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Hidden diversity in the *Podarcis tauricus* (Sauria, Lacertidae) species subgroup in the light of multilocus phylogeny and species delimitation

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ABSTRACT

The monophyletic species subgroup of *Podarcis tauricus* is distributed in the western and southern parts of the Balkans, and includes four species with unresolved and unstudied inter- and intra-specific phylogenetic relationships. Using sequence data from two mitochondrial and three nuclear genes and applying several phylogenetic methods and species delimitation approaches to an extensive dataset, we have reconstructed the phylogeny of the *Podarcis* wall lizards in the Balkans, and re-investigated the taxonomic status of the *P. tauricus* species subgroup. Multilocus analyses revealed that the aforementioned subgroup consists of five major clades, with *P. melisellensis* as its most basal taxon. Monophyly of *P. tauricus* sensu stricto is not supported, with one of the subspecies (*P. t. ionicus*) displaying great genetic diversity (hidden diversity or cryptic species). It comprises five, geographically distinct, subclades with genetic distances on the species level. Species delimitation approaches revealed nine species within the *P. tauricus* species subgroup (*P. melisellensis*, *P. gaigeae*, *P. milensis*, and six in the *P. tauricus* complex), underlining the necessity of taxonomic re-evaluation. We thus synonymize some previously recognized subspecies in this subgroup, elevate *P. t. tauricus* and *P. g. gaigeae* to the species level and suggest a distinct Albanian-Greek clade, provisionally named as the *P. ionicus* species complex. The latter clade comprises five unconfirmed candidate species that call for comprehensive studies in the future.

1. Introduction

Wall lizards of the genus *Podarcis* Wagler, 1830 belong to the family of Lacertidae, currently including 23 species (Sindaco et al., 2013; Uetz and Hošek, 2016). The genus is western European in origin, its diversity being the result of several vicariance events mainly related to the fragmentation of the western microplates during the Miocene (Oliverio et al., 2000). It is now the predominant reptile group in southern Europe, distributed from northwestern Africa through the Iberian and the Italian peninsulas to the Balkans, northwestern Asia Minor and the Crimean peninsula (Arnold, 1973). Taxonomy within *Podarcis* is complicated and continuously subject to revision, due to the existence of substantial intra-specific variability (Arnold et al., 1978). The first molecular phylogenetic studies on the genus (Harris and Arnold, 1999; Oliverio et al., 2000) divided it into several species groups, with relationships mainly unresolved.

The focal taxa of this study form part of the Balkan species group, which is phylogenetically comprised of two distinct species subgroups: (a) the *P. erhardii* subgroup, including *P. cretensis*

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(Wettstein, 1952), *P. erhardii* (Bedriaga, 1882), *P. levendis* Lymberakis, Poulakakis, Kaliontzopoulou, Valakos, & Mylonas, 2008, and *P. peloponnesiacus* (Bibron & Bory, 1833); and (b) the *P. tauricus* species subgroup, consisting of *P. gaigeae* (Werner, 1930), *P. melisellensis* (Braun, 1877), *P. milensis* (Werner, 1930) and *P. tauricus* (Pallas, 1814). In the second subgroup, *P. gaigeae* and *P. milensis* are island endemics. Two morphological subspecies of the former are currently recognized: *P. g. gaigeae* (Werner, 1930) on the Skyros Archipelago, and *P. g. weigandi* (Gruber & Schultze-Westrum, 1971) on the islet of Piperi. On the other hand, *P. milensis* includes three morphological subspecies [*P. m. milensis* (Bedriaga, 1882), *P. m. adolfjordansi* (Buchholz, 1962), and *P. m. gerakuniae* (Müller, 1938)], distributed on the Milos Archipelago. *Podarcis tauricus* is the species with the widest distribution within the subgroup, ranging mainly in the southern Balkans and eastern Europe (Fig. 1C). It is subdivided into three currently recognized subspecies (Sindaco and Jeremcenko, 2008): (a) *P. t. tauricus* (Pallas, 1814); (b) *P. t. ionicus* (Lehrs, 1902); and (c) *P. t. thasopulae* (Kattinger, 1942), of which the first two are geographically isolated by the Pindos mountain range (Fig. 1C), and the third is a stenoendemic subspecies inhabiting the islet of Thasopoula (north Aegean). Finally, *Podarcis melisellensis* is distributed along the Dalmatian coast and on many of its islands, currently represented by two subspecies: *P. m. melisellensis* (Braun, 1877), *P. m. fiumana* (Werner, 1891), and one undescribed lineage (Podnar et al., 2004; Sindaco and Jeremcenko, 2008).

The phylogenetic relationships and phylogeography of the *P. tauricus* subgroup has previously been investigated on the basis of mitochondrial DNA (mtDNA) loci (Podnar et al., 2014, 2004; Poulakakis et al., 2005a,b). The analysis of a dataset including all the species of the *P. tauricus* subgroup, but with limited number of specimens solely from Greece, supported monophyly of the *P. tauricus* species subgroup with two major clades. The first included *P. tauricus* sensu stricto, and the second comprised *P. gaigeae*, *P. milensis*, and *P. melisellensis* (moderate statistical support). In addition, the existence of two major lineages within *P. tauricus* sensu stricto with substantial high genetic diversity was detected. Moreover, mtDNA data for *P. melisellensis* revealed the presence of three major subclades (*melisellensis*, *fiumana*, and *Lastovo* subclades) with distinct geographic structure that is in discordance with its current subspecies taxonomy (Podnar et al., 2014, 2004).

To date, there has been no comprehensive study of the *P. tauricus* species subgroup with extensive sampling coverage and genetic information from both mitochondrial and nuclear DNA. Such a study will contribute to (a) the discovery of hidden diversity, (b) comparison of phylogenetic assessment among nuclear and mitochondrial markers, (c) comparison between gene trees and species trees, (d) evaluation of the phylogenetic relationships among the focal taxa in the light of new findings, and (e) estimation of the number of species included in the *P. tauricus* species subgroup. To that end, two mitochondrial and three nuclear markers were analysed using an extensive dataset. This included samples from the entire distribution area of the focal taxa and involved several multilocus phylogenetic analyses and coalescence-based approaches.

2. Material and methods

2.1. Specimens, DNA extraction, amplification and sequencing

Total genomic DNA was isolated using a standard ammonium acetate extraction protocol from muscle, liver or blood of specimens preserved in absolute ethanol. The sampling localities are shown in Fig. 1 and the tissue samples are listed in Appendix A. All the samples were deposited in the Natural History Museum of Crete, University of Crete (NHMC), but see Appendix A. The identification of species was based on external morphological characters sensu Arnold and Ovenden (2002). In total, 317 individuals constituting the ingroup were used (298 belonging to the focal *P. tauricus* species subgroup), including 13 species from more than 200 localities.

Double-stranded PCR was performed to amplify partial sequences of two mitochondrial gene (mtDNA) fragments [the large subunit of ribosomal RNA (16S rRNA) and the cytochrome *b* (cyt *b*)], and three nuclear gene (nDNA) fragments [the melanocortin receptor 1 (MC1R) and two anonymous nDNA markers (Pod15b and Pod55)]. These two anonymous markers have been recently added to the genomic resources and used for phylogenetic, species delimitation, population genetics and phylogeographic studies in *Podarcis* spp. (Pereira et al., 2013). Primers and conditions used in PCR amplifications and in cycle sequencing reactions are given in Table 1.

Single stranded sequencing of the PCR product was performed using the Big-Dye Terminator (v3.1) Cycle Sequencing kit ® on an ABI3730 automated sequencer following the manufacturer's protocol and using the same primers as in PCR.

Sequences were viewed and edited using CodonCode Aligner v. 3.7.1 (CodonCode Corporation ®). The authenticity of the sequences and the homology to the targeted genes were evaluated with a BLAST search in the NCBI genetic database (http://blast.ncbi.nlm.nih.gov/Blast.cgi). All newly determined sequences have been deposited in GenBank (Appendix A). Sequences of *Podarcis* were retrieved from GenBank (131 in total) and included in the phylogenetic analyses. Moreover, sequences of *Atlantolacerta andreanskyi* (Werner, 1929), *Lacerta agilis* Linnaeus, 1758, and *Teira dugesii* (Milne-Edwards, 1829) were also retrieved and used as outgroups. Information for the downloaded sequences (gene sampling, corresponding accession numbers, and studies generating the sequences) are presented in Appendix A.

To ensure that nuclear copies of mtDNA (pseudo-genes) were not present in the dataset several precautions and observations were conducted: (a) the general agreement in the topology, between the two mtDNA markers, (b) the absence of indels in the cyt *b* since it is a protein-coding gene, and (c) the absence of double peaks in the sequence chromatographs.

2.2. Alignment, genetic distances and model selection

The alignment of the sequences was performed separately for each gene with MAFFT (v.7; Katoh and Standley, 2013) with default parameters and the following alignment strategies of iterative refinement method: L-INS-i for cyt *b*, MC1R, and Pod-55, Q-INS-i for 16S rRNA, and E-INS-i for Pod15b. Alignment gaps were inserted to resolve length differences between sequences. Cytochrome *b* and MC1R sequences were translated into amino acids prior to analysis, and did not show any stop codons. Sequence divergences (*p*-distances) were estimated in MEGA (v.6.06; Tamura et al., 2013). The alignment used is available on request.

The alignment was partitioned into nine blocks, including 6 blocks for the 1st, 2nd, and 3rd codon positions for each one of the two protein-coding genes (cyt *b*, MC1R) and three blocks for each one of the other gene fragments (16S rRNA, Pod55, and Pod15b). This initial partition scheme was loaded in PartitionFinder (v.1.1.0; Lanfear et al., 2012) to calculate and select the best-fit partitioning scheme and models of molecular evolution for each downstream analysis (the model list was different for each analysis). The nine blocks were considered to have linked branch lengths and the model selection was based on the Bayesian Information Criterion (BIC; Schwarz, 1978), ignoring the models that include both gamma distribution and invariable sites (Yang, 2006). Finally, the greedy option was selected to search for the best-fit solutions.

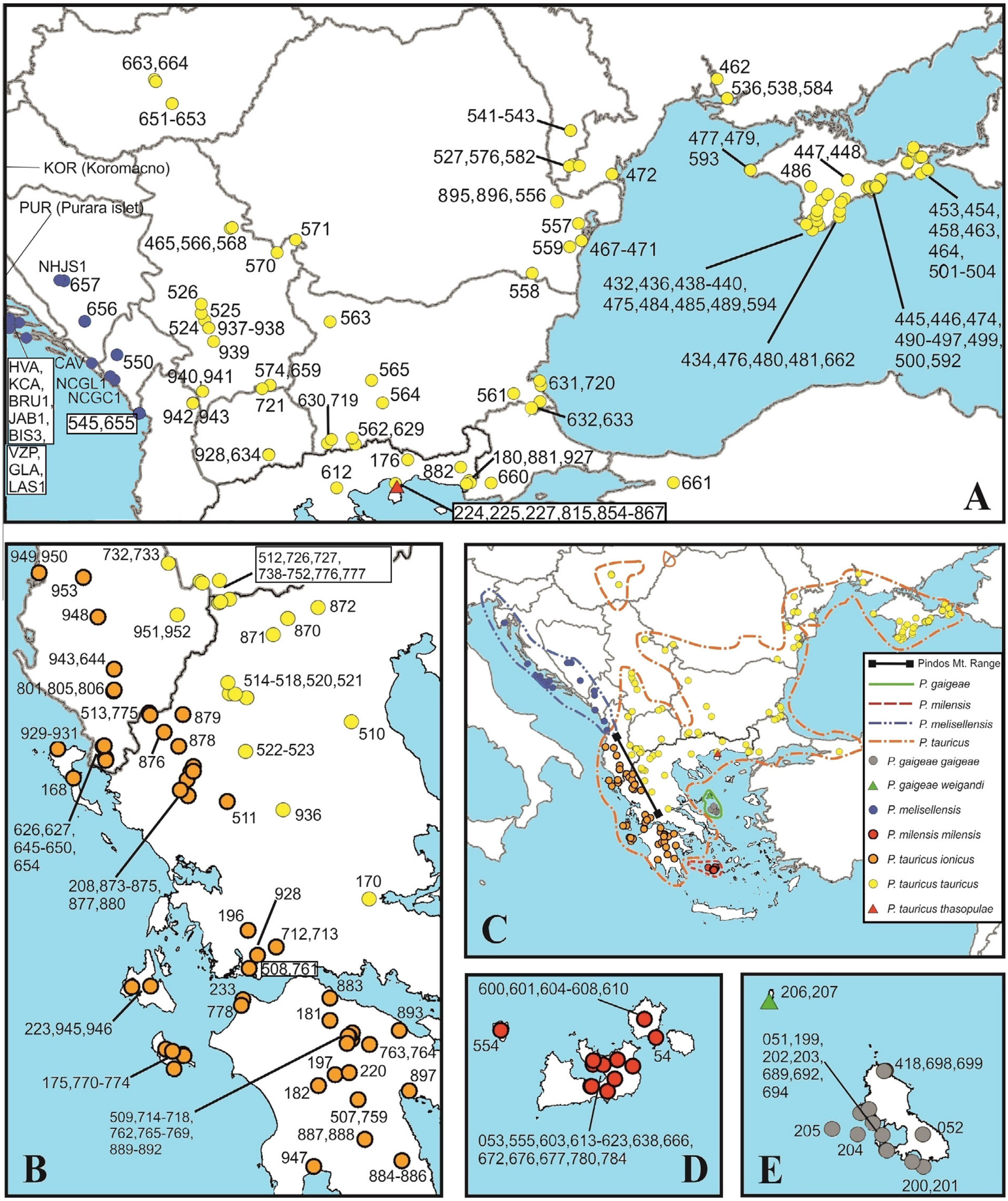

Fig. 1. Maps showing the localities of the samples and the distribution of the taxa belonging to the *P. tauricus* species subgroup: (A) northern parts of the entire range of *P. tauricus* species subgroup; (B) distribution pattern of *P. tauricus ionicus* and *P. t. tauricus* in the southwestern part of the Balkans; (C) sampled localities in the entire area of *P. tauricus* species subgroup; (D) Milos Island group and sampled localities of *P. milensis milensis*; (E) Skyros Island group and Piperi islet and sampled localities of *P. gaigeae*. The numbers/codes on the maps correspond to the sample codes of Appendix A.

To notice, in the species delimitation analysis and coalescent species tree inference the data were partitioned by loci due to requirement of ploidy provision.

2.3. Gene tree estimation on mtDNA, nuDNA and concatenated loci

Phylogenetic trees were constructed using Neighbor Joining (NJ) (Saitou and Nei, 1987), Maximum Parsimony (MP), Maximum Likelihood (ML) and Bayesian Inference (BI). Neighbor Joining analysis was performed in MEGA using the p-distances. Bootstrapping with 1000 pseudo-replicates was used to examine the robustness of clades in the resulting tree (Felsenstein, 1985). Maximum Parsimony analysis was performed with PAUP* (v.4.0b10; Swofford, 2002) with heuristic searches using stepwise addition and performing tree-bisection-reconnection (TBR) branch swapping (Swofford et al., 1996). Confidence in the nodes was assessed by

Table 1
Primers and conditions used in PCR amplifications[a] and in cycle sequencing reactions.

Gene	Primers	Sequence (5′–3′)	Size (bp)	Conditions	Reference
16S rRNA	16SAr-l	CGGCCGCCTGTTTATCAAAAACAT	∼530	3 mM MgCl, 94 °C/1 min, 42–52.9 °C/1 min, 72 °C/1 min × 35 cycles	Palumbi (1996)
	16SBr-h	GGAGCTCCGGTTTGAACTCAGATC			
Cyt b	GLUDG	TGACTTGAARAACCAYCGTTG	∼510	3 mM MgCl, 94 °C/1 min, 42–48.6 °C/1 min, 72 °C/1 min × 35 cycles	Palumbi (1996)
	CB2	CCCTCAGAATGATATTTGTCCTCA			
	L14841	AAAAAGCTTCCATCCAACATCTCAGCATGATGAAA	∼350		Kocher et al. (1989)
	CB2	CCCTCAGAATGATATTTGTCCTCA			Palumbi (1996)
MC1R	MC1RF	GGCNGCCATYGTCAAGAACCGGAACC	∼700	1.5 mM MgCl, 94 °C/1 min, 59 °C/1 min, 72 °C/1 min × 35 cycles	Pinho et al. (2010)
	MC1RR	CTCCGRAAGGCRTAAATGATGGGGTCCAC			
Pod55	pod55f	GGATCTTTATAGGAGAGTGCAGGCC	∼500		Pereira et al. (2013)
	pod55r	TTCCAGATTGTGTTTATCCTGGTGG			
Pod15b	pod15bf	AATCCTGGCTAAATGCAAGCCTTGG	∼550		Pereira et al. (2013)
	pod15br	GCCAGGAGAATAAGCTACTCCATCC			

[a] Using single *Taq* DNA polymerase (KAPA BIOSYSTEMS®).

1000 bootstrap replicates, with the random addition of taxa. Maximum Likelihood analysis was performed with RAxML (v.8.1.21; Stamatakis, 2014). To ensure that the inferred ML tree was not a local optimum, 200 ML searches for each dataset were conducted. The confidence of the branches of the best ML tree was further assessed based on 1000 rapid bootstrap replicates (under the GTRCAT model). Bayesian Inference was performed in MrBayes (v.3.2.1; Ronquist et al., 2012), with four runs and eight chains for each run for 10^7 generations, and the current tree was saved to file every 1000 generations. In order to confirm that the chains had achieved stationarity, we evaluated "burn-in" by plotting log-likelihood scores and tree lengths against generation number using Tracer (v.1.6; Rambaut et al., 2013). The $-\ln L$ stabilized after approximately 10^6 generations and the first 25% of the trees were discarded by default, as a conservative measure to avoid the possibility of including random sub-optimal trees. A majority rule consensus tree ("Bayesian" tree) was then produced from the posterior distribution of trees, and the posterior probabilities were calculated as the percentage of samples recovering any particular clade, where probabilities $\geqslant$95% indicate significant support.

Mitochondrial genetic clusters that represent "independently evolving" entities were selected, considering only the ingroup, using the method of Zhang et al. (2013), which identifies genetic clusters using a Poisson Tree Processes (PTP) model. Identical sequences were omitted from this analysis. For the concatenated phylogenetic analyses, at least one exemplar representing each PTP group (genetic cluster) in the mtDNA analysis was selected for sequencing the three nuclear markers. Following the same procedure as in mtDNA data, all phylogenetic (NJ, MP, ML and BI) analyses were performed, additionally, on (a) a concatenated dataset containing the two mitochondrial (16S rRNA and cyt *b*) and the three nuclear genes (MC1R, Pod55, and Pod15b) and (b) a dataset including only the nDNA markers. These datasets included 60 entities representing 16 morphologically identified *Podarcis* species, for which all five genes were amplified. Sequences representing the above genes were also obtained from NCBI belonging to *Lacerta agilis* (used as outgroup), *P. bocagei* (Seoane, 1884), *P. filfolensis* (Bedriaga, 1876), *P. muralis*, and *P. tiliguerta* (Gmelin, 1789).

2.4. Coalescent species tree

The coalescent species tree analysis was performed using the BEAST 2 software package (v.2.4.0; Bouckaert et al., 2014). The input files (xml) were created using BEAUti v. 2.4.0, implemented also in the BEAST 2 package. The nucleotide substitution models were not given *a priori* but instead the BEAST Model Test option was selected. As for other priors the Yule Model was selected for speciation and the Uncorrelated Lognormal Model for describing the relaxed molecular clock. The MCMC analysis was run for 4×10^8 generations, saving the result every 5.000 generations. The obtained log files were analysed with Tracer v.1.6. (Rambaut et al., 2014) to verify that the convergence of the analysis had been achieved and that satisfactory effective sample sizes had been obtained (ESSs values >200). The value of $-\ln L$ was stabilized after 4×10^7 generations and the first 10% from the 20.000 saved ones were discarded. To display the species tree the softwares FigTree (v. 1.4.2; part of the BEAST 2 package) and DensiTree (v.2.2.4; Bouckaert, 2010) were used.

2.5. Species delimitation

Bayesian species delimitation was conducted using BP&P (v.3.1 as implemented in BPPx; Yang, 2015) with the dataset for the five molecular markers considered as four independently evolving loci (mtDNA, MC1R, Pod55, and Pod15b) and solely including the nine major clades and subclades of *P. tauricus* species subgroup as potential distinct species. The method uses the multispecies coalescent model to compare different models of species delimitation and species phylogeny in a Bayesian framework, accounting for incomplete lineage sorting due to ancestral polymorphism and gene tree-species tree conflicts (Rannala and Yang, 2013; Yang and Rannala, 2014, 2010). For the prior distributions the approach of Leaché and Fujita (2010) was followed, considering three different combinations of prior: $\theta \sim G(1, 10)$ and $\tau^0 \sim G(1, 10)$, both with a prior mean = 0.1 and variance = 0.01, (b) assuming relatively small ancestral population sizes and shallow divergences among species: $\theta \sim G(2, 2000)$ and $\tau^0 \sim G(2, 2000)$, both with a prior mean = 0.001 and variance = 5×10^{-7}, and (c) assuming large ancestral populations sizes: $\theta \sim G(1, 10)$ and relatively shallow divergences among species: $\tau^0 \sim G(2, 2000)$, which is a conservative combination of priors that should favour models containing fewer species. The rjMCMC analyses (algorithm 1) were performed for 100,000 generations (sampling interval of three) with a burn-in period of 2500 and each species delimitation model was assigned equal prior probability. Each analysis was run at least twice, initiated with different starting seeds, to confirm consistency between runs. The topology of the phylogenetic tree based on the concatenated dataset was given as starting tree.

For comparison reasons, species delimitation was also performed in STACEY (v. 1.2.1; Jones, 2015), which is implemented in the software package BEAST 2. The input files (xml) were created using BEAUti. The nucleotide substitution models were not given *a priori* but instead the BEAST Model Test option was selected. As for other priors the Fossilized Birth Death Model was selected for speciation and the Uncorrelated Lognormal Model for describing the relaxed molecular clock. The MCMC analysis was run for 10^8 generations, saving the result every 5000 generations. The obtained log files were analysed with Tracer to verify that the convergence of the analysis had been achieved and that satisfactory effective sample sizes had been obtained. The value of $-\ln L$ was stabilized after 10^7 generations and the first 10% from the 20,000 saved ones were discarded. The analysis and the display of the results of the species delimitation and its statistical support were made by SpeciesDelimitationAnalyser (Jones et al., 2015).

3. Results

The best-fit partitioning schemes for each downstream analysis (BI and ML) and the selected nucleotide substitution models are summarized in the Supplementary Table S1. Different analyses and datasets resulted in different partitioning schemes and selected models.

In PTP analysis, 34 distinct evolutionary entities were identified (Suppl. Fig. S1). Up to 10 specimens from each evolutionary entity (Appendix A) were chosen and sequenced for the nuclear markers (MC1R, Pod55, and Pod15b), with the exception of the samples 947 (*P. tauricus* from Kalamata) and 132 (*P. muralis* from Kisavos Mt.), for which we failed to amplify the nDNA markers, as well as for the samples for which the mtDNA sequences were retrieved from GenBank (e.g. Lastovo subclade of *P. melisellensis*).

3.1. Concatenated gene trees

For the phylogenetic analyses at mtDNA level, a concatenated (cyt *b* and 16S rRNA) data set including 365 individuals (86 unique haplotypes) was used (sequences both generated here and downloaded), with 362 of them constituting the ingroup. A total of 1004 base pairs (cyt *b* 465 bp and 16S rRNA 539 bp) were aligned, with 294 (29.3%) alignment sites being variable and 266 (26.5%) parsimony informative (349 and 279, respectively, when outgroups were included in the analysis). For the nuDNA data, a total of 1739 base pairs (MC1R 696 bp, Pod55 474 bp, and Pod15b 569 bp) were aligned, with 164 (9.4%) alignment sites being variable and 103 (5.9%) parsimony informative (172 and 103, respectively, when outgroup was included in the analysis). The length of the sequences produced in the present study varied from 576 to 696 bp for the MC1R gene, from 408 to 474 bp for the Pod55 gene, and from 415 to 541 bp for the Pod15b gene. Finally, for the concatenated dataset (all five molecular markers) a total of 2718 base pairs were aligned, with 438 (16.1%) alignment sites being variable and 353 (13.0%) parsimony informative (468 and 355, respectively, when outgroup was included in the analysis).

Sequence divergence (p-distance) ranged from 0 to 23.7% for the cyt *b* gene and from 0 to 19.9% for the 16S rRNA gene. The mtDNA genetic distances among and within the major clades revealed by the phylogenetic analyses are shown in Tables 2 and 3, whereas the pairwise mtDNA genetic distances are shown in Supplementary Table S2. Sequence divergence ranged from 0 to 2.7% for the MC1R gene, from 0 to 3.3% for the Pod55 gene, and from 0 to 5.9% for the Pod15b gene. Table 4 shows the nDNA genetic distances among and within the major clades revealed by the phylogenetic analyses, whereas the pairwise nDNA genetic distances are shown in Supplementary Table S2.

Table 2
Genetic p-distances of the cyt *b* (below diagonal–left) and 16S rRNA genes (above diagonal–right) among the major clades. Values in diagonal (italics) are within clades sequence divergence (cyt b/16S rRNA), whereas dashes indicate the absence of the taxon from the 16S rRNA gene sampling, and n.a. indicate inability to compute inter–lineage divergence due to unitary representative of the clade.

Clade	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. *P. t. tauricus & P. t. thasopulae*	*0.4/ 0.1*	5.3	5.6	5.2	5.9	6.7	7.3	5.6	5.8	4.8	5.7	–	6.1	7.3	6.8	7.3	–	10.9	15.4	13.4
2. *P. t. ionicus*	10.6	*5.0/ 1.4*	5.0	4.4	4.7	6.6	6.5	5.2	5.6	5.0	5.8	–	6.2	6.7	5.44	6.3	–	9.	14.8	12.2
3. *P. gaigeae*	11.9	11.4	*0.3/ 0.2*	4.7	5.5	6.2	6.4	5.9	6.0	5.0	5.5	–	5.6	5.8	6.0	6.6	–	11.2	15.4	11.3
4. *P. milensis*	11.0	10.6	9.6	*1.0/ 0.4*	4.3	6.9	6.1	5.5	5.5	5.0	6.2	–	5.5	6.0	6.3	6.8	–	9.7	14.6	12.3
5. *P. melisellensis*	12.2	12.3	10.8	10.4	*3.7/ 1.3*	6.1	6.1	5.1	5.9	4.6	5.6	–	5.2	5.1	5.1	5.1	–	8.3	12.7	11.7
6. *P. cretensis*	13.4	13.3	14.6	13.4	15.2	*4.6/ 2.3*	3.7	3.4	5.7	5.1	6.4	–	6.9	7.3	6.4	5.6	–	8.9	14.1	12.8
7. *P. levendis*	12.4	14.1	15.2	13.3	14.4	7.9	*0.2/ 0.0*	2.9	5.0	5.3	6.4	–	6.8	7.2	6.0	5.7	–	9.6	15.3	12.8
8. *P. peloponnesiacus*	14.1	14.7	15.9	14.3	16.3	7.3	7.5	*0.3/ 0.0*	4.0	3.8	5.1	–	5.5	6.6	6.0	5.5	–	9.3	14.6	12.4
9. *P. erhardii*	13.8	13.5	15.1	13.0	13.5	13.6	12.4	13.2	*2.7/ 1.3*	4.9	5.5	–	5.5	6.5	6.4	6.0	–	9.9	15.0	12.6
10. *P. pityusensis*	18.2	16.2	17.7	15.4	15.4	15.9	18.6	17.6	16.9	*0.3/ 0.0*	1.5	–	4.9	5.3	5.0	5.7	–	8.3	13.7	11.4
11. *P. lilfordi*	16.4	14.5	15.2	15.1	13.8	13.8	124.7	14.2	16.2	10.4	*1.1/ 0.2*	–	4.7	5.4	6.0	6.4	–	9.9	14.3	11.5
12. *P. tiliguerta*	14.0	17.2	17.6	16.1	15.4	14.2	15.4	14.3	16.1	14.4	15.8	*3.3/–*	–	–	–	–	–	–	–	–
13. *P. siculus*	12.0	13.2	14.2	13.8	12.0	14.5	15.3	16.5	12.1	13.7	15.3	14.3	*1.0/ 0.0*	2.2	5.3	6.5	–	10.5	11.	12.5
14. *P. waglerianus*	13.3	13.6	13.8	13.4	11.5	16.1	14.6	16.4	13.3	12.4	13.4	13.2	6.6	*n.a./ n.a.*	5.4	6.1	–	10.6	12.5	12.2
15. *P. muralis*	14.3	14.0	16.9	14.3	13.7	13.3	14.0	15.3	13.3	16.3	16.0	13.2	11.8	12.1	*3.9/ 1.2*	5.5	–	9.4	14.3	11.5
16. *P. bocagei*	14.4	14.9	14.7	15.8	14.2	15.4	15.5	16.0	16.2	17.2	15.2	13.2	15.2	12.7	12.1	*0.7/ 0.0*	–	8.8	13.4	11.4
17. *P. filfolensis*	16.6	171.0	16.1	16.8	16.0	17.6	14.8	17.3	16.3	17.1	15.0	16.3	15.4	14.3	16.0	15.4	*2.0/–*	–	–	–
18. *T. dugesii*	18.2	18.7	20.2	19.4	20.2	15.9	14.4	16.4	17.6	19.4	18.1	18.3	17.5	17.5	17.9	17.0	16.8	*n.a./ n.a.*	12.6	10.8
19. *A. andreanskyi*	18.3	18.6	19.2	18.1	20.6	19.1	18.8	20.2	17.5	22.8	23.7	22.1	20.4	20.2	19.7	17.6	21.1	16.8	*n.a./ n.a.*	16.0
20. *L. agilis*	17.8	19.0	20.0	17.2	17.8	15.9	15.0	18.5	16.6	17.6	15.7	20.9	17.3	17.2	18.1	19.3	19.8	16.6	20.8	*n.a./ n.a.*

Table 3
Genetic distances of the mtDNA (cyt *b*/16S rRNA; below diagonal–left) and the nDNA genes (Pod55/Pod15b/MC1R; above diagonal–right) among the major subclades of *Podarcis tauricus ionicus*. Values in diagonal (italics) are within subclade sequence divergence for the five loci (cyt *b*/16S rRNA/Pod55/Pod15b/MC1R).

Podarcis tauricus ionicus subclade	(a)	(b)	(c)	(d)	(e)
(a) Zakynthos and Kefallonia Islands	*0.6/0.5/0.0/0.2/0.0*	0.1/0.3/0.3	0.2/0.5/0.6	0.0/0.2/0.3	0.2/0.3/0.3
(b) Western central Greece (Sterea Ellada)	5.3/3.2	*0.7/0.2/0.1/0.0/0.1*	0.2/0.5/0.4	0.0/0.2/0.2	0.1/0.1/0.1
(c) Northeastern Peloponnisos	8.7/2.6	9.2/3.6	*0.1/0.0/0.2/0.8/0.0*	0.2/0.2/0.4	0.2/0.4/0.5
(d) Central & Southeastern Peloponnisos	7.4/2.5	7.6/3.1	7.7/1.2	*0.2/0.0/0.0/0.0/0.1*	0.1/0.1/0.2
(e) Northern & Southwestern Peloponnisos, Northwestern Greece, Kerkyra Island, South-southwestern Albania	7.7/2.5	6.9/2.7	7.4/1.5	6.2/1.6	*0.5/0.2/0.2/0.1/0.0*

All mtDNA phylogenetic analyses (NJ, MP, ML, and BI) produced trees with very similar topologies (Suppl. Figs. S2 and S3). Unweighted parsimony analysis produced more than 10,000 equally parsimonious trees with a length of 1370 steps (consistency index CI = 0.366, retention index RI = 0.934). The large number of equally parsimonious solutions was largely due to terminal branch swapping. Maximum likelihood analysis resulted in a topology with $\ln L = -7367.62$. Bayesian inference resulted in a topology with mean $\ln L = -8348.59$. Identical topologies were recovered for each of the four runs with the full dataset, and the 50% majority-rule consensus tree of the 75×10^3 trees remaining after burn-in is presented in Supplementary Fig. S2 (full topology), as well as, in Supplementary Fig. S3 (collapsed to main clades topology). According to the resulted tree, the specimens of the genus *Podarcis* used in the present study are clustered into several main clades, with the majority of the morphologically recognized species being monophyletic. The phylogenetic relationships among them are mostly unresolved with the exception of four groupings; the *Podarcis tauricus* species subgroup, the *P. erhardii* species subgroup, the *P. siculus* – *P. waglerianus* pair, and the *P. pityusensis* – *P. lilfordi* pair. In the focal *P. tauricus* species subgroup, which appears monophyletic with moderate to high statistical support, five well-supported clades with unresolved phylogenetic relationships among them are recognized corresponding to the morphologically recognized taxa *P. melisellensis*, *P. milensis*, *P. gaigeae*, *P. t. ionicus* and *P. t. tauricus* - *P. t. thasopulae.* According to the mtDNA topology *P. tauricus* is polyphyletic, although with low statistical support, due to the more closely relationship of *P. t. ionicus* to *P. gaigeae*. On the other hand, *P. t. ionicus* is a monophyletic taxon, with five well-supported subclades (*a* – *e*; see Suppl. Fig. S3 for their corresponding distribution). However, the among-subclades relationships are partly resolved (only *a* and *b* have sister group relationship with high statistical support, whereas the relationship between *c* and *d* is supported by moderate to high statistical value. The other two subspecies of *P. tauricus* (*P. t. tauricus* and *P. t. thasopulae*) are grouped together in the same clade, containing specimens from a wide range of *P. tauricus* distribution (Fig. 1A–C) with low genetic diversity (Suppl. Fig. S2). The clade of *P. gaigeae* includes specimens from the island of Skyros and the islets Sarakino, Plateia, Koulouri, Exo Diavatis, Lakonisi, Skyropoula, Valaxa, Palamari, Rineia, and Piperi, with the subspecies inhabiting the latter (*P. g. weigandi*) not being phylogenetically distinct from *P. g. gaigeae* (Suppl. Fig. S2). The clade of *P. melisellensis* is divided into three, geographically distinct, subclades, with unresolved phylogenetic relationships among them (Suppl. Figs. S2 and S3). Two of them are originating from Dalmatian islands and islets (first subclade from Glavat and Lastovo, and the second from Jabuka, Brusnik, Biševo, and Vis), whereas the third one contains specimens from Montenegro, Bosnia & Herzegovina, Croatian coastal area (Koromačno-Istria, Cavtat-Dalmatia) and some Dalmatian islands (Korčula Island, Purara islet, and Hvar Island). Finally, the clade of *P. milensis* consists of specimens from the island group of Milos (Milos Island, Kimolos Island, and Antimilos and Agios Efstathios islets).

All phylogenetic (NJ, MP, ML, and BI) analyses of the nuDNA dataset produced phylogenies (Suppl. Fig. 4) that are in agreement with the mitochondrial ones (Suppl. Figs. S2 and S3) with $\ln L = -3943.03$ for ML and $\ln L = -4084.80$ for BI, but with incongruences in statistical support.

Respectively, all phylogenetic (NJ, MP, ML, and BI) analyses of the concatenated dataset (mtDNA and nuDNA) produced a more resolved phylogenetic tree (Fig. 2; $\ln L = -10{,}299.76$ for ML and $\ln L = -10{,}192.86$ for BI). Based on this tree and the results obtained from the mtDNA data (a) there is high to moderate statistical support that *P. melisellensis* is the root taxon of the *P. tauricus* species subgroup, (b) in the *P. erhardii* species subgroup, *P. erhardii* is the root taxon and *P. peloponnesiacus*, *P. levendis*, and *P. cretensis* are close related with the latter two being sister taxa, (c) *P. tiliguerta* is more closely related to the *P. lilifordi* – *P. pityusensis* pair and (d) *P. muralis* and *P. bocagei* have sister-taxon relationship.

3.2. Species tree

In the multilocus coalescent species tree analysis the ESS values were good (>224) with $\ln L = -9788.00$. The species tree (Figs. 3 and 4) is partly in agreement with the concatenated tree (Fig. 2) supporting (a) the monophyly of *P. tauricus* species subgroup, (b) the monophyly of *P. t. ionicus*, (c) *P. erhardii* being the root taxon of the homonym species subgroup, (d) *P. tiliguerta* being closely related to the sister taxa *P. lilfordi* and *P. pityusensis*, (e), and (f) the sister taxon relationship between *P. muralis* and *P. bocagei*. On the other hand, the majority of the nodes that are close the root have low statistical support. The same applies for the phylogenetic relationships among the major clades of the *P. tauricus* species subgroup, as well as among the *P. t. ionicus* subclades. Finally, the sister taxon relationship between *P. cretensis* and *P. levendis* is not supported.

3.3. Species delimitation

According to the estimated phylogenies, nine major clades and subclades are present within the *P. tauricus* species subgroup. In the BP&P analyses all nine of them were estimated as distinct species with the posterior probabilities ranging from 0.91 to 1.00, accounting all three prior combination schemes that supported the above solution of nine species with moderate, absolute, and good statistical support, respectively (Table 5). The rest of the solutions of either six, seven or eight species were estimated to have low statistical support. The analysis through STACEY produced high ESSs values (>290) with $\ln L = -5832.81$, resulted also in nine different species with almost absolute statistical support (p.p. = ~1.00). It is worth noticing that these nine clades/subclades were also estimated as different species within the *P. tauricus* species subgroup based on the single locus (here mtDNA) species delimitation analysis of PTP. In addition, PTP proposed to consider as different species the three *P. melisellensis* subclades, as well as the lineage from Kalamata within the subclade *e* of *P. t. ionicus*. In sum-

Table 4
Genetic distances of the Pod55 and Pod15b (within brackets) genes (below diagonal–left) and the MC1R gene (above diagonal–right) among the major clades. Values in diagonal (italics) are within lineages sequence divergence for the three loci (Pod55/Pod15b/MC1R), whereas dashes indicate the absence of the taxon from the gene sampling, and n.a. indicate inability to compute inter–lineage divergence due to unitary representative of the clade.

Clade	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. *P. tauricus tauricus* & *Podarcis tauricus thasopulae*	*0.0/ 0.3/ 0.3*	0.3	0.5	0.3	0.5	0.9	0.8	0.8	0.2	0.8	0.5	0.8	0.8	0.7	0.8	0.7	0.9	2.0
2. *P. tauricus ionicus*	0.3 (0.6)	*0.1/ 0.2/ 0.3*	0.6	0.2	0.4	0.9	0.8	0.6	0.2	0.8	0.5	0.8	0.7	0.7	0.6	0.6	0.8	2.0
3. *P. gaigeae*	0.9 (0.9)	0.7 (0.9)	*0.0/ 0.0/ 0.0*	0.5	0.7	1.1	1.0	1.0	0.4	1.0	0.7	1.0	1.0	1.0	1.0	1.0	1.1	2.0
4. *P. milensis*	0.4 (0.7)	0.3 (0.7)	0.9 (1.0)	*0.0/ 0.0/ 0.1*	0.3	0.7	0.7	0.7	0.1	0.7	0.4	0.6	0.5	0.5	0.6	0.6	0.6	1.9
5. *P. melisellensis*	0.9 (1.3)	0.8 (1.1)	1.4 (1.1)	0.8 (1.4)	*0.2/ 1.1/ 0.2*	0.9	0.8	0.8	0.2	0.7	0.5	0.7	0.8	0.8	0.8	0.8	0.9	1.8
6. *P. cretensis*	1.0 (3.1)	1.3 (3.0)	1.9 (2.9)	1.2 (3.1)	1.1 (3.3)	*0.0/ 0.0/ 0.2*	0.4	1.0	0.7	1.3	0.9	1.0	1.3	1.3	1.3	1.2	1.4	2.6
7. *P. levendis*	1.1 (2.8)	1.4 (2.7)	2.0 (2.7)	1.3 (2.9)	1.2 (3.1)	0.1 (0.8)	*0.0/ 0.0/ 0.0*	0.9	0.6	1.2	0.7	1.0	1.2	1.2	1.2	1.2	1.1	2.4
8. *P. peloponnesiacus*	1.7 (3.1)	1.9 (2.8)	2.6 (3.0)	1.9 (3.1)	1.8 (3.2)	0.7 (1.0)	0.8 (0.9)	*0.0/ 0.4/ 0.0*	0.6	1.2	0.9	1.1	1.2	1.2	0.9	0.8	1.3	2.4
9. *P. erhardii*	1.2 (4.1)	1.5 (3.9)	2.0 (3.8)	1.3 (4.0)	1.3 (4.2)	0.2 (2.0)	0.4 (1.9)	0.9 (2.1)	*0.4/ 2.2/ 0.0*	0.6	0.3	0.6	0.6	0.6	0.6	0.5	0.6	1.8
10. *P. pityusensis*	1.7 (3.5)	1.8 (3.3)	2.5 (2.8)	1.8 (3.5)	1.7 (3.4)	0.7 (2.9)	0.8 (2.7)	1.4 (3.0)	0.9 (3.7)	*0.0/ 0.6/ 0.0*	0.3	0.5	0.9	1.2	0.9	0.9	1.0	2.2
11. *P. lilfordi*	1.6 (3.3)	1.8 (3.2)	2.5 (2.7)	1.8 (3.3)	1.7 (3.2)	0.6 (2.5)	0.7 (2.4)	1.3 (2.6)	0.8 (3.5)	0.0 (0.4)	*0.0/ 0.0/ 0.0*	0.2	0.6	0.9	0.6	0.5	0.6	2.0
12. *P. tiliguerta*	1.8 (3.8)	2.2 (3.7)	2.5 (3.2)	1.8 (3.5)	1.6 (3.7)	0.8 (2.9)	0.9 (2.6)	1.5 (2.8)	1.0 (3.9)	1.0 (1.4)	0.9 (1.0)	*0.7/ 1.1/ 0.3*	0.9	1.2	0.8	0.8	0.9	2.34
13. *P. siculus*	2.1 (3.3)	2.3 (2.7)	3.1 (3.0)	2.4 (3.2)	1.8 (2.8)	1.2 (2.7)	1.3 (2.5)	1.9 (2.6)	1.6 (3.5)	1.9 (2.4)	1.8 (2.2)	2.5 (2.4)	*n.a./ n.a./ n.a.*	0.4	0.8	0.9	0.5	2.
14. *P. waglerianus*	1.0 (3.1)	1.3 (2.5)	1.9 (2.9)	1.2 (3.1)	1.6 (2.6)	0.5 (2.3)	0.6 (1.9)	1.2 (2.2)	0.7 (3.3)	1.2 (2.0)	1.1 (1.8)	1.3 (2.2)	1.2 (0.4)	*n.a./ n.a./ n.a.*	1.0	0.9	0.7	2.4
15. *P. muralis*	2.0 (3.0)	1.8 (2.9)	2.5 (2.8)	1.8 (3.2)	2.1 (3.0)	1.5 (2.3)	1.7 (2.2)	2.3 (2.5)	1.9 (3.4)	2.2 (2.3)	2.2 (1.9)	2.7 (1.9)	2.2 (2.0)	1.6 (1.6)	*0.1/ 0.3/ 0.2*	0.5	0.7	2.2
16. *P. bocagei*	2.1 (3.4)	245 (3.1)	3.0 (2.9)	2.3 (3.4)	2.6 (3.0)	1.5 (2.7)	1.6 (2.1)	2.1 (2.5)	1.9 (3.7)	2.3 (2.2)	2.1 (1.8)	2.5 (2.0)	2.3 (2.0)	1.5 (2.0)	1.9 (1.1)	*0.0/ 0.4/ 0.0*	0.9	2.3
17. *P. filfolensis*	0.7 (2.8)	0.6 (2.7)	1.2 (2.6)	0.5 (2.7)	0.4 (3.0)	0.7 (2.0)	0.8 (1.6)	1.4 (1.8)	1.0 (3.1)	1.3 (2.1)	1.3 (1.7)	1.3 (2.2)	1.9 (2.1)	1.2 (1.7)	1.8 (1.6)	2.3 (1.8)	*0.0/ 0.0/ 0.6*	2.4
18. *Lacerta agilis*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*–/–/ n.a.*

mary PTP estimated 12 distinct species within the *P. tauricus* species subgroup.

4. Discussion

This study provides a recapitulating phylogenetic reconstruction and assessment of the inter- and intra-specific relationships and diversity of the *P. tauricus* species subgroup. The data presented here feature complete taxon sampling, with representatives of all presently recognized species and most subspecies in the species subgroup. Specimens throughout the species' distribution ranges were incorporated and several phylogenetic and coalescent based methods were applied to generate gene trees, species trees and determine species delimitation. Among other things, our findings revealed several taxonomic discrepancies.

4.1. Phylogenetic relationships within the Balkan Wall lizards

Phylogenetic relationships between species groups in the genus remain largely unresolved. Failure to reconstruct them among the major clades of *Podarcis* could be due to rapid diversification early on in the evolutionary history of the genus, producing short but ancient branches with a low phylogenetic signal (Oliverio et al., 2000). This has already been cited as giving rise to the difficulty in resolving phylogenetic relationships in the Lacertidae family (Pavlicev and Mayer, 2009).

Two monophyletic species subgroups were revealed for the Balkan species group (*P. tauricus* and *P. erhardii*), in line with previous studies. However, although the *P. tauricus* subgroup appears to be more closely related to *P. erhardii*, this is not statistically supported by either a concatenated (Fig. 2) or a coales-

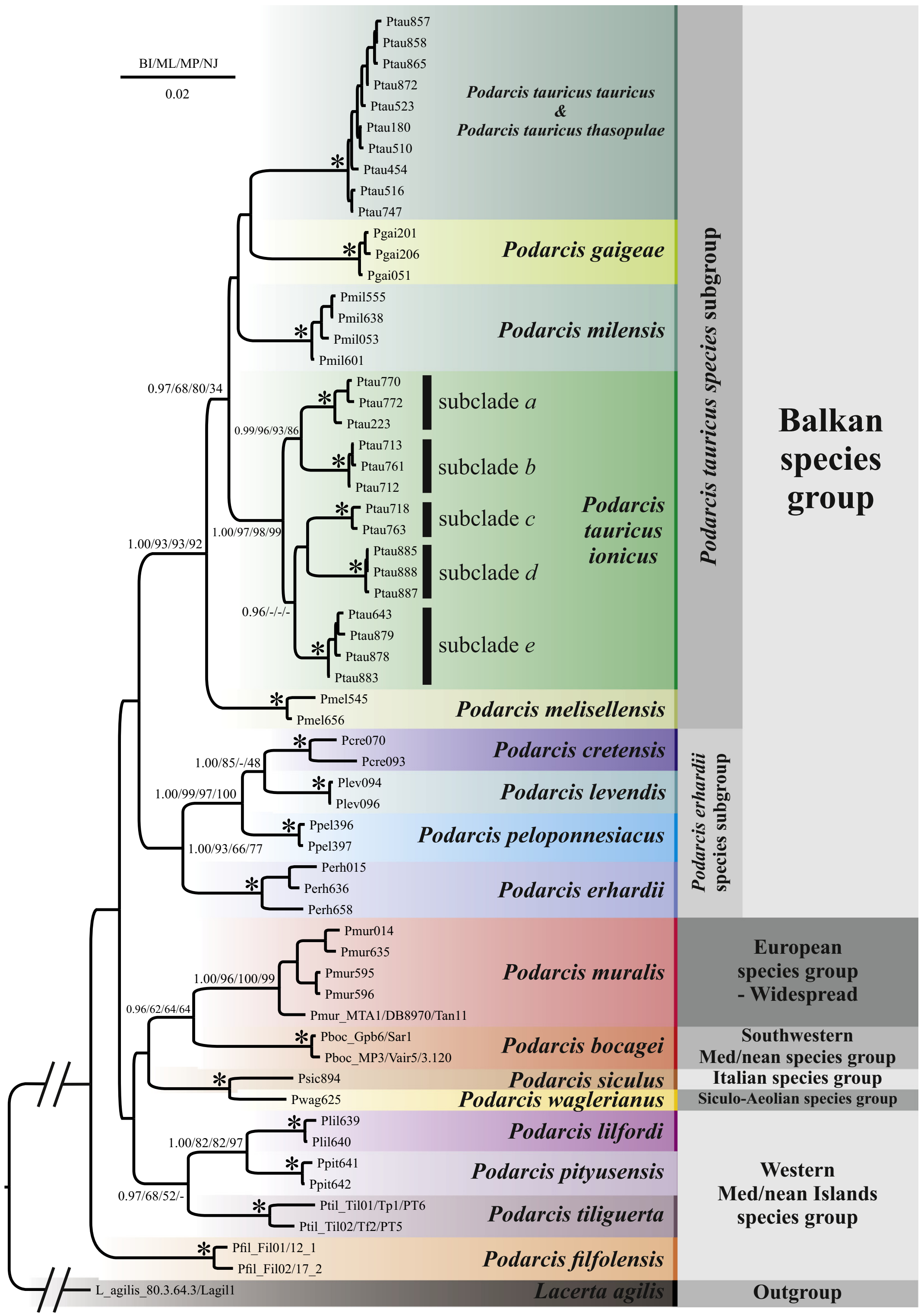

Fig. 2. Bayesian Inference tree based on the concatenated (mtDNA & nDNA) dataset focusing on the *P. tauricus* species subgroup. The posterior probabilities (>0.95) and bootstrap support (>50%) of all the phylogenetic methods used are given near the branches. No values, mean low statistical support and dashes mean different topology or polytomy. Asterisks indicate absolute support by all methods (BI/ML/MP/NJ).

cent approach (Fig. 3). This indicates that more markers should be implemented to evaluate their phylogenetic affinity. Within the *P. erhardii* species subgroup, phylogenetic relationships are fully resolved with high statistical support in the concatenated tree (Fig. 2), indicating *P. erhardii* as the root taxon of the species subgroup. Moreover, *P. cretensis* and *P. levendis* are sister taxa and both closely related to *P. peloponnesiacus*, resolving the phylogenetic relationships of these species, though the latter relationship is not well-supported in the species tree (Figs. 3 and 4).

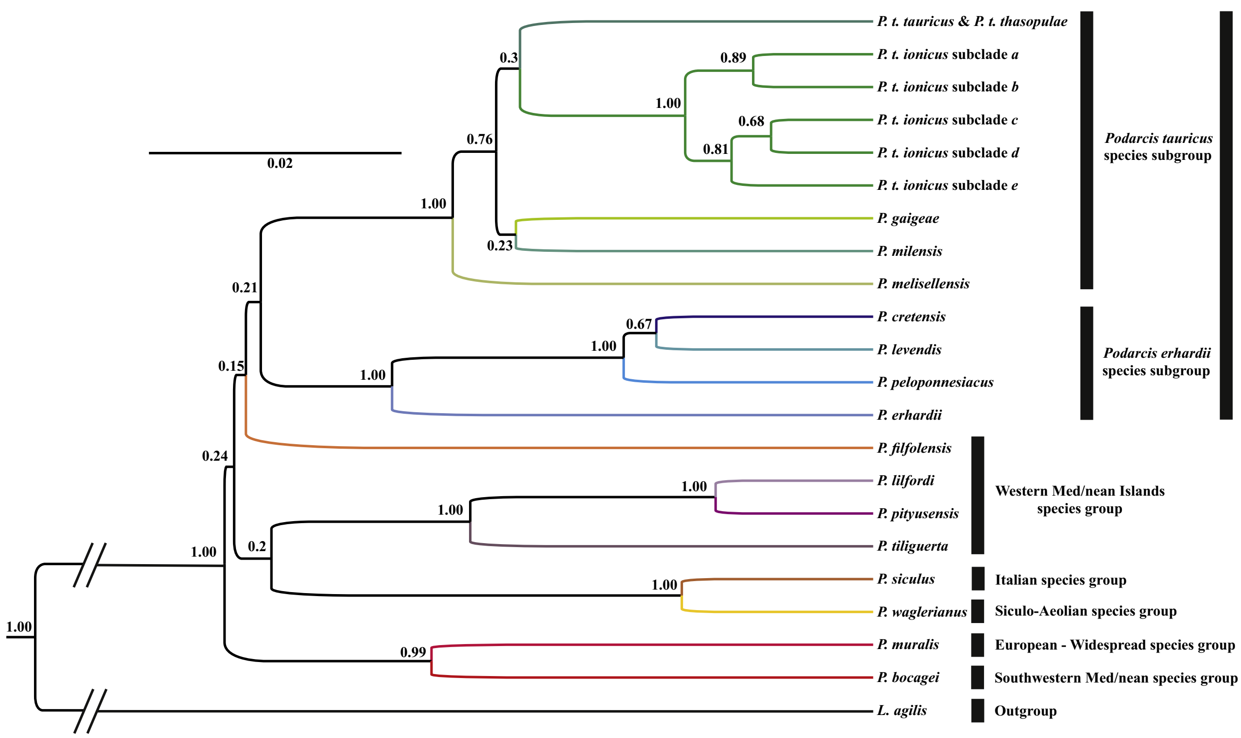

Fig. 3. The concensus multilocus coalescent species tree of the *P. tauricus* species subgroup and its conspecifics. The posterior probabilities are given near the branches.

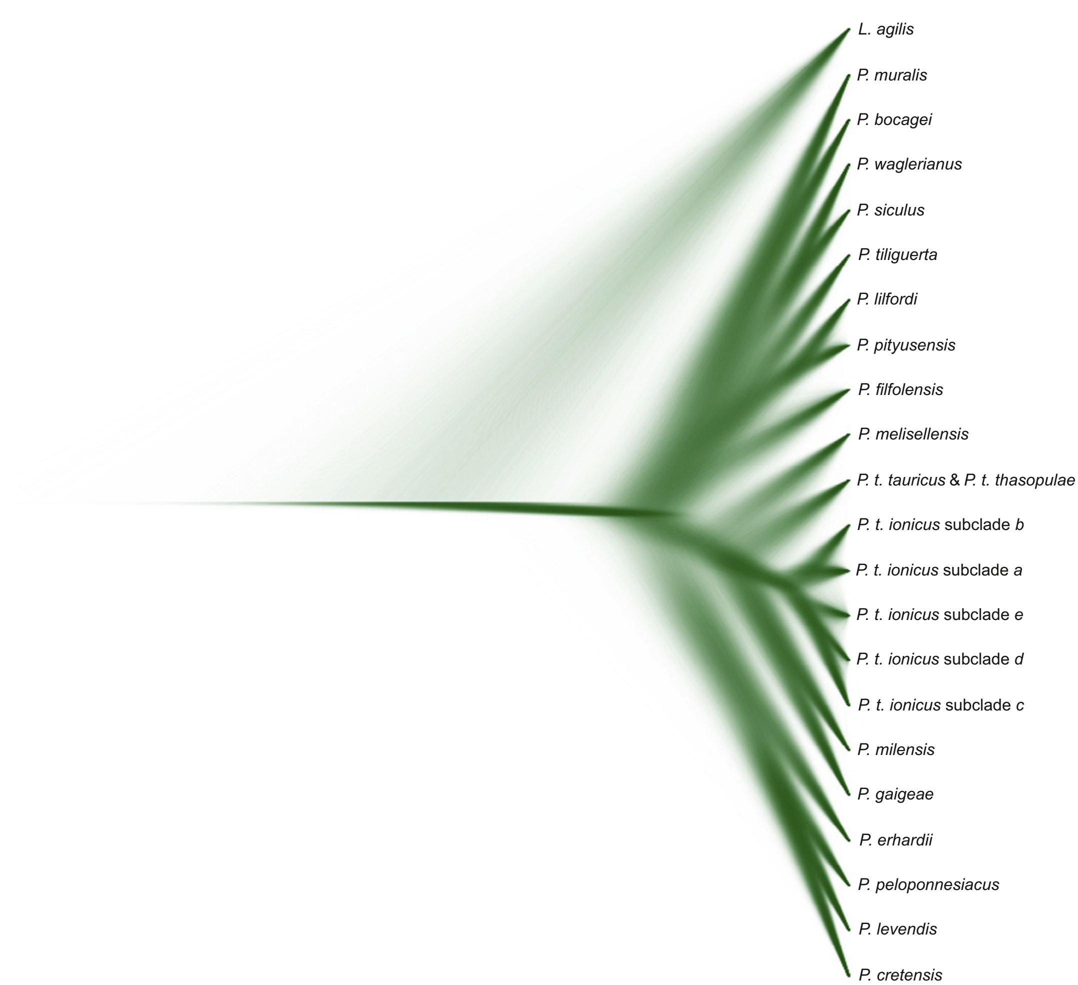

Fig. 4. Set of all trees (shown as a star tree) generated by the multilocus coalescent species tree analysis of the *P. tauricus* species subgroup and its conspecifics.

Table 5
Species delimitation results for the *P. tauricus* species subgroup based on BP&P software assuming nine species and using different prior schemes. The posterior probabilities are average values of two independent mcmc runs using different seed numbers.

Prior scheme	$\theta \sim G(1, 10) - \tau^0 \sim G(1, 10)$		$\theta \sim G(2, 2000) - \tau^0 \sim G(2, 2000)$		$\theta \sim G(1, 10) - \tau^0 \sim G(2, 2000)$	
Number of possible species	Posterior probability	Prior probability	Posterior probability	Prior probability	Posterior probability	Prior probability
6	–	–	–	–	<0.01	0.18
7	0.01	0.18	–	–	<0.01	0.18
8	0.11	0.13	<0.01	0.13	~0.10	0.13
9	0.88	0.06	~1.00	0.06	~0.90	0.06
Candidate species	Posterior probability					
P. milensis	1.00		1.00		1.00	
P. t. tauricus	1.00		1.00		1.00	
P. gaigeae	1.00		1.00		1.00	
P. melisellensis	1.00		1.00		1.00	
P. t. ionicus Subclade a	0.99		1.00		0.99	
P. t. ionicus Subclade b	0.93		1.00		0.96	
P. t. ionicus Subclade c	0.97		1.00		0.98	
P. t. ionicus Subclade d	0.95		1.00		0.94	
P. t. ionicus Subclade e	0.91		1.00		0.91	
P. t. ionicus Subclades b & e	0.05		–		0.05	
P. t. ionicus Subclades d & e	0.03		–		0.02	
P. t. ionicus Subclades a & d	–		–		0.01	

4.2. Phylogenetics relationships within the Podarcis tauricus species subgroup

Though largely unresolved, phylogenetic relationships among the current morphological taxa (Figs. 2 and 3) within the *P. tauricus* species subgroup were unexpected. No support was found for the previously published topologyb (Poulakakis et al., 2005a, b), which indicated a sister-taxon relationship between *P. milensis* and *P. gaigeae*, with *P. tauricus* as the root taxon of the species subgroup. Instead, the *P. tauricus* species subgroup is subdivided into five major clades, with *P. melisellensis* as the root taxon of the subgroup. Three of the clades correspond to three of the four morphological species in the species subgroup (*P. melisellensis*, *P. milensis*, and *P. gaigeae*). The other two clades include specimens of *P. tauricus*, without evidence that they are clustered together in a monophyletic group. The first of those clades corresponds to the subspecies *P. t. ionicus*, whereas the second consists of the other two subspecies (*P. t. tauricus* and *P. t. thasopulae*), which appear to be phylogenetically indistinguishable (Suppl. Fig. 2). Therefore, the taxonomy of *P. tauricus* at the species and subspecies level is not valid (see below). Genetic distance between the above two clades is comparable to the species level distances in *Podarcis* (Tables 2 and 4), as well as in other Lacertidae [e.g. *Lacerta* (Sagonas et al., 2014) and *Phoenicolacerta* (Tamar et al., 2015)].

It is worth noting here that *P. tauricus* has been considered a species complex with high genetic diversification (Poulakakis et al., 2005a), especially due to the high genetic divergence found within *P. t. ionicus* (Figs. 2–4, Tables 3 and 5). Five geographically distinct subclades were recovered within *P. t. ionicus*. Based on the mtDNA tree, their phylogenetic relationships were partly resolved. The subclades from the southern Ionian Islands (subclade *a*) and western central Greece (subclade *b*) have a sister-subclade relationship, whereas the other three subclades are clustered together, with the subclade from Albania, northwestern Greece and the western Peloponnisos (subclade *e*) being the most basal, and the subclades from the northeastern (subclade *c*) and south-central Peloponnisos (subclade *d*) forming a sister group. The genetic distances between them (Table 3) are relatively high (e.g. for the cyt *b* fragment they range from 5.4% to 9.2%), reaching and in some cases exceeding those among the morphologically recognized species of *P. levendis*, *P. cretensis*, and *P. peloponnesiacus*.

4.3. How many species? A proposed taxonomy of the Podarcis tauricus species subgroup in the light of multilocus phylogeny and species delimitation

In concordance with gene tree estimations, Bayesian species delimitation approaches clearly support a scheme of nine species within the *P. tauricus* species subgroup. PTP analysis estimated 12 distinct species within the *P. tauricus* species subgroup. Nevertheless, these results should be treated with caution, as PTP may overestimate the number of species in cases of uneven sampling between putative species (Zhang et al., 2013), as e.g. with *P. melisellensis*.

Based on the aforementioned results and the fact that the two clades of *P. tauricus* are morphologically, geographically, and phylogenetically distinct, the taxonomic status of *P. tauricus* should be revised by splitting the species into two separate taxa. The first taxon, *Podarcis tauricus* (Pallas, 1814) with type locality in northern Crimea, includes the populations currently assigned to the subspecies *P. t. tauricus* and *P. t. thasopulae*, together being synonymized under monotypic *Podarcis tauricus* without further subspecific division. The second taxon corresponds either to a distinct evolutionary species (de Queiroz, 2005), *Podarcis ionicus* (Lehrs, 1902), with type locality in the island of Kerkyra (Corfu Isl.), displaying high levels of intraspecific genetic diversity (five Deep Conspecific Lineages; DCL, Table 3), or to a species complex comprising of up to five Unconfirmed Candidate Species (UCS) (Padial et al., 2010). For the time being and until extensive genetic, morphological and ecophysiological examination is carried out, we propose referring to this second taxon as the *P. ionicus* species complex. According to Padial et al. (2010), the provisional names for *P. ionicus* phylogenetic subclades *a* to *e* should be: (a) *Podarcis ionicus* [Ca1 Poulakakis et al., 2005a], (b) *Podarcis ionicus* [Ca2 Psonis et al., 2016], (c) *Podarcis ionicus* [Ca3 Psonis et al., 2016], (d) *Podarcis ionicus* [Ca4 Poulakakis et al., 2005a], and (e) *Podarcis ionicus* [Ca5 Lehrs, 1902]. The Greek island endemics *P. milensis* and *P. gaigeae* did not display any phylogenetic structure and geographic pattern. Intra-specific phylogeny of the specimens inhabiting different islands and islets was in both cases bush-like, indicating either a recent colonization/fragmentation history or high gene flow among them. Given that *P. g. weigandi* and *P. g. gaigeae* could not be distinguished from each other, the subspecific taxonomy of *P. gaigeae* should be revised by synonymizing the current subspecies under monotypic *P. gaigeae* with no further subspecific division, a proposal that has already been highlighted by Poulakakis et al. (2005b). For *P. milensis*, more samples from the rest of its subspecies (*P. m. adolfjordansi* and *P. m. gerakuniae*) should be included in future analyses if safe conclusions are to be reached. Finally, *P. melisellensis* is represented by three lineages that have already been recognized at the subspecies level: *P. m. melisellensis*, *P. m. fiumana*, and a third undescribed lineage corresponding to the *Lastovo* subclade.

5. Conclusions

According to the present study, the *P. tauricus* species subgroup is a monophyletic unit that includes five major clades, with unresolved intra-clades phylogenetic relationships and *P. melisellensis* as the root taxon. Monophyly of *P. tauricus* sensu stricto is not supported, with *P. t. ionicus* displaying high levels of hidden genetic diversity, comprising five subclades with partially resolved phylogenetic relationships. Genetic diversification within *P. t. tauricus*, *P. gaigeae*, and *P. milensis* was found to be low, whereas the taxonomic validity of the subspecies *P. t. tauricus* - *P. t. thasopulae* and *P. g. gaigeae* – *P. g. weigandi* is unfounded; they should be regarded as synonyms. Finally, species delimitation approaches clearly support the existence of nine distinct species within the *P. tauricus* species subgroup. The main focus of further research should be on the *P. ionicus* species complex as defined above, comprising five Unconfirmed Candidate Species. This will necessitate detailed population-genetic analysis of nuclear markers in contact zones, as well as of the morphology and ecology typifying these UCS. Finally, though not the focus of the present study, it is clear that despite having used three nuDNA and two mtDNA loci, phylogenetic relationships among the species of the entire genus remain largely unresolved. To gain a fuller understanding, future investigations should consider selecting numerous and more appropriate molecular markers.

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Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.ympev.2016.09.007.

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Appendix A.

Alphabetically ordered by taxon name list of specimens examined in the present study and sequences retrieved from NCBI (under the horizontal bar) with their corresponding sample codes, taxon names, voucher numbers (or isolate codes of NCBI sequences), country/region/locality names (detailed only where available), reference of the study in which they were used, and accession numbers in GenBank.

Sample Code	Taxon Name	NHMC Voucher Numbers (or isolate codes of NCBI sequences)	Country – Region – Locality	Study	Accession Numbers (16S rRNA/cyt *b*/MC1R/Pod15b/Pod55)
070	*P. cretensis*	NHMC 80.3.51.176	Greece – Crete Isl.– Samaria gorge	(Poulakakis et al., 2003) (isolate PE-12; cyt *b*) / Present Study (16S rRNA & nDNA markers)	KX658177 / AF486202 / KX658476 / KX658529 / KX658582
093	*P. cretensis*	NHMC 80.3.51.327	Greece – Crete Isl. – Koufonisi islet	(Poulakakis et al., 2005b) (Pe93 isolate; 16S rRNA) / (Poulakakis et al., 2003) (isolate PE-23; cyt *b*) / Present Study (nDNA markers)	AY896147 / AF486213 / KX658477 / KX658530 / KX658583
015	*P. erhardii*	NHMC 80.3.51.583	Greece – Sarantaporos	(Poulakakis et al., 2005b) (Pe15 isolate; mtDNA markers) / Present Study (nDNA markers)	AY896198 / AY896062 / KX658478 / KX658531 / KX658584
636	*P. erhardii*	NHMC 80.3.51.2407	FYROM – Mikri Prespa lake	Present Study	KX658178 / KX657876 / KX658479 / KX658532 / KX658585
658	*P. erhardii*	NHMC 80.3.51.2462	Serbia – Crnovska River	Present Study	KX658179 / KX657877 / KX658480 / KX658533 / KX658586
051	*P. gaigeae gaigeae*	NHMC 80.3.56.1	Greece – Sporades, Skyros Isl. – Valaxa islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*) / Present Study (nDNA markers)	AY768739 / AY768775/ KX658481 / KX658534 / KX658587
201	*P. gaigeae gaigeae*	NHMC 80.3.56.15	Greece – Sporades, Skyros Isl. – Plateia islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*) / Present Study (nDNA markers)	AY768735 / AY768771 / KX658482 / KX658535 / KX658588

206	*P. gaigeae weigandi*	NHMC 80.3.56.37	Greece – Sporades – Piperi islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*) / Present Study (nDNA markers)	AY768733 / AY768769 / KX658483 / KX658536 / KX658589
418	*P. gaigeae gaigeae*	NHMC 80.3.56.70	Greece – Sporades, Skyros Isl. – Palamari islet	Present Study	KX658180 / KX657878 / - / - / -
689	*P. gaigeae gaigeae*	NHMC 80.3.56.84	Greece – Sporades, Skyros Isl. – Exo Diavatis islet	Present Study	KX658181 / KX657879 / - / - / -
692	*P. gaigeae gaigeae*	NHMC 80.3.56.87	Greece – Sporades – Skyros Isl., Agios Fokas, quarry	Present Study	KX658182 / KX657880 / - / - / -
694	*P. gaigeae gaigeae*	NHMC 80.3.56.89	Greece – Sporades, Skyros Isl. – Exo Diavatis islet	Present Study	KX658183 / KX657881 / - / - / -
696	*P. gaigeae gaigeae*	NHMC 80.3.56.91	Greece – Sporades, Skyros Isl. – Lakkonisi islet	Present Study	KX658184 / KX657882 / - / - / -
698	*P. gaigeae gaigeae*	NHMC 80.3.56.93	Greece – Sporades, Skyros Isl. – Palamari	Present Study	KX658185 / KX657883 / - / - / -
699	*P. gaigeae gaigeae*	NHMC 80.3.56.94	Greece – Sporades, Skyros Isl. – Palamari	Present Study	KX658186 / KX657884 / - / - / -
094	*P. levendis*	NHMC 80.3.51.279	Greece – Antikythira Isl. – Pori islet	(Poulakakis et al., 2005b) (isolate Pe94; 16S rRNA) / (Poulakakis et al., 2003) (isolate PE-31; cyt *b*) / Present Study (nDNA markers)	AY896170 / AF486221 / KX658484 / KX658537 / KX658590
096	*P. levendis*	NHMC 80.3.51.288	Greece – Antikythira Isl. – Pori islet	(Poulakakis et al., 2005b) (isolate Pe96; 16S rRNA) / (Poulakakis et al., 2003) (isolate PE-32; cyt *b*) / Present Study (nDNA markers)	AY896171 / AF486222 / KX658485 / KX658538 / KX658591
639	*P. lilfordi*	NHMC 80.3.59.2	Spain – Mallorca Isl.	(Kapli et al., 2013) (isolate Plil1; cyt *b*) / Present Study (16S rRNA & nDNA markers)	KX658187 / KF003361 / KX658486 / KX658539 / KX658592
640	*P. lilfordi*	NHMC 80.3.59.3	Spain – Mallorca Isl.	(Kapli et al., 2013) (isolate Plil2; cyt *b*) / Present Study (16S rRNA & nDNA	KX658188 / KF003362 / KX658487 / KX658540 / KX658593

				markers)	
545	*P. melisellensis*	NHMC 80.3.57.4	Montenegro – Ada Bojana	Present Study	KX658189 / KX657885 / KX658488 / KX658541 / KX658594
655	*P. melisellensis*	NHMC 80.3.57.10	Montenegro – Ada Bojana	Present Study	KX658190 / KX657886 / - / - / -
656	*P. melisellensis*	NHMC 80.3.57.11	Bosnia and Herzegovina – Nevesinje	Present Study	KX658191 / KX657887 / KX658489 / KX658542 / KX658595
657	*P. melisellensis*	NHMC 80.3.57.12 (NMP6V 74157)*	Bosnia and Herzegovina – Prozor	Present Study	KX658192 / KX657888 / - / - / -
053	*P. milensis milensis*	NHMC 80.3.52.2	Greece – Kyklades – Milos Isl., Achivadolimni lake	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*) / Present Study (nDNA markers)	AY768741 / AY768777 / KX658490 / KX658543 / KX658596
554	*P. milensis milensis*	NHMC 80.3.52.64	Greece – Kyklades, Milos Isl. – Antimilos islet	Present Study	- / KX657889 / - / - / -
555	*P. milensis milensis*	NHMC 80.3.52.66	Greece – Kyklades, Milos Isl. – Milos excavations	Present Study	KX658193 / KX657890 / KX658491 / KX658544 / KX658597
600	*P. milensis milensis*	NHMC 80.3.52.5	Greece – Kyklades – Kimolos Isl.	Present Study	KX658194 / KX657891 / - / - / -
601	*P. milensis milensis*	NHMC 80.3.52.10	Greece – Kyklades – Kimolos Isl.	Present Study	KX658195 / KX657892 / KX658492 / KX658545 / KX658598
603	*P. milensis milensis*	NHMC 80.3.52.78	Greece – Kyklades – Milos Isl.	Present Study	KX658196 / KX657893 / - / - / -
604	*P. milensis milensis*	NHMC 80.3.52.4	Greece – Kyklades – Kimolos Isl.	Present Study	KX658197 / KX657894 / - / - / -
605	*P. milensis milensis*	NHMC 80.3.52.6	Greece – Kyklades – Kimolos Isl.	Present Study	KX658198 / KX657895 / - / - / -
606	*P. milensis milensis*	NHMC 80.3.52.7	Greece – Kyklades – Kimolos Isl.	Present Study	KX658199 / KX657896 / - / - / -
607	*P. milensis milensis*	NHMC 80.3.52.8	Greece – Kyklades – Kimolos Isl.	Present Study	KX658200 / KX657897 / - / - / -
608	*P. milensis milensis*	NHMC 80.3.52.9	Greece – Kyklades – Kimolos Isl.	Present Study	KX658201 / KX657898 / - / - / -
610	*P. milensis milensis*	NHMC 80.3.52.12	Greece – Kyklades – Kimolos Isl.	Present Study	KX658202 / KX657899 / - / - / -
613	*P. milensis milensis*	NHMC 80.3.52.67	Greece – Kyklades – Milos Isl.	Present Study	KX658203 / KX657900 / - / - / -
614	*P. milensis milensis*	NHMC 80.3.52.68	Greece – Kyklades – Milos Isl.	Present Study	KX658204 / KX657901 / - / - / -
615	*P. milensis milensis*	NHMC 80.3.52.69	Greece – Kyklades – Milos Isl.	Present Study	KX658205 / KX657902 / - / - / -
616	*P. milensis milensis*	NHMC 80.3.52.70	Greece – Kyklades – Milos Isl.	Present Study	- / KX657903 / - / - / -
617	*P. milensis milensis*	NHMC 80.3.52.71	Greece – Kyklades – Milos Isl.	Present Study	KX658206 / KX657904 / - / - / -
618	*P. milensis milensis*	NHMC 80.3.52.72	Greece – Kyklades – Milos Isl.	Present Study	KX658207 / KX657905 / - / - / -
619	*P. milensis milensis*	NHMC 80.3.52.73	Greece – Kyklades – Milos Isl.	Present Study	KX658208 / KX657906 / - / - / -
620	*P. milensis milensis*	NHMC 80.3.52.74	Greece – Kyklades – Milos Isl.	Present Study	KX658209 / KX657907 / - / - / -
621	*P. milensis*	NHMC 80.3.52.75	Greece – Kyklades –	Present Study	KX658210 / KX657908 / - / - / -

	milensis		Milos Isl.		
622	*P. milensis milensis*	NHMC 80.3.52.76	Greece – Kyklades – Milos Isl.	Present Study	KX658211 / KX657909 / - / - / -
623	*P. milensis milensis*	NHMC 80.3.52.77	Greece – Kyklades – Milos Isl.	Present Study	KX658212 / KX657910 / - / - / -
638	*P. milensis milensis*	NHMC 80.3.52.79	Greece – Kyklades – Milos Isl., Adamas	Present Study	KX658213 / KX657911 / KX658493 / KX658546 / KX658599
666	*P. milensis milensis*	NHMC 80.3.52.81	Greece – Kyklades – Milos Isl., Achivadolimni lake, at Agios Konstantinos church	Present Study	KX658214 / KX657912 / - / - / -
672	*P. milensis milensis*	NHMC 80.3.52.87	Greece – Kyklades – Milos Isl., Parasporos	Present Study	KX658215 / KX657913 / - / - / -
676	*P. milensis milensis*	NHMC 80.3.52.91	Greece – Kyklades – Milos Isl., Komia	Present Study	KX658216 / KX657914 / - / - / -
677	*P. milensis milensis*	NHMC 80.3.52.92	Greece – Kyklades – Milos Isl., Adamas NW, on the way to Vato	Present Study	KX658217 / KX657915 / - / - / -
684	*P. milensis milensis*	NHMC 80.3.52.99	Greece – Kyklades – Kimolos Isl.	Present Study	KX658218 / KX657916 / - / - / -
780	*P. milensis milensis*	NHMC 80.3.52.101	Greece – Kyklades – Milos Isl., Achivadolimni lake	Present Study	KX658219 / KX657917 / - / - / -
784	*P. milensis milensis*	NHMC 80.3.52.106	Greece – Kyklades– Milos Isl., Zefyria	Present Study	KX658220 / KX657918 / - / - / -
014	*P. muralis*	NHMC 80.3.53.79	Greece – Karditsa – Kazarma	(Poulakakis et al., 2005b) (mtDNA markers)/ Present Study (nDNA markers)	AY896187 / AY896134 / KX658494 / KX658547 / KX658600
595	*P. muralis*	NHMC 80.3.53.541	Ukraine – Lower Danube area, near Ukrainian–Romanian state border, trading river port of the town of Reni, Odessa Province, Reni Distr.	Present Study	KX658221 / KX657919 / KX658495 / KX658548 / KX658601
596	*P. muralis*	NHMC 80.3.53.544	Ukraine – NW coast of the Lake Kagul, Odessa Province, Reni Distr..	Present Study	KX658222 / KX657920 / KX658496 / KX658549 / KX658602
635	*P. muralis*	NHMC 80.3.53.545	Greece – Kastoria – Eptachori	Present Study	KX658223 / KX657921 / KX658497 / KX658550 / KX658603
396	*P. peloponnesiacus*	NHMC 80.3.54.114	Greece – Achaia – Erymanthos Mt.	Present Study	KX658224 / KX657922 / KX658498 / KX658551 / KX658604
397	*P. peloponnesiacus*	NHMC 80.3.54.117	Greece – Messinia – Aigaleo Mt.	Present Study	KX658225 / KX657923 / KX658499 / KX658552 / KX658605
641	*P. pityusensis*	NHMC 80.3.176.1	Spain – Mallorca Isl. – Palma (introduced)	(Kapli et al., 2013) (isolate Ppit1; cyt *b*) / Present Study (16S rRNA &	KX658226 / KF003363 / KX658500 / KX658553 / KX658606

642	*P. pityusensis*	NHMC 80.3.176.2	Spain – Mallorca Isl. – Palma (introduced)	nDNA markers) (Kapli et al., 2013) (isolate Ppit2; cyt *b*) / Present Study (16S rRNA & nDNA markers)	KX658227 / KF003364 / KX658501 / KX658554 / KX658607
894	*P. siculus*	NHMC 80.3.55.17	Slovenia – Dragonje	Present Study	KX658228 / KX657924 / KX658502 / KX658555 / KX658608
170	*P. tauricus tauricus*	NHMC 80.3.50.28	Greece – Fthiotida – Spercheios river	Present Study	KX658229 / KX657925 / - / - / -
180	*P. tauricus tauricus*	NHMC 80.3.50.34	Greece – Evros, Feres	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*) / Present Study (nDNA markers)	AY768710 / AY768746 / KX658503 / KX658556 / KX658609
223	*P. tauricus ionicus*	NHMC 80.3.50.26	Greece – Ionian Islands – Kefallonia Isl.	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*) / Present Study (nDNA markers)	AY768713 / AY768749 / KX658504 / KX658557 / KX658610
432	*P. tauricus tauricus*	NHMC 80.3.50.66	Crimea – western part of Main range of the Crimean Mts. – near village Uzundzha, western slope of Mt. Chuvash–Koyi (Range Trapan–Bair); Sevastopol territory	Present Study	KX658230 / KX657926 / - / - / -
434	*P. tauricus tauricus*	NHMC 80.3.50.68	Crimea – Southern Coast – between settlements Parthenit and Gurzuf, Cape Ayu-Dagh; Alushta territory	Present Study	KX658231 / KX657927 / - / - / -
436	*P. tauricus tauricus*	NHMC 80.3.50.70	Crimea – Southern Coast – near Cape Sarych, locality of Choban-Tash; Sevastopol territory	Present Study	KX658232 / KX657928 / - / - / -
438	*P. tauricus tauricus*	NHMC 80.3.50.72	Crimea – western border between Main range of the Crimean Mts. and Southern Coast – near town of Balaclava,Range Spilia; Sevastopol territory	Present Study	KX658233 / KX657929 / - / - / -
439	*P. tauricus tauricus*	NHMC 80.3.50.73	Crimea – western border between Main range of the Crimean	Present Study	KX658234 / KX657930 / - / - / -

			Mts. and western Foothills – between villages of Rodnoe and Ternovka; Sevastopol territory		
440	*P. tauricus tauricus*	NHMC 80.3.50.74	Crimea – western border between Main range of the Crimean Mts. and western Foothills – between villages of Rodnoe and Ternovka; Sevastopol territory	Present Study	KX658235 / KX657931 / - / - / -
445	*P. tauricus tauricus*	NHMC 80.3.50.79	Crimea – extreme eastern maritime plot of Main Range of the Crimean Mts. – Dvuyakornaya Valley, between village of Yuzhnoe and settlement Ordzhonikidze; Theodosia territory	Present Study	KX658236 / KX657932 / - / - / -
446	*P. tauricus tauricus*	NHMC 80.3.50.80	Crimea – extreme eastern maritime plot of Main Range of the Crimean Mts. – Dvuyakornaya Valley, between village of Yuzhnoe and settlement Ordzhonikidze; Theodosia territory	Present Study	KX658237 / KX657933 / - / - / -
447	*P. tauricus tauricus*	NHMC 80.3.50.81	Crimea – eastern Foothills – Mt. Ak–Kaya, Belogorsk Distr.	Present Study	KX658238 / KX657934 / - / - / -
448	*P. tauricus tauricus*	NHMC 80.3.50.82	Crimea – eastern Foothills – Mt. Ak–Kaya, Belogorsk Distr.	Present Study	KX658239 / KX657935 / - / - / -
450	*P. tauricus tauricus*	NHMC 80.3.50.330	Romania - Muntii Macinului	Present Study	KX658240 / KX657936 / - / - / -
451	*P. tauricus tauricus*	NHMC 80.3.50.331	Romania - Muntii Macinului	Present Study	KX658241 / KX657937 / - / - / -
453	*P. tauricus tauricus*	NHMC 80.3.50.87	Crimea – Black Sea coast of Kerch Peninsula – Mt. Opuk, Lenin's Distr.	Present Study	KX658242 / KX657938 / - / - / -
454	*P. tauricus tauricus*	NHMC 80.3.50.88	Crimea – Azov Sea, coast of Kerch Penisula – Karalarskaya Steppe, between Cape Chagany (near village Zolotoe) and salt Lake Chokrak, Lenino Distr.	Present Study	KX658243 / KX657939 / KX658505 / KX658558 / KX658611
458	*P. tauricus tauricus*	NHMC 80.3.50.92	Crimea – Azov Sea coast of Kerch Penisula – Karalarskaya Steppe,	Present Study	KX658244 / KX657940 / - / - / -

			valley of sulfatar spring Suurtash, Lenino Distr.		
459	*P. tauricus tauricus*	NHMC 80.3.50.93	Crimea – Azov Sea coast of Kerch Peninsula – Karalarskaya Steppe, valley of river Sernaya, Lenino Distr.	Present Study	KX658245 / KX657941 / - / - / -
462	*P. tauricus tauricus*	NHMC 80.3.50.96	Crimea – near the border of the western Foothills and Main Range – sanatorium Adzhi–Su, environs of village Polyana, Bakhchisarayi Distr.	Present Study	KX658246 / KX657942 / - / - / -
463	*P. tauricus tauricus*	NHMC 80.3.50.97	Crimea – eastern part of the Kerch Peninsula – ruins of ancient town Ilurat near village Ivanovka, Lenino Distr.	Present Study	KX658247 / KX657943 / - / - / -
464	*P. tauricus tauricus*	NHMC 80.3.50.98	Crimea – extreme eastern , part of Black Sea coast of Kerch Peninsula – environs of the village Yakovenkovo, Cape Ak–Burun, Lenino Distr.	Present Study	KX658248 / KX657944 / - / - / -
465	*P. tauricus tauricus*	NHMC 80.3.50.99	Serbia environs of the village Šumarak	Present Study	KX658249 / KX657945 / - / - / -
467	*P. tauricus tauricus*	NHMC 80.3.50.101	Romania – ancient colony Histria near Tulcea	Present Study	KX658250 / KX657946 / - / - / -
468	*P. tauricus tauricus*	NHMC 80.3.50.102	Romania – ancient colony Histria near Tulcea	Present Study	KX658251 / KX657947 / - / - / -
469	*P. tauricus tauricus*	NHMC 80.3.50.103	Romania – ancient colony Histria near Tulcea	Present Study	KX658252 / KX657948 / - / - / -
470	*P. tauricus tauricus*	NHMC 80.3.50.104	Romania – ancient colony Histria near Tulcea	Present Study	KX658253 / KX657949 / - / - / -
471	*P. tauricus tauricus*	NHMC 80.3.50.105	Romania – ancient colony Histria near Tulcea	Present Study	KX658254 / KX657950 / - / - / -
472	*P. tauricus tauricus*	NHMC 80.3.50.106	Ukraine – northern border of Stentsovsko–Zhebriyanskie marshy areas – environs of the village Desantnoe, Killia Distr., Odessa Province	Present Study	KX658255 / KX657951 / - / - / -
474	*P. tauricus tauricus*	NHMC 80.3.50.108	Crimea – SE part of Main Range, upper belt of southern	Present Study	KX658256 / KX657952 / - / - / -

			macroslope – SW spur of Ridge Papas–Tepe between the settlement Krasnokamenka and village Lesnoe, Sudak territory.		
475	*P. tauricus tauricus*	NHMC 80.3.50.109	Crimea – SW part of Main Range – area of the Pass Bechku between the Valleys Baidarskaya and Belbekskaya environs of village Peredovoe, border of Sevastopol territory and Bakhshisarayi Distr.	Present Study	KX658257 / KX657953 / - / - / -
476	*P. tauricus tauricus*	NHMC 80.3.50.110	Crimea – SE part of Main Range, upper belt of southern macroslope – southern slopes of Upland Karabi–Yaila, valley of river Mikropotamo and foot of Mt. Likon, environs of the village Generalskoe; Alushta territory	Present Study	KX658258 / KX657954 / - / - / -
477	*P. tauricus tauricus*	NHMC 80.3.50.111	Crimea – NW Crimean height plain – between the settlement Chernomorskyi and the village Olenevka, northern coast of Tarkhankutskyi Penisula, Chernomorskoe Distr.	Present Study	KX658259 / KX657955 / - / - / -
479	*P. tauricus tauricus*	NHMC 80.3.50.113	Crimea – NW Crimean height plain – between the settlement Chernomorskyi and the village Olenevka, northern coast of Tarkhankutskyi Penisula, Chernomorskoe Distr	Present Study	KX658260 / KX657956 / - / - / -
480	*P. tauricus tauricus*	NHMC 80.3.50.114	Crimea – Southern Coast – environs of s. Parthenit, Cape Ayu-Dagh, Alushta Territory	Present Study	KX658261 / KX657957 / - / - / -
481	*P. tauricus tauricus*	NHMC 80.3.50.115	Crimea – Southern Coast – s. Vinogradnyi, Alushta territory	Present Study	KX658262 / KX657958 / - / - / -
482	*P. tauricus*	NHMC	Crimea – western	Present Study	KX658263 / KX657959 / - / - / -

	tauricus	80.3.50.116	Foothills – village Kuibyshevo Bahshisarayi Distr.		
484	*P. tauricus tauricus*	NHMC 80.3.50.118	Crimea – western Foothills – v. Priyatnoe Svidanie, Mt. Bakla, Bakhshisarayi Distr.	Present Study	KX658264 / KX657960 / - / - / -
485	*P. tauricus tauricus*	NHMC 80.3.50.119	Crimea – central Foothills – suburbs of Simferopol, coast of Simferopol reservoire, Simferopol Distr.	Present Study	KX658265 / KX657961 / - / - / -
486	*P. tauricus tauricus*	NHMC 80.3.50.120	Crimea – western plain – v. Skvortsovo, Simferopol Distr.	Present Study	KX658266 / KX657962 / - / - / -
489	*P. tauricus tauricus*	NHMC 80.3.50.123	Crimea – western Foothills – v. Preduschelnoe, Mt Kachi–Kal'on, Bakhchisarayi Distr.	Present Study	KX658267 / KX657963 / - / - / -
490	*P. tauricus tauricus*	NHMC 80.3.50.124	Crimea – extreme eastern plot of Main Range – stm. Solnechnyi, foot of Mt. Pasha Oba, Theodosia Distr.	Present Study	KX658268 / KX657964 / - / - / -
491	*P. tauricus tauricus*	NHMC 80.3.50.125	Crimea – SE coast – stm. Schebetovka, northern clope of Mt. Echki-Dagh, Theodosia territory	Present Study	KX658269 / KX657965 / - / - / -
492	*P. tauricus tauricus*	NHMC 80.3.50.126	Crimea – SE coast – Karadagh Reserve, SE slope of Mt. Karadagh, Theodosia territory	Present Study	KX658270 / KX657966 / - / - / -
493	*P. tauricus tauricus*	NHMC 80.3.50.127	Crimea – SE coast – Karadagh Reserve, Southern slope of Ridge Kara-Agach, Theodosia territory	Present Study	KX658271 / KX657967 / - / - / -
494	*P. tauricus tauricus*	NHMC 80.3.50.128	Crimea – SE coast – Karadagh Reserve, Karadagh Valley, Theodosia territory	Present Study	KX658272 / KX657968 / - / - / -
495	*P. tauricus tauricus*	NHMC 80.3.50.129	Crimea – SE coast – stm. Krasnokamenka, Mt. Frenk Mezer, Sudak territory.	Present Study	KX658273 / KX657969 / - / - / -
496	*P. tauricus tauricus*	NHMC 80.3.50.130	Crimea – SE coast – Karadagh Reserve, S slope of Ridge Kara-Agach, Theodosia territory	Present Study	KX658274 / KX657970 / - / - / -
497	*P. tauricus tauricus*	NHMC 80.3.50.131	Crimea – SE coast – stm. Krasnokamenka, Mt. Gondarly-Kaya,	Present Study	KX658275 / KX657971 / - / - / -

			Sudak territory		
498	*P. tauricus tauricus*	NHMC 80.3.50.132	Crimea – SE coast – Karadagh Reserve, SE slope of Mt. Karadagh, Theodosia territory	Present Study	KX658276 / KX657972 / - / - / -
499	*P. tauricus tauricus*	NHMC 80.3.50.133	Crimea – SE coast – Karadagh Reserve, NW slope of Mt. Legener Theodosia territory	Present Study	KX658277 / KX657973 / - / - / -
500	*P. tauricus tauricus*	NHMC 80.3.50.134	Crimea – SE coast – Karadagh Reserve, Biological station, Theodosia territory	Present Study	KX658278 / KX657974 / - / - / -
501	*P. tauricus tauricus*	NHMC 80.3.50.135	Crimea – central part of Kerch Peninsula – between village Doroshenkovo and reservoir Yuzmak, Lenino Distr.	Present Study	KX658279 / KX657975 / - / - / -
502	*P. tauricus tauricus*	NHMC 80.3.50.136	Crimea – eastern part of Kerch Peninsula – village Ivanovka, Churbashskaya ravine, near ancient town Ilurat, Lenino Distr.	Present Study	KX658280 / KX657976 / - / - / -
503	*P. tauricus tauricus*	NHMC 80.3.50.137	Crimea – central part of Kerch Peninsula – village Leninskoe, southern slope of Ridge Parpachskyi, Lenino Distr.	Present Study	KX658281 / KX657977 / - / - / -
504	*P. tauricus tauricus*	NHMC 80.3.50.138	Crimea – SE part of Kerch Peninsula – village Zavetnoe, Lenino Distr.	Present Study	KX658282 / KX657978 / - / - / -
507	*P. tauricus ionicus*	NHMC 80.3.50.40	Greece – Arkadia – Tripoli	Present Study	KX658283 / KX657979 / - / - / -
508	*P. tauricus ionicus*	NHMC 80.3.50.42	Greece – Aitoloakarnania – Messologi, 2/39 Syntagma Evzonon	Present Study	KX658284 / KX657980 / - / - / -
509	*P. tauricus ionicus*	NHMC 80.3.50.44	Greece – Korinthia – Feneos	Present Study	KX658285 / KX657981 / - / - / -
510	*P. tauricus tauricus*	NHMC 80.3.50.48	Greece – Larisa – Kalyvia, 3.5km NE	Present Study	KX658286 / KX657982 / KX658506 / KX658559 / KX658612
511	*P. tauricus ionicus*	NHMC 80.3.50.55	Greece – Ioannina– Tzoumerka Mt.	Present Study	KX658287 / KX657983 / - / - / -
512	*P. tauricus tauricus*	NHMC 80.3.50.302	Greece – Florina – Prespes lakes	Present Study	KX658288 / KX657984 / - / - / -
513	*P. tauricus ionicus*	NHMC 80.3.50.65	Greece – Ioannina – Nemertsika Mt., Vitsikopoulo	Present Study	KX658289 / KX657985 / - / - / -
514	*P. tauricus tauricus*	NHMC 80.3.50.139	Greece – Grevena – Voio Mt., Aidona	Present Study	KX658290 / KX657986 / - / - / -
515	*P. tauricus tauricus*	NHMC 80.3.50.140	Greece – Grevena – Voio Mt., Aidona	Present Study	- / KX657987 / - / - / -
516	*P. tauricus*	NHMC	Greece – Grevena –	Present Study	KX658291 / KX657988/

	tauricus	80.3.50.141	Voio Mt., Aidona		KX658507 / KX658560 / KX658613
517	*P. tauricus tauricus*	NHMC 80.3.50.142	Greece – Grevena – Voio Mt., Aidona	Present Study	KX658292 / KX657989 / - / - / -
518	*P. tauricus tauricus*	NHMC 80.3.50.143	Greece – Kozani – Voio Mt., Agios Sotiras	Present Study	- / KX657990 / - / - / -
520	*P. tauricus tauricus*	NHMC 80.3.50.145	Greece – Kozani – Voio Mt., Vouxorina	Present Study	KX658293 / KX657991 / - / - / -
521	*P. tauricus tauricus*	NHMC 80.3.50.146	Greece – Kozani – Voio Mt., Agioi Anargyroi	Present Study	KX658294 / KX657992 / - / - / -
522	*P. tauricus tauricus*	NHMC 80.3.50.147	Greece – Trikala – Antichasia Mt., Korydalos	Present Study	KX658295 / KX657993 / - / - / -
523	*P. tauricus tauricus*	NHMC 80.3.50.148	Greece – Trikala – Antichasia Mt., Korydalos	Present Study	KX658296 / KX657994 / KX658508 / KX658561 / KX658614
524	*P. tauricus tauricus*	NHMC 80.3.50.149	Serbia – Brvenica	Present Study	KX658297 / KX657995 / - / - / -
525	*P. tauricus tauricus*	NHMC 80.3.50.150	Serbia – road to Studenica	Present Study	KX658298 / KX657996 / - / - / -
526	*P. tauricus tauricus*	NHMC 80.3.50.151	Serbia – Maglič	Present Study	KX658299 / KX657997 / - / - / -
527	*P. tauricus tauricus*	NHMC 80.3.50.152	Ukraine – eastern environs of the villages Tabaki and Zaliznichne, Odessa Province, Bolgradskyi Distr.	Present Study	KX658300 / KX657998 / - / - / -
536	*P. tauricus tauricus*	NHMC 80.3.50.161	Ukraine – right bank of Dnieper river – suburbs of town of Nikolaev, settlement Shirokaya Balka, Nikolaev Province	Present Study	KX658301 / KX657999 / - / - / -
538	*P. tauricus tauricus*	NHMC 80.3.50.163	Ukraine – right bank of Dnieper river – suburbs of town of Nikolaev, settlement Shirokaya Balka, Nikolaev Province	Present Study	KX658302 / KX658000 / - / - / -
541	*P. tauricus tauricus*	NHMC 80.3.50.166	Moldova – on the river Yalpug, suburbs of town of Comrat, autonomous region of Gagauzia	Present Study	KX658303 / KX658001 / - / - / -
542	*P. tauricus tauricus*	NHMC 80.3.50.167	Moldova – on the river Yalpug, suburbs of town of Comrat, autonomous region of Gagauzia	Present Study	KX658304 / KX658002 / - / - / -
543	*P. tauricus tauricus*	NHMC 80.3.50.168	Moldova – on the river Yalpug, suburbs of town of Comrat, autonomous region of Gagauzia	Present Study	KX658305 / KX658003 / - / - / -
544	*P. tauricus tauricus*	NHMC 80.3.50.169	Moldova – on the river Yalpug, suburbs of town of Comrat, autonomous region of Gagauzia	Present Study	KX658306 / KX658004 / - / - / -

556	*P. tauricus tauricus*	NHMC 80.3.50.190	Romania – Tulcea – Macin	Present Study	KX658307 / KX658005 / - / - / -
557	*P. tauricus tauricus*	NHMC 80.3.50.191	Romania – Tulcea – Babadag	Present Study	KX658308 / KX658006 / - / - / -
558	*P. tauricus tauricus*	NHMC 80.3.50.192	Romania – Constanta county – Canaraua Feti	Present Study	KX658309 / KX658007 / - / - / -
559	*P. tauricus tauricus*	NHMC 80.3.50.193	Romania – Constanta county – Gura Dobrogei	Present Study	KX658310 / KX658008 / - / - / -
561	*P. tauricus tauricus*	NHMC 80.3.50.196	Bulgaria – Golyamo Bukovo, Distr. Sredets	Present Study	KX658311 / KX658009 / - / - / -
562	*P. tauricus tauricus*	NHMC 80.3.50.197	Bulgaria – Petrelik, Distr. Gotse Delchev	Present Study	KX658312 / KX658010 / - / - / -
563	*P. tauricus tauricus*	NHMC 80.3.50.198	Bulgaria – Krapchene, Distr. Montana	Present Study	KX658313 / KX658011 / - / - / -
564	*P. tauricus tauricus*	NHMC 80.3.50.199	Bulgaria – Ognyanovo, Distr. Pazardzhik	Present Study	KX658314 / KX658012 / - / - / -
565	*P. tauricus tauricus*	NHMC 80.3.50.200	Bulgaria – Sredna Gora Mt., near Panagyurishte	Present Study	KX658315 / KX658013 / - / - / -
566	*P. tauricus tauricus*	NHMC 80.3.50.178	Serbia – Gaj village	Present Study	KX658316 / KX658014 / - / - / -
568	*P. tauricus tauricus*	NHMC 80.3.50.180	Serbia – surroundings of Banatska Palanka	Present Study	KX658317 / KX658015 / - / - / -
570	*P. tauricus tauricus*	NHMC 80.3.50.182	Serbia – environs of Donji Milanovac	Present Study	KX658318 / KX658016 / - / - / -
571	*P. tauricus tauricus*	NHMC 80.3.50.183	Serbia – Diana Karataš	Present Study	KX658319 / KX658017 / - / - / -
574	*P. tauricus tauricus*	NHMC 80.3.50.187	Serbia – environs of Trgovište	Present Study	KX658320 / KX658018 / - / - / -
576	*P. tauricus tauricus*	NHMC 80.3.50.201	Ukraine – eastern environs of the villages Tabaki and Zaliznichne, Odessa Province, Bolgradskyi Distr.	Present Study	KX658321 / KX658019 / - / - / -
582	*P. tauricus tauricus*	NHMC 80.3.50.207	Ukraine – Ukrainian-Moldavian state border along the river Bol'shoyi Yalpug, Odessa Province, Bolgradskyi Distr.,	Present Study	KX658322 / KX658020 / - / - / -
583	*P. tauricus tauricus*	NHMC 80.3.50.208	Ukraine – Odessa Province, Bolgradskyi Distr.	Present Study	KX658323 / KX658021 / - / - / -
584	*P. tauricus tauricus*	NHMC 80.3.50.209	Ukraine – right bank of Dnieper river – suburbs of town of Nikolaev, settlement Shirokaya Balka, Nikolaev Province	Present Study	KX658324 / KX658022 / - / - / -
588	*P. tauricus tauricus*	NHMC 80.3.50.213	Moldova – on the river Yalpug, suburbs of town of Comrat, autonomous region of Gagauzia	Present Study	KX658325 / KX658023 / - / - / -

592	*P. tauricus tauricus*	NHMC 80.3.50.217	Crimea – SE coast, Karadagh Reserve, Mt. Malyi Karadagh, Theodosia territory	Present Study	KX658326 / KX658024 / - / - / -
593	*P. tauricus tauricus*	NHMC 80.3.50.218	Crimea – Tarkhankutskyi Peninsula, 5,5km to N-NW from village Olenevka, locality Dzhanghul', Chernomorskoe Distr..	Present Study	KX658327 / KX658025 / - / - / -
594	*P. tauricus tauricus*	NHMC 80.3.50.220	Crimea – extreme western part of Southern Coast, 1,5 km to SE from town of Balaclava, loc. Micro–Yalo, Sevastopol territory.	Present Study	KX658328 / KX658026 / - / - / -
612	*P. tauricus tauricus*	NHMC 80.3.50.189	Greece – Thessaloniki – Mavrouda	Present Study	KX658329 / KX658027 / - / - / -
626	*P. tauricus ionicus*	NHMC 80.3.50.223	Albania – Kodër	Present Study	KX658330 / KX658028 / - / - / -
627	*P. tauricus ionicus*	NHMC 80.3.50.224	Albania – Kodër	Present Study	KX658331 / KX658029 / - / - / -
628	*P. tauricus tauricus*	NHMC 80.3.50.225	FYROM – Vitachevo, S of Kavadarci	Present Study	KX658332 / KX658030 / - / - / -
629	*P. tauricus tauricus*	NHMC 80.3.50.226	Bulgaria – Gotse Delchev	Present Study	KX658333 / KX658031 / - / - / -
630	*P. tauricus tauricus*	NHMC 80.3.50.227	Bulgaria – Damyanica	Present Study	KX658334 / KX658032 / - / - / -
631	*P. tauricus tauricus*	NHMC 80.3.50.228	Bulgaria – Arkutino, sand dunes	Present Study	KX658335 / KX658033 / - / - / -
632	*P. tauricus tauricus*	NHMC 80.3.50.229	Bulgaria – Balgari	Present Study	KX658336 / KX658034 / - / - / -
633	*P. tauricus tauricus*	NHMC 80.3.50.230	Bulgaria – Malko Tarnovo	Present Study	KX658337 / KX658035 / - / - / -
634	*P. tauricus tauricus*	NHMC 80.3.50.231	FYROM – Vitachevo, S of Kavadarci	Present Study	KX658338 / KX658036 / - / - / -
637	*P. tauricus tauricus*	NHMC 80.3.50.234	Hungary – Kunpeszér	Present Study	KX658339 / KX658037 / - / - / -
643	*P. tauricus ionicus*	NHMC 80.3.50.235	Albania – Golemaj	Present Study	KX658340 / KX658038 / KX658509 / KX658562 / KX658615
644	*P. tauricus ionicus*	NHMC 80.3.50.236	Albania – Golemaj	Present Study	KX658341 / KX658039 / - / - / -
645	*P. tauricus ionicus*	NHMC 80.3.50.237	Albania – Vagalat	Present Study	KX658342 / KX658040 / - / - / -
646	*P. tauricus ionicus*	NHMC 80.3.50.238	Albania – Vagalat	Present Study	KX658343 / KX658041 / - / - / -
647	*P. tauricus ionicus*	NHMC 80.3.50.239	Albania – Vagalat	Present Study	KX658344 / KX658042 / - / - / -
648	*P. tauricus ionicus*	NHMC 80.3.50.240	Albania – Kodër	Present Study	KX658345 / KX658043 / - / - / -
649	*P. tauricus ionicus*	NHMC 80.3.50.241	Albania – Vagalat	Present Study	KX658346 / KX658044 / - / - / -
650	*P. tauricus ionicus*	NHMC 80.3.50.242	Albania – Halo	Present Study	KX658347 / KX658045 / - / - / -
651	*P. tauricus*	NHMC	Hungary – Bugac	Present Study	KX658348 / KX658046 / - / - / -

	tauricus	80.3.50.243			
652	*P. tauricus tauricus*	NHMC 80.3.50.244	Hungary – Bugac	Present Study	KX658349 / KX658047 / - / - / -
653	*P. tauricus tauricus*	NHMC 80.3.50.245	Hungary – Bugac	Present Study	KX658350 / KX658048 / - / - / -
654	*P. tauricus ionicus*	NHMC 80.3.50.246	Albania – Kodër	Present Study	KX658351 / KX658049 / - / - / -
659	*P. tauricus tauricus*	NHMC 80.3.50.248	Serbia – Crnovska River	Present Study	KX658352 / KX658050 / - / - / -
660	*P. tauricus tauricus*	NHMC 80.3.50.249	Turkey – Keşan	Present Study	KX658353 / KX658051 / - / - / -
661	*P. tauricus tauricus*	NHMC 80.3.50.250	Turkey – paragem II pedras berma estrada	Present Study	KX658354 / KX658052 / - / - / -
662	*P. tauricus tauricus*	NHMC 80.3.50.251	Crimea – Mt. Yuzhnaya Demerdżhi, Alushta territory	Present Study	KX658355 / KX658053 / - / - / -
663	*P. tauricus tauricus*	NHMC 80.3.50.232 (HNHM-HER_2014.2.1)**	Hungary – Kiskunság – Kunpeszér	Present Study	KX658356 / KX658054 / - / - / -
664	*P. tauricus tauricus*	NHMC 80.3.50.233 (HNHM-HER_2010.68.1)**	Hungary – Kiskunság – Kunpeszér	Present Study	KX658357 / KX658055 / - / - / -
712	*P. tauricus ionicus*	NHMC 80.3.50.252	Greece – Aitoloakarnania – Trichonida lake	Present Study	KX658358 / KX658056 / KX658510 / KX658563 / KX658616
713	*P. tauricus ionicus*	NHMC 80.3.50.253	Greece – Aitoloakarnania – Trichonida lake	Present Study	KX658359 / KX658057 / KX658511 / KX658564 / KX658617
714	*P. tauricus ionicus*	NHMC 80.3.50.254	Greece – Korinthia – Ancient Feneos	Present Study	KX658360 / KX658058 / - / - / -
715	*P. tauricus ionicus*	NHMC 80.3.50.255	Greece – Korinthia – Ancient Feneos	Present Study	KX658361 / KX658059 / - / - / -
716	*P. tauricus ionicus*	NHMC 80.3.50.256	Greece – Korinthia – Ancient Feneos	Present Study	KX658362 / KX658060 / - / - / -
717	*P. tauricus ionicus*	NHMC 80.3.50.257	Greece – Korinthia – Ancient Feneos	Present Study	KX658363 / KX658061 / - / - / -
718	*P. tauricus ionicus*	NHMC 80.3.50.258	Greece – Korinthia – Ancient Feneos	Present Study	KX658364 / KX658062 / KX658512 / KX658565 / KX658618
719	*P. tauricus tauricus*	NHMC 80.3.50.259	Bulgaria – Ladarevo	Present Study	KX658365 / KX658063 / - / - / -
720	*P. tauricus tauricus*	NHMC 80.3.50.260	Bulgaria – Sozopol	Present Study	KX658366 / KX658064 / - / - / -
721	*P. tauricus tauricus*	NHMC 80.3.50.261	Serbia – Prohor Pčinjski	Present Study	KX658367 / KX658065 / - / - / -
726	*P. tauricus tauricus*	NHMC 80.3.50.266	FYROM – Pretor, Lake Prespa	Present Study	KX658368 / KX658066 / - / - / -
727	*P. tauricus tauricus*	NHMC 80.3.50.267	FYROM – Pretor, Lake Prespa	Present Study	KX658369 / KX658067 / - / - / -
728	*P. tauricus tauricus*	NHMC 80.3.50.268	FYROM – Pretor, Lake Prespa	Present Study	KX658370 / KX658068 / - / - / -
730	*P. tauricus tauricus*	NHMC 80.3.50.270	FYROM – Pretor, Lake Prespa	Present Study	KX658371 / KX658069 / - / - / -
732	*P. tauricus tauricus*	NHMC 80.3.50.272	Albania – Lin	Present Study	KX658372 / KX658070 / - / - / -
733	*P. tauricus tauricus*	NHMC 80.3.50.273	Albania – Lin	Present Study	KX658373 / KX658071 / - / - / -
738	*P. tauricus tauricus*	NHMC 80.3.50.278	Greece – Florina – Prespes lakes	Present Study	KX658374 / KX658072 / - / - / -

739	*P. tauricus tauricus*	NHMC 80.3.50.279	Greece – Florina – Prespes lakes	Present Study	KX658375 / KX658073 / - / - / -
740	*P. tauricus tauricus*	NHMC 80.3.50.280	Greece – Florina – Prespes lakes	Present Study	KX658376 / KX658074 / - / - / -
741	*P. tauricus tauricus*	NHMC 80.3.50.281	Greece – Florina – Prespes lakes	Present Study	KX658377 / KX658075 / - / - / -
742	*P. tauricus tauricus*	NHMC 80.3.50.282	Greece – Florina – Prespes lakes	Present Study	KX658378 / KX658076 / - / - / -
743	*P. tauricus tauricus*	NHMC 80.3.50.283	Greece – Florina – Prespes lakes	Present Study	KX658379 / KX658077 / - / - / -
744	*P. tauricus tauricus*	NHMC 80.3.50.284	Greece – Florina – Prespes lakes	Present Study	KX658380 / KX658078 / - / - / -
745	*P. tauricus tauricus*	NHMC 80.3.50.285	Greece – Florina – Prespes lakes	Present Study	KX658381 / KX658079 / - / - / -
746	*P. tauricus tauricus*	NHMC 80.3.50.286	Greece – Florina – Prespes lakes	Present Study	KX658382 / KX658080 / - / - / -
747	*P. tauricus tauricus*	NHMC 80.3.50.287	Greece – Florina – Prespes lakes	Present Study	KX658383 / KX658081 / KX658513 / KX658566 / KX658619
748	*P. tauricus tauricus*	NHMC 80.3.50.288	Greece – Florina – Prespes lakes	Present Study	KX658384 / KX658082 / - / - / -
749	*P. tauricus tauricus*	NHMC 80.3.50.289	Greece – Florina – Prespes lakes	Present Study	KX658385 / KX658083 / - / - / -
750	*P. tauricus tauricus*	NHMC 80.3.50.290	Greece – Florina – Prespes lakes	Present Study	KX658386 / KX658084 / - / - / -
751	*P. tauricus tauricus*	NHMC 80.3.50.291	Greece – Florina – Prespes lakes	Present Study	KX658387 / KX658085 / - / - / -
752	*P. tauricus tauricus*	NHMC 80.3.50.247	Greece – Florina – Prespes lakes, Agios Germanos	Present Study	KX658388 / KX658086 / - / - / -
759	*P. tauricus ionicus*	NHMC 80.3.50.38	Greece – Arkadia – Tripoli	Present Study	- / KX658087 / - / - / -
761	*P. tauricus ionicus*	NHMC 80.3.50.41	Greece – Aitolokarnania – Messologi, 2/39 Syntagma Evzonon	Present Study	KX658389 / KX658088 / KX658514 / KX658567 / KX658620
762	*P. tauricus ionicus*	NHMC 80.3.50.43	Greece – Korinthia – Feneos	Present Study	- / KX658089 / - / - / -
763	*P. tauricus ionicus*	NHMC 80.3.50.45	Greece – Korinthia – Stymfalia lake	Present Study	KX658390 / KX658090 / KX658515 / KX658568 / KX658621
764	*P. tauricus ionicus*	NHMC 80.3.50.46	Greece – Korinthia – Stymfalia lake	Present Study	KX658391 / KX658091 / - / - / -
765	*P. tauricus ionicus*	NHMC 80.3.50.49	Greece – Korinthia – Feneos, Doxis lake	Present Study	KX658392 / KX658092 / - / - / -
766	*P. tauricus ionicus*	NHMC 80.3.50.50	Greece – Korinthia – Feneos, Doxis lake	Present Study	KX658393 / KX658093 / - / - / -
767	*P. tauricus ionicus*	NHMC 80.3.50.51	Greece – Korinthia – Feneos, Doxis lake	Present Study	KX658394 / KX658094 / - / - / -
768	*P. tauricus ionicus*	NHMC 80.3.50.52	Greece – Korinthia – Feneos, Doxis lake	Present Study	KX658395 / KX658095 / - / - / -
769	*P. tauricus ionicus*	NHMC 80.3.50.53	Greece – Korinthia – Feneos, Doxis lake	Present Study	KX658396 / KX658096 / - / - / -
770	*P. tauricus ionicus*	NHMC 80.3.50.56	Greece – Eptanisa Islands– Zakynthos, near Keri lake	Present Study	KX658397 / KX658097 / KX658516 / KX658569 / KX658622
771	*P. tauricus ionicus*	NHMC 80.3.50.57	Greece – Eptanisa Islands– Zakynthos, in the center of the town	Present Study	KX658398 / KX658098 / - / - / -
772	*P. tauricus ionicus*	NHMC 80.3.50.58	Greece – Eptanisa Islands– Zakynthos,	Present Study	KX658399 / KX658099 / KX658517 / KX658570 /

			Chora to Argasi		KX658623
773	*P. tauricus ionicus*	NHMC 80.3.50.59	Greece – Eptanisa Islands – Zakynthos, Chora to Argasi	Present Study	KX658400 / KX658100 / - / - / -
774	*P. tauricus ionicus*	NHMC 80.3.50.60	Greece – Eptanisa Islands – Zakynthos, Kalipades region	Present Study	KX658401 / KX658101 / - / - / -
775	*P. tauricus ionicus*	NHMC 80.3.50.62	Greece – Ioannina – Nemertsika Mt. – Paliochori	Present Study	KX658402 / KX658102 / - / - / -
776	*P. tauricus tauricus*	NHMC 80.3.50.303	Greece – Florina – Prespes lakes	Present Study	KX658403 / KX658103 / - / - / -
777	*P. tauricus tauricus*	NHMC 80.3.50.304	Greece – Florina – Prespes lakes	Present Study	KX658404 / KX658104 / - / - / -
778	*P. tauricus ionicus*	NHMC 80.3.50.221	Greece – Achaia – Strofilia forest	Present Study	KX658405 / KX658105 / - / - / -
797	*P. tauricus tauricus*	NHMC 80.3.50.292	FYROM – Stenje, Prespansko jezero	Present Study	KX658406 / KX658106 / - / - / -
801	*P. tauricus ionicus*	NHMC 80.3.50.296	Albania – Cajupit pass	Present Study	KX658407 / KX658107 / - / - / -
805	*P. tauricus ionicus*	NHMC 80.3.50.300	Albania – Cajupit pass	Present Study	KX658408 / KX658108 / - / - / -
806	*P. tauricus ionicus*	NHMC 80.3.50.301	Albania – Cajupit pass	Present Study	KX658409 / KX658109 / - / - / -
815	*P. tauricus thasopulae*	NHMC 80.3.50.305	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658410 / KX658110 / - / - / -
854	*P. tauricus thasopulae*	NHMC 80.3.50.306	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658411 / KX658111 / - / - / -
855	*P. tauricus thasopulae*	NHMC 80.3.50.307	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658412 / KX658112 / - / - / -
856	*P. tauricus thasopulae*	NHMC 80.3.50.308	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658413 / KX658113 / - / - / -
857	*P. tauricus thasopulae*	NHMC 80.3.50.309	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658414 / KX658114 / KX658518 / KX658571 / KX658624
858	*P. tauricus thasopulae*	NHMC 80.3.50.310	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658415 / KX658115 / KX658519 / KX658572 / KX658625
859	*P. tauricus thasopulae*	NHMC 80.3.50.311	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	- / KX658116 / - / - / -
860	*P. tauricus thasopulae*	NHMC 80.3.50.312	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658416 / KX658117 / - / - / -
861	*P. tauricus thasopulae*	NHMC 80.3.50.313	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658417 / KX658118 / - / - / -
862	*P. tauricus thasopulae*	NHMC 80.3.50.314	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658418 / KX658119 / - / - / -
863	*P. tauricus thasopulae*	NHMC 80.3.50.315	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658419 / KX658120 / - / - / -
864	*P. tauricus tauricus*	NHMC 80.3.50.316	Greece – Nestos – Keramoti	Present Study	KX658420 / KX658121 / - / - / -
865	*P. tauricus tauricus*	NHMC 80.3.50.317	Greece – Nestos – Keramoti	Present Study	KX658421 / KX658122 / KX658520 / KX658573 / KX658626

866	*P. tauricus thasopulae*	NHMC 80.3.50.318	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658422 / KX658123 / - / - / -
867	*P. tauricus thasopulae*	NHMC 80.3.50.319	Greece – Kavala, Thasos Isl. – Thasopoula islet	Present Study	KX658423 / KX658124 / - / - / -
870	*P. tauricus tauricus*	NHMC 80.3.50.334	Greece – Florina – Petron lake	Present Study	KX658424 / KX658125 / - / - / -
871	*P. tauricus tauricus*	NHMC 80.3.50.335	Greece – Florina – Cheimaditida lake to Zazari lake	Present Study	KX658425 / KX658126 / - / - / -
872	*P. tauricus tauricus*	NHMC 80.3.50.336	Greece – Pella – Agra lake	Present Study	KX658426 / KX658127 / KX658521 / KX658574 / KX658627
873	*P. tauricus ionicus*	NHMC 80.3.50.337	Greece – Ioannina – island of Ioannina lake	Present Study	KX658427 / KX658128 / - / - / -
874	*P. tauricus ionicus*	NHMC 80.3.50.338	Greece – Ioannina – Ioannina University, building E1	Present Study	KX658428 / KX658129 / - / - / -
875	*P. tauricus ionicus*	NHMC 80.3.50.339	Greece – Ioannina – Mitsikeli Mt., Liggiades	Present Study	KX658429 / KX658130 / - / - / -
876	*P. tauricus ionicus*	NHMC 80.3.50.340	Greece – Ioannina – Zagori, Mesovouni	Present Study	KX658430 / KX658131 / - / - / -
877	*P. tauricus ionicus*	NHMC 80.3.50.341	Greece – Ioannina – Dodoni	Present Study	KX658431 / KX658132 / - / - / -
878	*P. tauricus ionicus*	NHMC 80.3.50.342	Greece – Ioannina – Zagori, Dilofo, Agios Minas	Present Study	KX658432 / KX658133 / KX658522 / KX658575 / KX658628
879	*P. tauricus ionicus*	NHMC 80.3.50.343	Greece – Ioannina – Konitsa	Present Study	KX658433 / KX658134 / KX658523 / KX658576 / KX658629
880	*P. tauricus ionicus*	NHMC 80.3.50.344	Greece – Ioannina – opposite of the island of Ioannina lake	Present Study	KX658434 / KX658135 / - / - / -
881	*P. tauricus tauricus*	NHMC 80.3.50.345	Greece – Evros – Feres, 5km SE	Present Study	KX658435 / KX658136 / - / - / -
882	*P. tauricus tauricus*	NHMC 80.3.50.346	Greece – Evros – Treis Vryses	Present Study	KX658436 / KX658137 / - / - / -
883	*P. tauricus ionicus*	NHMC 80.3.50.347	Greece – Achaia – Klokos Mt.	Present Study	KX658437 / KX658138 / KX658524 / KX658577 / KX658630
884	*P. tauricus ionicus*	NHMC 80.3.50.320	Greece – Arkadia – Kosmas	Present Study	KX658438 / KX658139 / - / - / -
885	*P. tauricus ionicus*	NHMC 80.3.50.321	Greece – Arkadia – Kosmas	Present Study	KX658439 / KX658140 / KX658525 / KX658578 / KX658631
886	*P. tauricus ionicus*	NHMC 80.3.50.322	Greece – Arkadia – Kosmas	Present Study	KX658440 / KX658141 / - / - / -
887	*P. tauricus ionicus*	NHMC 80.3.50.323	Greece – Lakonia – Karyes	Present Study	KX658441 / KX658142 / KX658526 / KX658579 / KX658632
888	*P. tauricus ionicus*	NHMC 80.3.50.324	Greece – Lakonia – Karyes	Present Study	KX658442 / KX658143 / KX658527 / KX658580 / KX658633
889	*P. tauricus ionicus*	NHMC 80.3.50.325	Greece – Korinthia – Doxis lake	Present Study	KX658443 / KX658144 / - / - / -
890	*P. tauricus ionicus*	NHMC 80.3.50.326	Greece – Korinthia – Doxis lake	Present Study	KX658444 / KX658145 / - / - / -
891	*P. tauricus*	NHMC	Greece – Korinthia –	Present Study	KX658445 / KX658146 / - / - / -

	ionicus	80.3.50.327	Doxis lake		
892	*P. tauricus ionicus*	NHMC 80.3.50.328	Greece – Korinthia – Louzi	Present Study	KX658446 / KX658147 / - / - / -
893	*P. tauricus ionicus*	NHMC 80.3.50.329	Greece – Korinthia – Sikionas	Present Study	KX658447 / KX658148 / - / - / -
897	*P. tauricus ionicus*	NHMC 80.3.50.332	Greece – Argolida – Nafplio	Present Study	KX658448 / KX658149 / - / - / -
927	*P. tauricus tauricus*	NHMC 80.3.50.195	Greece – Evros – Doriskos, 2.18km S.	Present Study	KX658449 / KX658150 / - / - / -
928	*P. tauricus ionicus*	NHMC 80.3.50.61	Greece – Aitoloakarnania – Arakinthos Mt., Karitsa	Present Study	KX658450 / KX658151 / - / - / -
929	*P. tauricus ionicus*	NHMC 80.3.50.348	Greece – Eptanisa Islands – Kerkyra Isl., Sidari	Present Study	KX658451 / KX658152 / - / - / -
930	*P. tauricus ionicus*	NHMC 80.3.50.349	Greece – Eptanisa Islands – Kerkyra Isl., Sidari	Present Study	KX658452 / KX658153 / - / - / -
931	*P. tauricus ionicus*	NHMC 80.3.50.350	Greece – Eptanisa Islands – Kerkyra Isl., Sidari	Present Study	KX658453 / KX658154 / - / - / -
932	*P. tauricus ionicus*	NHMC 80.3.50.351	Greece – Eptanisa Islands – Kerkyra Isl., Sidari	Present Study	KX658454 / KX658155 / - / - / -
933	*P. tauricus ionicus*	NHMC 80.3.50.352	Greece – Eptanisa Islands – Kerkyra Isl., Sidari	Present Study	KX658455 / KX658156 / - / - / -
934	*P. tauricus ionicus*	NHMC 80.3.50.353	Greece – Eptanisa Islands – Kerkyra Isl., Sidari	Present Study	KX658456 / KX658157 / - / - / -
935	*P. tauricus ionicus*	NHMC 80.3.50.354	Greece – Eptanisa Islands – Kerkyra Isl., Sidari	Present Study	KX658457 / KX658158 / - / - / -
936	*P. tauricus tauricus*	NHMC 80.3.50.355	Greece – Karditsa – Mouzaki, 3km E.	Present Study	KX658458 / KX658159 / - / - / -
937	*P. tauricus tauricus*	NHMC 80.3.50.356	Serbia – Šipačina	Present Study	KX658459 / KX658160 / - / - / -
938	*P. tauricus tauricus*	NHMC 80.3.50.357	Serbia – Šipačina	Present Study	KX658460 / KX658161 / - / - / -
939	*P. tauricus tauricus*	NHMC 80.3.50.358	Kosovo – Cerajë	Present Study	KX658461 / KX658162 / - / - / -
940	*P. tauricus tauricus*	NHMC 80.3.50.359	Kosovo – Gjonaj	Present Study	KX658462 / KX658163 / - / - / -
941	*P. tauricus tauricus*	NHMC 80.3.50.360	Kosovo – Gjonaj	Present Study	KX658463 / KX658164 / - / - / -
942	*P. tauricus tauricus*	NHMC 80.3.50.361	Albania – Përbreg	Present Study	KX658464 / KX658165 / - / - / -
943	*P. tauricus tauricus*	NHMC 80.3.50.362	Albania – Lume	Present Study	KX658465 / KX658166 / - / - / -
945	*P. tauricus ionicus*	NHMC 80.3.50.367	Greece – Eptanisa Islands – Kefallonia Isl., Lixouri	Present Study	KX658466 / KX658167 / - / - / -
946	*P. tauricus ionicus*	NHMC 80.3.50.368	Greece – Eptanisa Islands – Kefallonia Isl. , Lixouri	Present Study	KX658467 / KX658168 / - / - / -
947	*P. tauricus ionicus*	NHMC 80.3.50.63	Greece – Messinia – Pamisos river, near Kalamata airport	Present Study	KX658468 / KX658169 / - / - / -
948	*P. tauricus ionicus*	NHMC 80.3.50.170	Albania – Uznovë	Present Study	KX658469 / KX658170 / - / - / -
949	*P. tauricus*	NHMC	Albania – Divjakë-	Present Study	KX658470 / KX658171 / - / - / -

	ionicus	80.3.50.171	Karavastë NP		
950	*P. tauricus ionicus*	NHMC 80.3.50.172	Albania – Divjakë-Karavastë NP	Present Study	KX658471 / KX658172 / - / - / -
951	*P. tauricus tauricus*	NHMC 80.3.50.173	Albania – Maliq	Present Study	KX658472 / KX658173 / - / - / -
952	*P. tauricus tauricus*	NHMC 80.3.50.174	Albania – Maliq	Present Study	KX658473 / KX658174 / - / - / -
953	*P. tauricus ionicus*	NHMC 80.3.50.175	Albania – Fierzë	Present Study	KX658474 / KX658175 / - / - / -
625	*P. waglerianus*	NHMC 80.3.150.1	Italy – Sicilia – castle dona fiorata	Present Study	KX658475 / KX658176 / KX658528 / KX658581 / KX658634
-	*P. bocagei*	Gpb6	Spain – Lugo	(Pinho et al., 2006) (16S rRNA) / (Harris and Sá-Sousa, 2002) (cyt *b*)	DQ081075 / AF469426 / - / - / -
-	*P. bocagei*	Sar1	Spain – Lugo	(Pinho et al., 2010) (MC1R) / (Pereira et al., 2013) (Pod55 & Pod15b)	- / - / GU180961 / KC681232 / KC681696
-	*P. bocagei*	MP3	Portugal – Porto – Madalena	(Pinho et al., 2006) (16S rRNA) / (Harris and Sá-Sousa, 2002) (cyt *b*)	DQ081076 / AF469424 / - / - / -
-	*P. bocagei*	Vair5	Portugal – Porto – Vairao	(Pinho et al., 2010)	- / - / GU180965 / - / -
-	*P. bocagei*	3.120	Portugal – Porto – Madalena	(Pereira et al., 2013)	- / - / - / KC681228 / KC681693
-	*P. filfolensis*	Fil01	Malta – Comino	(Buades et al., 2013)	- / JX852112 / - / - / -
-	*P. filfolensis*	12_1	Malta – Comino	(Salvi et al., 2014)	- / - / KJ027748 / KJ027908 / KJ027961
-	*P. filfolensis*	Fil02	Malta – Maltese archipelago	(Rodríguez et al., 2013)	- / KF022052 / - / - / -
-	*P. filfolensis*	17_2	Malta – Malta Isl. – Balzan	(Salvi et al., 2014)	- / - / KJ027769 / KJ027930 / KJ027975
052	*P. gaigeae gaigeae*	NHMC 80.3.56.34	Greece – Sporades, Skyros Isl. – Kochylas Mt.	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768731 / AY768767 / - / - / -
199	*P. gaigeae gaigeae*	NHMC 80.3.56.11	Greece – Sporades, Skyros Isl. – Mesa Diavatis islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY76879 / AY768765 / - / - / -
200	*P. gaigeae gaigeae*	NHMC 80.3.56.14	Greece – Sporades, Skyros Isl. – Sarakino islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768737 / AY768773 / - / - / -
202	*P. gaigeae gaigeae*	NHMC 80.3.56.29	Greece – Sporades, Skyros Isl. – Koulouri islet	(Poulakakis et al., 2005b) (16S rRNA) /	AY768730 / AY768766 / - / - / -

				(Poulakakis et al., 2005a) (cyt *b*)	
203	*P. gaigeae gaigeae*	NHMC 80.3.56.25	Greece – Sporades, Skyros Isl. – Lakonisi islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768732 / AY768768 / - / - / -
204	*P. gaigeae gaigeae*	NHMC 80.3.56.16	Greece – Sporades, Skyros Isl. – Rineia islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768717 / AY768772 / - / - / -
205	*P. gaigeae gaigeae*	NHMC 80.3.56.22	Greece – Sporades, Skyros Isl. – Skyropoula islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768738 / AY768774 / - / - / -
207	*P. gaigeae weigandi*	NHMC 80.3.56.38	Greece – Sporades – Piperi islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768734 / AY768770 / - / - / -
-	*P. melisellensis*	BIS3	Croatia – Vis archipelago - Biševo Island	(Podnar et al., 2004)	AY185019 / AY185062 / - / - / -
-	*P. melisellensis*	BRU1	Croatia – Vis archipelago - Brusnik islet	(Podnar et al., 2004)	AY185017 / AY185057 / - / - / -
-	*P. melisellensis*	CAV	Croatia – Cavtat	(Podnar et al., 2004)	AY185012 / AY185023 / - / - / -
-	*P. melisellensis*	GLA	Croatia – Lastovo archipelago - Glavat islet	(Podnar et al., 2004)	AY185014 / AY185042 / - / - / -
-	*P. melisellensis*	HVA	Croatia – Hvar Island	(Podnar et al., 2004)	AY185011 / AY185020 / - / - / -
-	*P. melisellensis*	JAB1	Croatia – Vis archipelago - Jabuka islet	(Podnar et al., 2004)	AY185018 / AY185097 / - / - / -
-	*P. melisellensis*	KCA	Croatia – Korčula Island	(Podnar et al., 2004)	AY185013 / AY185028 / - / - / -
-	*P. melisellensis*	KOR	Croatia – Istria – Koromačno	(Podnar et al., 2004)	AY185010 / AY185029 / - / - / -
-	*P. melisellensis*	LAS1	Croatia – Lastovo Island	(Podnar et al., 2004)	AY185015 / AY185036 / - / - / -
-	*P. melisellensis*	NCGC1	Montenegro – Budva	(Podnar et al., 2014)	- / KF373650 / - / - / -
-	*P. melisellensis*	NCGCL1	Montenegro – Mt. Lovćen	(Podnar et al., 2014)	- / KF373651 / - / - / -
-	*P. melisellensis*	NHJS1	Bosnia and Herzegovina – Ramsko lake	(Podnar et al., 2014)	- / KF373649 / - / - / -
-	*P. melisellensis*	PUR	Croatia – Kornati archipelago - Purara islet	(Podnar et al., 2004)	AY185009 / AY185052 / - / - / -
-	*P. melisellensis*	VZP	Croatia – Vis Island - Zlopolje	(Podnar et al., 2004)	AY185016 / AY185097 / - / - / -
054	*P. milensis*	NHMC 80.3.52.3	Greece – Kyklades –	(Poulakakis et	AY768740 / AY768776 / - / - / -

	milensis		Milos Isl. – Agios Efstathios islet	al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	
132	*P. muralis*	NHMC 80.3.53.45	Greece – Larissa – Kisavos Mt.	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2003) (cyt *b*)	AY896181 / AF486232 / - / - / -
-	*P. muralis*	MTA1	Spain – Asturias – Tanes	(Pinho et al., 2006)	DQ081106 / DQ081150 / - / - / -
-	*P. muralis*	DB8970	Spain – Asturias – Tanes	(Salvi et al., 2013)	- / - / KF372123 / - / -
-	*P. muralis*	Tan11	Spain – Asturias – Tanes	(Pereira et al., 2013)	- / - / - / KC681277 / KC681728
-	*P. siculus*	Lucania	Italy – Vallo della Lucania	(Podnar et al., 2005)	AY770912 / AY770886 / - / - / -
168	*P. tauricus ionicus*	NHMC 80.3.50.22	Greece – Eptanisa Islands – Kerkyra Isl.	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768714 / AY768750 / - / - / -
175	*P. tauricus ionicus*	NHMC 80.3.50.20	Greece – Eptanisa Islands – Zakynthos Isl.	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768728 / AY768764 / - / - / -
176	*P. tauricus tauricus*	NHMC 80.3.50.35	Greece – Florina, Niki	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768711 / AY768747 / - / - / -
181	*P. tauricus ionicus*	NHMC 80.3.50.18	Greece – Achaia, Kalavryta	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768712 / AY768748 / - / - / -
182	*P. tauricus ionicus*	NHMC 80.3.50.17	Greece – Arkadia, Dimitsana	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768708 / AY768744 / - / - / -
196	*P. tauricus ionicus*	NHMC 80.3.50.15	Greece – Aitoloakarnania, Agrinio	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt b)	AY768706 / AY768742 / - / - / -
197	*P. tauricus ionicus*	NHMC 80.3.50.21	Greece – Arkadia, Vytina	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768727 / AY768721 / - / - / -
208	*P. tauricus*	NHMC 80.3.50.2	Greece – Ioannina,	(Poulakakis et	AY768726 / AY768762 / - / - / -

	ionicus		Theriakisi	al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	
220	*P. tauricus ionicus*	NHMC 80.3.50.23	Greece – Arkadia, Levidi	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768717 / AY768753 / - / - / -
224	*P. tauricus thasopulae*	NHMC 80.3.50.33	Greece – Kavala, Thasos Isl. – Thasopoula islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768723 / AY768759 / - / - / -
225	*P. tauricus thasopulae*	NHMC 80.3.50.36	Greece – Kavala, Thasos Isl. – Thasopoula islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt *b*)	AY768724 / AY768760 / - / - / -
227	*P. tauricus thasopulae*	NHMC 80.3.50.32	Greece – Kavala, Thasos Isl. – Thasopoula islet	(Poulakakis et al., 2005b) (16S rRNA) / (Poulakakis et al., 2005a) (cyt b)	AY768725 / AY768761 / - / - / -
233	*P. tauricus ionicus*	NHMC 80.3.50.1	Greece – Ileia – Strofilia near to Kalogria	(Poulakakis et al., 2005a)	AY768721 / AY768757 / - / - / -
-	*P. tiliguerta*	Til01	France – Corsica – Padodell	(Buades et al., 2013)	- / JX852113 / - / - / -
-	*P. tiliguerta*	Tp1	France – Corsica – Padodell	(Buades et al., 2013)	- / - / JX126692 / - / -
-	*P. tiliguerta*	PT6	France – North Corsica	(Pereira et al., 2013)	- / - / - / KC681281 / KC681736
-	*P. tiliguerta*	Til02	France – Corsica – Padodell	(Buades et al., 2013)	- / JX852114 / - / - / -
-	*P. tiliguerta*	Tf2	France – Corsica – Padodell	(Buades et al., 2013)	- / - / JX126691 / - / -
-	*P. tiliguerta*	PT5	France – Corsica – Solenzarea	(Pereira et al., 2013)	- / - / - / KC681283 / KC681735
-	*Atlantolacerta andreanskyi*	LN-4	Morocco – Jebel Toupkal	(Pavlicev and Mayer, 2009)	AF206603 / AF206537 / - / - / -
-	*Lacerta agilis*	NHMC 80.3.64.3	Greece – Makedonia – Drama	(Sagonas et al., 2014)	KJ940218 / KJ940307 / - / - / -
-	*Lacerta agilis*	Lagi1	Spain	(Nunes et al., 2011)	- / - / JF732966 / - / -
-	*Teira dugesii*	DG-18	Portugal – Madeira	(Pavlicev and Mayer, 2009)	GQ142096 / GQ142121 / - / - / -

* Deposited in the National Museum of Prague (NMP)
** Deposited in the Hungarian Natural History Museum (HNHM)

Supplementary Table S2.

Dataset	Analysis	
	Bayesian Inference (MrBayes)	**Maximum Likelihood** (RAxML)
mtDNA (16S rRNA & cyt *b*)	**1.** cyt *b*_pos1 - GTR+G **2.** 16S rRNA, cyt *b*_pos2 - GTR+G **3.** cyt *b*_pos3 - HKY+I	**1.** cyt *b*_pos1 - GTR+G **2.** 16S rRNA, cyt *b*_pos2, cyt *b*_pos3 - GTR+G
nDNA (MC1R, Pod55, Pod15b)	**1.** MC1R_pos1, Pod55 - K80+I **2.** MC1R_pos2 - F81 **3.** MC1R_pos3 - HKY+G **4.** Pod15b - K80+G	**1.** MC1R_pos1, MC1R_pos2, Pod55 - GTR+G **2.** MC1R_pos3 - GTR+G **3.** Pod15b - GTR+G
Concatenated (16S rRNA & cyt *b*, MC1R, Pod55, Pod15b)	**1.** 16S rRNA, cyt *b*_pos2 - GTR+G **2.** cyt *b*_pos1 - GTR+I **3.** MC1R_pos1, Pod55, cyt *b*_pos3 - HKY+I **4.** MC1R_pos2 - F81 **5.** MC1R_pos3 - HKY+G **6.** Pod15b - K80+G	**1.** 16S rRNA, cyt *b*_pos2 - GTR+G **2.** cyt *b*_pos1 - GTR+G **3.** MC1R_pos1, MC1R_pos2, Pod55, cyt *b*_pos3 - GTR+G **4.** MC1R_pos3 - GTR+G **5.** Pod15b - GTR+G