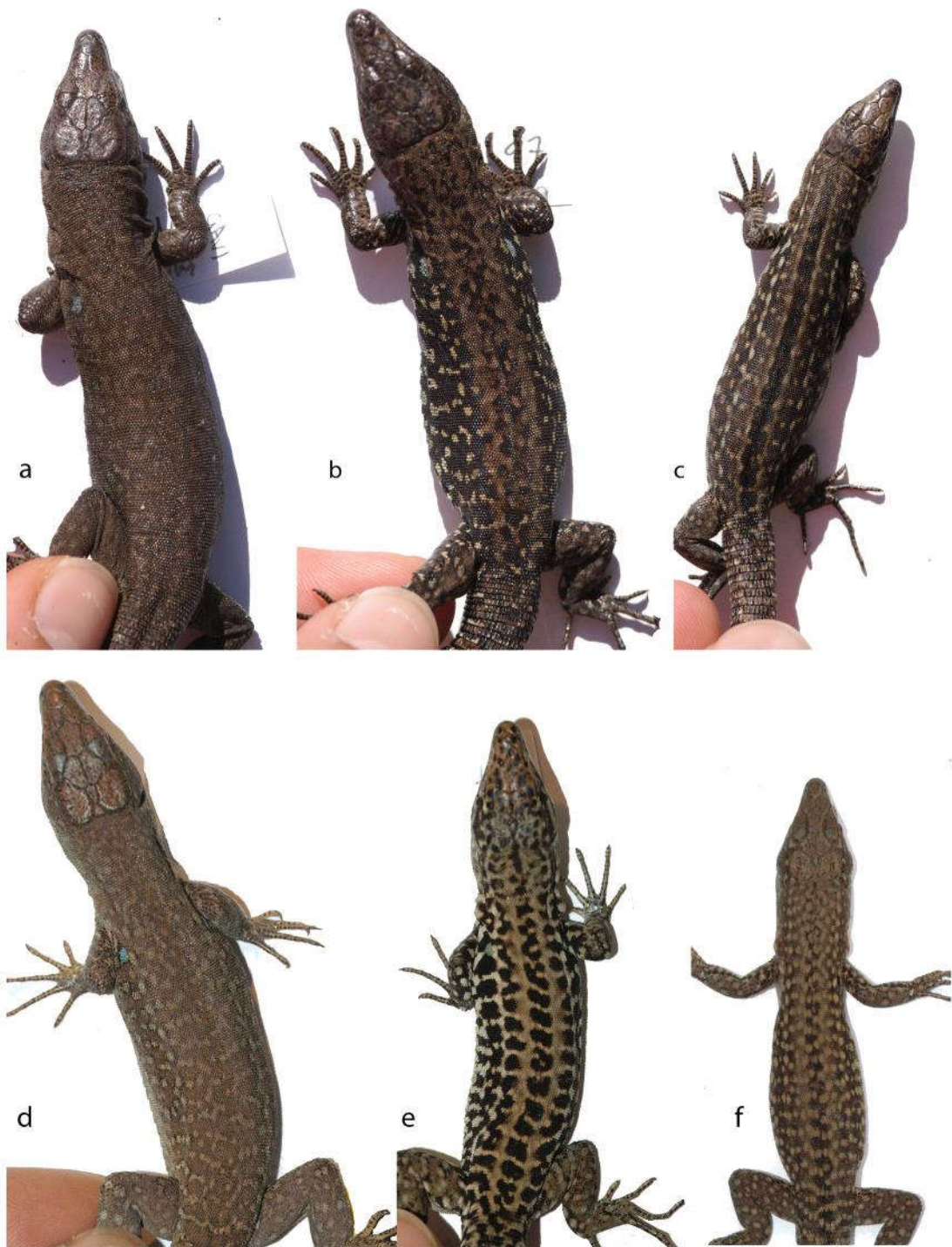
458 Fig. 4



459

460

461 Fig. 5



462

463

464

465 **Fig. 6**



466

467

accept