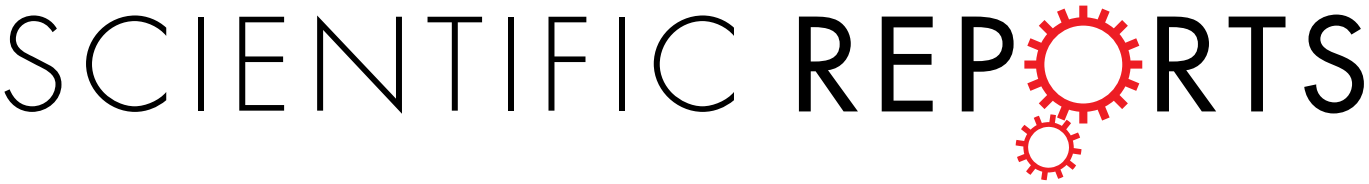

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Hybridization patterns in two contact zones of grass snakes reveal a new Central European snake species

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Recent studies found major conflicts between traditional taxonomy and genetic differentiation of grass snakes and identified previously unknown secondary contact zones. Until now, little is known about gene flow across these contact zones. Using two mitochondrial markers and 13 microsatellite loci, we examined two contact zones. One, largely corresponding to the Rhine region, involves the western subspecies *Natrix natrix helvetica* and the eastern subspecies *N. n. natrix*, whereas in the other, more easterly, contact zone two lineages meet that are currently identified with *N. n. natrix* and *N. n. persa*. This second contact zone runs across Central Europe to the southern Balkans. Our analyses reveal that the western contact zone is narrow, with parapatrically distributed mitochondrial lineages and limited, largely unidirectional nuclear gene flow. In contrast, the eastern contact zone is very wide, with massive nuclear admixture and broadly overlapping mitochondrial lineages. In combination with additional lines of evidence (morphology, phylogeny, divergence times), we conclude that these differences reflect different stages in the speciation process and that *Natrix helvetica* should be regarded as a distinct species. We suggest a nomenclatural framework for presently recognized grass snake taxa and highlight the need for reconciling the conflicts between genetics and taxonomy.

Even though species delimitation became a Renaissance issue in zoology, with new approaches being developed for assessing species boundaries[1–5], the validity of many approaches largely depends on the underlying species concept. Currently, there are more than 30 species concepts distinguished, with an ever increasing number[6]. While the application of different concepts lead to a taxonomic inflation for some regions and some groups, the number of Central European vertebrate species remained generally stable, suggesting their diversity is well understood. An exception to that rule might be bats[7,8]. With respect to Central European snakes, the number of recognized species did not change for more than a century[9–15], even though some southern European taxa, like *Elaphe sauromates*[16], *Macroprotodon brevis* and *M. mauritanicus*[17,18], *Malpolon insignitus*[19], *Natrix astreptophora*[20], *Vipera graeca*[21], and *Zamenis lineatus*[22], have been elevated to species status within the last two decades and a new species of viper (*Vipera walser*) has been recently discovered in the Alps[23].

Grass snakes (*Natrix natrix* sensu lato) are the most abundant and one of the most widely distributed snake species of the Palaearctic region[24,25]. For a long time, little was known about their genetic and phylogeographic structuring. Based on external morphology, many subspecies have traditionally been recognized[25,26], suggestive of pronounced phylogeographic structuring. Indeed, in a pioneering nearly range-wide study using mitochondrial DNA (mtDNA), not less than 16 distinct genetic lineages were identified[26]. However, the majority of these lineages conflicts with previously recognized subspecies and only two lineages match with morphologically defined taxa. In phylogenetic analyses, these lineages correspond to 16 terminal clades that cluster in three major

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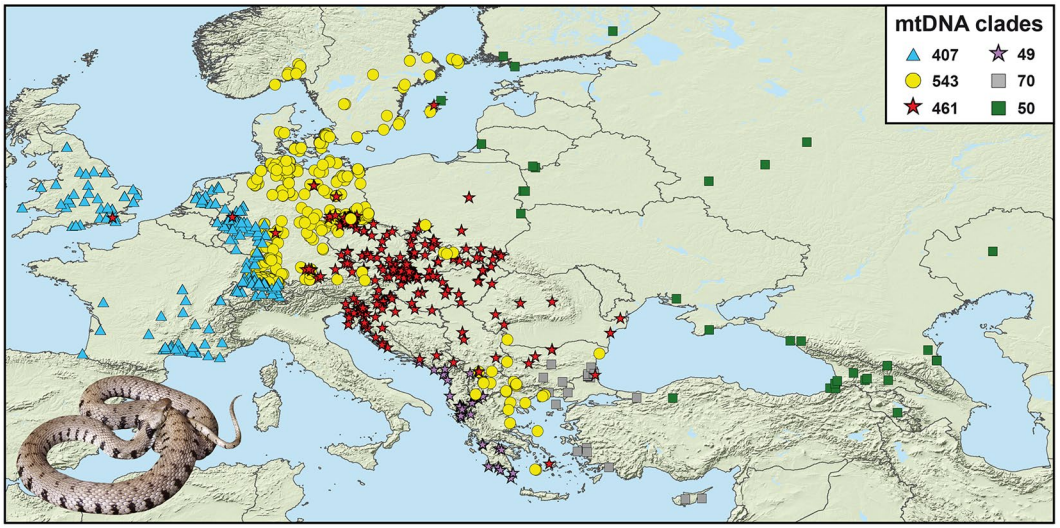

Figure 1. Distribution of mitochondrial lineages of 1,580 grass snakes used in this study. Total sample size of each clade shown in the legend. Eight allochthonous grass snakes with haplotypes of Italian lineages caught in southern Great Britain and Hesse, Germany, not shown. Map was created using ARCGIS 10.2 (http://www.esri.com/arcgis) and ADOBE ILLUSTRATOR CS6 (http://www.adobe.com/products/illustrator.html). Inset: *Natrix natrix helvetica* (Linz am Rhein, Germany); photo: Wolfgang Böhme.

clades (Supplementary Fig. S1). One of these major clades matches with the Ibero-Maghrebian taxon *astreptophora*, which had traditionally been recognized as a subspecies of *N. natrix*. In the face of virtually lacking gene flow with the geographically neighbouring taxon (*N. n. helvetica*) and concordant morphological and genetic evidence, Ibero-Maghrebian grass snakes have recently been split off as the distinct species *N. astreptophora*[20].

In agreement with earlier morphological investigations[27], the recent phylogeographic assessment of grass snakes[26] revealed a contact zone of two deeply divergent mitochondrial lineages for the Rhine region, with an unexpectedly clear-cut parapatric distribution pattern. The involved lineages match with what is currently identified with *N. n. helvetica* and *N. n. natrix*. Another unexpected discovery was that the distribution ranges of *N. n. natrix* in Central Europe and *N. n. persa* in the Balkan Peninsula comprise a previously unknown, more easterly located, contact zone of two distinct lineages, which conflict with morphological taxon delimitation and occur across the distribution ranges of *N. n. natrix* and *N. n. persa*[26]. In contrast to the situation in the Rhine region, the haplotypes of these two eastern lineages occur in wide sympatry and represent lineages that are placed in phylogenetic analyses in the same major clade, while the mitochondrial lineage of *N. n. helvetica* belongs to another one of the three major clades (Supplementary Fig. S1). According to molecular clock calculations[28], the clade containing *N. n. helvetica* diverged from the eastern lineages 7.3–8.2 million years ago, while the two eastern lineages are with 5.1–5.9 million years significantly younger.

The present study aims at examining and comparing differentiation and gene flow across the two contact zones of genetic lineages of different age and phylogenetic hierarchy. For doing so, the previous sampling[26] was increased fourfold and mitochondrial DNA data (1,983 bp) were combined with evidence from 13 highly polymorphic nuclear microsatellite loci.

Materials and Methods

Sampling and laboratory procedures. The focus of the present study lies on two contact zones of distinct genetic lineages of grass snakes (Fig. 1), one in the Rhine region, involving *Natrix natrix helvetica* ('blue lineage') and the nominotypical subspecies ('yellow lineage') and another contact zone further in the east, which was identified for the first time in a previous study[26]. This second contact zone runs across Central Europe to the southern Balkans and concerns two genetic lineages ('red' and 'yellow lineages'), which occur within the distribution ranges of *N. n. natrix* and *N. n. persa*. However, neither of these subspecies is congruent with the two genetic lineages, and both lineages occur within the range of either taxon and beyond, suggesting that a taxonomic revision is required[26]. Only one of these lineages, the 'yellow lineage', occurs naturally in the Rhine region, i.e. in the contact zone with *N. n. helvetica*.

In total, 1,603 samples (shed skins, saliva samples, tissues from roadkills and museum specimens) were used in the present study. No snakes were sacrificed for the present study. All sampling and methods were carried out in accordance with relevant guidelines, regulations and best ethical and experimental practice of the Senckenberg Nature Research Society. Two mitochondrial DNA fragments (partial ND4 gene plus adjacent DNA coding for tRNAs = ND4 + tRNAs, below termed for simplicity ND4, and cytochrome *b* gene = cyt *b*) were sequenced (866 bp and 1,117 bp, respectively). Mitochondrial sequences of 391 specimens were available from previous studies[20,26,29] and merged with new data for 1,197 grass snakes. For 15 samples, mtDNA could not be sequenced. In addition, samples were genotyped at 13 polymorphic nuclear microsatellite loci. Laboratory procedures for mtDNA and microsatellites followed previous studies[20,26]. The microsatellite data of 1,484 samples included those

for 31 grass snakes from a previous study[20]. For 119 samples, for which mtDNA sequences were available, no microsatellite data could be generated. Approximately 200 samples from Switzerland were studied in the laboratory of the University of Basel, whereas the majority of samples was processed in the laboratory of Senckenberg Dresden. Fragment lengths of the two data sets were calibrated using 31 samples processed in both laboratories. For detailed sample information, see Supplementary Table S1.

Mitochondrial sequence analyses and networks. Mitochondrial sequences were aligned using BIOEDIT 7.0.9.0[30], resulting in an 866-bp-long alignment of 1,550 ND4 sequences and an 1,117-bp-long alignment of 1,313 cyt *b* sequences. The mitochondrial lineage of each new sample was identified by running exploratory Maximum Likelihood (ML) analyses using RAXML 7.2.8[31] including previously published data[20,26,29], the GTR + G model and a fast ML search with 100 bootstrap values. Then, for the lineages involved in the studied contact zones, alignments of each mtDNA block were examined using POPART (http://popart.otago.ac.nz) and the implemented parsimony network algorithm of TCS[32]. Based on haplotypes, uncorrected *p* distances (means) were calculated using MEGA 7.0.21[33] and the pairwise deletion option.

Genetic cluster analysis, inferring hybrid status and PCA. All 13 microsatellite loci were tested for Hardy-Weinberg equilibrium (HWE) and linkage equilibrium using ARLEQUIN 3.5.1.2[34]. The presence of null alleles was examined using MICRO-CHECKER 2.2.3[35]. There was no evidence for linkage disequilibrium, null alleles or a deviation from HWE. Microsatellite data were then analyzed with the unsupervised Bayesian clustering approach of STRUCTURE 2.3.4[36,37] using the admixture model and correlated allele frequencies. STRUCTURE searches in the data set for partitions that are, as far as possible, in linkage equilibrium and HWE. The Monte Carlo Markov chains ran for 1 million generations, including a burn-in of 250,000 generations. Calculations were repeated ten times for *K*s ranging from 1 to 10. The optimal number of clusters was determined using the ΔK method[38] with the software STRUCTURE HARVESTER[39]. STRUCTURE results were visualized using DISTRUCT 1.1[40].

In the southern Balkans and the Baltic Sea region, additional genetic lineages occur[26,29]. These lineages are expected to contribute to nuclear genomic admixture, which is why a stepwise approach was applied to assess their genetic impact and to single out the extent of admixture between the red and yellow lineages. This approach takes into account that STRUCTURE is known to identify only the uppermost hierarchical level of genetic partitioning[38], i.e. the clusters reflect the most differentiated genetic units. Accordingly, a first calculation comprising all available samples resulted in two clusters, one corresponding to *helvetica* (blue lineage) and the other to all other lineages.

To explore which individuals represent *helvetica* hybrids, hybrid genotypes were modelled using HYBRIDLAB 1.0[41]. For doing so, 20 non-admixed representatives of each lineage occurring in the Rhine contact zone were selected (blue and yellow lineages) as pure parental genotypes. Using these data, 20 genotypes of each hybrid class (F_1, F_2 and two backcrosses) were inferred and the simulated hybrid data were then subjected to STRUCTURE analyses, together with the data of the 20 pure grass snakes of each cluster, to obtain a threshold for *Q* values for distinguishing pure animals, hybrids and backcrosses. Based on this threshold, all genotypes with genetic impact of *helvetica* were removed and a second STRUCTURE run included then only the remaining samples. With this run, admixture of the red and yellow lineages with the other geographically neighbouring lineages (lilac, grey, and green lineages; Fig. 1) was explored. Then, all samples with an impact from other lineages > 5% were eliminated and the remaining data (only red and yellow genotypes and their hybrids) were subjected to another STRUCTURE run. This data set was also examined using HYBRIDLAB to distinguish pure and hybrid samples. For this HYBRIDLAB run, samples from geographically distant populations were selected that originated in regions where either only the red or the yellow lineage occurs (Scandinavia vs. Austria and Slovakia).

In addition, for the microsatellite data of the STRUCTURE clusters, population genetic diversity values, pairwise F_{ST} values and Analyses of Molecular Variance (AMOVAs) were calculated using CONVERT 1.31[42], ARLEQUIN[34] and FSTAT 2.9.3.2[43]. Admixed individuals were excluded.

Microsatellite data were also examined using Principal Component Analyses (PCA) as implemented in the R package ADEGENET[44] to assess the distinctiveness of the genetic lineages without underlying population genetic presumptions. Two different PCAs were run, one including genotypes of all samples of the blue, red and yellow lineages and their hybrids and another one with samples of the yellow and red lineage without influence of *helvetica* and the adjacent eastern lineages. Obviously introduced individuals were excluded.

Cline analyses. To examine gene flow across contact zones, cline analyses were calculated for microsatellite and mtDNA data using the R package HZAR[45]. This software fits molecular genetic data to classical equilibrium cline models using the Metropolis-Hastings Markov chain Monte Carlo algorithm. Cline fitting was performed by adding geographical information of sampling sites to genetic information. To acknowledge for mountain ranges, two transects were selected. The transect for the contact zone in the Rhine region ran from southern France to northeastern Germany (1,200 km) and the transect for the eastern contact zone, from northern Germany to northern Hungary (1,000 km). The eastern transect was not extended to the southern Balkans because the grass snakes are there genetically impacted by other genetic lineages. Using ARCGIS 10.2 (http://www.esri.com/arcgis), samples were arbitrarily pooled by dividing each transect into segments of 10 km length. Samples within 50 km left and right of each segment were assigned to one sampling unit.

For microsatellite data, the mean proportion *Q* of cluster membership (as inferred by STRUCTURE) for each pooled collection site was then calculated. For mitochondrial data, the frequency of haplotypes of the blue lineage (western contact zone) or the yellow lineage (eastern contact zone) was used. These four data sets (mtDNA and microsatellites for each contact zone) were processed independently. Using a burn-in of 10,000 iterations, followed by additional 90,000 iterations, fifteen implemented models were fitted to the mean proportions of cluster membership or haplotype frequencies. The best cline model was then selected based on the lowest AIC score

(Supplementary Table S2) and the corresponding Maximum Likelihood clines. Observed frequency data were plotted over the associated fuzzy cline regions (95% credible cline regions).

Results

Mitochondrial phylogeography and haplotypes. Our fourfold sampling (Fig. 1 and Supplementary Fig. S2) confirmed and refined previous findings[26], in particular that the blue lineage (*Natrix natrix helvetica*) meets with the yellow lineage (currently identified with *N. n. natrix*) in a secondary contact zone in the Rhine region, and that another, more easterly and much wider, contact zone of the yellow and red lineages runs across Central Europe to the Balkans. The latter two lineages are distributed within the ranges of what is currently identified with the grass snake subspecies *N. n. natrix* and *N. n. persa*, but these lineages conflict with morphology-based taxonomy so that neither the distribution ranges of the lineages and subspecies nor morphology and genetics are congruent[26]. Rather, each subspecies corresponds to several distinct mitochondrial lineages and some of these lineages are shared between the two subspecies. Thus, there is obviously a pronounced conflict between morphological variation and genetics. Whereas the geographical distribution of haplotypes of the blue and yellow lineages abuts, with virtually no sympatric occurrences (Supplementary Fig. S2), haplotypes of the yellow and red lineages widely overlap in Central Europe (Fig. 1), in a region corresponding to central, eastern and southern Germany, southern Poland, Austria, the Czech Republic, and Slovakia. However, further southeastwards, only haplotypes of the red lineage occur and in the southern Balkans, only haplotypes of the yellow lineage are recorded (Fig. 1).

While the vast majority of our 1,588 samples represents native grass snakes, there are some obvious cases of translocated individuals, like a few isolated records of the red lineage within the range of *N. n. helvetica* (Great Britain, Rhine region). One population in the Neander valley close to Düsseldorf, Germany, seems to consist exclusively of such allochthonous grass snakes and has been suspected to be introduced for a long time[46,47]. In addition to these non-native grass snakes, eight individuals of other mitochondrial lineages from the Mediterranean (Italy) were found in southern Great Britain and Hesse, Germany (not shown in Fig. 1). We cannot completely exclude that also our new record of a third mitochondrial lineage on the island of Gotland (green lineage; Fig. 1) refers to an introduced grass snake. However, when it is considered that grass snakes colonized Gotland via transoceanic dispersal[29] and that now all three lineages occurring all around the Baltic Sea have been recorded from Gotland, their natural occurrence seems possible there.

In parsimony network analyses, each lineage corresponded to a highly distinct haplotype cluster. For ND4 (Fig. 2, top), there are 12 haplotypes in the blue lineage, 43 haplotypes in the yellow lineage, and 33 haplotypes in the red lineage. Haplotypes of the yellow and red lineages differed by a minimum of 40 mutational steps. Haplotypes of the blue lineage (*N. n. helvetica*) were separated from the yellow haplotype cluster by at least 40 mutational steps and from the red cluster by a minimum of 54 steps. With only 12 haplotypes differing by maximally two mutation steps, there was distinctly less variation in the blue lineage compared to the two eastern lineages. In the yellow lineage, 43 haplotypes with maximally 15 mutations occurred; in the red lineage, 33 haplotypes differing by maximally 10 mutations.

For cyt *b* (Fig. 2, bottom) a similar pattern emerged. The blue lineage differed by a minimum of 73 mutations from the yellow lineage and by 64 mutations from the red lineage. The yellow and red haplotype clusters were connected by a minimum of 53 mutational steps. Compared to ND4, there was distinctly more variation observed, with 29 haplotypes in the blue lineage and 66 haplotypes in the red lineage. The yellow lineage comprised 42 haplotypes. Haplotypes of the blue lineage differed by a maximum of five mutations, haplotypes of the yellow lineage by a maximum of nine mutations and haplotypes of the red cluster by a maximum of 16 mutations. European Nucleotide Archive (ENA) accession numbers for haplotypes are listed in Supplementary Table S3.

For ND4, the blue lineage differed on average from the yellow lineage by an uncorrected *p* distance of 5.03% and from the red lineage, by 5.88%; the divergence between the yellow and red lineages was 5.16%. For cyt *b*, mean *p* distances between the blue, yellow and red lineages were 6.90% and 6.39%, respectively; the yellow and red lineages differed by 5.48%.

Genotyping and admixture. The 13 studied microsatellite loci were highly polymorphic, with allele numbers ranging from 12 to 39 per locus (Supplementary Table S4) and a total allele number of 285. For the complete data set including *Natrix natrix helvetica* and all five eastern lineages, the ΔK method suggested two as the optimal number of clusters (Supplementary Fig. S3a). One of these clusters represented *helvetica*, and the other contained all eastern lineages (Fig. 3a). The assignment of the eastern lineages to only one cluster matched with the close phylogenetic relationship of their mtDNA lineages[26]. According to an AMOVA using microsatellite data, 59.84% of the molecular variance occurred within and 40.16% between the two clusters, corresponding to an F_{ST} value of 0.40. The high distinctiveness of both clusters was also supported by a large number of private alleles, especially for the eastern cluster (Supplementary Table S5).

In general, the *helvetica* cluster matched well with the mitochondrial clade (Fig. 3). Genotypic introgression occurs largely unidirectional from *helvetica* into the eastern cluster. Most hybrids between *helvetica* and the eastern cluster originate from northern Switzerland, where the sampling is very comprehensive and dense, with approximately 200 samples from the contact zone. However, this dense sampling also revealed that the contact zone is narrow, with hybrid signatures occurring only in a maximally 50-km-wide strip (Fig. 3a, right). The allochthonous population of grass snakes of the red lineage in the Neander valley is clearly assigned to the eastern cluster, in agreement with mitochondrial haplotypes (Fig. 3a, left), and without admixture with neighbouring *helvetica* populations.

The second STRUCTURE run (Fig. 3b) included the eastern lineages without impact of *helvetica*. Based on the HYBRIDLAB results (Supplementary Table S6), only samples with an eastern cluster membership of at least 95% were considered in that analysis, for which $K = 2$ was again the best solution (Supplementary Fig. S3b).

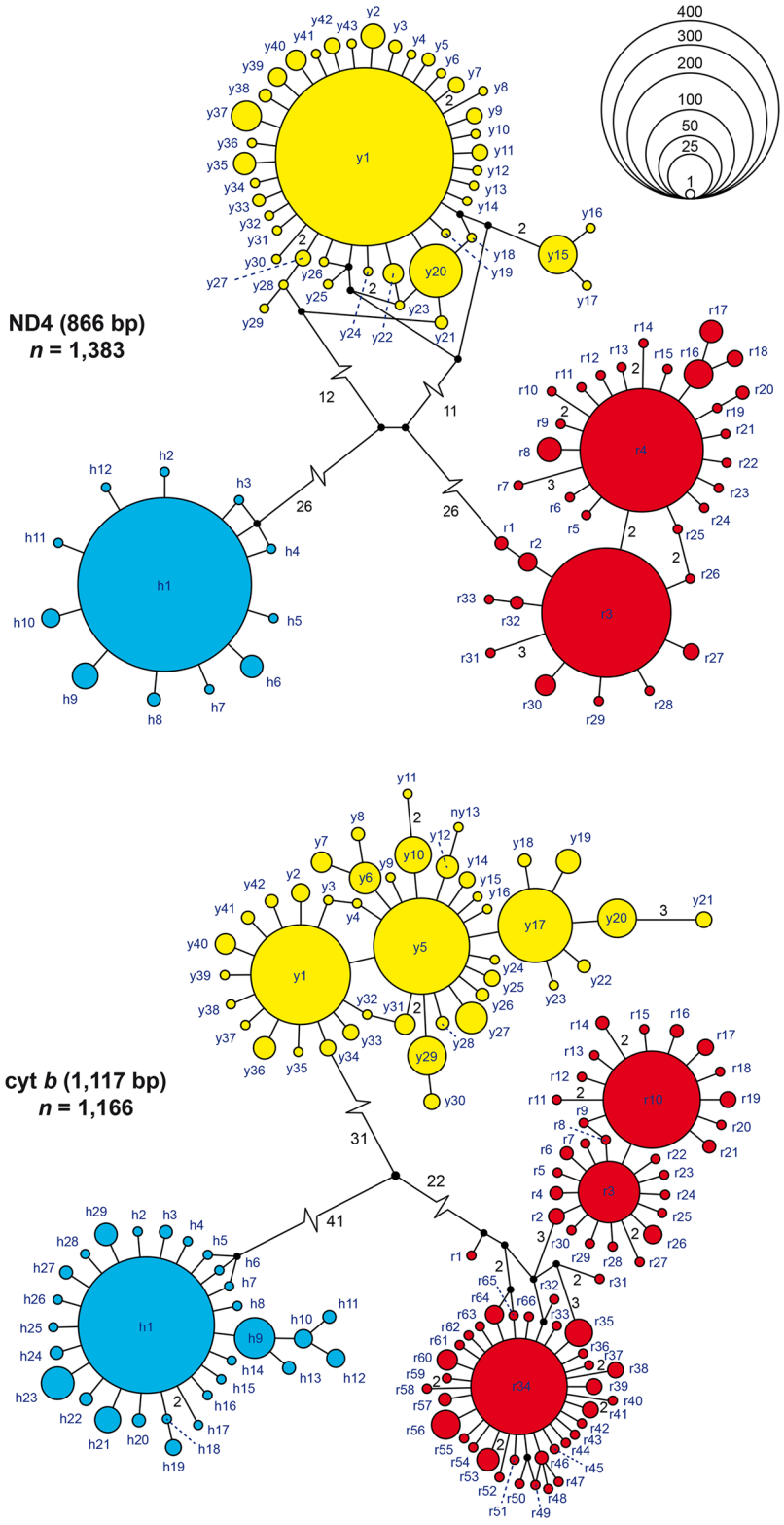

Figure 2. Parsimony networks of mtDNA sequences. Symbol sizes reflect haplotype frequencies. Small black circles are missing node haplotypes; each line connecting two haplotypes corresponds to one mutation step, if not otherwise indicated by numbers. Haplotype colours correspond to lineages, i.e. *Natrix natrix helvetica* (h) in blue; eastern lineages in yellow (y) and in red (r).

One cluster (pink) embraced the yellow and red lineages and another one (brown) the grey, lilac and green lineages. Many southern samples of the yellow and red lineages, especially from Slovenia, Croatia and the southern

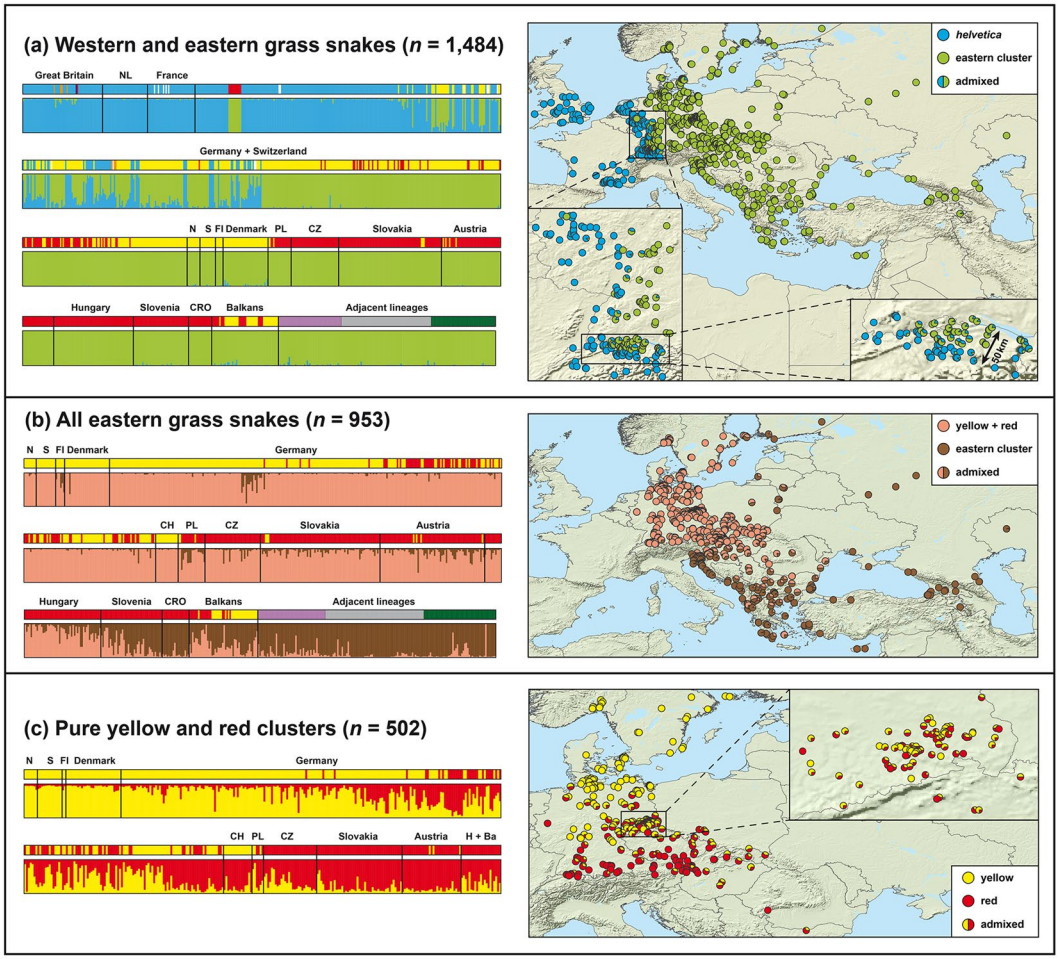

Figure 3. Genotypic structuring of grass snakes. On the left, the mitochondrial lineage of each sample is shown above the STRUCTURE diagrams, with haplotypes of *Natrix natrix helvetica* indicated in blue and haplotypes of the eastern lineages in colours corresponding to Fig. 1 (yellow, red, lilac, grey, green; white = missing data). In (**a**), orange and dark blue corresponds to non-native snakes (Italian lineages). Samples in STRUCTURE diagrams are arranged within each country from west to east (**a**) or from north to south (**b**,**c**). In STRUCTURE diagrams, an individual sample is represented by a vertical bar reflecting its inferred ancestry. In (**a**), the blue cluster corresponds to *N. n. helvetica* and the light green cluster to all other lineages. The isolated red/light green block (first row) represents the allochthonous population from the Neander valley, Germany. In (**b**), samples with genetic impact of *helvetica* are excluded. The pink cluster corresponds to samples from the yellow and red lineages. Brown percentages indicate genetic impact of adjacent lineages (lilac, grey, green). In (**c**) only samples from the yellow and red lineages and their hybrids, without genetic signatures of other lineages, were processed. Country abbreviations: Ba – Balkans (Albania, Bosnia and Herzegovina, Montenegro, Serbia, Kosovo, Former Yugoslav Republic of Macedonia, Romania, Bulgaria, and Greece), CH – Switzerland, CRO – Croatia, CZ – Czech Republic, FI – Finland, H – Hungary, N – Norway, NL – Netherlands, PL – Poland, S – Sweden. Maps were created using ARCGIS 10.2 (http://www.esri.com/arcgis) and ADOBE ILLUSTRATOR CS6 (http://www.adobe.com/products/ illustrator.html).

Balkans, showed a high degree of admixture with the brown cluster. This admixture area largely corresponds to those regions where only haplotypes of the yellow and red lineages are present.

Samples with admixed ancestry with the brown cluster >5% were excluded from the third STRUCTURE analysis (Fig. 3c), for which the optimal number of clusters was again $K = 2$ (Supplementary Fig. S3c). Now, one cluster corresponded to the yellow and the other to the red lineage. According to the HYBRIDLAB results (Supplementary Table S6), grass snakes with at least 80% cluster membership were treated as 'pure yellow' and with at least 83% as 'pure red'. Introgression was common in both directions, indicating massive gene flow across hundreds of kilometres (Fig. 3c, right), including regions where exclusively or predominantly mitochondrial haplotypes of one lineage are present. For the yellow and red clusters, 89.18% of the molecular variance occurred within, and only 10.82% between the two clusters, equalling an F_{ST} value of 0.11 (Supplementary Table S5).

The PCAs using microsatellite data (Fig. 4) are in line with the STRUCTURE analyses in that the blue lineage (*N. n. helvetica*) was highly distinct from the yellow and red lineages, with some mismatches reflecting mitochondrial introgression mainly from *helvetica* into the eastern group. In contrast, the eastern lineages showed weak

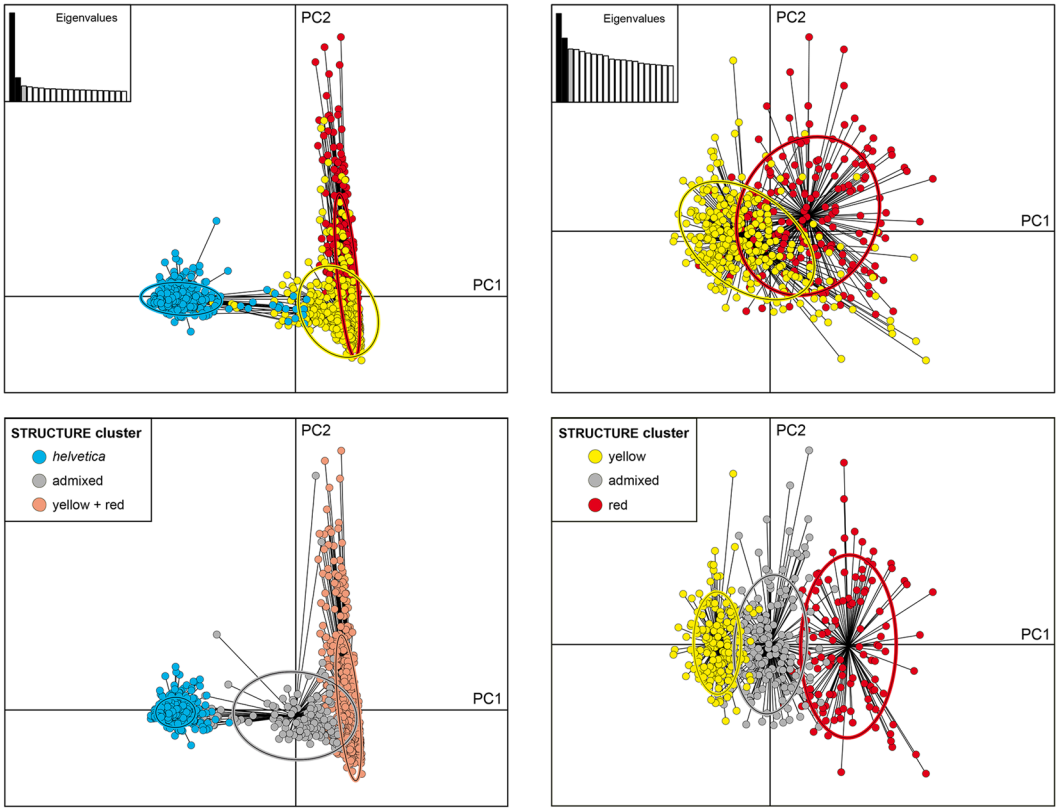

Figure 4. PCA axes 1–2 for microsatellite data. Samples are coloured according to mitochondrial lineages (top) or STRUCTURE clusters (bottom). Admixed individuals were identified according to HYBRIDLAB results. PCAs for the yellow and red lineages correspond to the samples from Fig. 3c. Non-native samples were excluded. The oval outlines represent 95% confidential intervals. For *helvetica* and the eastern lineages (left) the x axis explains 16.6% and the y axis 4.5% of variation. For the eastern lineages (right) the x axis explains 3.8% and the y axis 2.9% of variation. Analyses along axes 1–3 produced nearly identical results (see Supplementary Fig. S4).

differentiation and massive overlap. The PCAs corroborate furthermore that our definition of admixed individuals is appropriate because hybrids were intermediate also in the PCA, independently from population affiliation, HWE or linkage equilibrium.

Cline analyses. The cline analyses revealed completely different patterns in the two contact zones (Fig. 5). For the western contact zone (contact zone I), the cline is concordant and very steep for both marker systems. For microsatellites, the cline centre was estimated to be located 639.9 km (95% confidence interval: 635.1–644.2 km) north-east from the starting point in southern France with a cline width of 39.4 km (24.4–59.6 km). For mitochondrial data, the cline centre was revealed almost at the same point, at 637.2 km (632.9–641.2 km), with a similar cline width of 37.5 km (27.3–53.6 km). A much smoother cline was found for the contact zone of the yellow and red lineages (contact zone II). The cline centre for microsatellites was located 518.7 km (454.5–590.4 km) distant from the reference site in northern Germany with a considerable cline width of 677.1 km (404.5–1,009.6 km). The width for the mtDNA cline was with 358.3 km (261.5–489.7 km) approximately half as wide as the microsatellite cline. The location of the centre was nearly identical at 503.8 km (474.6–537.0 km) from the reference site.

Discussion

Hybrid zones are regions in which genetically distinct populations meet and produce hybrid offspring[48]. They can be interpreted as 'windows on the evolutionary process'[49] and 'natural laboratories for evolutionary studies'[50]. Hybridization can provide important insights into divergence and speciation processes[50–56] and, thus, contributes to a better understanding of evolution. Based on extensive sampling of approximately 1,600 grass snakes and using a powerful data set of 13 microsatellite loci and two mitochondrial markers, this study presents a fine-scale analysis of gene flow across two secondary contact zones of grass snake lineages.

There are significantly different patterns of gene flow. While gene flow in the contact zone of *N. n. helvetica* and the 'yellow lineage' is limited and largely unidirectional from *helvetica* into the 'yellow lineage', with a cline width of less than 50 km in the contact zone, gene flow in the contact zone of the 'yellow' and 'red lineages' is extensive and in both directions. This contact zone is wide (cline widths for microsatellites and mtDNA approx. 680 km and 360 km), and the 'yellow' and 'red lineages' seem to be panmictic there (Fig. 3).

Our data provide evidence for hybridization in the contact zone of *N. n. helvetica* and the yellow lineage. The extent of admixture there clearly exceeds the negligible gene flow between *helvetica* and *N. astreptophora*

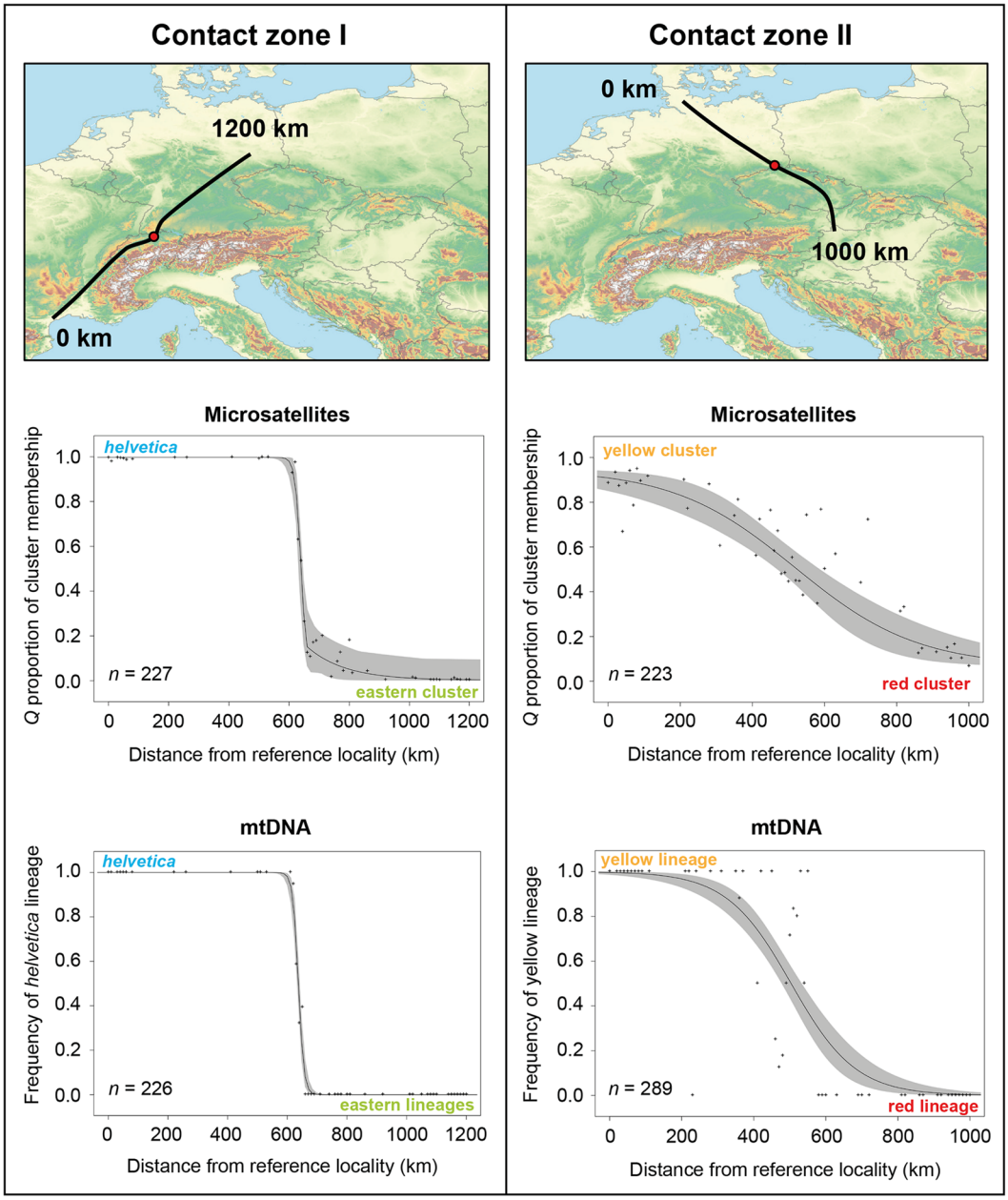

Figure 5. Cline analyses of mitochondrial DNA and microsatellite data. Transects (top) through the two different contact zones of grass snake lineages (*helvetica*/eastern lineages – left; yellow/red lineages – right) and associated Maximum Likelihood clines for microsatellites (centre) and mtDNA (bottom). Grey: fuzzy 95% credible cline region. Red points (top) indicate cline centres. Maps were created using ARCGIS 10.2 (http://www.esri.com/arcgis) and ADOBE ILLUSTRATOR CS6 (http://www.adobe.com/products/illustrator.html).

in southwestern France. The latter taxon is now regarded as a distinct species[20]. Nevertheless, there also seems to be a barrier against gene flow between *helvetica* and eastern grass snakes. Their contact zone is characterized by steep clines for both marker systems (Fig. 5, left). In addition, the two clusters are separated by a high F_{ST} value of 0.40 for microsatellites. Due to the parapatric distribution of mitochondrial haplotypes along the contact zone (Supplementary Fig. S2) combined with mainly unidirectional genotypic introgression (Fig. 3), it can be concluded that gene flow is mainly mediated by *helvetica* males. Asymmetrical introgression is not unusual in hybridizing taxa[57]. According to our STRUCTURE and HYBRIDLAB analyses, F_1 hybrids between *helvetica* and eastern grass snakes are rare. Parental genotypes in the contact zone, together with backcrosses, correspond to a bimodal hybrid zone and an advanced speciation process[58]. Other examples for such bimodal hybrid zones in Europe include, for instance, fire-bellied toads (*Bombina bombina*, *B. variegata*[59,60]), crested and marbled newts (*Triturus cristatus*, *T. marmoratus*[61,62]; *T. carnifex*, *T. cristatus*, *T. dobrogicus*[63]), pond turtles (*Emys orbicularis*, *E. trinacris*[55]), and wall lizards (*Podarcis bocagei*, *P. carbonelli*[64]), taxa which are all regarded as distinct species.

Current taxonomy	Proposed taxonomy
Natrix astreptophora	*Natrix astreptophora*
Natrix natrix natrix	*Natrix natrix natrix*
Natrix natrix cypriaca	*Natrix natrix cypriaca*
Natrix natrix fusca	*Natrix natrix fusca*
Natrix natrix gotlandica	*Natrix natrix gotlandica*
Natrix natrix persa	*Natrix natrix persa*
Natrix natrix schweizeri	*Natrix natrix schweizeri*
Natrix natrix scutata	*Natrix natrix scutata*
Natrix natrix syriaca	*Natrix natrix syriaca*
Natrix natrix helvetica	*Natrix helvetica helvetica*
Natrix natrix cetti	*Natrix helvetica cetti*
Natrix natrix corsa	*Natrix helvetica corsa*
Natrix natrix lanzai	*Natrix helvetica lanzai*
Natrix natrix sicula	*Natrix helvetica sicula*

Table 1. Current and proposed taxonomy for grass snakes.

Generally, a steep cline across a narrow hybrid zone suggests lower hybrid fitness and selection against hybrids[48,65–67], corresponding to intrinsic isolating mechanisms, which may also include assortative mating.

A completely different pattern is represented by the contact zone of the two eastern grass snake lineages, the 'red' and the 'yellow lineage'. Virtually all individuals are admixed there, indicating a unimodal hybrid zone. Cytonuclear discordance is frequent, in particular, 'red' or mainly 'red' genotypes are often combined with 'yellow' haplotypes (Fig. 3c). The contact zone covers a broad geographical area and is characterized by smooth wide clines (Fig. 5, right); the F_{ST} value of 0.11 (microsatellites) of the involved lineages is low. Similar, also geographically wide-ranging, admixture among distinct taxa is observed for instance in European pond turtles (*Emys orbicularis galloitalica*, *E. o. hellenica*[55]) and rabbits (*Oryctolagus cuniculus cuniculus*, *O. c. algirus*[68]). Enigmatic is the more or less exclusive presence of mitochondrial haplotypes of the 'red lineage' in the central part of the contact zone and the more or less exclusive presence of 'yellow haplotypes' in the southernmost part (Fig. 1), despite massive nuclear admixture (Fig. 3). Unlike in the very north, where the exclusive presence of yellow haplotypes can be easily explained by early Holocene colonization and subsequent high-density blocking[69], the absence of one mitochondrial lineage in the hybrid zone could be related to selective pressure against one mitochondrial lineage; a finding requiring further research. The fact that additional genetic lineages are involved in these parts of the contact zone further complicates the matter.

In summary, we found good agreement between the studied mitochondrial lineages and nuclear genotypes of grass snakes. Using 13 highly polymorphic microsatellite loci, distinct clusters were revealed that correspond to previously identified mitochondrial lineages[26]. However, we discovered very different gene flow patterns, with steep clines and a narrow contact zone for *N. n. helvetica* and the 'yellow lineage' and a wide contact zone with smooth clines for the 'yellow' and 'red lineages'. According to mtDNA, the involved lineages are of different phylogenetic hierarchy and age (Supplementary Fig. S1): *Natrix natrix helvetica* belongs to another major clade than the 'yellow' and 'red lineages', which are placed in phylogenetic analyses into the same major clade[26]. *Natrix natrix helvetica* diverged from the two eastern lineages 7.3–8.2 million years ago, whereas the yellow and red lineages split only 5.1–5.9 million years ago[28]. With respect to nuclear genotypes, *N. n. helvetica* and the 'yellow lineage' differ by an F_{ST} value of 0.40, while the 'yellow' and the 'red lineage' differ by 0.11. When these values are compared to the F_{ST} value of 0.27 for *N. n. helvetica* and *N. astreptophora* (based on the same loci[20]), this together with the limited gene flow in the narrow contact zone raises the question whether *N. n. helvetica* represents a distinct species and not only a subspecies.

Species conceptualization and delimitation is a complicated issue. In particular, it is difficult to distinguish whether observed differences are on the species or population level[70]. Moreover, different species concepts can lead to different conclusions about species status, and there are currently more than 30 species concepts used[6]. However, to bypass conflicts between different species concepts, it has been suggested to unite their common elements and to characterize species primarily as independent evolutionary lineages[71,72]. Morphology, reproductive isolation, ecological niches or reciprocal monophyly are understood as different lines of evidence for species status[71].

It is important that these lines of evidence emerge at different times in the speciation process[71]. Regarding reproductive isolation, species boundaries are known to be 'semipermeable'[49,73,74] and approximately 10% of animal species are known to hybridize[75]. Speciation may occur despite continuous gene flow[76–81] and high abundances of hybrids within a hybrid zone are not uncommon[48]. Obviously, reproductive isolation in nature is a matter of degree[82], with the complete lack of interbreeding and hybridization representing only the most extreme condition[6]. Hybridization between sister species in narrow contact zones is also known from other European snake species, like *Vipera aspis* and *V. latastei* in Spain[83]. Therefore, the limited gene flow between *N. n. helvetica* and the 'yellow lineage' fits in that pattern and is not contradicting species status.

Considering the largely unidirectional gene flow from *N. n. helvetica* into the 'yellow lineage' in a narrow contact zone, the morphological distinctness of *N. n. helvetica*[25], its placement in another deeply divergent clade than

eastern grass snake lineages[26], and the considerable age of its mitochondrial lineage[28] (Supplementary Fig. S1), we propose to elevate this taxon to full species level and to recognize *Natrix helvetica* (Lacepède, 1789) as a distinct species.

In contrast, we regard the 'yellow' and 'red lineages' as conspecific, representing a less advanced stage in the speciation process. This assessment is supported by their lacking morphological differentiation, their wide hybrid zone with panmictic large-scale gene flow, the placement of their younger mitochondrial lineages in the same more inclusive clade[26,28] (Supplementary Fig. S1) and a low F_{ST} value compared to the differentiation of *N. helvetica*. Our STRUCTURE analyses (Fig. 3b) also provide evidence that the 'yellow' and 'red lineages' admix on broad scale with other lineages from the same clade in the southern Balkans[26], supporting their conspecificity. These lineages are currently identified in the Balkans with *N. n. persa*, and some of them with *N. n. natrix* in more northerly regions[14,25,26].

Nomenclaturally, the recognition of *N. helvetica* as a full species necessitates that all nominal subspecies assigned to the same major clade in phylogenetic analyses[26] have to be transferred to *N. helvetica*, resulting in a revised taxonomy (Table 1). Fortunately, the many previously described mismatches between morphologically defined taxa and genetic lineages[26] refer only to taxa within, but not across, the newly delimited species, so that the suggested taxonomy does not contribute to further nomenclatural confusion, but reflects deep genetic divergences and discontinuities much better than before. However, we wish to underline that further research is needed for reconciling the conflicts between genetics and morphology of the individual subspecies within each of the three grass snake species.

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Author Contributions

C.K. performed the lab work, raw data editing, genetic analyses, created the figures and wrote the manuscript. U.F. conceived and designed the study, discussed the data and text, and revised the manuscript. M.V. helped with calculations. M.C. and S.U. conducted sequencing and fragment length analysis of Swiss samples. W.B., A.H. and D.J. contributed many samples. All authors critically read the manuscript.

Additional Information

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Hybridization patterns in two contact zones of grass snakes reveal a new Central European snake species

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Supplementary Information

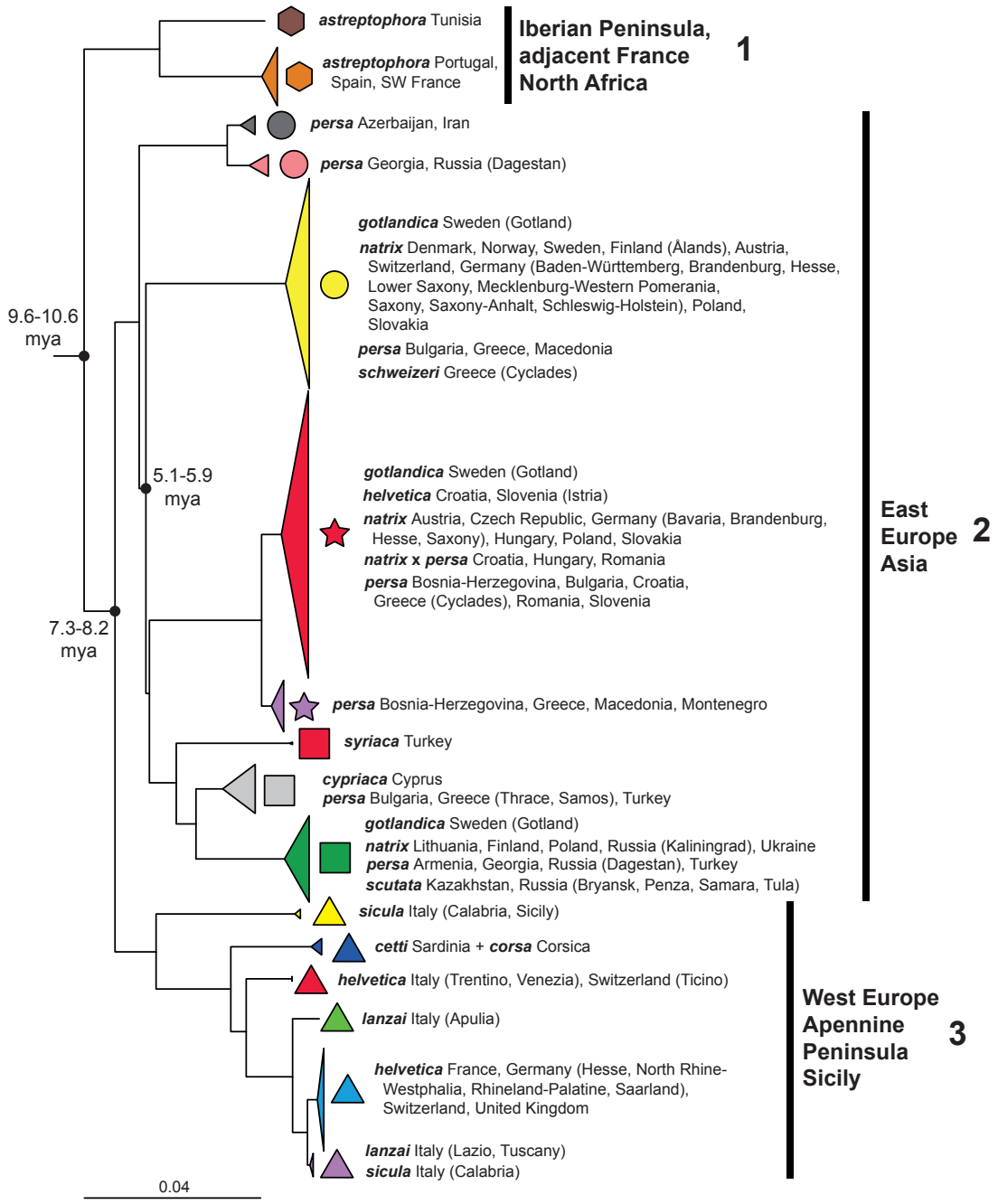


Figure S1. Simplified mitochondrial phylogeny for grass snakes (from Kindler *et al*. 2013, 2014 based on 1,984 bp of ND4 and cyt *b*). The three major clades 1-3 are highlighted; numbers at nodes indicate split ages according to Fritz *et al.* (2012). The new record for Gotland, Sweden, is added (clade with green square). Note the many mismatches between morphologically defined taxa and mitochondrial clades. The traditional identification of grass snakes from Istria (Kabisch 1999; Kreiner 2007) is in error and also conflicts with morphology (unpubl. data). The figure was created using ADOBE ILLUSTRATOR CS6 (http://www.adobe.com/products/illustrator.html).

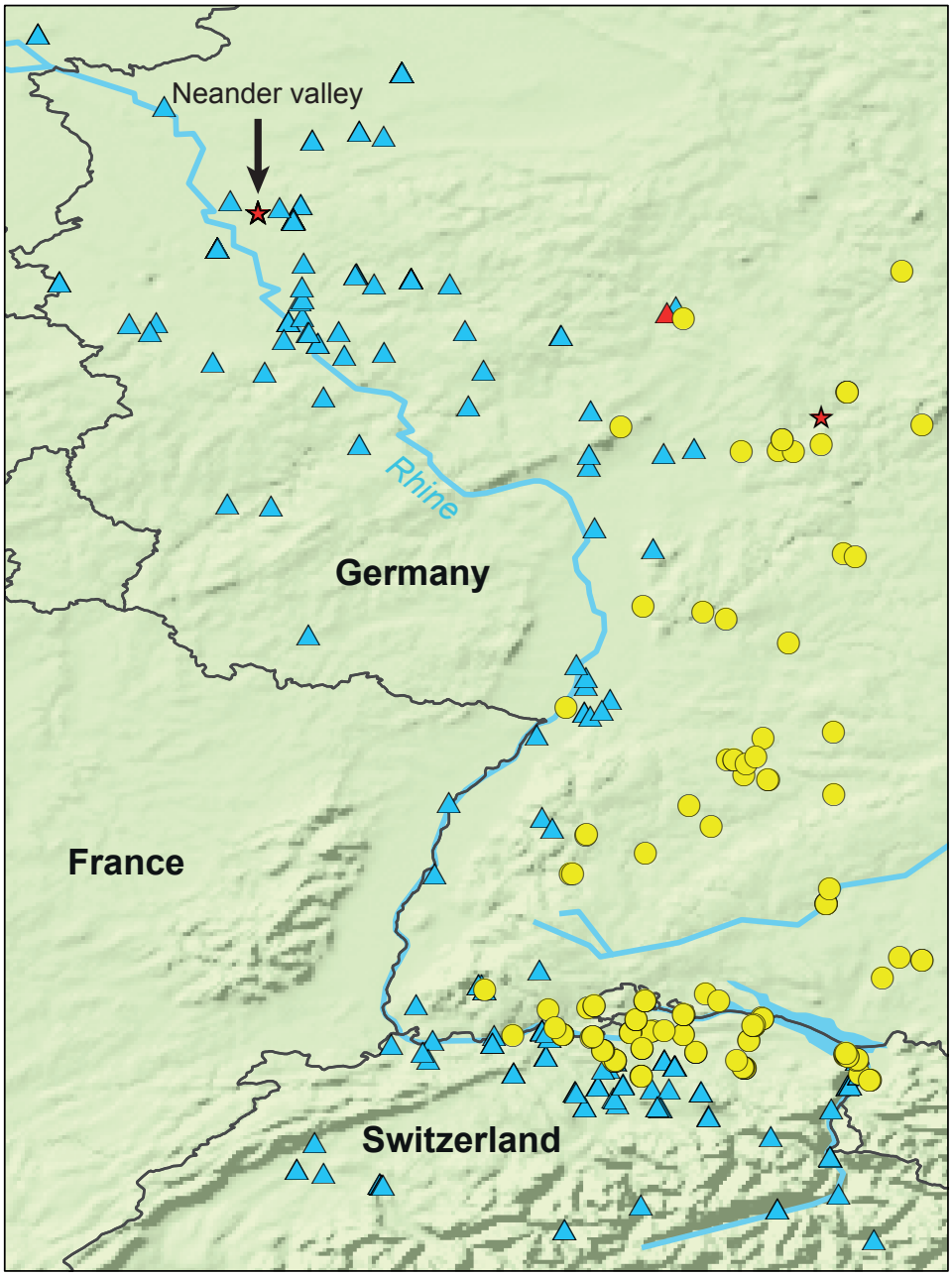
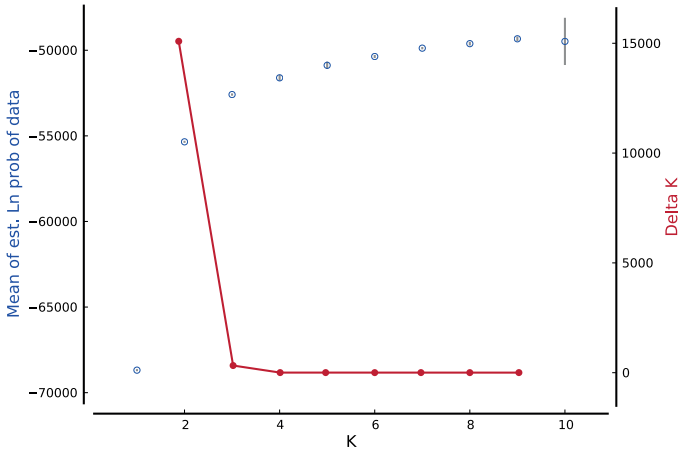
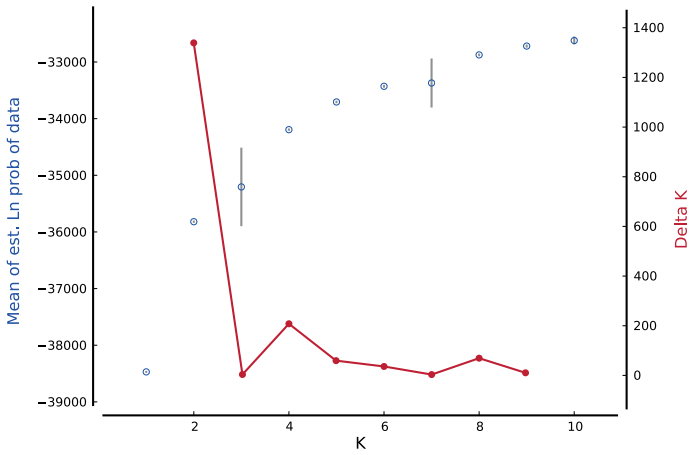


Figure S2. Distribution of mitochondrial haplotypes in the western contact zone. Symbols correspond to Figures 1 and S1. Arrow highlights allochthonous population of the 'red lineage' in the Neander valley. Red triangle represents a non-native lineage from northern Italy. Map was created using ARCGIS 10.2 (http://www.esri.com/arcgis) and ADOBE ILLUSTRATOR CS6 (http://www.adobe.com/products/illustrator.html).

(a) *helvetica* and all eastern lineages



(b) All eastern lineages without impact of *helvetica*



(c) Yellow and red lineage without impact of adjacent lineages

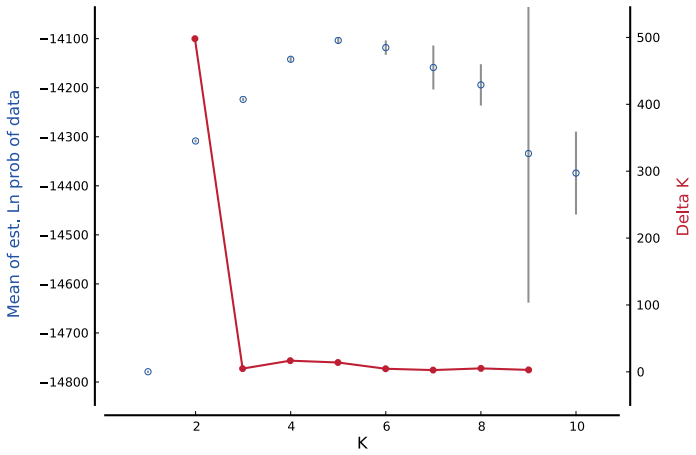


Figure S3. Δ*K* values and posterior probabilities for STRUCTURE runs for three data sets using STRUCTURE HARVESTER (Earl & vonHoldt, 2012). The modal value is always at *K*=2. *K*=1 could be excluded because of the higher posterior probabilities for *K*=2.

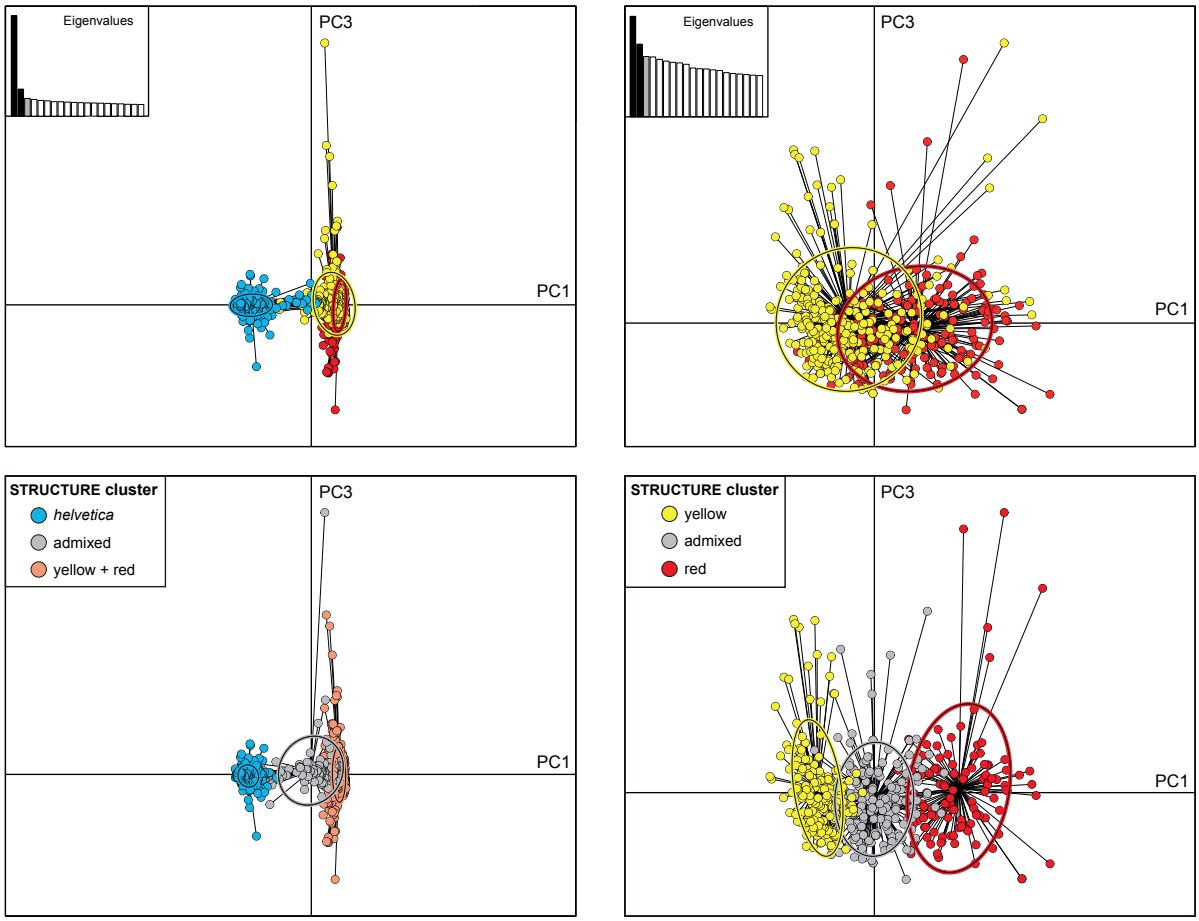


Figure S4. PCA axes 1–3 for microsatellite data of both contact zones. Samples are coloured according to mtDNA lineages (top) and STRUCTURE clusters (bottom). Admixed individuals were categorized according to HYBRIDLAB results. PCAs for the yellow and red lineages correspond to the samples from Figure 3c. Non-native samples were excluded. The oval outlines represent 95% confidential intervals. For *helvetica* and the eastern lineages (left), the x axis explains 16.6% and the y axis 2.9% of variation. For the eastern lineages (right), the x axis explains 3.8% and the y axis 2.4% of variation.

Table S1. Samples studied. Blue vouchers correspond to samples processed at the University of Basel. MtDNA data colour-coded according to genetic lineage. Accession numbers indicate samples from previous studies which were too short for an unambiguous assignment to haplotypes. STRUCTURE clusters colour-coded according to legend on the right.

Colour code:

helvetica cluster	cluster yellow + red	yellow cluster
eastern cluster	cluster adjacent lineages	red cluster
admixed	admixed	admixed

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
MTD T 10627	Albania: Boboshticë	5	**t11**	**t10**	0.00	0.39	-	This study
MTD T 13543	Albania: Cajupit pass	5	**t2**	**t10**	0.04	0.04	-	This study
MTD T 13544	Albania: Cajupit pass	5	**t2**	**t8**	0.00	0.71	-	This study
MTD T 14777	Albania: Divjakë-Karavastë National Park	5	**t7**	**t15**	0.03	0.04	-	This study
MTD T 11602	Albania: Fitore	5	**t5**	**t8**	0.01	0.18	-	This study
MTD T 13003	Albania: Grabovë	5	**t2**	**t16**	0.01	0.21	-	This study
MTD T 11603	Albania: Koder	5	**t6**	-	0.05	0.04	-	This study
MTD T 13004	Albania: near Memaliaj: Schendli Mountains	5	**t3**	-	0.00	0.02	-	This study
MTD T 13005	Albania: near Memaliaj: Schendli Mountains	5	**t2**	-	0.01	0.11	-	This study
MTD T 13006	Albania: near Memaliaj: Schendli Mountains	5	**t9**	**t17**	0.10	-	-	This study
MTD T 13001	Albania: near Sukë: Trebeshine Mountains	5	**t2**	**t10**	0.25	-	-	This study
MTD T 13002	Albania: near Sukë: Trebeshine Mountains	5	**t2**	**t19**	0.01	0.02	-	This study
MTD T 11598	Albania: near Sukë: Trebeshinë Mountains	5	**t20**	**t20**	0.01	0.33	-	This study
MTD T 11599	Albania: Shalës	5	**t6**	**t10**	0.00	0.16	-	This study
MTD T 11600	Albania: Shalës	5	**t6**	**t21**	0.00	0.10	-	This study
MTD T 14757	Armenia: Nshkhark	8	**gn10**	**gn17**	0.02	0.03	-	This study
MTD T 14758	Armenia: Nshkhark	8	**gn10**	**gn17**	0.01	0.02	-	This study
MTD T 14759	Armenia: Nshkhark	8	**gn10**	**gn17**	0.09	-	-	This study
ZFMK 65105	Austria: Burgenland: Andau	4	**r30**	**r3**	0.00	0.80	-	Kindler *et al.* (2013)
NHMW 39266 (2)	Austria: Burgenland: Apetlon	4	**r3**	**r18**	0.00	0.98	0.05	This study
ZFMK 68656	Austria: Burgenland: Apetlon	4	**r4**	**r34**	0.00	0.91	-	Kindler *et al.* (2013)
ZFMK 55995	Austria: Burgenland: Breitenbrunn	4	**r4**	**r34**	0.00	0.83	-	Kindler *et al.* (2013)
NHMW 39030 (2)	Austria: Burgenland: Eisenstadt	4	**r4**	**r34**	0.00	0.96	0.15	This study
ZFMK 51746	Austria: Burgenland: Hölle	4	-	**r35**	0.00	0.93	-	Kindler *et al.* (2013)
ZFMK 74926	Austria: Burgenland: Illmitz	4	**r4**	**r34**	0.00	0.92	-	Kindler *et al.* (2013)
ZFMK 83775	Austria: Burgenland: Illmitz	4	-	**r65**	0.00	0.96	0.15	Kindler *et al.* (2013)
ZFMK 65687	Austria: Burgenland: Jois	4	**r3**	**r10**	0.00	0.69	-	Kindler *et al.* (2013)
NHMW 38644	Austria: Burgenland: Lake Neusiedl	4	**r3**	-	0.00	0.92	-	This study
MTD T 11991	Austria: Burgenland: Lake Neusiedl: Illmitz	4	**r4**	-	0.00	0.56	-	This study
MTD T 12062	Austria: Burgenland: Lake Neusiedl: Illmitz	4	**r4**	-	0.01	0.52	-	This study
MTD T 12063	Austria: Burgenland: Lake Neusiedl: Illmitz	4	**r4**	-	0.00	0.86	-	This study
NHMW 38809	Austria: Burgenland: Lake Neusiedl: Illmitz	4	**r4**	**r34**	0.00	0.79	-	This study
NHMW 39436 (2)	Austria: Burgenland: Lake Neusiedl: Illmitz	4	**r4**	**r43**	0.00	0.97	0.09	This study
NHMW 40024 (1)	Austria: Burgenland: Lake Neusiedl: Illmitz	4	**r4**	**r35**	0.00	0.89	-	This study
MTD T 11986	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	**r53**	0.00	0.90	-	This study
MTD T 11987	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	**r39**	0.00	0.95	0.09	This study
MTD T 11988	Austria: Burgenland: Lake Neusiedl: Jois	4	**r30**	-	0.00	0.78	-	This study
MTD T 11989	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	**r34**	0.00	0.98	0.18	This study
MTD T 11990	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	-	-	-	This study
MTD T 11992	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	**r56**	0.00	0.96	0.06	This study
MTD T 12058	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	-	-	-	This study
MTD T 12059	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	-	-	-	This study
MTD T 12060	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	0.00	0.91	-	This study
MTD T 12061	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	0.00	0.61	-	This study
MTD T 12064	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	**r53**	0.00	0.79	-	This study
MTD T 12065	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	**r10**	0.00	0.82	-	This study
MTD T 12066	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	0.00	0.96	0.06	This study
MTD T 12067	Austria: Burgenland: Lake Neusiedl: Jois	4	**r3**	**r10**	0.00	0.57	-	This study
MTD T 12068	Austria: Burgenland: Lake Neusiedl: Jois	4	**r13**	-	-	-	-	This study
MTD T 12069	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	0.00	0.98	0.18	This study
MTD T 12070	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	-	-	-	This study
MTD T 12071	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	0.00	0.96	0.10	This study
MTD T 12072	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	-	-	-	This study
MTD T 12073	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	-	-	-	This study
MTD T 12074	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	0.00	0.90	-	This study
MTD T 12075	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	-	-	-	This study
MTD T 12076	Austria: Burgenland: Lake Neusiedl: Jois	4	**r30**	**r10**	0.00	0.79	-	This study
MTD T 12077	Austria: Burgenland: Lake Neusiedl: Jois	4	**r3**	-	0.00	0.69	-	This study
MTD T 12078	Austria: Burgenland: Lake Neusiedl: Jois	4	**r4**	-	-	-	-	This study
NHMW 39266 (1)	Austria: Burgenland: Lake Neusiedl: Neusiedl am See	4	**r4**	**r56**	0.00	0.98	0.22	This study
ZFMK 51670	Austria: Burgenland: Weiden am See	4	**r10**	**r34**	0.00	0.67	-	Kindler *et al.* (2013)
ZFMK 91242	Austria: Burgenland: Zitzmannsdorfer Wiesen	4	**r4**	**r35**	0.00	0.89	-	Kindler *et al.* (2013)
MTD T 11964	Austria: Carinthia: Lake Faak	4	**r4**	-	-	-	-	This study
NHMW 39030 (1)	Austria: Lower Austria: Aspersdorf	4	**r4**	**r34**	0.00	0.99	0.14	This study
MTD T 9912	Austria: Lower Austria: Bergern	4	**r3**	**r10**	0.00	0.87	-	Kindler *et al.* (2013)
NHMW 38541	Austria: Lower Austria: Ernstbrunn	4	**r4**	**r34**	0.00	0.98	0.09	This study
NHMW 36728	Austria: Lower Austria: Grünbach am Schneeberg	4	**r4**	**r34**	0.00	0.98	0.37	This study
ZFMK 83922	Austria: Lower Austria: Losenheim	4	**r9**	**r34**	0.00	0.91	-	Kindler *et al.* (2013)
NHMW 36405 (3)	Austria: Lower Austria: NE Drösing	4	**r4**	**r34**	0.02	0.97	0.13	This study
NHMW 36695 (1)	Austria: Lower Austria: near Hollabrunn	4	**r3**	**r10**	0.00	0.99	0.17	This study
NHMW 36695 (2)	Austria: Lower Austria: near Hollabrunn	4	**r3**	**r10**	0.00	0.86	-	This study
NHMW 36405 (2)	Austria: Lower Austria: Oberedlitz	4	**r4**	**r34**	0.00	0.98	0.06	This study
NHMW 40084 (2)	Austria: Lower Austria: Orth an der Donau	4	**r3**	**r10**	0.00	0.89	-	This study
NHMW 38557 (1)	Austria: Lower Austria: Perchtoldsdorf	4	**r4**	**r52**	0.00	0.83	-	This study
NHMW 39496	Austria: Lower Austria: Petronell-Carnuntum	4	**r3**	**r10**	-	-	-	This study
NHMW 39436 (1)	Austria: Lower Austria: Sommerein	4	**r4**	**r34**	0.00	0.85	-	This study
NHMW 37311	Austria: Lower Austria: St. Pölten	4	**r3**	**r10**	0.03	0.96	0.10	This study
NHMW 38810	Austria: Lower Austria: St. Valentin	4	**r3**	**r10**	0.00	0.98	0.10	This study
NHMW 40084 (1)	Austria: Lower Austria: Stopfenreuth	4	**r3**	**r3**	0.00	0.97	0.08	This study
ZFMK 73648	Austria: Styria: Admont/Gesäuse	3	-	**y5**	0.00	0.96	0.06	Kindler *et al.* (2013)
NHMW 36994	Austria: Styria: Eibiswald	4	**r4**	**r34**	0.00	0.74	-	This study
MTD T 14544	Austria: Styria: Graz	4	**r4**	-	-	-	-	This study
MTD T 13539	Austria: Styria: Seewiesen	4	**r4**	**r41**	0.02	0.60	-	This study
NHMW 39266 (3)	Austria: Upper Austria: between Stadl Paura and Stadl Traun	4	**r4**	**r35**	0.00	0.84	-	This study
NHMW 38946	Austria: Upper Austria: Mauthausen	4	**r3**	**r21**	0.00	0.99	0.05	This study
NHMW 36405 (1)	Austria: Upper Austria: St. Ulrich bei Steyr	4	**r3**	**r21**	0.00	0.96	0.06	This study
NHMW 37422	Austria: Upper Austria: St. Ulrich bei Steyr	4	**r3**	**r10**	0.00	0.98	0.13	This study
NHMW 38038	Austria: Upper Austria: St. Ulrich bei Steyr	4	**r3**	**r10**	0.00	0.28	-	This study
NHMW 38599	Austria: Upper Austria: St. Ulrich bei Steyr	3	**y1**	**y5**	0.00	0.99	0.06	This study
NHMW 39122	Austria: Upper Austria: St. Ulrich bei Steyr	3	**y1**	**y5**	0.02	0.95	0.12	This study
NHMW 40024 (2)	Austria: Upper Austria: St. Ulrich bei Steyr	4	**r3**	**r10**	0.00	0.80	-	This study
NHMW 40036 (1)	Austria: Upper Austria: St. Ulrich bei Steyr	3	**y1**	**y5**	0.00	0.83	-	This study
NHMW 40036 (2)	Austria: Upper Austria: St. Ulrich bei Steyr	4	**r3**	**r10**	0.00	0.99	0.08	This study
MTD T 14561	Austria: Vienna	4	**r3**	**r12**	0.00	0.99	0.09	This study
MTD T 14562	Austria: Vienna	4	**r3**	**r10**	0.00	0.96	0.04	This study
MTD T 9903	Austria: Vienna: Danube Island	4	**r3**	**r26**	0.00	0.94	-	Kindler *et al.* (2013)
MTD T 9904	Austria: Vienna: Danube Island	4	**r19**	**r34**	0.00	0.80	-	Kindler *et al.* (2013)
MTD T 9905	Austria: Vienna: Danube Island	4	**r3**	**r10**	0.00	0.96	0.16	Kindler *et al.* (2013)
NHMW 36284	Austria: Vienna: Danube Island	4	**r3**	-	-	-	-	This study
NHMW 36359	Austria: Vienna: Danube Island	4	**r3**	**r10**	0.00	0.94	-	This study
NHMW 38557 (2)	Austria: Vienna: Hadersdorf-Weidlingau	4	**r3**	**r10**	0.00	0.96	0.08	This study
MTD T 8976	Bosnia and Herzegovina: Maglič Mountain: Prijevor	4	**r7**	**r32**	0.01	0.39	-	Kindler *et al.* (2013)
MTD T 12836	Bosnia and Herzegovina: near Capljina: Hutovo Blato	4	**r4**	**r34**	0.01	0.13	-	This study
MTD T 12837	Bosnia and Herzegovina: near Capljina: Hutovo Blato	5	**t8**	-	0.00	0.02	-	This study
MTD T 8644	Bosnia and Herzegovina: near Capljina: Hutovo Blato	5	**t2**	**t12**	0.00	0.03	-	Kindler *et al.* (2013)
MTD T 8645	Bosnia and Herzegovina: near Capljina: Hutovo Blato	5	**t2**	**t12**	0.01	0.05	-	Kindler *et al.* (2013)
MTD D 40692	Bulgaria: Albena	3	-	HF680126	0.01	0.23	-	Kindler *et al.* (2013)
MTD T 10951	Bulgaria: Arkutino	7	**gy1**	**gy7**	0.01	0.07	-	This study
ZFMK 59679	Bulgaria: Arkutino	7	**gy1**	-	0.00	0.07	-	Kindler *et al.* (2013)
MTD T 10939	Bulgaria: Asenovgrad: Asenovitza river	7	**gy1**	**gy4**	0.01	0.04	-	This study
MTD T 10953	Bulgaria: between Pismenovo and Primorsko	7	**gy6**	-	0.00	0.05	-	This study
MTD T 10954	Bulgaria: between Pismenovo and Primorsko	7	**gy1**	**gy10**	0.01	0.02	-	This study
MTD T 8653	Bulgaria: Bezhanovo	4	**r3**	**r3**	0.01	0.31	-	Kindler *et al.* (2013)
MTD T 10952	Bulgaria: Bosna pass	7	**gy10**	**gy2**	0.01	0.02	-	This study
MTD T 10948	Bulgaria: Brashlyan	7	**gy2**	**gy4**	0.00	0.10	-	This study
MTD T 10949	Bulgaria: Brashlyan	7	**gy10**	**gy2**	0.00	0.14	-	This study
MTD T 8654	Bulgaria: Etropole	4	**r4**	**r34**	0.02	0.26	-	Kindler *et al.* (2013)
MTD D 18923	Bulgaria: Levunovo	3	**y20**	**y30**	0.01	0.45	-	Kindler *et al.* (2013)

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
MTD D 18924	Bulgaria: Levunovo	**3**	**y15**	**y10**	0.00	0.08	-	Kindler *et al.* (2013)
MTD T 10940	Bulgaria: Liljanovo	**3**	**y20**	**y29**	0.00	0.55	-	This study
MTD T 14446	Bulgaria: Lozenets	**7**	**gy1**	**gy4**	0.01	0.02	-	This study
MTD T 9321	Bulgaria: Malko Gradište (pass)	**7**	**gy1**	**gy4**	0.00	0.53	-	Kindler *et al.* (2013)
MTD D 29984	Bulgaria: Mičurin	**4**	**r4**	**r34**	-	-	-	Kindler *et al.* (2013)
BEV.T4054	Bulgaria: Novo selo	**3**	**y15**	**y10**	0.01	0.29	-	This study
MTD T 9910	Bulgaria: Novo Selo	**3**	-	**y10**	0.01	0.29	-	Kindler *et al.* (2013)
MTD T 10946	Bulgaria: Pass to Slivarovo	**7**	**gy10**	**gy2**	0.01	0.05	-	This study
MTD T 9012	Bulgaria: Pejo Javorov	**3**	**y18**	**y30**	0.02	0.36	-	Kindler *et al.* (2013)
MTD T 9013	Bulgaria: Pejo Javorov	**3**	**y20**	**y29**	0.00	0.03	-	Kindler *et al.* (2013)
MTD T 12965	Bulgaria: Pomorie	**7**	**gy4**	**gy11**	0.00	0.03	-	This study
MTD T 10941	Bulgaria: Primorsko	**7**	**gy5**	**gy6**	0.00	0.31	-	This study
MTD T 10943	Bulgaria: Primorsko	**7**	**gy1**	**gy4**	0.03	0.04	-	This study
MTD T 9318	Bulgaria: Ropotamo	**7**	**gy9**	**gy2**	0.00	0.04	-	Kindler *et al.* (2013)
MTD T 9319	Bulgaria: Ropotamo	**7**	**gy5**	**gy6**	0.11	-	-	Kindler *et al.* (2013)
MTD T 10942	Bulgaria: Ropotamo	**7**	**gy9**	**gy2**	0.01	0.12	-	This study
MTD D 19566	Bulgaria: Sandanksi	**3**	**y20**	**y30**	0.01	0.27	-	Kindler *et al.* (2013)
MTD D 20867	Bulgaria: Sandanska Bistrica Valley	**3**	HF679836	HF680138	0.01	0.52	-	Kindler *et al.* (2013)
MTD T 8649	Bulgaria: Shipka pass	**7**	HF679838	**gy4**	0.01	0.47	-	Kindler *et al.* (2013)
MTD T 14453	Bulgaria: Svištov	**4**	**r4**	**r61**	0.01	0.43	-	This study
MTD T 14454	Bulgaria: Svištov	**4**	**r4**	**r34**	0.00	0.96	0.31	This study
MTD T 10950	Bulgaria: Zvezdets	**7**	**gy3**	**gy5**	0.01	0.05	-	This study
ZFMK 54705	Croatia: 25 km N Rijeka: Gomance	**4**	**r18**	-	0.00	0.05	-	Kindler *et al.* (2013)
ZFMK 92199	Croatia: Benkovac	**4**	**r4**	**r34**	0.01	0.21	-	Kindler *et al.* (2013)
ZFMK 91558	Croatia: Istria: NE Lupoglav	**4**	**r17**	**r60**	0.01	0.10	-	Kindler *et al.* (2013)
MTD D 32031	Croatia: Istria: Rovinj	**4**	**r4**	**r34**	0.02	0.02	-	Kindler *et al.* (2013)
MTD D 32032	Croatia: Istria: Rovinj	**4**	**r4**	**r34**	0.00	0.05	-	Kindler *et al.* (2013)
MTD D 20790	Croatia: Krk	**4**	**r16**	HF679930	0.00	0.06	-	Kindler *et al.* (2013)
MTD T 11596	Croatia: Krk	**4**	**r16**	**r34**	0.01	0.21	-	This study
MTD T 11597	Croatia: Krk	**4**	**r16**	**r34**	0.00	0.43	-	This study
MTD T 13249	Croatia: Krk	**4**	**r16**	**r34**	0.01	0.02	-	This study
MTD T 13250	Croatia: Krk	**4**	**r16**	**r34**	0.00	0.04	-	This study
MTD T 13251	Croatia: Krk	**4**	**r18**	**r62**	0.01	0.08	-	This study
ZFMK 49094	Croatia: Krk: N Krk	**4**	**r16**	-	0.00	0.04	-	Kindler *et al.* (2013)
ZFMK 54706	Croatia: Krk: Punat	**4**	**r16**	-	0.00	0.08	-	Kindler *et al.* (2013)
ZFMK 54709	Croatia: near Šibenik: Krka falls	**4**	**r11**	-	0.00	0.08	-	Kindler *et al.* (2013)
NHMW 37852	Croatia: Pag: Vlasici	**4**	**r4**	**r35**	0.00	0.04	-	This study
ZFMK 54707	Croatia: Plitvice	**4**	**r16**	**r34**	-	-	-	Kindler *et al.* (2013)
MTD T 11112	Croatia: Rab: Lopar	**4**	**r4**	**r34**	0.00	0.02	-	This study
MTD T 11211	Croatia: Rab: Lopar	**4**	**r4**	**r34**	0.00	0.04	-	This study
BEV.1242	Croatia: southern edge of the Neretva Delta	**5**	**l15**	-	0.01	0.02	-	This study
MTD T 9873	Croatia: Vransko Jezero	**4**	**r16**	-	0.00	0.02	-	Kindler *et al.* (2013)
ZFMK 76296	Cyprus: Larnaka: Paralimni	**7**	**gy11**	-	0.01	0.01	-	Kindler *et al.* (2013)
MTD T 11876	Cyprus: Xyliatos dam	**7**	**gy11**	-	0.01	0.01	-	This study
MTD T 11908	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.00	0.01	-	This study
MTD T 11909	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.00	0.01	-	This study
MTD T 11910	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 11911	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 11912	Cyprus: Xyliatos dam	**7**	**gy6**	**gy9**	0.01	0.03	-	This study
MTD T 11913	Cyprus: Xyliatos dam	**7**	**gy6**	**gy9**	0.00	0.03	-	This study
MTD T 11914	Cyprus: Xyliatos dam	**7**	**gy6**	**gy9**	0.00	0.04	-	This study
MTD T 11915	Cyprus: Xyliatos dam	**7**	**gy6**	**gy9**	0.01	0.02	-	This study
MTD T 11916	Cyprus: Xyliatos dam	**7**	**gy6**	**gy9**	0.00	0.08	-	This study
MTD T 11917	Cyprus: Xyliatos dam	**7**	**gy6**	**gy9**	0.00	0.09	-	This study
MTD T 11982	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.00	0.01	-	This study
MTD T 11984	Cyprus: Xyliatos dam	**7**	**gy11**	-	0.01	0.01	-	This study
MTD T 11985	Cyprus: Xyliatos dam	**7**	-	**gy3**	0.01	0.01	-	This study
MTD T 12084	Cyprus: Xyliatos dam	**7**	-	**gy3**	0.01	0.01	-	This study
MTD T 12085	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 12087	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 12089	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 12090	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 12094	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 12095	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 12096	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
MTD T 14830	Cyprus: Xyliatos dam	**7**	**gy11**	**gy3**	0.01	0.01	-	This study
ZFMK 54318	Cyprus: Xyliatos dam	**7**	-	**gy3**	0.01	0.01	-	Kindler *et al.* (2013)
ZFMK 61144	Cyprus: Xyliatos dam	**7**	-	**gy3**	0.01	0.01	-	Kindler *et al.* (2013)
ZFMK 66524	Cyprus: Xyliatos dam	**7**	-	**gy3**	0.01	0.01	-	Kindler *et al.* (2013)
MTD T 9888	Czech Republic: Bartošovice	**4**	**r1**	-	0.00	0.61	-	Kindler *et al.* (2013)
MTD T 9878	Czech Republic: Běstvina	**4**	**r3**	-	0.01	0.94	-	Kindler *et al.* (2013)
MTD T 9579	Czech Republic: between Horušice and Ruda	**4**	**r3**	**r10**	0.00	0.77	-	Kindler *et al.* (2013)
MTD T 9580	Czech Republic: between Horušice and Ruda	**4**	**r4**	**r34**	0.00	0.94	-	Kindler *et al.* (2013)
MTD T 12995	Czech Republic: Čepice	**4**	**r4**	**r34**	0.00	0.98	0.22	This study
MTD T 8963	Czech Republic: České Budějovice	**4**	**r33**	**r3**	0.00	0.98	0.19	Kindler *et al.* (2013)
MTD T 9886	Czech Republic: Chřiby Mountains: Halenkovice	**4**	**r4**	**r34**	0.00	0.93	-	Kindler *et al.* (2013)
MTD T 9880	Czech Republic: Chřiby Mountains: Jankovice	**4**	**r4**	-	0.00	0.95	0.09	Kindler *et al.* (2013)
MTD T 9885	Czech Republic: Chřiby Mountains: Jankovice	**4**	-	**r34**	0.00	0.70	-	Kindler *et al.* (2013)
MTD T 9882	Czech Republic: Chřiby Mountains: Kudlovice	**4**	**r4**	-	0.00	0.97	0.16	Kindler *et al.* (2013)
MTD T 8974	Czech Republic: Chřiby Mountains: Kudlovická dolina	**4**	**r32**	**r3**	0.00	0.61	-	Kindler *et al.* (2013)
MTD T 9879	Czech Republic: Chřiby Mountains: Salaš	**4**	**r4**	-	0.00	0.92	-	Kindler *et al.* (2013)
MTD T 13009	Czech Republic: Dlouhá Loučka	**4**	**r4**	**r34**	-	-	-	This study
MTD T 8636	Czech Republic: Dolní Lištná	**4**	**r3**	-	-	-	-	Kindler *et al.* (2013)
MTD T 8642	Czech Republic: Dolní Lištná	**4**	**r3**	**r10**	0.00	0.97	0.64	Kindler *et al.* (2013)
MTD T 10626	Czech Republic: Dolní Marklovice;	**4**	**r4**	**r34**	0.01	0.97	0.37	This study
MTD T 14862	Czech Republic: Dražovice	**4**	**r4**	**r34**	0.00	0.99	0.20	This study
MTD T 12781	Czech Republic: Fojtka	**4**	**r3**	**r16**	0.00	0.99	0.50	This study
MTD T 8962	Czech Republic: Heřmanovice	**4**	**r4**	**r34**	0.00	0.97	0.22	Kindler *et al.* (2013)
MTD T 8964	Czech Republic: Heřmanovice	**4**	**r4**	**r34**	0.00	0.98	0.26	Kindler *et al.* (2013)
MTD T 8972	Czech Republic: Kamýk: Litoměřice	**4**	**r3**	**r10**	0.00	0.98	0.17	Kindler *et al.* (2013)
MTD T 8634	Czech Republic: Karviná: Olšiny	**4**	**r4**	**r34**	0.00	0.55	-	Kindler *et al.* (2013)
MTD T 14863	Czech Republic: Klikov	**4**	**r4**	**r34**	0.00	0.99	0.14	This study
MTD T 8966	Czech Republic: Kokořín	**4**	**r3**	**r10**	0.00	0.99	0.35	Kindler *et al.* (2013)
MTD T 8965	Czech Republic: Kokořínský Důl	**4**	**r4**	**r34**	0.00	0.98	0.77	Kindler *et al.* (2013)
MTD T 8971	Czech Republic: Kundratice: Litoměřice	**4**	**r3**	**r10**	0.00	0.99	0.60	Kindler *et al.* (2013)
MTD T 13549	Czech Republic: Lužnice	**4**	**r3**	**r10**	0.00	0.95	0.26	This study
MTD T 9881	Czech Republic: Moravský Písek	**4**	**r4**	-	0.00	0.97	0.20	Kindler *et al.* (2013)
MTD T 14451	Czech Republic: Na Plachtě, Hradec Králové	**4**	**r3**	-	0.00	0.96	0.44	This study
MTD T 14756	Czech Republic: Narodní park Podyjí	**4**	**r4**	**r34**	0.00	0.97	0.09	This study
MTD T 13010	Czech Republic: Olomouc: Černovír	**4**	**r8**	**r34**	0.00	0.96	0.33	This study
MTD T 13007	Czech Republic: Plinkout	**4**	**r4**	**r58**	0.00	0.96	0.31	This study
MTD T 14755	Czech Republic: Pouzdřanský rybník	**4**	**r4**	**r34**	0.00	0.96	0.09	This study
MTD T 14861	Czech Republic: Sadská	**4**	**r3**	**r10**	0.00	0.99	0.57	This study
MTD T 8643	Czech Republic: Staré Hamry	**4**	**r3**	**r10**	0.00	0.98	0.13	Kindler *et al.* (2013)
MTD T 14769	Czech Republic: Staré Město nad Metují	**4**	**r2**	**r10**	0.00	0.99	0.72	This study
MTD T 12794	Czech Republic: Stráž nad Ohří	**3**	**y1**	-	-	-	-	This study
MTD T 13008	Czech Republic: Vlárský průsmyk	**4**	**r3**	**r22**	-	-	-	This study
MTD T 8969	Czech Republic: Vysoká: Jihlava	**4**	**r3**	**r9**	0.00	0.97	0.12	Kindler *et al.* (2013)
MTD T 8970	Czech Republic: Vysoká: Jihlava	**4**	**r3**	**r10**	0.00	0.97	0.14	Kindler *et al.* (2013)
MTD T 8961	Czech Republic: Zlaté Hory	**4**	**r2**	**r10**	0.00	0.97	0.27	Kindler *et al.* (2013)
MTD T 9652	Denmark: Funen: NNW Svendborg	**3**	**y1**	**y1**	0.01	0.99	0.95	Kindler *et al.* (2013)
MTD T 9653	Denmark: Funen: NNW Svendborg	**3**	**y1**	**y1**	0.03	0.98	0.77	Kindler *et al.* (2013)
MTD T 9654	Denmark: Funen: NNW Svendborg	**3**	**y1**	**y1**	0.01	0.98	0.80	Kindler *et al.* (2013)
MTD T 9655	Denmark: Funen: NNW Svendborg	**3**	**y1**	**y1**	0.00	0.99	0.81	Kindler *et al.* (2013)
MTD T 9913	Denmark: Jutland: SE Gammel Rye	**3**	**y1**	**y38**	0.02	0.98	0.95	Kindler *et al.* (2013)
MTD T 9914	Denmark: Jutland: SE Gammel Rye	**3**	**y1**	**y1**	0.18	-	-	Kindler *et al.* (2013)
MTD T 9915	Denmark: Jutland: SE Gammel Rye	**3**	**y1**	**y1**	0.05	0.98	0.95	Kindler *et al.* (2013)
MTD T 9916	Denmark: Jutland: SE Skanderborg	**3**	**y1**	**y1**	0.10	-	-	Kindler *et al.* (2013)
MTD T 14559	Denmark: Langeland: Hov	**3**	**y1**	**y37**	0.01	0.99	0.95	This study
MTD T 9651	Denmark: Langeland: S Tranekær	**3**	**y1**	**y17**	0.01	0.97	0.93	Kindler *et al.* (2013)
MTD T 10918	Denmark: Zealand: 6 km W Koge	**3**	**y30**	**y1**	0.01	0.99	0.92	Kindler *et al.* (2014)
ZMH R09201	Denmark: Zealand: Brønsholm	**3**	**y20**	-	0.00	0.99	0.94	This study
ZMH R09021	Denmark: Zealand: Fredensborg	**3**	**y20**	-	-	-	-	This study
ZMH R09022	Denmark: Zealand: Fredensborg	**3**	**y20**	-	-	-	-	This study

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
ZMH R09204	Denmark: Zealand: Fredensborg	3	y20	-	0.04	0.98	0.95	This study
ZMH R09205	Denmark: Zealand: Fredensborg	3	y20	-	-	-	-	This study
ZMH R09206	Denmark: Zealand: Fredensborg	3	y20	-	-	-	-	This study
ZMH R09210	Denmark: Zealand: Fredensborg	3	y20	-	-	-	-	This study
ZMH R09211	Denmark: Zealand: Fredensborg	3	y20	-	-	-	-	This study
ZMH R09020	Denmark: Zealand: Gribskov forest	3	y20	-	-	-	-	This study
ZMH R09030	Denmark: Zealand: Gribskov forest	3	y20	-	0.00	0.36	-	This study
ZMH R09055	Denmark: Zealand: Gribskov forest	3	y20	-	-	-	-	This study
MTD T 14546	Denmark: Zealand: Holte: Vaserne	3	y1	y39	0.00	0.99	0.87	This study
MTD T 14547	Denmark: Zealand: Holte: Vaserne	3	y1	y40	0.11	-	-	This study
MTD T 14548	Denmark: Zealand: Holte: Vaserne	3	y1	y1	0.00	0.99	0.95	This study
MTD T 14751	Denmark: Zealand: N Copenhagen: Jægersborg Dyrehave	3	y1	y1	0.21	-	-	This study
MTD T 9649	Denmark: Zealand: N Præstø: Feddet	3	y34	y1	0.01	0.98	0.95	Kindler *et al.* (2013)
MTD T 9269	Denmark: Zealand: S Borup	3	y7	y1	0.00	0.99	0.94	Kindler *et al.* (2013)
MTD T 9270	Denmark: Zealand: S Borup	3	y7	y1	0.00	0.99	0.95	Kindler *et al.* (2013)
MTD T 9271	Denmark: Zealand: S Borup	3	y7	-	0.00	0.99	0.95	Kindler *et al.* (2013)
MTD T 14550	Denmark: Zealand: S Hillerød: Børstingerød Mose	3	y1	y40	0.04	0.99	0.94	This study
MTD T 14551	Denmark: Zealand: S Hillerød: Børstingerød Mose	3	y19	y1	0.00	0.99	0.91	This study
MTD T 14552	Denmark: Zealand: S Hillerød: Børstingerød Mose	3	y1	y1	0.02	0.99	0.94	This study
MTD T 14553	Denmark: Zealand: S Hillerød: Børstingerød Mose	3	y24	y1	0.01	0.99	0.87	This study
MTD T 14554	Denmark: Zealand: S Hillerød: Børstingerød Mose	3	y1	y40	0.00	0.99	0.93	This study
MTD T 14555	Denmark: Zealand: S Hillerød: Børstingerød Mose	3	y1	y1	0.00	0.99	0.94	This study
MTD T 14556	Denmark: Zealand: S Hillerød: Børstingerød Mose	3	y1	y40	0.02	0.99	0.95	This study
MTD T 14557	Denmark: Zealand: S Hillerød: Børstingerød Mose	3	y1	y1	0.04	0.99	0.94	This study
MTD T 14549	Denmark: Zealand: S Hillerød: Brødeskov	3	y1	y40	0.01	0.99	0.95	This study
MTD T 14558	Denmark: Zealand: S Hillerød: near Lillerød: Ravnsholt	3	y1	y1	0.00	0.99	0.89	This study
MTD T 14341	Denmark: Zealand: W Køge	3	y1	y1	0.00	0.99	0.94	This study
MTD T 14342	Denmark: Zealand: W Køge	3	y1	y1	0.00	0.99	0.91	This study
MTD T 9648	Denmark: Zealand: W Køge	3	y1	y1	0.06	-	-	Kindler *et al.* (2013)
MTD T 11583	Finland: Åland	3	y1	y25	0.01	0.55	-	Kindler *et al.* (2014)
MTD T 11584	Finland: Åland	3	y1	y5	0.00	0.99	0.81	Kindler *et al.* (2014)
MTD T 11586	Finland: Åland	3	y5	y5	0.01	0.80	-	Kindler *et al.* (2014)
MTD T 11589	Finland: Åland: Finström	3	y1	y5	0.00	0.99	0.93	Kindler *et al.* (2014)
MTD T 11587	Finland: Åland: Lemland: Bergö	3	y5	y5	0.01	0.41	-	Kindler *et al.* (2014)
MTD T 11588	Finland: Åland: Lemland: Nåtö	3	y1	y5	0.03	0.69	-	Kindler *et al.* (2014)
MTD T 11591	Finland: Eastern Finland: Savonlinna: Hememäki	8	gn1	gn4	0.00	0.02	-	Kindler *et al.* (2014)
MTD T 11585	Finland: Southern Finland: Hanko	8	gn6	gn11	0.00	0.05	-	Kindler *et al.* (2014)
MTD T 11590	Finland: Western Finland: near Kaarina	8	gn1	gn5	0.00	0.15	-	Kindler *et al.* (2014)
MTD T 12985	Former Yugoslav Republic of Macedonia: Crkvíno	3	y23	y29	0.01	0.05	-	This study
MTD T 12986	Former Yugoslav Republic of Macedonia: Dojran Lake: Mrdaja	3	y15	-	0.01	0.25	-	This study
MTD T 12987	Former Yugoslav Republic of Macedonia: Dojran Lake: Mrdaja	3	y17	y10	0.05	0.15	-	This study
MTD T 12988	Former Yugoslav Republic of Macedonia: Dojran Lake: Mrdaja	3	y21	-	0.17	-	-	This study
MTD T 12989	Former Yugoslav Republic of Macedonia: Dojran Lake: Mrdaja	3	y15	y11	0.00	0.30	-	This study
MTD T 12994	Former Yugoslav Republic of Macedonia: Dolna Matka	5	I2	I10	0.00	0.41	-	This study
BEV.T4055	Former Yugoslav Republic of Macedonia: Jakubica Mountains	3	y15	y10	0.10	-	-	This study
MTD T 9911	Former Yugoslav Republic of Macedonia: Jakubica Mountains	3	y15	y10	0.10	-	-	Kindler *et al.* (2013)
MTD T 12992	Former Yugoslav Republic of Macedonia: Lake Prespa: Asamati	5	I11	I9	0.03	0.04	-	This study
MTD T 12993	Former Yugoslav Republic of Macedonia: Lake Prespa: Pokrvenik	3	y12	-	0.00	0.28	-	This study
MTD T 12991	Former Yugoslav Republic of Macedonia: Lake Prespa: Pretor	5	I2	-	0.00	0.17	-	This study
MTD T 13000	Former Yugoslav Republic of Macedonia: Lake Prespa: Stenje	5	I11	I10	0.15	-	-	This study
MTD T 9877	Former Yugoslav Republic of Macedonia: National Park Galičica	5	I12	I22	0.01	0.57	-	Kindler *et al.* (2013)
MTD T 14447	Former Yugoslav Republic of Macedonia: Nov Dojran	3	y15	y10	0.02	0.07	-	This study
MTD T 9909	Former Yugoslav Republic of Macedonia: Porodin	5	I10	I10	0.03	0.08	-	Kindler *et al.* (2013)
MTD T 12990	Former Yugoslav Republic of Macedonia: Star Dojran	3	y15	y10	0.12	-	-	This study
MTD T 8633	Former Yugoslav Republic of Macedonia: Stenje	5	I2	I10	0.06	-	-	Kindler *et al.* (2013)
BEV.1690	France: Alpes-de-Haute-Provence: Clumanc	E	h7	-	0.99	-	-	Pokrant *et al.* (2016)
ZFMK 54711	France: Ardèche: 10 km N Tournon-sur-Rhône	E	h1	h1	1.00	-	-	Kindler *et al.* (2013)
BEV.6430	France: Aveyron: Peyrusse-le-Roc	E	h1	-	1.00	-	-	Pokrant *et al.* (2016)
MTD T 10091	France: Bas-Rhin: Strasbourg	E	h1	-	1.00	-	-	Kindler *et al.* (2013)
BEV.11494	France: Bouches-du-Rhône: Aubagne	E	h1	-	-	-	-	This study
BEV.9397	France: Bouches-du-Rhône: between Fos-sur-Mer and Port-Saint-Louis-du-Rhône	E	h1	-	1.00	-	-	Pokrant *et al.* (2016)
ZFMK 54712	France: Bouches-du-Rhône: Camargue	E	h1	-	0.98	-	-	Kindler *et al.* (2013)
BEV.6425	France: Bouches-du-Rhône: Camargue: Clos de Lange	E	h1	-	1.00	-	-	Pokrant *et al.* (2016)
BEV.284	France: Bouches-du-Rhône: Camargue: Marais du Grenouillet	E	h1	-	1.00	-	-	Pokrant *et al.* (2016)
ZMH R07158	France: Bouches-du-Rhône: Camargue: near Fiélouse	E	h1	-	-	-	-	This study
BEV.9398	France: Bouches-du-Rhône: Camargue: Salin de Badon	E	h1	-	-	-	-	This study
ZMH R07572	France: Bouches-du-Rhône: Camargue: Salin de Badon	E	h1	h1	0.98	-	-	Pokrant *et al.* (2016)
ZMH R07573	France: Bouches-du-Rhône: Camargue: Salin de Badon	E	h1	h1	0.99	-	-	Pokrant *et al.* (2016)
ZMH R06950	France: Bouches-du-Rhône: Camargue: Tour du Valat	E	h1	h1	0.95	-	-	Pokrant *et al.* (2016)
ZMH R06951	France: Bouches-du-Rhône: Camargue: Tour du Valat	E	h1	h1	1.00	-	-	Pokrant *et al.* (2016)
ZMH R06952	France: Bouches-du-Rhône: Camargue: Tour du Valat	E	h1	h1	1.00	-	-	Pokrant *et al.* (2016)
ZMH R06997	France: Bouches-du-Rhône: Camargue: Tour du Valat	E	h1	-	0.98	-	-	Pokrant *et al.* (2016)
ZMH R07062	France: Bouches-du-Rhône: Camargue: Tour du Valat	E	h1	h1	1.00	-	-	Pokrant *et al.* (2016)
ZFMK 54710	France: Bouches-du-Rhône: Saint-Martin-de-Crau	E	h1	h1	0.98	-	-	Kindler *et al.* (2013)
BEV.9401	France: Bouches-du-Rhône: Saint-Martin-de-Crau: Mas de Pernes	E	h1	-	1.00	-	-	Pokrant *et al.* (2016)
MTD T 11950	France: Deux-Sèvres: near Niort	E	h1	h9	0.99	-	-	Pokrant *et al.* (2016)
BEV.11533	France: Gard: near Alzon: Col de la Barrière	unknown	-	-	0.99	-	-	Pokrant *et al.* (2016)
BEV.9400	France: Gard: Saint-Hippolyte-du-Fort	E	h12	-	0.99	-	-	Pokrant *et al.* (2016)
BEV.T9260	France: Gironde: near Léognan: Minoy	E	h1	h1	0.97	-	-	Pokrant *et al.* (2016)
BEV.T9261	France: Gironde: near Léognan: Minoy	E	h1	h1	1.00	-	-	Pokrant *et al.* (2016)
BEV.T9264	France: Hérault: Avène dam	E	h1	h27	0.97	-	-	Pokrant *et al.* (2016)
BEV.9049	France: Hérault: between Le Bosc and Loiras	E	h1	-	1.00	-	-	Pokrant *et al.* (2016)
BEV.6428	France: Hérault: Grabels	unknown	-	-	1.00	-	-	Pokrant *et al.* (2016)
BEV.9029	France: Hérault: Lansargues	E	h1	-	-	-	-	Pokrant *et al.* (2016)
BEV.T9266	France: Hérault: Lattes	E	h1	h27	0.97	-	-	Pokrant *et al.* (2016)
BEV.T9258	France: Hérault: Le Mas Blanc	E	h4	h1	0.99	-	-	Pokrant *et al.* (2016)
BEV.T9259	France: Hérault: Le Mas Blanc	E	h1	h1	-	-	-	Pokrant *et al.* (2016)
BEV.T9565	France: Hérault: Les Corrèges	E	h1	h1	0.99	-	-	This study
BEV.6421	France: Hérault: Massif du Caroux	unknown	-	-	1.00	-	-	Pokrant *et al.* (2016)
BEV.8499	France: Hérault: Massif du Caroux	E	h1	-	0.99	-	-	Pokrant *et al.* (2016)
BEV.11496	France: Hérault: Montpellier	unknown			0.99	-	-	Pokrant *et al.* (2016)
BEV.847	France: Hérault: Saint-Pierre-de-la-Fage	E	h1	-	0.99	-	-	Pokrant *et al.* (2016)
BEV.10974	France: Hérault: Soulagets	E	h1	h15	-	-	-	This study
BEV.9041	France: Hérault: Truscas	unknown	-	-	0.98	-	-	Pokrant *et al.* (2016)
BEV.9293	France: Isère: Clelles	E	h1	-	1.00	-	-	Pokrant *et al.* (2016)
BEV.8324	France: Loire: Sainte-Foy-Saint-Sulpice	E	h1	-	1.00	-	-	Pokrant *et al.* (2016)
MTD T 10092	France: Puy-de-Dôme: near Murol: Monneaux	E	h1	-	1.00	-	-	Kindler *et al.* (2013)
MTD T 11999	France: Pyrénées-Atlantiques: St. Jean de Luz	E	h1	-	-	-	-	Pokrant *et al.* (2016)
MTD T 12024	France: Saône-et-Loire: Anost	E	h1	-	-	-	-	This study
ZFMK 61095	France: Saône-et-Loire: Anost	E	h1	h1	-	-	-	Kindler *et al.* (2013)
ZFMK 64930	France: Saône-et-Loire: Charolles	E	h1	h14	-	-	-	Kindler *et al.* (2013)
MTD D 40712	France: Var: N La Londe les Maures	E	-	h8	-	-	-	Kindler *et al.* (2013)
BEV.11530	France: Vaucluse: Saint-Saturnin-lès-Apt	E	h1	-	0.97	-	-	Pokrant *et al.* (2016)
MTD T 11973	Georgia: Akhaldaba	8	gn9	-	0.00	0.03	-	This study
MTD T 11975	Georgia: Akhaldaba	8	gn11	-	0.00	0.01	-	This study
ZFMK 76546	Georgia: Batumi	8	gn12	gn14	0.00	0.02	-	Kindler *et al.* (2013)
ZFMK 73721	Georgia: Borshomi	8	gn8	gn17	0.00	0.03	-	Kindler *et al.* (2013)
ZFMK 73722	Georgia: Borshomi	8	-	gn10	0.00	0.03	-	Kindler *et al.* (2013)
MTD T 14770	Georgia: Kobuleti	8	gn15	gn13	0.01	0.01	-	This study
MTD T 14771	Georgia: Kobuleti	8	gn16	gn10	0.00	0.01	-	This study
MTD T 8960	Georgia: Kutaisi	8	gn15	gn13	0.00	0.02	-	Kindler *et al.* (2013)
MTD T 9341	Georgia: Mtskheta	8	gn16	gn10	0.01	0.02	-	Kindler *et al.* (2013)
MTD T 9339	Georgia: N Stepanzminda	8	gn1	gn1	0.01	0.02	-	Kindler *et al.* (2013)
MTD T 9340	Georgia: N Stepanzminda	8	gn1	gn19	0.01	0.02	-	Kindler *et al.* (2013)
SMNS 14510	Germany: Baden-Württemberg: Bad Waldsee	3	y1	y1	0.02	0.92	-	This study
SMNS 14508	Germany: Baden-Württemberg: Bad Wurzach	3	y1	y1	0.01	0.98	0.07	This study
SMNS 14509	Germany: Baden-Württemberg: Bad Wurzach	3	y1	y1	0.04	0.71	-	This study
MTD T 14814	Germany: Baden-Württemberg: Berau	3	y1	y3	0.34	-	-	This study
ZFMK 78777	Germany: Baden-Württemberg: between Leonberg and Gerlingen	3	-	y5	0.01	0.96	0.13	Kindler *et al.* (2013)
MTD D 40907	Germany: Baden-Württemberg: Böhringer See	3	y1	-	0.20	-	-	Kindler *et al.* (2013)
MTD T 14531	Germany: Baden-Württemberg: Bronnbach	3	y1	y5	0.08	-	-	This study
SMNS 14503	Germany: Baden-Württemberg: Dettenheim	E	h1	h1	-	-	-	This study
MTD T 14816	Germany: Baden-Württemberg: Freudenstadt	3	y1	y34	0.30	-	-	This study
MTD T 14835	Germany: Baden-Württemberg: Freudenstadt	3	y1	-	-	-	-	This study

• **Table S1 continued**

Voucher	Locality	mtDNA data			Microsatellite data			Reference
		mtDNA clade	ND4 haplotype	cyt *b* haplotype	First STRUCTURE run	Second STRUCTURE run	Third STRUCTURE run	
MTD T 14858	Germany: Baden-Württemberg: Gamburg	3	y1	y5	0.01	0.99	0.27	This study
MTD T 14828	Germany: Baden-Württemberg: Harpolingen	E	h1	h23	0.99	-	-	This study
SMNS 14506	Germany: Baden-Württemberg: Herrenberg	3	y1	y1	-	-	-	This study
SMNS 14505	Germany: Baden-Württemberg: Herten	E	h1	h1	0.97	-	-	This study
SMNS 14512	Germany: Baden-Württemberg: Kandern	E	h1	h5	1.00	-	-	This study
MTD T 14874	Germany: Baden-Württemberg: Kappel-Grafenhausen	E	h1	h1	1.00	-	-	This study
MTD T 14837	Germany: Baden-Württemberg: Karlsruhe	3	y1	y1	0.11	-	-	This study
MTD T 14841	Germany: Baden-Württemberg: Karlsruhe	E	h1	h6	0.90	-	-	This study
SMNK-REP 689	Germany: Baden-Württemberg: Karlsruhe	E	h1	-	-	-	-	This study
SMNK-REP 910	Germany: Baden-Württemberg: Karlsruhe	E	h1	-	0.99	-	-	This study
SMNK-REP 1003	Germany: Baden-Württemberg: Karlsruhe: between Staffort and Weingarten	E	h1	-	0.96	-	-	This study
MTD T 14813	Germany: Baden-Württemberg: Karlsruhe: Oberwaldsee	E	h1	h1	0.99	-	-	This study
MTD T 14821	Germany: Baden-Württemberg: Kniebis	E	h1	h10	1.00	-	-	This study
MTD T 14843	Germany: Baden-Württemberg: Laufenburg - Grunholz	3	y1	y1	0.73	-	-	This study
MTD T 14820	Germany: Baden-Württemberg: Lenzkirch	E	h1	h1	-	-	-	This study
SMNK-REP 1268	Germany: Baden-Württemberg: Linkenheim	E	h1	-	1.00	-	-	This study
MTD T 14815	Germany: Baden-Württemberg: lower Neckar valley	3	y1	y5	0.09	-	-	This study
SMNS 12851	Germany: Baden-Württemberg: Ludwigsburg	3	y1	-	0.08	-	-	This study
SMNS 12227	Germany: Baden-Württemberg: Mettnau	3	y37	y1	0.15	-	-	This study
SMNS 14514	Germany: Baden-Württemberg: near Gerlingen: Krummbachtal	3	y1	y26	0.03	0.98	0.16	This study
SMNS 14515	Germany: Baden-Württemberg: near Gerlingen: Krummbachtal	3	y1	y5	0.15	-	-	This study
SMNS 14511	Germany: Baden-Württemberg: near Heilbronn: Reichertshausen	3	y1	-	0.03	0.97	0.10	This study
SMNS 9092	Germany: Baden-Württemberg: near Ravensburg	3	y1	y1	-	-	-	This study
MTD D 39068	Germany: Baden-Württemberg: Oberweissach	3	y1	y1	0.18	-	-	Kindler *et al.* (2013)
SMNS 14260	Germany: Baden-Württemberg: Ohmden-Jesingen	3	y1	-	0.01	0.98	0.25	This study
MTD T 14818	Germany: Baden-Württemberg: Ottenhöfen	E	h1	h1	1.00	-	-	This study
MTD T 14822	Germany: Baden-Württemberg: Präg	3	y1	-	0.92	-	-	This study
MTD T 14823	Germany: Baden-Württemberg: Präg	E	h1	h1	0.92	-	-	This study
MTD T 14824	Germany: Baden-Württemberg: Präg	E	h1	h1	0.99	-	-	This study
MTD T 14825	Germany: Baden-Württemberg: Präg	E	h1	h1	0.99	-	-	This study
MTD T 14826	Germany: Baden-Württemberg: Präg	E	h1	h1	0.99	-	-	This study
MTD T 14827	Germany: Baden-Württemberg: Präg	E	h1	h1	1.00	-	-	This study
MTD T 14525	Germany: Baden-Württemberg: Riedlingen	3	y1	y2	0.00	0.99	0.13	This study
MTD T 14526	Germany: Baden-Württemberg: Riedlingen	3	y1	-	0.00	0.99	0.46	This study
MTD T 14527	Germany: Baden-Württemberg: Riedlingen	3	y1	-	0.06	-	-	This study
MTD T 14528	Germany: Baden-Württemberg: Riedlingen	3	y1	y2	0.02	0.99	0.21	This study
MTD T 14529	Germany: Baden-Württemberg: Riedlingen	3	y1	y2	0.00	0.99	0.29	This study
MTD T 14829	Germany: Baden-Württemberg: Schiltach	3	y1	y34	-	-	-	This study
MTD T 14831	Germany: Baden-Württemberg: Schiltach	3	y1	y34	0.18	-	-	This study
MTD T 11994	Germany: Baden-Württemberg: Schriesheim	3	y1	y5	0.32	-	-	This study
MTD T 14839	Germany: Baden-Württemberg: Steinmauern	E	h1	h1	-	-	-	This study
SMNS 14517	Germany: Baden-Württemberg: Stuttgart-Botnang	3	y1	y5	0.00	0.99	0.17	This study
SMNS 14518	Germany: Baden-Württemberg: Stuttgart-Feuerbach	3	y1	y5	0.24	-	-	This study
SMNS 14151	Germany: Baden-Württemberg: Stuttgart-Hohenheim	3	y1	y1	0.01	0.99	0.11	This study
SMNS 14519	Germany: Baden-Württemberg: Stuttgart-Hohenheim, Uni Campus, Eiszeitsee	3	y1	y5	0.09	-	-	This study
SMNS 14085	Germany: Baden-Württemberg: Stuttgart-Vaihingen	3	y1	y26	0.22	-	-	This study
MTD T 14833	Germany: Baden-Württemberg: Sulz-Fischingen	3	y1	y1	0.09	-	-	This study
MTD T 12038	Germany: Baden-Württemberg: Tübingen: Wurmlingen	3	y1	y1	0.02	0.98	0.32	This study
MTD T 14834	Germany: Baden-Württemberg: Zwiefalten	3	y1	y2	0.04	0.96	0.25	This study
MTD T 11137	Germany: Bavaria: 1 km SSW Jachenau	3	y1	y12	0.39	-	-	This study
ZMH R09037	Germany: Bavaria: Berchtesgaden	3	y20	-	-	-	-	This study
MTD T 11141	Germany: Bavaria: between Katschenreuth and Frankenberg	3	y1	y5	0.00	0.98	0.31	This study
MTD T 11142	Germany: Bavaria: between Katschenreuth and Frankenberg	3	y1	y5	0.01	0.98	0.54	This study
MTD T 11143	Germany: Bavaria: between Katschenreuth and Frankenberg	3	y1	y5	0.00	0.99	0.79	This study
MTD T 11145	Germany: Bavaria: Dreschen	3	y1	y5	0.01	0.98	0.62	This study
MTD T 14560	Germany: Bavaria: E Passau: Erlau	4	r3	r10	0.00	0.98	0.30	This study
MTD T 11147	Germany: Bavaria: Haunstetten	3	y1	y13	0.00	0.96	0.10	This study
MTD T 11136	Germany: Bavaria: Jochenstein	4	r3	r10	0.00	0.93	-	This study
MTD T 11158	Germany: Bavaria: Klautzenbach	4	r3	r10	0.00	0.99	0.53	This study
ZFMK 71166	Germany: Bavaria: Mammendorf	4	r3	r20	0.00	0.97	0.13	Kindler *et al.* (2013)
MTD T 11134	Germany: Bavaria: Munich	4	r3	r10	0.00	0.95	0.10	This study
MTD T 11149	Germany: Bavaria: Munich: Feldmoching	4	r3	r10	0.00	0.99	0.28	This study
MTD T 11150	Germany: Bavaria: Munich: Obermenzing	4	r3	r10	0.00	0.56	-	This study
MTD T 11151	Germany: Bavaria: Munich: Obermenzing	4	r3	r10	0.00	0.99	0.07	This study
MTD T 11152	Germany: Bavaria: Munich: Obermenzing	4	r3	r10	0.00	0.98	0.04	This study
MTD T 11153	Germany: Bavaria: Munich: Obermenzing	3	y1	y12	0.00	0.91	-	This study
MTD T 11154	Germany: Bavaria: Munich: Obermenzing	3	y1	y12	0.00	0.98	0.04	This study
MTD T 11155	Germany: Bavaria: Munich: Obermenzing	4	r3	r10	0.00	0.80	-	This study
MTD T 11133	Germany: Bavaria: Murnauer Moos	3	y1	y5	0.00	0.99	0.19	This study
ZSM DNA 171	Germany: Bavaria: near Bad Aibling	4	r3	r10	0.00	0.99	0.07	This study
MTD T 11139	Germany: Bavaria: near Haiming	4	r3	r10	0.00	0.98	0.07	This study
MTD T 11144	Germany: Bavaria: near Neuenreuth	3	y1	y5	0.04	0.98	0.83	This study
MTD T 14352	Germany: Bavaria: Olching	4	r3	r10	0.00	0.99	0.07	This study
MTD T 11135	Germany: Bavaria: Passau	4	r3	r10	0.00	0.99	0.11	This study
ZFMK 56016	Germany: Bavaria: Passau	4	r3	r10	0.01	0.94	-	Kindler *et al.* (2013)
MTD T 11138	Germany: Bavaria: Schliersee	4	r3	r10	0.02	0.99	0.11	This study
MTD T 14832	Germany: Bavaria: Schwandorf	3	y1	y12	0.00	0.99	0.08	This study
MTD T 11140	Germany: Bavaria: Wackersdorf	3	y1	-	0.00	0.99	0.34	This study
MTD T 11148	Germany: Bavaria: Wolfratshausen	3	y1	y12	0.00	0.99	0.14	This study
MTD T 14172	Germany: Berlin: Teufelssee	3	y1	-	0.00	0.93	-	This study
MTD T 14173	Germany: Berlin: Teufelssee	3	y1	-	0.00	0.97	0.15	This study
MTD D 47570	Germany: Brandenburg: Brieske	3	y1	-	0.00	0.99	0.56	Kindler *et al.* (2013)
NME R 0492/06	Germany: Brandenburg: Casel	3	y1	-	-	-	-	This study
MTD D 29503	Germany: Brandenburg: Cumlosen	4	r4	HF680017	0.01	0.51	-	Kindler *et al.* (2013)
MTD T 11460	Germany: Brandenburg: Forst	3	y1	y6	0.00	0.98	0.41	This study
MTD T 14362	Germany: Brandenburg: Golm	4	r3	r10	0.00	0.98	0.60	This study
MTD T 14363	Germany: Brandenburg: Golm	3	y1	y17	0.00	0.99	0.84	This study
MTD T 14364	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.92	This study
MTD T 14365	Germany: Brandenburg: Golm	3	y35	y33	0.00	0.99	0.67	This study
MTD T 14366	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.96	0.88	This study
MTD T 14367	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.89	This study
MTD T 14369	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.92	This study
MTD T 14370	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.98	0.78	This study
MTD T 14371	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.83	This study
MTD T 14372	Germany: Brandenburg: Golm	4	r3	r15	0.00	0.99	0.54	This study
MTD T 14373	Germany: Brandenburg: Golm	3	y35	y33	0.00	0.98	0.66	This study
MTD T 14374	Germany: Brandenburg: Golm	3	y35	y33	0.00	0.99	0.93	This study
MTD T 14375	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.96	0.68	This study
MTD T 14376	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.80	This study
MTD T 14377	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.97	0.87	This study
MTD T 14378	Germany: Brandenburg: Golm	4	r3	r10	0.00	0.97	0.90	This study
MTD T 14379	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.98	0.56	This study
MTD T 14380	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.96	0.78	This study
MTD T 14381	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.97	0.87	This study
MTD T 14382	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.89	This study
MTD T 14383	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.95	0.96	This study
MTD T 14384	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.86	This study
MTD T 14385	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.98	0.83	This study
MTD T 14386	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.92	This study
MTD T 14387	Germany: Brandenburg: Golm	3	y1	y5	0.00	0.99	0.91	This study
MTD T 14530	Germany: Brandenburg: Gülpe	3	y8	y17	0.00	0.95	0.88	This study
MTD D 47197	Germany: Brandenburg: Guteborn	3	y1	y5	0.00	0.97	0.48	Kindler *et al.* (2013)
MTD T 3813	Germany: Brandenburg: Guteborn	3	-	y5	0.00	0.97	0.48	Kindler *et al.* (2013)
MTD D 45304	Germany: Brandenburg: Hosena	3	y1	y19	0.00	0.98	0.89	Kindler *et al.* (2013)
ZMB 66570	Germany: Brandenburg: near Bamme	3	y1	y5	0.00	0.99	0.60	Kindler *et al.* (2014)
MTD D 29504	Germany: Brandenburg: Perleberg	3	y20	y29	-	-	-	Kindler *et al.* (2013)
MTD T 14345	Germany: Brandenburg: Schwedt/Oder	3	y1	y17	0.00	0.99	0.92	This study
ZFMK 76358	Germany: Brandenburg: Senftenberg	3	y1	y17	0.00	0.98	0.89	Kindler *et al.* (2013)
MTD T 14368	Germany: Brandenburg: Werder	3	y13	y17	0.00	0.98	0.74	This study
ZMH R09735	Germany: Hamburg: Klövensteen	3	y1	y20	0.00	0.99	0.94	This study
ZMH R06162	Germany: Hamburg: Ohlstedt	3	y1	-	0.03	0.99	0.95	This study
ZMH R09009	Germany: Hamburg: Wohldorf	3	y1	-	-	-	-	This study
ZMH R09048	Germany: Hamburg: Wohldorf	3	y20	-	-	-	-	This study
MTD T 14620	Germany: Hesse: Bebra-Weiterode	3	y1	y5	0.00	0.98	0.84	This study

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
SMF 76440	Germany: Hesse: Bergen-Enkheim	**E**	**h1**	**h1**	0.91	-	-	This study
SMF 71026	Germany: Hesse: Biebergemünd	**3**	**y1**	-	0.01	0.99	0.62	This study
SMF 71027	Germany: Hesse: Biebergemünd	**3**	**y1**	**y31**	0.06	-	-	This study
SMF 77543	Germany: Hesse: Biebergemünd-Breitenborn	**3**	**y1**	**y5**	0.20	-	-	This study
SMF 78480	Germany: Hesse: Flieden	**3**	**y1**	**y31**	0.00	0.98	0.69	This study
ZFMK 58023	Germany: Hesse: Flieden	**3**	**y39**	**y5**	0.09	-	-	This study
ZFMK 82929	Germany: Hesse: Flieden	**3**	**y1**	**y31**	0.06	-	-	Kindler *et al.* (2013)
SMF 79183	Germany: Hesse: Hasselroth-Neuenhaßlau	**3**	**y1**	**y5**	0.39	-	-	This study
ZFMK 89403	Germany: Hesse: Herborn	**E**	**h1**	**h1**	-	-	-	Kindler *et al.* (2013)
MTD T 14112	Germany: Hesse: Herborn	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14842	Germany: Hesse: Hirschhorn	**3**	**y1**	**y5**	-	-	-	This study
MTD D 35776	Germany: Hesse: Hofheim/Lorsbuch	**E**	**h1**	**h24**	0.97	-	-	Kindler *et al.* (2013)
MTD T 14175	Germany: Hesse: Lautertal-Beedenkirchen	**E**	**h1**	-	0.73	-	-	This study
ZSUM Re.S2.1.2.c	Germany: Hesse: Marburg	**E**	**h1**	**h1**	0.97	-	-	This study
ZSUM Re.S2.1.1.a	Germany: Hesse: Marburg: Lahn mountains	C	**c1**	**c2**	0.33	-	-	This study
ZSUM Re.S2.1.2.a	Germany: Hesse: Marburg: Lahn mountains	C	**c1**	-	0.43	-	-	This study
ZSUM Re.S2.1.2.b	Germany: Hesse: Marburg: Lahn mountains	**unknown**	-	-	0.47	-	-	This study
ZSUM Re.S2.1.2.g	Germany: Hesse: Marburg: Lahn mountains	C	**c1**	-	0.99	-	-	This study
MTD T 13929	Germany: Hesse: Marburg: new botanical garden	**3**	**y1**	-	-	-	-	This study
MTD T 13930	Germany: Hesse: Marburg: new botanical garden	**3**	**y1**	-	-	-	-	This study
MTD T 13931	Germany: Hesse: Marburg: new botanical garden	**3**	**y39**	**y5**	0.01	0.95	0.80	This study
MTD T 13932	Germany: Hesse: Marburg: new botanical garden	**3**	**y39**	-	0.03	0.93	-	This study
MTD T 13933	Germany: Hesse: Marburg: new botanical garden	**3**	**y39**	**y5**	0.41	-	-	This study
MTD T 13400	Germany: Hesse: near Bad Homburg	**3**	**y1**	-	0.00	0.99	0.90	This study
SMF 73339	Germany: Hesse: near Bieber	**3**	**y1**	**y31**	0.04	0.96	0.82	This study
SMF 72196	Germany: Hesse: near Hanau: Mittelbuchen	**E**	**h1**	-	-	-	-	This study
SMF 72456	Germany: Hesse: near Kelkheim: Fischbach	**E**	**h1**	**h24**	0.99	-	-	This study
ZFMK 82930	Germany: Hesse: Steinau	**4**	**r3**	**r10**	0.00	0.83	-	Kindler *et al.* (2013)
SMF 75825	Germany: Hesse: SW Gross-Gerau: Kühkopf	**E**	**h1**	**h1**	1.00	-	-	This study
SMF 74531	Germany: Hesse: W Oberndorf	**3**	**y1**	**y31**	0.07	-	-	This study
SMF 78703	Germany: Hesse: Weilrod: Niederlauken	**E**	**h1**	**h4**	0.99	-	-	This study
MTD T 14749	Germany: Lower Saxony: Cuxhaven: Spanger Heide	**3**	**y1**	**y17**	0.00	0.99	0.95	This study
MTD T 14750	Germany: Lower Saxony: Cuxhaven: Spanger Heide	**3**	**y1**	**y18**	0.00	0.99	0.89	This study
LMNM REP963	Germany: Lower Saxony: Frieschenmoor	**3**	**y1**	**y17**	0.05	0.87	-	This study
MTD T 13919	Germany: Lower Saxony: Gartow	**3**	**y35**	-	0.00	0.99	0.90	This study
MTD T 13374	Germany: Lower Saxony: Hannover	**3**	**y1**	-	-	-	-	This study
MTD T 13367	Germany: Lower Saxony: Hannover	**3**	**y1**	**y27**	-	-	-	This study
LMNM REP961	Germany: Lower Saxony: Hatterwüsting	**3**	**y1**	**y17**	-	-	-	This study
LMNM REP107	Germany: Lower Saxony: Hude	**3**	**y1**	**y17**	0.02	0.99	0.95	This study
LMNM REP960	Germany: Lower Saxony: Huntlosen	**3**	**y1**	**y18**	0.16	-	-	This study
MTD T 13370	Germany: Lower Saxony: Lachendorf	**3**	**y35**	-	0.01	0.98	0.90	This study
MTD T 13371	Germany: Lower Saxony: Lachendorf	**3**	**y1**	-	0.00	0.99	0.95	This study
ZFMK 86134	Germany: Lower Saxony: Lachendorf	**3**	**y1**	**y5**	0.00	0.99	0.92	Kindler *et al.* (2013)
ZFMK 89088	Germany: Lower Saxony: Leiferde	**3**	**y1**	**y9**	0.01	0.99	0.71	Kindler *et al.* (2013)
ZMH R06756	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.65	-	This study
ZMH R06758	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.12	-	-	This study
ZMH R06945	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.93	-	This study
ZMH R06959	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	-	0.01	0.46	-	This study
ZMH R07057	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.01	0.78	-	This study
ZMH R07878	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.73	-	This study
ZMH R08415	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.08	-	This study
ZMH R08936	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.39	-	This study
ZMH R09335	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.40	-	This study
ZMH R09336	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	-	0.00	0.92	-	This study
ZMH R09337	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.58	-	This study
ZMH R09540	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.01	0.85	-	This study
ZMH R09636	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.92	-	This study
ZMH R09742	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.66	-	This study
ZMH R09754	Germany: Lower Saxony: Lüchow-Dannenberg: Pevestorf	**3**	**y20**	**y29**	0.00	0.85	-	This study
MTD T 13373	Germany: Lower Saxony: Meißendorf	**3**	**y1**	**y17**	0.01	0.98	0.77	This study
MTD T 13368	Germany: Lower Saxony: near Celle: Bannetzer Moor	**3**	**y1**	-	0.01	0.99	0.54	This study
MTD T 13369	Germany: Lower Saxony: near Cuxhaven: Arensch	**3**	**y1**	-	0.01	0.99	0.55	This study
MTD T 13372	Germany: Lower Saxony: near Dannefeld	**3**	**y35**	-	0.00	0.97	0.77	This study
LMNM REP957	Germany: Lower Saxony: Oldenbrok	**3**	**y1**	**y17**	0.08	-	-	This study
LMNM REP496	Germany: Lower Saxony: Oldenburg	**3**	**y1**	-	-	-	-	This study
LMNM REP962	Germany: Lower Saxony: Oldenburg: Eversten	**3**	**y1**	**y17**	0.15	-	-	This study
MTD T 14621	Germany: Lower Saxony: Oldendorf (Luhe)	**3**	-	**y19**	-	-	-	This study
MTD T 14622	Germany: Lower Saxony: Oldendorf (Luhe)	**3**	**y1**	**y19**	0.00	0.99	0.93	This study
LMNM REP553	Germany: Lower Saxony: Rastede	**3**	**y1**	-	-	-	-	This study
LMNM REP128	Germany: Lower Saxony: S Oldenburg: Barneführer Holz	**3**	**y1**	-	0.02	0.98	0.42	This study
ZMH R06717	Germany: Lower Saxony: Salzhausen	**3**	**y1**	-	-	-	-	This study
ZMH R09016	Germany: Lower Saxony: Stade	**3**	**y1**	-	-	-	-	This study
MTD T 13917	Germany: Lower Saxony: Steinhuder Meer	**3**	**y1**	**y17**	0.03	0.99	0.91	This study
MTD T 13918	Germany: Lower Saxony: Steinhuder Meer	**3**	**y1**	**y17**	0.02	0.99	0.84	This study
MTD T 11465	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y22**	0.00	0.99	0.94	Kindler *et al.* (2014)
MTD T 11466	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.98	0.87	Kindler *et al.* (2014)
MTD T 11467	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.99	0.91	Kindler *et al.* (2014)
MTD T 11468	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y31**	**y17**	0.01	0.91	-	Kindler *et al.* (2014)
MTD T 11469	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.98	0.85	Kindler *et al.* (2014)
MTD T 11470	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.99	0.87	Kindler *et al.* (2014)
MTD T 11471	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.98	0.89	Kindler *et al.* (2014)
MTD T 11472	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.99	0.89	Kindler *et al.* (2014)
MTD T 11473	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.99	0.84	Kindler *et al.* (2014)
MTD T 11474	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.98	0.95	Kindler *et al.* (2014)
MTD T 11476	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.99	0.89	Kindler *et al.* (2014)
MTD T 11477	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y22**	0.00	0.99	0.90	Kindler *et al.* (2014)
MTD T 11478	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.98	0.91	Kindler *et al.* (2014)
MTD T 11479	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.96	0.48	Kindler *et al.* (2014)
MTD T 11480	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.99	0.94	Kindler *et al.* (2014)
MTD T 11481	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.99	0.91	Kindler *et al.* (2014)
MTD T 11482	Germany: Mecklenburg-Western Pomerania: 3 km E Wesenberg	**3**	**y1**	**y17**	0.00	0.98	0.92	Kindler *et al.* (2014)
NME R 0567/08	Germany: Mecklenburg-Western Pomerania: Boitin	**3**	**y1**	**y17**	0.00	0.99	0.93	This study
NME R 0973/14	Germany: Mecklenburg-Western Pomerania: Groß-Miltzow	**3**	**y22**	-	0.00	0.97	0.18	This study
NME R 0974/14	Germany: Mecklenburg-Western Pomerania: Groß-Miltzow	**3**	**y1**	**y17**	0.00	0.99	0.95	This study
ZFMK 61035	Germany: Mecklenburg-Western Pomerania: Güstrow	**3**	-	**y17**	-	-	-	Kindler *et al.* (2013)
NME R 0414/02	Germany: Mecklenburg-Western Pomerania: near Ahlbeck	**3**	**y1**	-	0.00	0.99	0.69	This study
NME R 0963/14	Germany: Mecklenburg-Western Pomerania: near Ahlbeck	**3**	**y1**	-	0.00	0.98	0.43	This study
MTD T 12145	Germany: Mecklenburg-Western Pomerania: near Altwarp	**3**	**y1**	**y17**	0.00	0.97	0.90	This study
MTD T 12146	Germany: Mecklenburg-Western Pomerania: near Altwarp	**3**	**y1**	**y17**	0.00	0.98	0.79	This study
MTD T 12147	Germany: Mecklenburg-Western Pomerania: near Altwarp	**3**	**y1**	**y17**	0.00	0.98	0.93	This study
MTD T 12148	Germany: Mecklenburg-Western Pomerania: near Altwarp	**3**	**y1**	**y17**	0.00	0.97	0.95	This study
MTD T 12149	Germany: Mecklenburg-Western Pomerania: near Altwarp	**3**	**y1**	-	0.00	0.98	0.92	This study
MTD T 12150	Germany: Mecklenburg-Western Pomerania: near Altwarp	**3**	**y1**	-	0.00	0.98	0.80	This study
MTD T 12134	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y22**	**y17**	0.00	0.99	0.95	This study
MTD T 12135	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y1**	**y17**	0.00	0.99	0.91	This study
MTD T 12136	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y1**	**y17**	0.00	0.99	0.85	This study
MTD T 12137	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y1**	**y17**	0.00	0.99	0.81	This study
MTD T 12138	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y22**	**y17**	0.00	0.99	0.88	This study
MTD T 12139	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y1**	-	0.00	0.99	0.86	This study
MTD T 12140	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y1**	**y17**	0.00	0.90	-	This study
MTD T 12141	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y22**	**y17**	0.00	0.99	0.62	This study
MTD T 12142	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y1**	-	0.00	0.98	0.90	This study
MTD T 12143	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y22**	**y17**	0.01	0.98	0.61	This study
MTD T 12144	Germany: Mecklenburg-Western Pomerania: near Carwitz	**3**	**y1**	**y17**	0.00	0.98	0.90	This study
MTD T 14482	Germany: Mecklenburg-Western Pomerania: near Stralsund	**3**	**y1**	**y17**	0.00	0.98	0.88	This study
MTD T 12829	Germany: Mecklenburg-Western Pomerania: near Wustrow	**3**	**y1**		0.00	0.99	0.40	This study
MTD T 11462	Germany: Mecklenburg-Western Pomerania: Neubrandenburg	**3**	**y1**	**y17**	0.00	0.99	0.91	Kindler *et al.* (2014)
MTD T 11463	Germany: Mecklenburg-Western Pomerania: Neubrandenburg	**3**	**y1**	**y17**	0.00	0.99	0.92	Kindler *et al.* (2014)
MTD T 11464	Germany: Mecklenburg-Western Pomerania: Neubrandenburg	**3**	**y1**	**y17**	0.00	0.99	0.83	Kindler *et al.* (2014)
NME R 0475/06	Germany: Mecklenburg-Western Pomerania: Neubrandenburg	**3**	**y1**	**y17**	0.00	0.98	0.88	This study
MTD T 11475	Germany: Mecklenburg-Western Pomerania: Neubrandenburg: Lake Tollense	**3**	**y1**	**y17**	0.00	0.98	0.77	Kindler *et al.* (2014)
ZFMK 47435	Germany: Mecklenburg-Western Pomerania: Neukloster	**3**	**y1**	-	0.00	0.99	0.95	Kindler *et al.* (2013)
NME R 0474/06	Germany: Mecklenburg-Western Pomerania: Prerow	**3**	**y43**	**y1**	0.00	0.99	0.93	This study
MTD T 14508	Germany: Mecklenburg-Western Pomerania: Rostock: Radelsee	**3**	**y10**	**y17**	0.00	0.99	0.95	This study

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
MTD T 14483	Germany: Mecklenburg-Western Pomerania: Saal: Neuendorf-Heide	**3**	**y1**	**y1**	0.00	0.96	0.94	This study
MTD T 14484	Germany: Mecklenburg-Western Pomerania: Saal: Neuendorf-Heide	**3**	**y1**	**y1**	0.00	0.98	0.91	This study
MTD T 11483	Germany: Mecklenburg-Western Pomerania: Usedom	**3**	**y1**	**y17**	0.00	0.94	-	Kindler *et al.* (2014)
MTD T 11484	Germany: Mecklenburg-Western Pomerania: Usedom	**3**	**y1**	**y17**	0.00	0.98	0.90	Kindler *et al.* (2014)
ZFMK 68431	Germany: North Rhine-Westphalia: Bad Honnef	**E**	**h1**	-	1.00	-	-	Kindler *et al.* (2013)
ZFMK 68432	Germany: North Rhine-Westphalia: Bad Honnef	**E**	**h1**	**h1**	1.00	-	-	Kindler *et al.* (2013)
ZFMK 92193	Germany: North Rhine-Westphalia: Bad Münstereifel	**E**	**h1**	**h1**	0.99	-	-	Kindler *et al.* (2013)
MTD T 11191	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.98	-	-	This study
MTD T 11193	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11194	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11195	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11196	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11197	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11198	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.85	-	-	This study
MTD T 11199	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11200	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11204	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11408	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11409	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11412	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11414	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11415	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11417	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11420	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11421	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.98	-	-	This study
MTD T 11422	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.98	-	-	This study
MTD T 11424	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11426	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11427	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.98	-	-	This study
MTD T 11429	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11430	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11432	Germany: North Rhine-Westphalia: between Ammelsbüren and Davensberg	**E**	**h1**	**h1**	0.98	-	-	This study
ZFMK 75088	Germany: North Rhine-Westphalia: between Bergisch-Gladbach and Herrenstrunden	**E**	**h1**	-	1.00	-	-	Kindler *et al.* (2013)
ZFMK 70420	Germany: North Rhine-Westphalia: between Hürtgenwald and Gey	**E**	**h1**	**h1**	1.00	-	-	Kindler *et al.* (2013)
MTD T 12494	Germany: North Rhine-Westphalia: between Ratingen and Düsseldorf	**E**	**h1**	**h1**	1.00	-	-	This study
ZFMK 68433	Germany: North Rhine-Westphalia: Bonn	**E**	**h10**	**h1**	0.99	-	-	Kindler *et al.* (2013)
ZFMK 92228	Germany: North Rhine-Westphalia: Bonn	**E**	**h1**	-	0.98	-	-	Kindler *et al.* (2013)
ZFMK 92536	Germany: North Rhine-Westphalia: Bonn	**E**	**h1**	**h1**	0.96	-	-	Kindler *et al.* (2013)
ZFMK 92537	Germany: North Rhine-Westphalia: Bonn	**E**	**h10**	**h1**	0.98	-	-	Kindler *et al.* (2013)
ZFMK 89393	Germany: North Rhine-Westphalia: Bonn: Kottenforst	**E**	**h10**	**h1**	0.99	-	-	Kindler *et al.* (2013)
MTD T 12106	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	1.00	-	-	This study
MTD T 12107	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	0.98	-	-	This study
MTD T 12108	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	1.00	-	-	This study
MTD T 12109	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	0.99	-	-	This study
MTD T 12110	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	1.00	-	-	This study
MTD T 12111	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	0.99	-	-	This study
MTD T 12112	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	0.98	-	-	This study
MTD T 12115	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	1.00	-	-	This study
MTD T 12117	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	1.00	-	-	This study
MTD T 12118	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 12119	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 12120	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 12121	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 12122	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 12123	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	1.00	-	-	This study
MTD T 12124	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	1.00	-	-	This study
MTD T 12125	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 12126	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	0.98	-	-	This study
MTD T 12127	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 12128	Germany: North Rhine-Westphalia: Brüchermühle	**E**	**h1**	-	1.00	-	-	This study
MTD T 14059	Germany: North Rhine-Westphalia: Dortmund	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14060	Germany: North Rhine-Westphalia: Dortmund	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11981	Germany: North Rhine-Westphalia: Dortmund: Kirchderne	**E**	**h1**	**h1**	1.00	-	-	This study
ZFMK 86786	Germany: North Rhine-Westphalia: Drove	**E**	**h1**	-	1.00	-	-	Kindler *et al.* (2013)
SMNS 14502	Germany: North Rhine-Westphalia: Herfterath	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11786	Germany: North Rhine-Westphalia: Herne	**E**	**h1**	**h1**	0.98	-	-	This study
MTD T 12021	Germany: North Rhine-Westphalia: Herne	**E**	**h1**	-	0.98	-	-	This study
MTD T 12020	Germany: North Rhine-Westphalia: Königswinter	**E**	**h10**	-	0.94	-	-	This study
ZFMK 82773	Germany: North Rhine-Westphalia: Königswinter: Ittenbach	**E**	**h1**	**h17**	0.98	-	-	Kindler *et al.* (2013)
MTD T 11790	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	-	0.00	0.94	-	This study
MTD T 11809	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	-	0.00	0.97	0.23	This study
MTD T 11874	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	**r35**	0.00	0.97	0.23	This study
MTD T 11879	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	-	-	-	-	This study
MTD T 11888	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	**r35**	0.00	0.98	0.05	This study
MTD T 11889	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	**r34**	0.00	0.99	0.17	This study
MTD T 11890	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	**r35**	0.00	0.97	0.21	This study
MTD T 11891	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	-	0.00	0.96	0.08	This study
MTD T 11892	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	-	0.00	0.91	-	This study
MTD T 11894	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	-	0.00	0.97	0.10	This study
MTD T 11895	Germany: North Rhine-Westphalia: Mettmann: Neandertal	**4**	**r4**	-	0.00	0.98	0.06	This study
MTD T 11574	Germany: North Rhine-Westphalia: Much	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11575	Germany: North Rhine-Westphalia: Much	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11576	Germany: North Rhine-Westphalia: Much	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11577	Germany: North Rhine-Westphalia: Much	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 14087	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14088	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14089	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	-	-	-	This study
MTD T 14090	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	-	**h1**	1.00	-	-	This study
MTD T 14091	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	1.00	-	-	This study
MTD T 14092	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14094	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	1.00	-	-	This study
MTD T 14095	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	1.00	-	-	This study
MTD T 14096	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14097	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	-	-	-	This study
MTD T 14098	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	1.00	-	-	This study
MTD T 14099	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	1.00	-	-	This study
MTD T 14100	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14101	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	1.00	-	-	This study
MTD T 14103	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14104	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	-	-	-	This study
MTD T 14105	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14106	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	1.00	-	-	This study
MTD T 14107	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	-	-	-	This study
MTD T 14109	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	-	1.00	-	-	This study
MTD T 14111	Germany: North Rhine-Westphalia: near Dormagen: Knechtstedener Wald	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14485	Germany: North Rhine-Westphalia: near Olpe: Friesenhagen	**E**	**h1**	**h1**	0.95	-	-	This study
ZFMK 83771	Germany: North Rhine-Westphalia: Nideggen/Eifel	**E**	**h1**	**h1**	0.98	-	-	Kindler *et al.* (2013)
MTD T 13972	Germany: North Rhine-Westphalia: Rösrath	**E**	**h1**	**h1**	0.99	-	-	This study
ZFMK 89086	Germany: North Rhine-Westphalia: Sankt Augustin-Hangelar	**E**	**h1**	**h1**	0.96	-	-	Kindler *et al.* (2013)
MTD T 11157	Germany: North Rhine-Westphalia: Troisdorf	**E**	**h1**	**h1**	-	-	-	This study
MTD T 11996	Germany: North Rhine-Westphalia: Troisdorf	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 14486	Germany: North Rhine-Westphalia: Wesel	**E**	**h1**	**h1**	0.97	-	-	This study
MTD T 11795	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11873	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	-	-	-	This study
MTD T 11877	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	-	0.97	-	-	This study
MTD T 11878	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11880	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11881	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11883	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11884	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	-	0.96	-	-	This study
MTD T 11886	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	0.99	-	-	This study
MTD T 11887	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11904	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 11905	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	**E**	**h1**	**h1**	1.00	-	-	This study

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
MTD T 11907	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	-	1.00	-	-	This study
MTD T 12043	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	-	-	-	-	This study
MTD T 12045	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	-	0.99	-	-	This study
MTD T 12048	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	-	1.00	-	-	This study
MTD T 12049	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	-	1.00	-	-	This study
MTD T 12050	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	h1	0.99	-	-	This study
MTD T 12051	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	h1	1.00	-	-	This study
MTD T 12052	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	h1	1.00	-	-	This study
MTD T 12053	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	h1	0.93	-	-	This study
MTD T 12054	Germany: North Rhine-Westphalia: Wuppertal: Kohlfurt	E	h1	-	1.00	-	-	This study
ZFMK 73645	Germany: North Rhine-Westphalia: Wuppertal: Morsbachtal	E	h1	h1	1.00	-	-	Kindler *et al.* (2013)
MTD T 12057	Germany: North Rhine-Westphalia: Wuppertal: Neu-Dornap	E	h1	-	1.00	-	-	This study
ZFMK 73646	Germany: North Rhine-Westphalia: Wuppertal: Vorwerk	E	h1	h1	1.00	-	-	Kindler *et al.* (2013)
MTD T 14838	Germany: Rhineland-Palatinate: Altenahr	E	h5	h1	-	-	-	This study
MTD T 12042	Germany: Rhineland-Palatinate: between Oberpleis and Eudenbach	E	h1	-	-	-	-	This study
SMF 56593	Germany: Rhineland-Palatinate: Bürdenbach	E	h1	h1	0.89	-	-	This study
SMNS 14504	Germany: Rhineland-Palatinate: Germersheim	E	h1	h1	1.00	-	-	This study
ZFMK 80876	Germany: Rhineland-Palatinate: Horhausen	E	h1	h1	0.92	-	-	Kindler *et al.* (2013)
MTD D 35933	Germany: Rhineland-Palatinate: Lieser	E	h1	h1	1.00	-	-	Kindler *et al.* (2013)
ZFMK 83703	Germany: Rhineland-Palatinate: Maria Laach	E	h1	h1	-	-	-	Kindler *et al.* (2013)
SMF 73299	Germany: Rhineland-Palatinate: Nauroth	E	h1	h1	1.00	-	-	This study
MTD T 11573	Germany: Rhineland-Palatinate: near Dreis	E	h1	h1	1.00	-	-	This study
MTD T 11758	Germany: Rhineland-Palatinate: near Linz: St. Katharinen	E	h1	-	-	-	-	This study
SMF 74940	Germany: Rhineland-Palatinate: SW Koblenz: between Macken and Burgen	E	h1	h1	0.99	-	-	This study
ZFMK 80875	Germany: Rhineland-Palatinate: Weltersburg	E	h1	-	1.00	-	-	Kindler *et al.* (2013)
ZFMK 54321	Germany: Saarland: Hirschberg/Neunkirchen	E	-	h28	0.99	-	-	Kindler *et al.* (2013)
MTD T 14481	Germany: Saxony: Altenberg: Bärenstein	4	r3	r10	0.00	0.99	0.82	This study
MTD D 39712	Germany: Saxony: Bad Düben	3	y1	HF680028	-	-	-	Kindler *et al.* (2013)
MTD D 39331	Germany: Saxony: Bad Gottleuba	4	r3	r17	0.00	0.98	0.19	Kindler *et al.* (2013)
MTD D 47231	Germany: Saxony: Bärnsdorf	4	r3	r10	0.00	0.98	0.49	Kindler *et al.* (2013)
MTD T 10923	Germany: Saxony: between Burkhartswalde and Obermunzig	3	y1	y5	0.01	0.81	-	This study
MTD T 14545	Germany: Saxony: between Mohorn and Helbigsdorf	4	r4	r34	0.00	0.99	0.34	This study
MTD T 10997	Germany: Saxony: between Volkersdorf and Boxdorf	4	r28	r10	0.00	0.98	0.91	This study
MTD T 10998	Germany: Saxony: between Volkersdorf and Boxdorf	4	r3	r10	-	-	-	This study
MTD T 3183	Germany: Saxony: Biehla	3	y1	y6	0.00	0.98	0.23	Kindler *et al.* (2013)
MTD D 31066	Germany: Saxony: Borna	4	r3	r17	0.02	0.96	0.15	Kindler *et al.* (2013)
MWLK 192/13	Germany: Saxony: Burkau	3	y2	y5	0.00	0.98	0.62	This study
MTD D 47317	Germany: Saxony: Chemnitz	3	y9	y5	0.00	0.99	0.64	Kindler *et al.* (2013)
MTD D 47318	Germany: Saxony: Chemnitz	3	-	y5	0.00	0.99	0.93	Kindler *et al.* (2013)
MWLK 803/05	Germany: Saxony: Cunnersdorf	4	r3	r10	0.00	0.94	-	This study
MWLK 626/05	Germany: Saxony: Cunnersdorf-Biehla	3	y2	y5	0.00	0.99	0.38	Kindler *et al.* (2013)
MTD D 46238	Germany: Saxony: Dahlen	3	y1	y5	0.00	0.96	0.72	Kindler *et al.* (2013)
MWLK 588/11	Germany: Saxony: Döbra	3	y1	y6	0.00	0.98	0.85	This study
MTD D 47638	Germany: Saxony: Dorfhain	4	r3	r10	0.00	0.99	0.65	Kindler *et al.* (2013)
MTD D 45527	Germany: Saxony: Dresden	3	-	y27	0.00	0.97	0.18	Kindler *et al.* (2013)
MTD D 47639	Germany: Saxony: Dresden	4	r3	r10	0.01	0.98	0.75	Kindler *et al.* (2013)
MTD D 47728	Germany: Saxony: Dresden	3	y1	-	0.00	0.99	0.78	Kindler *et al.* (2013)
MTD T 11539	Germany: Saxony: Dresden	3	y1	y27	0.02	0.99	0.86	This study
MTD T 13025	Germany: Saxony: Dresden	4	r3	r10	0.00	0.99	0.60	This study
MTD T 13090	Germany: Saxony: Dresden	3	y1	y27	0.00	0.98	0.65	This study
MTD T 14057	Germany: Saxony: Dresden	4	r3	r10	-	-	-	This study
MTD T 14487	Germany: Saxony: Dresden	4	r3	r10	0.00	0.99	0.12	This study
MTD T 11159	Germany: Saxony: Dresden: Airport	4	r3	r10	0.00	0.99	0.87	This study
MTD T 12816	Germany: Saxony: Dresden: Klotzsche	4	r3	r10	0.02	0.98	0.77	This study
MTD T 12832	Germany: Saxony: Dresden: Klotzsche	4	r3	r10	0.00	0.99	0.79	This study
MWLK 76/08	Germany: Saxony: Dresden: Klotzsche	3	y1	y27	-	-	-	This study
MTD D 48178	Germany: Saxony: Dresden: Langebrück	4	r4	r34	0.00	0.98	0.57	Kindler *et al.* (2013)
MTD T 12835	Germany: Saxony: Dresden: Langebrück	3	y1	y27	0.00	0.98	0.22	This study
MWLK 665/11	Germany: Saxony: Dresden: Langebrück	3	y1	-	-	-	-	This study
MTD D 47258	Germany: Saxony: Dresden: Weixdorf	4	r3	r10	0.02	0.98	0.87	Kindler *et al.* (2013)
MTD D 48756	Germany: Saxony: Dresden: Weixdorf	3	y1	y27	0.00	0.99	0.76	This study
MWLK 250/08	Germany: Saxony: Drohen	3	y1	y8	0.00	0.99	0.40	This study
MWLK 399/01	Germany: Saxony: Dubring - Scheckthal	3	y1	y6	-	-	-	This study
MWLK 51/04	Germany: Saxony: Dubringer Moor	3	y1	y6	0.00	0.98	0.58	Kindler *et al.* (2013)
MWLK 432/08	Germany: Saxony: Fischbach	4	r3	r10	0.00	0.99	0.31	This study
MWLK 265/08	Germany: Saxony: Groß Neida	3	y1	y5	0.00	0.98	0.55	This study
MWLK 266/08	Germany: Saxony: Groß Neida	3	y1	-	0.00	0.99	0.40	This study
MTD D 38701	Germany: Saxony: Großdittmannsdorf	4	-	r34	-	-	-	Kindler *et al.* (2013)
MWLK 370/04	Germany: Saxony: Großdittmannsdorf	4	r3	r10	-	-	-	Kindler *et al.* (2013)
MWLK 776/05	Germany: Saxony: Guttau	3	y1	y5	0.00	0.92	-	Kindler *et al.* (2013)
MTD D 47002	Germany: Saxony: Hartmannsgrün	3	-	y5	0.00	0.99	0.67	Kindler *et al.* (2013)
MTD T 14752	Germany: Saxony: Helbigsdorf	4	r4	r59	0.00	0.99	0.88	This study
MWLK 794/05	Germany: Saxony: Jetscheba	3	y1	y5	0.01	0.93	-	This study
MWLK 182/12	Germany: Saxony: Kamenz	3	y2	y5	0.00	0.97	0.29	This study
MWLK 466/05	Germany: Saxony: Kamenz	4	r3	-	0.00	0.99	0.46	Kindler *et al.* (2013)
MWLK 988/05	Germany: Saxony: Kamenz	3	y2	y5	0.00	0.97	0.26	Kindler *et al.* (2013)
MTD T 10924	Germany: Saxony: Karsdorf	4	r3	r10	0.00	0.99	0.61	This study
MTD T 10925	Germany: Saxony: Karsdorf	4	r3	r10	0.01	0.99	0.26	This study
MTD T 10926	Germany: Saxony: Karsdorf	3	y1	y5	0.01	0.98	0.09	This study
MTD T 10927	Germany: Saxony: Karsdorf	4	r3	r10	-	-	-	This study
MTD T 10928	Germany: Saxony: Karsdorf	4	r3	r10	-	-	-	This study
MTD T 10929	Germany: Saxony: Karsdorf	4	r4	r34	0.01	0.99	0.22	This study
MTD T 10930	Germany: Saxony: Karsdorf	3	y1	y5	0.01	0.98	0.62	This study
MTD T 10932	Germany: Saxony: Karsdorf	4	r4	r34	0.00	0.99	0.90	This study
MTD T 10933	Germany: Saxony: Karsdorf	4	r3	r10	0.00	0.99	0.30	This study
MTD T 10934	Germany: Saxony: Karsdorf	4	r3	r17	-	-	-	This study
MTD T 10843	Germany: Saxony: Kleba	4	r3	r10	0.00	0.90	-	This study
MTD T 14350	Germany: Saxony: Klingenberg	4	r3	r10	0.00	0.98	0.20	This study
MTD T 14351	Germany: Saxony: Klingenberg	4	r4	r34	0.00	0.99	0.14	This study
MTD T 14444	Germany: Saxony: Klingenberg	4	r3	r10	0.00	0.99	0.83	This study
MTD T 14445	Germany: Saxony: Klingenberg	4	r3	r10	0.00	0.98	0.09	This study
MTD D 40611	Germany: Saxony: Kreischa-Lockmittel	4	r3	r10	0.00	0.99	0.61	Kindler *et al.* (2013)
MTD D 45996	Germany: Saxony: Lauterbach	3	-	y5	0.00	0.99	0.95	Kindler *et al.* (2013)
MTD T 9528	Germany: Saxony: Lengefeld / Neunzehnhain	4	r3	r11	0.00	0.98	0.73	Kindler *et al.* (2013)
MWLK 343/10	Germany: Saxony: Liebegast	3	y1	y27	0.01	0.99	0.86	This study
MTD D 48837	Germany: Saxony: Liegau-Augustusbad	4	r3	r10	0.00	0.99	0.20	This study
MTD T 10999	Germany: Saxony: Liegau-Augustusbad	4	r3	r10	0.00	0.99	0.22	This study
MTD T 11227	Germany: Saxony: Liegau-Augustusbad	4	r3	r10	0.00	0.98	0.50	This study
MTD T 11461	Germany: Saxony: Liegau-Augustusbad	4	r3	r10	0.00	0.97	0.30	This study
MTD T 12782	Germany: Saxony: Liegau-Augustusbad	3	y1	y27	0.00	0.98	0.28	This study
MTD T 13332	Germany: Saxony: Liegau-Augustusbad	3	y1	y27	0.00	0.97	0.33	This study
MWLK 76/01	Germany: Saxony: Linz	4	r3	r10	0.00	0.99	0.52	Kindler *et al.* (2013)
MTD T 10936	Germany: Saxony: Medingen	3	y1	y27	0.00	0.98	0.35	This study
MTD T 11106	Germany: Saxony: Meißen	3	y1	y5	0.08	-	-	This study
MTD T 11107	Germany: Saxony: Meißen	4	r3	r10	0.00	0.99	0.95	This study
MTD T 11108	Germany: Saxony: Meißen	4	r3	r10	0.00	0.98	0.26	This study
MTD T 11396	Germany: Saxony: Meißen	4	r3	r10	0.00	0.98	0.20	This study
MTD T 11397	Germany: Saxony: Meißen	3	y1	y5	0.00	0.99	0.56	This study
MTD T 11398	Germany: Saxony: Meißen	4	r3	r14	0.00	0.98	0.66	This study
MTD T 11400	Germany: Saxony: Meißen	4	r3	r14	-	-	-	This study
MWLK 371/01	Germany: Saxony: Michalken	3	y1	y5	0.00	0.98	0.22	Kindler *et al.* (2013)
MWLK 372/01	Germany: Saxony: Michalken	3	y1	y6	0.00	0.97	0.45	Kindler *et al.* (2013)
MWLK 624/07	Germany: Saxony: Michalken	3	y1	y5	0.01	0.99	0.51	This study
MTD D 45006	Germany: Saxony: Milkel	3	y1	y6	-	-	-	Kindler *et al.* (2013)
MWLK 793/05	Germany: Saxony: Milkel	3	y1	y8	0.00	0.98	0.35	This study
MWLK 1032/05	Germany: Saxony: Mönau	3	y1	y5	0.00	0.99	0.92	This study
MWLK 1049/05	Germany: Saxony: Mönau	3	y1	y5	0.01	0.96	0.20	This study
MTD T 10770	Germany: Saxony: Moritzburg	4	r4	r34	0.01	0.73	-	This study
MTD T 10771	Germany: Saxony: Moritzburg	4	r4	r34	0.00	0.99	0.71	This study
MTD T 10772	Germany: Saxony: Moritzburg	4	r4	r44	0.01	0.99	0.58	This study
MTD T 10773	Germany: Saxony: Moritzburg	4	r4	r34	0.01	0.99	0.92	This study
MTD T 10774	Germany: Saxony: Moritzburg	3	y1	y5	0.00	0.92	-	This study
MTD T 11031	Germany: Saxony: Moritzburg	4	r3	r10	0.00	0.99	0.39	This study
MTD T 11032	Germany: Saxony: Moritzburg	4	r4	r34	0.01	0.98	0.32	This study

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
MTD T 11033	Germany: Saxony: Moritzburg	4	r4	r34	0.00	0.99	0.10	This study
MTD T 11035	Germany: Saxony: Moritzburg	4	r4	r34	0.00	0.99	0.92	This study
MWLK 665/11	Germany: Saxony: Naunhof	4	r3	r10	0.01	0.98	0.75	This study
MTD T 11395	Germany: Saxony: near Dresden	3	y1	y27	0.01	0.93	-	This study
MWLK 105/01	Germany: Saxony: Neudorf	3	y1	y5	0.00	0.96	0.73	This study
MWLK 311/05	Germany: Saxony: Neukirch	3	y1	y7	0.00	0.95	0.25	Kindler *et al.* (2013)
MTD D 47429	Germany: Saxony: Oberschöna	4	r3	r10	-	-	-	Kindler *et al.* (2013)
MTD D 32501	Germany: Saxony: Oppach	3	y1	y7	-	-	-	Kindler *et al.* (2013)
MWLK 141/09	Germany: Saxony: Oppitz	3	y1	y19	0.01	0.98	0.33	This study
MTD D 42679	Germany: Saxony: Ottendorf-Okrilla	3	y1	y7	0.00	0.99	0.63	Kindler *et al.* (2013)
MTD T 11222	Germany: Saxony: Ottendorf-Okrilla	3	y1	y6	-	-	-	This study
MTD T 14857	Germany: Saxony: Pirk: dam	3	y9	y5	0.00	0.98	0.50	This study
MWLK 378/10	Germany: Saxony: Prachenau	3	y1	y7	0.00	0.98	0.74	This study
MWLK 297/10	Germany: Saxony: Pulsnitz	4	r3	r10	0.00	0.82	-	This study
MWLK 284/99	Germany: Saxony: Rehnsdorf	3	y2	y5	0.00	0.99	0.53	Kindler *et al.* (2013)
MTD T 13915	Germany: Saxony: Rietschen	3	y3	y5	0.00	0.99	0.60	This study
MTD T 13916	Germany: Saxony: Rietschen	3	y41	y5	0.00	0.98	0.49	This study
MWLK 194/09	Germany: Saxony: Röhrsdorf	4	r3	r10	0.00	0.91	-	This study
MWLK 68/02	Germany: Saxony: Schönau	3	y1	y19	0.00	0.98	0.25	This study
MWLK 1486/06	Germany: Saxony: Schönbach-Bulleritz	3	y2	y5	0.00	0.99	0.29	This study
MTD T 11030	Germany: Saxony: Schönborn	3	y1	y6	0.00	0.99	0.06	This study
MWLK 53/04	Germany: Saxony: Schwepnitz	3	y3	y5	0.00	0.95	0.39	Kindler *et al.* (2013)
MTD T 12833	Germany: Saxony: Seilitz	4	r4	r34	0.01	0.98	0.86	This study
MWLK 137/12	Germany: Saxony: Skaska	3	y1	y6	0.00	0.97	0.46	This study
MWLK 204/12	Germany: Saxony: Skaska	3	y1	y6	0.00	0.98	0.93	This study
MWLK 687/11	Germany: Saxony: Skaska	3	y1	y5	0.01	0.99	0.77	This study
MWLK 537/11	Germany: Saxony: Steinitz	3	y1	y5	0.00	0.90	-	This study
MWLK 483/07	Germany: Saxony: Straßgräbchen	3	y2	y5	0.00	0.99	0.25	This study
MWLK 795/05	Germany: Saxony: Teicha	3	-	y5	0.00	0.97	0.13	Kindler *et al.* (2013)
MTD T 13015	Germany: Saxony: Tharandt	4	r3	r10	0.00	0.99	0.19	This study
MWLK 1047/05	Germany: Saxony: Treugebühla	3	y14	y5	0.00	0.98	0.76	This study
MWLK 10/13	Germany: Saxony: Uhyst - Mönau	3	y32	y7	0.00	0.96	0.72	This study
MWLK 447/11	Germany: Saxony: Uhyst - Mönau	3	y1	y5	0.00	0.99	0.61	This study
MTD T 12185	Germany: Saxony: w Niesky	3	-	y5	0.00	0.98	0.77	This study
MTD D 42680	Germany: Saxony: Waldenburg	3	y1	y15	0.00	0.99	0.73	Kindler *et al.* (2013)
MWLK 1050/05	Germany: Saxony: Wartha-Steinitz	3	y26	y6	0.00	0.90	-	This study
MWLK 115/09	Germany: Saxony: Weinböhla	3	y1	y1	0.01	0.99	0.74	This study
MTD T 10775	Germany: Saxony: Wermsdorf	3	y1	y5	0.00	0.97	0.47	This study
MTD T 10994	Germany: Saxony: Wermsdorf	3	y1	y5	0.00	0.99	0.81	This study
MTD T 10995	Germany: Saxony: Wermsdorf	4	r3	-	0.00	0.98	0.60	This study
MTD T 10996	Germany: Saxony: Wermsdorf	4	r3	r10	0.00	0.98	0.35	This study
MTD T 11223	Germany: Saxony: Wermsdorf	4	r3	r10	0.00	0.83	-	This study
MWLK 815/05	Germany: Saxony: Wilthen	3	y1	y5	0.00	0.99	0.11	This study
MWLK 144/01	Germany: Saxony: Wittichenau	3	y1	y5	0.00	0.97	0.13	Kindler *et al.* (2013)
MTD D 41418	Germany: Saxony-Anhalt: Altenbrak	3	y1	y17	0.01	0.98	0.84	Kindler *et al.* (2013)
MTD T 11578	Germany: Saxony-Anhalt: near Klobikau: Lake Geißeltal	3	y1	y5	0.00	0.95	0.64	This study
ZFMK 89087	Germany: Saxony-Anhalt: Sangerhausen	3	y1	y5	0.00	0.99	0.33	Kindler *et al.* (2013)
MTD T 14072	Germany: Schleswig-Holstein: Bad Bramstedt	3	y1	y20	0.00	0.99	0.92	This study
ZMH R09486	Germany: Schleswig-Holstein: Bargteheide	3	y1	y19	0.08	-	-	This study
ZMH R09497	Germany: Schleswig-Holstein: Bargteheide	3	y1	y20	0.01	0.99	0.85	This study
ZMH R09855	Germany: Schleswig-Holstein: Bargteheide	3	y1	y20	0.00	0.99	0.87	This study
ZMH R11001	Germany: Schleswig-Holstein: Bargteheide	3	y1	y20	0.02	0.99	0.90	This study
MTD T 14846	Germany: Schleswig-Holstein: Bark: Barker Heide	3	y1	y20	0.01	0.95	0.66	This study
MTD T 14847	Germany: Schleswig-Holstein: Dägeling: Heide Nordoe	3	y1	y20	0.01	0.94	-	This study
MTD T 14070	Germany: Schleswig-Holstein: Daldorf: Kiebitzholmer Moor	3	y1	y20	0.01	0.98	0.96	This study
MTD T 14845	Germany: Schleswig-Holstein: Dätgen	3	y11	y20	0.01	0.98	0.67	This study
ZMH R09046	Germany: Schleswig-Holstein: Dithmarschen	3	y1	-	-	-	-	This study
MTD T 14073	Germany: Schleswig-Holstein: Felm: Kaltenhofer Moor	3	y1	y21	0.02	0.99	0.91	This study
MTD T 14074	Germany: Schleswig-Holstein: Felm: Kaltenhofer Moor	3	y1	y21	0.00	0.99	0.94	This study
MTD T 14848	Germany: Schleswig-Holstein: Felm: Kaltenhofer Moor	3	y1	y21	0.00	0.99	0.94	This study
MTD T 14071	Germany: Schleswig-Holstein: Gribbohm	3	y11	-	0.01	0.96	0.89	This study
MTD T 14066	Germany: Schleswig-Holstein: Hamdorf	3	y11	y20	0.00	0.99	0.88	This study
MTD T 14069	Germany: Schleswig-Holstein: Hamdorf	3	y1	y20	0.01	0.98	0.83	This study
ZFMK 85184	Germany: Schleswig-Holstein: Kiel: Elmschenhagen	3	y1	y20	0.00	0.99	0.95	Kindler *et al.* (2013)
ZFMK 62405	Germany: Schleswig-Holstein: Kiel: Landwehr	3	y1	HF680066	0.00	0.99	0.82	Kindler *et al.* (2013)
MTD T 13934	Germany: Schleswig-Holstein: Klein Rönnau	3	y1	-	0.00	0.99	0.95	This study
ZMH R09338	Germany: Schleswig-Holstein: Langenhorst	3	y1	y19	0.00	0.99	0.95	This study
MTD T 14068	Germany: Schleswig-Holstein: Lübeck: Grönauer Heide	3	y1	y20	0.00	0.99	0.92	This study
MTD T 13935	Germany: Schleswig-Holstein: Lübeck: Schellbruch	3	y1	y20	0.01	0.95	0.85	This study
MTD T 13936	Germany: Schleswig-Holstein: Lübeck: Schellbruch	3	y1	y20	0.01	0.99	0.96	This study
MTD T 14063	Germany: Schleswig-Holstein: Osterrönfeld	3	y1	-	0.00	0.99	0.92	This study
ZFMK 92535	Germany: Schleswig-Holstein: Probstei: Hagener Moor	3	y1	y41	0.00	0.99	0.80	Kindler *et al.* (2013)
ZFMK 73639	Germany: Schleswig-Holstein: Probsteierhagen	3	y1	y41	0.00	0.99	0.87	Kindler *et al.* (2013)
ZMH R04381	Germany: Schleswig-Holstein: Rendsburg-Eckernförde: Warder	3	y1	y5	0.00	0.99	0.76	This study
MTD T 14064	Germany: Schleswig-Holstein: Sehestedt	3	y1	y20	0.00	0.99	0.95	This study
NME R 0409/02	Germany: Thuringia: Cospeda	3	y1	y5	0.00	0.99	0.45	This study
NME R 0445/04	Germany: Thuringia: Erfurt: Rhoda	3	y1	y5	0.00	0.97	0.76	This study
NME R 0507/07	Germany: Thuringia: Erfurt: Rhoda	3	y1	y5	0.00	0.99	0.53	This study
NME R 0556/08	Germany: Thuringia: Erfurt: Rhoda	3	y1	y5	0.00	0.98	0.69	This study
NME R 0696/11	Germany: Thuringia: Geroda	3	y1	y5	0.00	0.98	0.84	This study
NME R 0793/13	Germany: Thuringia: Großheringen	3	y1	y5	0.00	0.97	0.93	This study
NME R 0956/14	Germany: Thuringia: Heroldsdorf	3	y1	y5	-	-	-	This study
NME R 0415/02	Germany: Thuringia: Rotheul	3	y1	y16	0.00	0.99	0.11	This study
MTD T 12792	Germany: Thuringia: Schömbach dam	3	y1	y4	0.00	0.98	0.83	This study
NME R 0253/99	Germany: Thuringia: Triebes	3	y1	y5	-	-	-	This study
NME R 0676/10	Germany: Thuringia: Triebes	3	y1	y5	0.00	0.98	0.55	This study
NME R 0495/06	Germany: Thuringia: Uhlstädt-Kirchhasel	3	y1	-	-	-	-	This study
NME R 0890/13	Germany: Thuringia: Wandersleben	3	y1	y24	0.06	-	-	This study
NME R 0413/02	Germany: Thuringia: Zeulenroda-Triebes	3	y9	y5	0.00	0.99	0.59	This study
MTD T 14169	Great Britain	E	h1	h21	-	-	-	This study
MTD T 14807	Great Britain: Brecklands area of Norfolk: near Thetford	E	h1	-	-	-	-	This study
MTD T 14808	Great Britain: Brecklands area of Norfolk: near Thetford	E	h1	h7	1.00	-	-	This study
MTD T 14809	Great Britain: Brecklands area of Norfolk: near Thetford	E	h1	h1	1.00	-	-	This study
MTD T 14810	Great Britain: Brecklands area of Norfolk: near Thetford	E	h1	h1	1.00	-	-	This study
MTD T 14811	Great Britain: Brecklands area of Norfolk: near Thetford	E	h1	h1	1.00	-	-	This study
MTD T 14812	Great Britain: Brecklands area of Norfolk: near Thetford	E	h1	h1	1.00	-	-	This study
MTD T 14130	Great Britain: Buckingshamshire: Chesham	E	h1	h1	1.00	-	-	This study
MTD T 14144	Great Britain: Denbighshire: Eryrys	E	h1	-	1.00	-	-	This study
MTD T 14165	Great Britain: Dorset	E	h1	h1	1.00	-	-	This study
MTD T 14166	Great Britain: Dorset	E	h1	h1	0.99	-	-	This study
MTD T 14131	Great Britain: Dorset: Bovington	E	h6	-	-	-	-	This study
MTD T 14132	Great Britain: Dorset: Christchurch	E	h1	h1	0.99	-	-	This study
MTD T 14117	Great Britain: Essex: Loughton	E	h1	h1	1.00	-	-	This study
MTD T 14118	Great Britain: Essex: Loughton	E	h1	h1	1.00	-	-	This study
MTD T 14119	Great Britain: Essex: Loughton	E	h1	h1	1.00	-	-	This study
MTD T 14120	Great Britain: Essex: Loughton	E	h1	h1	1.00	-	-	This study
MTD T 14121	Great Britain: Essex: Loughton	E	h1	h1	1.00	-	-	This study
MTD T 14122	Great Britain: Essex: Loughton	E	h1	h1	1.00	-	-	This study
MTD T 14136	Great Britain: Gloucestershire: Milkwall	E	h1	h1	1.00	-	-	This study
MTD T 14124	Great Britain: Hereford: 4km E Ledbury	E	h1	h1	1.00	-	-	This study
MTD T 14123	Great Britain: Hereford: Ledbury	E	h2	h1	1.00	-	-	This study
MTD T 14139	Great Britain: Herefordshire: Abbey Dore	E	h1	h1	1.00	-	-	This study
MTD T 14167	Great Britain: Herefordshire: Hatfield	E	h1	-	1.00	-	-	This study
MTD T 14137	Great Britain: Herefordshire: Tedstone Wafre	E	h1	h21	0.97	-	-	This study
MTD T 13012	Great Britain: Hull	E	h6	h1	1.00	-	-	This study
MTD T 13011	Great Britain: Hull	E	h6	h1	1.00	-	-	This study
MTD T 14133	Great Britain: Kent: Hildenborough	E	h1	-	1.00	-	-	This study
MTD T 14126	Great Britain: near Scotland	E	h1	h1	-	-	-	This study
MTD T 14127	Great Britain: near Scotland	E	h1	h1	-	-	-	This study
MTD T 14128	Great Britain: near Scotland	E	h1	h1	-	-	-	This study
MTD T 14421	Great Britain: Norfolk: Aylsham	E	-	h1	1.00	-	-	This study
MTD T 14116	Great Britain: Norfolk: Cirby Cane	E	h1	h1	1.00	-	-	This study
MTD T 9982	Great Britain: North Wales: Gwaith Powder	E	h1	-	1.00	-	-	Kindler *et al.* (2013)
MTD T 9983	Great Britain: North Wales: Gwaith Powder	E	h1	-	1.00	-	-	Kindler *et al.* (2013)

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
MTD T 14141	Great Britain: Northhamptonshire: Sywell	E	h1	-	1.00	-	-	This study
MTD T 14140	Great Britain: Nottinghamshire: Jacksdale	E	h1	h1	1.00	-	-	This study
MTD T 14113	Great Britain: Pembrokeshire: Talbenny	E	h1	-	0.92	-	-	This study
MTD T 14142	Great Britain: Staffordshire: between Wombourn and Sedgley	E	h1	h1	1.00	-	-	This study
MTD T 14163	Great Britain: Suffolk: Martlesham	E	h1	h1	1.00	-	-	This study
MTD T 14164	Great Britain: Suffolk: Martlesham	E	h1	h1	1.00	-	-	This study
MTD T 14134	Great Britain: Surrey: Milford	E	h1	h1	1.00	-	-	This study
MTD T 14147	Great Britain: Surrey: Newdigate	C	c1	c1	0.98	-	-	This study
MTD T 14148	Great Britain: Surrey: Newdigate	E	h1	h1	0.73	-	-	This study
MTD T 14149	Great Britain: Surrey: Newdigate	E	h1	h21	0.96	-	-	This study
MTD T 14150	Great Britain: Surrey: Newdigate	E	h1	h1	0.99	-	-	This study
MTD T 14151	Great Britain: Surrey: Newdigate	E	h8	h1	0.90	-	-	This study
MTD T 14152	Great Britain: Surrey: Newdigate	C	c1	c1	0.84	-	-	This study
MTD T 14153	Great Britain: Surrey: Newdigate	C	c1	c1	1.00	-	-	This study
MTD T 14154	Great Britain: Surrey: Newdigate	E	h1	h21	0.99	-	-	This study
MTD T 14155	Great Britain: Surrey: Newdigate	E	h8	h1	0.98	-	-	This study
MTD T 14156	Great Britain: Surrey: Newdigate	E	h1	h21	0.98	-	-	This study
MTD T 14157	Great Britain: Surrey: Newdigate	C	c1	c1	0.94	-	-	This study
MTD T 14158	Great Britain: Surrey: Newdigate	E	h1	h1	0.98	-	-	This study
MTD T 14159	Great Britain: Surrey: Newdigate	E	h1	h1	0.98	-	-	This study
MTD T 14160	Great Britain: Surrey: Newdigate	E	h1	h21	0.96	-	-	This study
MTD T 14161	Great Britain: Surrey: Newdigate	E	h1	h21	0.82	-	-	This study
MTD T 14464	Great Britain: Surrey: Newdigate	E	h1	h21	0.99	-	-	This study
MTD T 14465	Great Britain: Surrey: Newdigate	E	h1	h1	0.83	-	-	This study
MTD T 14466	Great Britain: Surrey: Newdigate	F	f1	f1	0.93	-	-	This study
MTD T 14467	Great Britain: Surrey: Newdigate	4	r4	r34	1.00	-	-	This study
MTD T 14468	Great Britain: Surrey: Newdigate	E	h1	h1	0.99	-	-	This study
MTD T 14135	Great Britain: Sussex: Heathfield	E	h1	h1	1.00	-	-	This study
MTD T 14143	Great Britain: Warwickshire: Oxhill	E	h1	h1	1.00	-	-	This study
MTD T 14129	Great Britain: Yorkshire: Bradford	E	h1	h1	1.00	-	-	This study
MTD T 14359	Great Britain: Yorkshire: Skipwith Common	E	h6	h20	1.00	-	-	This study
MTD T 14360	Great Britain: Yorkshire: Southern Washlands	E	h6	h1	1.00	-	-	This study
MTD T 14361	Great Britain: Yorkshire: Southern Washlands	E	h6	h1	1.00	-	-	This study
BEV.12928	Greece: 4 km NE Kalpaki	5	l13	l14	0.01	0.13	-	This study
ZFMK 62945	Greece: Chalkidiki: N Stratoni	3	y16	y10	0.01	0.21	-	Kindler *et al.* (2013)
ZFMK 69946	Greece: Chalkidiki: N Stratoni	3	y15	y10	0.00	0.40	-	Kindler *et al.* (2013)
MTD D 19183	Greece: Cyclades: Milos	3	-	y10	0.00	0.60	-	Kindler *et al.* (2013)
ZFMK 85407	Greece: Cyclades: Milos	3	y15	-	0.00	0.78	-	Kindler *et al.* (2013)
MTD D 25827	Greece: Cyclades: Paros	4	r18	-	-	-	-	Kindler *et al.* (2013)
MTD T 8646	Greece: Dadia	7	gy9	gy1	0.06	-	-	Kindler *et al.* (2013)
MTD D 25843	Greece: Kythira	5	l16	l6	0.01	0.12	-	Kindler *et al.* (2013)
ZFMK 54702	Greece: Little Prespa Lake near Florina	5	l11	l10	0.01	0.15	-	Kindler *et al.* (2013)
MTD T 14327	Greece: Milos	3	y15	y10	0.00	0.50	-	This study
ZFMK 71679	Greece: Nestos Delta	3	-	y10	0.02	0.03	-	Kindler *et al.* (2013)
ZFMK 62500	Greece: Peloponnesus: Itilo	5	l16	-	0.00	0.24	-	Kindler *et al.* (2013)
MTD T 14337	Greece: Peloponnesus: Kalogria	5	l17	l7	0.00	0.65	-	This study
ZFMK 65179	Greece: Peloponnesus: Kalogria	5	l2	-	0.00	0.03	-	Kindler *et al.* (2013)
ZFMK 71680	Greece: Peloponnesus: Kato Kastanea	5	l16	l1	0.02	0.28	-	Kindler *et al.* (2013)
MTD T 13548	Greece: Peloponnesus: Lake Doxa	5	-	l4	0.00	0.10	-	This study
MTD T 14329	Greece: Peloponnesus: Lake Stimfalia	5	l16	l3	0.03	0.09	-	This study
ZFMK 92217	Greece: Peloponnesus: Limni Strofilia near Kalogria	5	l14	l8	0.00	0.05	-	Kindler *et al.* (2013)
ZFMK 82103	Greece: Peloponnesus: near Pylos	5	l18	l5	0.00	0.16	-	Kindler *et al.* (2013)
ZFMK 83029	Greece: Peloponnesus: near Pylos	5	l16	l2	0.01	0.20	-	Kindler *et al.* (2013)
ZFMK 84037	Greece: Peloponnesus: near Pylos	5	l18	l5	0.03	0.04	-	Kindler *et al.* (2013)
ZFMK 86043	Greece: Peloponnesus: near Pylos	5	l16	l5	0.04	0.07	-	Kindler *et al.* (2013)
ZFMK 86045	Greece: Peloponnesus: near Pylos	5	-	l5	0.01	0.22	-	Kindler *et al.* (2013)
MTD T 14336	Greece: Peloponnesus: Strofilia	5	l19	l8	0.01	0.08	-	This study
ZFMK 89415	Greece: Samos	7	gy8	-	0.02	0.02	-	Kindler *et al.* (2013)
MTD T 11813	Greece: Samothrace	7	gy6	-	0.00	0.02	-	This study
MTD T 11814	Greece: Samothrace	7	gy6	-	0.00	0.03	-	This study
MTD T 11815	Greece: Samothrace	7	gy6	-	0.01	0.05	-	This study
MTD T 11816	Greece: Samothrace	7	gy6	gy9	0.00	0.16	-	This study
MTD T 11817	Greece: Samothrace	7	gy6	gy9	0.00	0.04	-	This study
MTD T 11818	Greece: Samothrace	7	gy6	-	0.00	0.04	-	This study
MTD T 11819	Greece: Samothrace	7	gy6	-	0.01	0.13	-	This study
MTD T 11822	Greece: Samothrace	7	gy6	-	0.01	0.12	-	This study
MTD T 11824	Greece: Samothrace	7	gy6	-	0.00	0.09	-	This study
MTD T 11825	Greece: Samothrace	7	gy6	-	0.00	0.10	-	This study
MTD T 11826	Greece: Samothrace	7	gy6	-	0.01	0.04	-	This study
MTD T 11829	Greece: Samothrace	7	gy6	-	0.00	0.03	-	This study
MTD T 11830	Greece: Samothrace	7	gy6	-	0.00	0.04	-	This study
MTD T 11834	Greece: Samothrace	7	gy6	-	0.00	0.14	-	This study
MTD T 11837	Greece: Samothrace	7	gy6	-	0.00	0.02	-	This study
MTD T 9907	Greece: Skiros	3	y15	y10	0.00	0.03	-	Kindler *et al.* (2013)
MTD T 8639	Greece: Thessaloniki	3	HF679875	-	0.03	0.12	-	Kindler *et al.* (2013)
MTD D 29269	Greece: Volos	3	y15	HF680174	0.01	0.17	-	Kindler *et al.* (2013)
ZFMK 62956	Greece: Xanthus: Avdira	3	y15	y10	0.00	0.06	-	Kindler *et al.* (2013)
ZFMK 92957	Greece: Xanthus: Avdira	3	y15	-	0.00	0.08	-	Kindler *et al.* (2013)
ZFMK 62958	Greece: Xanthus: Jasmos	7	gy8	-	0.01	0.08	-	Kindler *et al.* (2013)
MTD T 12033	Hungary: Balaton: Balatonszepezd	4	r4	-	0.00	0.31	-	This study
ZFMK 58024	Hungary: Balaton: Balatonszepezd	4	r4	-	0.00	0.31	-	Kindler *et al.* (2013)
ZFMK 74927	Hungary: Balaton: Tihany	4	r3	r10	0.00	0.64	-	Kindler *et al.* (2013)
MTD T 11207	Hungary: Balaton: Tihany	4	r3	r2	0.00	0.92	-	This study
MTD T 11858	Hungary: Balaton: Tihany	4	r24	-	0.00	0.72	-	This study
MTD T 11859	Hungary: Balaton: Tihany	4	r22	r34	0.00	0.91	-	This study
ZFMK 65686	Hungary: Barcs	4	r4	r34	0.00	0.65	-	Kindler *et al.* (2013)
ZFMK 88062	Hungary: between Sarród and Fertóujlak	4	r4	r34	0.00	0.40	-	Kindler *et al.* (2013)
MTD T 12942	Hungary: Bodrogkisfalud	4	r3	r25	0.01	0.82	-	This study
ZFMK 61029	Hungary: Gyór	4	r3	r10	0.00	0.97	0.07	Kindler *et al.* (2013)
ZFMK 91241	Hungary: Hansági-fócsatorna	4	r4	r35	0.00	0.77	-	Kindler *et al.* (2013)
NHMW 36337	Hungary: Hortobagy	4	r3	-	0.00	0.86	-	This study
MTD T 9906	Hungary: Hortobágy	4	r3	r3	0.00	0.89	-	Kindler *et al.* (2013)
MTD T 7571	Hungary: Kunpeszér	4	r4	r34	0.00	0.93	-	Kindler *et al.* (2013)
MTD T 7574	Hungary: Kunpeszér	4	r3	r27	0.00	0.62	-	Kindler *et al.* (2013)
MTD T 13547	Hungary: Létavértes	4	r3	r3	0.00	0.72	-	This study
MTD T 12016	Hungary: Lipót	4	r3	-	0.00	0.88	-	This study
MTD T 11862	Hungary: near Fülöpstallas	4	r30	-	0.00	0.97	0.51	This study
MTD T 11863	Hungary: near Fülöpstallas	4	r4	r39	0.00	0.52	-	This study
MTD T 11595	Hungary: near Kunpeszér: Sarlóspuszta	4	r4	r53	0.00	0.96	0.37	This study
MTD T 12751	Hungary: near Tokaj	4	r3	r3	0.00	0.95	0.43	This study
MTD T 12752	Hungary: near Tokaj	4	r26	r28	0.00	0.72	-	This study
MTD T 12753	Hungary: near Tokaj	4	r3	r3	0.00	0.98	0.16	This study
MTD T 12754	Hungary: near Tokaj	4	r3	r30	0.01	0.95	0.71	This study
MTD T 12755	Hungary: near Tokaj	4	r3	r3	0.00	0.60	-	This study
MTD T 12756	Hungary: near Tokaj	4	r27	r3	0.00	0.87	-	This study
MTD T 12757	Hungary: near Tokaj	4	r3	r13	0.00	0.92	-	This study
MTD T 12758	Hungary: near Tokaj	4	r3	r3	0.00	0.79	-	This study
MTD T 12759	Hungary: near Tokaj	4	r3	r3	0.00	0.96	0.12	This study
MTD T 12760	Hungary: near Tokaj	4	r3	r3	0.00	0.99	0.41	This study
MTD T 12761	Hungary: near Tokaj	4	r27	r3	0.00	0.98	0.10	This study
MTD T 12762	Hungary: near Tokaj	4	r3	r3	0.00	0.74	-	This study
MTD T 12763	Hungary: near Tokaj	4	r3	r3	0.00	0.68	-	This study
MTD T 12764	Hungary: near Tokaj	4	r27	r3	0.00	0.98	0.37	This study
MTD T 12765	Hungary: near Tokaj	4	r3	r3	0.00	0.99	0.07	This study
MTD T 12766	Hungary: near Tokaj	4	r3	r4	0.00	0.76	-	This study
MTD T 12767	Hungary: near Tokaj	4	r3	r6	0.01	0.98	0.35	This study
MTD T 12768	Hungary: near Tokaj	4	r3	r23	0.00	0.99	0.58	This study
MTD T 12769	Hungary: near Tokaj	4	r3	r3	0.00	0.96	0.47	This study
MTD T 12770	Hungary: near Tokaj	4	r3	r3	0.01	0.78	-	This study
MTD T 12771	Hungary: near Tokaj	4	r3	r8	0.00	0.92	-	This study
MTD T 12772	Hungary: near Tokaj	4	r3	r3	0.00	0.94	-	This study
MTD T 12773	Hungary: near Tokaj	4	r3	r3	0.00	0.91	-	This study
MTD T 12774	Hungary: near Tokaj	4	r3	r3	0.00	0.98	0.31	This study
MTD T 12775	Hungary: near Tokaj	4	r3	r6	0.00	0.96	0.26	This study

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
MTD T 12776	Hungary: near Tokaj	4	r3	r3	0.01	0.92	-	This study
MTD T 12777	Hungary: near Tokaj	4	r3	r4	0.00	0.95	0.08	This study
MTD T 12778	Hungary: near Tokaj	4	r3	r3	0.00	0.98	0.54	This study
MTD T 12779	Hungary: near Tokaj	4	r3	r3	0.00	0.97	0.64	This study
MTD T 12780	Hungary: near Tokaj	4	r3	r3	0.00	0.81	-	This study
ZFMK 85905	Hungary: S Budapest	4	r4	r34	0.00	0.84	-	Kindler *et al.* (2013)
ZFMK 82795	Hungary: Somogyszob	4	-	r34	0.00	0.55	-	Kindler *et al.* (2013)
MTD T 11918	Hungary: Szeged: Lake Feher	4	r14	-	0.00	0.68	-	This study
MTD T 11920	Hungary: Szeged: Lake Feher	4	r3	-	0.00	0.72	-	This study
MTD T 12014	Hungary: Szeged: Lake Feher	4	r3	-	0.00	0.46	-	This study
MTD T 12015	Hungary: Szeged: Lake Feher	4	r3	-	0.00	0.72	-	This study
MTD T 11864	Hungary: Tiszaalpár	4	r3	r3	0.00	0.91	-	This study
MTD T 11865	Hungary: Tiszaalpár	4	r3	r24	0.00	0.75	-	This study
MTD T 11867	Hungary: Tiszaalpár	4	r3	-	0.00	0.90	-	This study
MTD T 11979	Hungary: Tömörd	4	r4	r34	0.00	0.54	-	This study
MTD T 11980	Hungary: Tömörd	4	r4	r56	0.00	0.69	-	This study
MTD T 7594	Hungary: Villany	4	r4	r45	0.00	0.87	-	Kindler *et al.* (2013)
BEV.T7571	Kazakhstan: Lake Edylsor	8	gn1	gn1	0.02	0.05	-	This study
BEV.T7572	Kazakhstan: Lake Edylsor	8	gn1	gn1	0.02	0.06	-	This study
MTD T 14459	Kosovo: Ferizaj	4	r20	r31	0.03	0.49	-	This study
MTD T 14460	Kosovo: Ferizaj	5	l1	l11	0.01	0.22	-	This study
MTD T 14462	Kosovo: Gjonaj	5	l2	-	0.00	0.13	-	This study
MTD T 14458	Kosovo: Nerodime e Poshtme	4	r20	-	0.01	0.26	-	This study
MTD T 14461	Kosovo: Topojan	3	y21	y29	0.06	-	-	This study
MTD T 8967	Lithuania: Marcinkonys	8	gn1	gn6	0.00	0.10	-	Kindler *et al.* (2013)
MTD T 12787	Lithuania: NE Šilutė	8	gn3	gn1	0.00	0.74	-	This study
MTD T 12788	Lithuania: NE Šilutė	8	gn3	gn1	0.00	0.20	-	This study
MTD T 12790	Lithuania: NE Šilutė	8	gn3	gn1	0.00	0.27	-	This study
MTD T 8968	Lithuania: Trasninkas	8	gn1	gn19	0.00	0.39	-	Kindler *et al.* (2013)
MTD T 14775	Montenegro: Bjelasica	4	r4	r1	0.06	-	-	This study
ZFMK 92216	Montenegro: near island Ada	5	l2	l12	0.00	0.12	-	Kindler *et al.* (2013)
MTD T 9875	Montenegro: Sasovići, Zelenica, Boka kotorska	5	l2	l10	0.01	0.03	-	Kindler *et al.* (2013)
ZFMK 92205	Montenegro: Skutari-Lake: Limljani	5	l4	l18	0.07	-	-	Kindler *et al.* (2013)
ZFMK 92206	Montenegro: Skutari-Lake: Limljani	5	l2	l13	0.01	0.07	-	Kindler *et al.* (2013)
MTD T 9908	Montenegro: Spuz	5	l2	l12	0.02	0.03	-	Kindler *et al.* (2013)
MTD T 13957	Netherlands: Amstelveen	E	h1	-	1.00	-	-	This study
MTD T 13958	Netherlands: Amstelveen	E	h1	-	1.00	-	-	This study
MTD T 13959	Netherlands: Amstelveen	E	h1	h1	1.00	-	-	This study
MTD T 12131	Netherlands: Amsterdam: IJ	E	h1	-	1.00	-	-	This study
MTD T 12132	Netherlands: Amsterdam: IJ	E	h1	-	1.00	-	-	This study
MTD T 13969	Netherlands: Boschoord	E	h1	h1	1.00	-	-	This study
MTD T 13970	Netherlands: Boschoord	E	h1	h1	0.97	-	-	This study
MTD T 13971	Netherlands: Boschoord	E	h1	h1	1.00	-	-	This study
MTD T 13954	Netherlands: Durgerdam V.E.	E	h1	h29	1.00	-	-	This study
MTD T 13955	Netherlands: Durgerdam V.E.	E	h1	h29	1.00	-	-	This study
MTD T 13956	Netherlands: Durgerdam V.E.	E	h1	h29	1.00	-	-	This study
MTD T 12129	Netherlands: Flevoland: Kuinderbos	E	h1	-	1.00	-	-	This study
MTD T 12133	Netherlands: Flevoland: Kuinderbos	E	h1	-	0.98	-	-	This study
MTD T 13960	Netherlands: Hilversum	E	h1	h1	1.00	-	-	This study
MTD T 13961	Netherlands: Hilversum	E	h1	h1	1.00	-	-	This study
MTD T 13962	Netherlands: Hilversum	E	h1	h1	1.00	-	-	This study
MTD T 13942	Netherlands: Houten	E	h1	-	-	-	-	This study
MTD T 13943	Netherlands: Houten	E	h1	h29	1.00	-	-	This study
MTD T 13944	Netherlands: Houten	E	h1	h29	0.99	-	-	This study
MTD T 13939	Netherlands: Leersum	E	h1	h1	1.00	-	-	This study
MTD T 13940	Netherlands: Leersum	E	h1	-	-	-	-	This study
MTD T 13941	Netherlands: Leersum	E	h1	h29	1.00	-	-	This study
MTD T 13966	Netherlands: Oldeberkoop	E	h1	h1	1.00	-	-	This study
MTD T 13967	Netherlands: Oldeberkoop	E	h1	h1	1.00	-	-	This study
MTD T 13968	Netherlands: Oldeberkoop	E	h1	h1	1.00	-	-	This study
MTD T 13945	Netherlands: Oostvaardersplassen	E	h1	h1	1.00	-	-	This study
MTD T 13946	Netherlands: Oostvaardersplassen	E	h1	h1	0.96	-	-	This study
MTD T 13947	Netherlands: Oostvaardersplassen	E	h1	h1	0.98	-	-	This study
MTD T 13963	Netherlands: Rimburg	E	h1	h1	1.00	-	-	This study
MTD T 13964	Netherlands: Rimburg	E	h1	h1	0.99	-	-	This study
MTD T 13965	Netherlands: Rimburg	E	h1	h1	0.99	-	-	This study
MTD T 13951	Netherlands: Velp: Beekhuizen	E	h1	h1	0.99	-	-	This study
MTD T 13952	Netherlands: Velp: Beekhuizen	E	h1	h1	1.00	-	-	This study
MTD T 13953	Netherlands: Velp: Beekhuizen	E	h1	h1	1.00	-	-	This study
MTD T 13948	Netherlands: Wageningen	E	h1	h25	1.00	-	-	This study
MTD T 13949	Netherlands: Wageningen	E	h1	h1	1.00	-	-	This study
MTD T 13950	Netherlands: Wageningen	E	h1	h1	1.00	-	-	This study
MTD T 11568	Norway: Akershus: Ski	3	y1	y1	0.03	0.98	0.94	Kindler *et al.* (2014)
MTD T 11569	Norway: Akershus: Ski	3	y1	y1	0.01	0.90	-	Kindler *et al.* (2014)
ZMUO 54-96	Norway: Akershus: Son	3	y1	y17	0.01	0.95	0.95	Kindler *et al.* (2013)
MTD T 11567	Norway: Åndebu: Ilestadvannet	3	y1	y5	0.04	0.95	0.83	Kindler *et al.* (2014)
MTD T 11566	Norway: Holmestrand: Hallingsrud	3	y1	y17	0.01	0.99	0.94	Kindler *et al.* (2014)
ZMUO 31-83	Norway: Oslo: Grønmo: Sølvdobla	3	y1	y17	0.00	0.99	0.95	Kindler *et al.* (2013)
ZMUO 26-85	Norway: Oslo: Maridalen: Skjervensaga	3	y1	y17	0.02	0.99	0.95	Kindler *et al.* (2013)
MTD T 11571	Norway: Østfold: Moss	3	y1	y1	0.01	0.98	0.93	Kindler *et al.* (2014)
MTD T 11570	Norway: southern Oslo	3	y1	y17	0.06	-	-	Kindler *et al.* (2014)
ZMUO IH 10/2000	Norway: Telemark: Levangshalvøya	3	y1	y17	-	-	-	Kindler *et al.* (2013)
MTD T 11966	Poland: Lublin: Kosyn	8	gn5	-	0.00	0.03	-	This study
MTD T 12793	Poland: Małopolska: Książ Wielki	4	r3	r3	0.00	0.60	-	This study
MTD T 12830	Poland: Małopolska: Książ Wielki	4	r3	r3	0.00	0.88	-	This study
MTD T 12831	Poland: Małopolska: Książ Wielki	4	r3	r3	0.00	0.84	-	This study
MTD T 10318	Poland: Mazovia: Kampinos National Park	4	r3	r26	0.00	0.58	-	Kindler *et al.* (2013)
MTD T 9965	Poland: Mazovia: Kampinos National Park	4	r3	-	0.00	0.37	-	Kindler *et al.* (2013)
MTD T 9966	Poland: Mazovia: Kampinos National Park	4	r3	-	0.00	0.67	-	Kindler *et al.* (2013)
MTD T 9968	Poland: Mazovia: Kampinos National Park	4	r3	r3	0.00	0.87	-	Kindler *et al.* (2013)
MTD T 9969	Poland: Mazovia: Kampinos National Park	4	r3	r26	0.00	0.90	-	Kindler *et al.* (2013)
MTD T 9972	Poland: Mazovia: Kampinos National Park	4	r3	r3	0.02	0.56	-	Kindler *et al.* (2013)
MTD T 9974	Poland: Mazovia: Kampinos National Park	4	r3	-	0.00	0.57	-	Kindler *et al.* (2013)
BEV.7605	Poland: Podlachia: Białowieza National Park	8	gn1	gn1	0.00	0.05	-	This study
MTD T 10314	Poland: Podlachia: Białowieza National Park	8	-	gn1	0.00	0.44	-	Kindler *et al.* (2013)
MTD T 10315	Poland: Podlachia: Białowieza National Park	8	gn1	gn2	0.00	0.28	-	Kindler *et al.* (2013)
MTD T 10316	Poland: Podlachia: Białowieza National Park	8	gn1	gn1	0.01	0.08	-	Kindler *et al.* (2013)
MTD T 9975	Poland: Podlachia: Białowieza National Park	8	gn1	-	0.00	0.12	-	Kindler *et al.* (2013)
MTD T 9976	Poland: Podlachia: Białowieza National Park	8	gn1	gn1	0.00	0.20	-	Kindler *et al.* (2013)
MTD T 9977	Poland: Podlachia: Białowieza National Park	8	gn1	gn1	0.00	0.41	-	Kindler *et al.* (2013)
MTD T 9637	Poland: Upper Silesia: Golczowice	4	r2	r10	0.00	0.95	0.18	Kindler *et al.* (2013)
MTD T 10025	Poland: Upper Silesia: Kotóz Wielki	4	r3	r10	0.00	0.95	0.09	Kindler *et al.* (2013)
MTD T 10026	Poland: Upper Silesia: Kotóz Wielki	3	y1	-	0.00	0.97	0.26	Kindler *et al.* (2013)
MTD T 9635	Poland: Upper Silesia: Krośnica	4	r4	r34	0.00	0.99	0.38	Kindler *et al.* (2013)
MTD T 9638	Poland: Upper Silesia: Ligota Tulowicka	4	r2	r10	0.00	0.90	-	Kindler *et al.* (2013)
MTD T 9636	Poland: Upper Silesia: SE Opole	4	r4	r34	0.00	0.90	-	Kindler *et al.* (2013)
MTD T 11485	Poland: Usedom	3	y1	y17	0.00	0.99	0.91	Kindler *et al.* (2014)
MTD T 11486	Poland: Usedom	3	y1	y23	0.00	0.97	0.73	Kindler *et al.* (2014)
MTD T 8640	Romania: Cerna Sat	4	r6	-	0.00	0.98	0.06	Kindler *et al.* (2013)
MTD T 9889	Romania: Chilia Veche	4	r3	-	0.00	0.70	-	Kindler *et al.* (2013)
ZFMK 82775	Romania: Constanța: Histria	4	-	r3	0.01	0.50	-	Kindler *et al.* (2013)
MTD T 11604	Romania: Crivina	4	r5	r34	0.01	0.83	-	This study
MTD T 8650	Romania: Geoagiu de Sus	4	r29	r3	0.01	0.80	-	Kindler *et al.* (2013)
MTD T 13542	Romania: Tarnovita	4	r3	r3	0.00	0.36	-	This study
ZFMK 91040	Russia: Bryansk	8	gn7	gn11	0.01	0.01	-	Kindler *et al.* (2013)
ZFMK 91041	Russia: Bryansk	8	gn1	gn1	0.00	0.01	-	Kindler *et al.* (2013)
MTD T 13545	Russia: Cherusti	8	gn1	gn1	0.02	0.05	-	This study
MTD T 11970	Russia: Dagestan: Machachkala	8	gn16	-	0.01	0.01	-	This study
MTD T 11971	Russia: Dagestan: Machachkala	8	gn1	-	0.00	0.04	-	This study
ZFMK 65692	Russia: Dagestan: Machačkala	8	gn4	gn20	0.00	0.02	-	Kindler *et al.* (2013)
ZFMK 62936	Russia: Dagestan: Tatayurt	8	gn1	gn9	0.01	0.01	-	Kindler *et al.* (2013)
ZFMK 60732	Russia: Krasnodar: Otdalyonnyy	8	gn1	gn3	0.00	0.05	-	Kindler *et al.* (2013)
ZFMK 58029	Russia: Krasnodar: Tuapse	8	gn1	gn21	0.02	0.03	-	Kindler *et al.* (2013)
ZFMK 70614	Russia: Tula: S Tula: Chopr River	8	gn1	gn1	0.07	-	-	Kindler *et al.* (2013)

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
ZFMK 72270	Russia: Tula: S Tula: Chopr River	8	gn1	gn7	0.00	0.01	-	Kindler *et al.* (2013)
MTD T 14456	Serbia: Belo Polje	4	r4	-	0.00	0.45	-	This study
MTD T 14455	Serbia: Belo Polje	4	r4	-	0.00	0.75	-	This study
MTD T 14457	Serbia: Dići	4	r4	r34	0.02	0.58	-	This study
MTD T 12999	Serbia: Donji Dušnik	4	r4	r54	0.05	0.56	-	This study
MTD T 12984	Serbia: Prohor	3	y15	y10	0.01	0.40	-	This study
MTD T 8975	Slovakia: between Topoľa and Runina	4	r3	-	0.00	0.93	-	Kindler *et al.* (2013)
MTD T 12960	Slovakia: Bodíky	4	r4	r56	0.00	0.97	0.07	This study
MTD T 12961	Slovakia: Bodíky	4	r3	r19	0.00	0.95	0.19	This study
MTD T 12962	Slovakia: Bodíky	4	r3	r10	0.00	0.97	0.06	This study
MTD T 12963	Slovakia: Bodíky	4	r3	r10	0.00	0.90	-	This study
MTD T 12966	Slovakia: Bratislava - Dúbravka	4	r3	r34	0.00	0.99	0.19	This study
MTD T 12998	Slovakia: Bratislava - Dúbravka	4	r4	r34	0.01	0.97	0.10	This study
MTD T 12964	Slovakia: Bratislava - Karlova Ves	4	r4	r34	0.00	0.95	0.08	This study
MTD T 12967	Slovakia: Bratislava - Karlova Ves	4	r3	r56	0.00	0.95	0.14	This study
MTD T 14764	Slovakia: Bratislava - Petržalka	4	r3	r10	0.00	0.99	0.08	This study
MTD T 14765	Slovakia: Bratislava - Petržalka	4	r3	r10	0.00	0.97	0.07	This study
MTD T 14766	Slovakia: Bratislava - Petržalka	4	r3	r19	0.00	0.98	0.14	This study
MTD T 14767	Slovakia: Bratislava - Petržalka	4	r3	r10	0.00	0.68	-	This study
MTD T 10938	Slovakia: Bratislava: Devínská Kobyla	4	r3	r10	0.00	0.98	0.06	This study
MTD T 12944	Slovakia: Bratislava: Železná Studnička	4	r3	r10	0.00	0.85	-	This study
MTD T 12945	Slovakia: Bratislava: Železná Studnička	4	r3	r16	0.00	0.96	0.35	This study
MTD T 12946	Slovakia: Bratislava: Železná Studnička	4	r3	r10	0.00	0.89	-	This study
MTD T 12968	Slovakia: Bratislava: Železná Studnička	4	r4	r53	0.00	0.95	0.09	This study
MTD T 12969	Slovakia: Bratislava: Železná Studnička	4	r3	r39	0.00	0.97	0.08	This study
MTD T 12970	Slovakia: Bratislava: Železná Studnička	4	r4	r57	0.00	0.98	0.05	This study
MTD T 9017	Slovakia: Bujakovo	4	r3	r2	0.00	0.96	0.10	Kindler *et al.* (2013)
MTD T 8648	Slovakia: Červený Kláštor	4	r3	r3	0.00	0.84	-	Kindler *et al.* (2013)
MTD T 14452	Slovakia: Chotínske Piesky	4	r8	r64	0.00	0.97	0.36	This study
MTD T 14450	Slovakia: Čunovo	4	r4	r34	0.00	0.98	0.41	This study
MTD T 9014	Slovakia: Devín	4	r3	r10	0.00	0.95	0.08	Kindler *et al.* (2013)
MTD T 14760	Slovakia: Devínské Jazero	4	r3	r3	0.00	0.74	-	This study
MTD T 14761	Slovakia: Devínské Jazero	4	r3	r19	0.00	0.97	0.08	This study
MTD T 12996	Slovakia: Dunajská Lužná	4	r3	r10	0.00	0.85	-	This study
MTD T 12997	Slovakia: Dunajská Lužná	4	r4	r37	0.00	0.93	-	This study
MTD T 14763	Slovakia: Gbelce: Parížské močiare	4	r4	r34	0.00	0.78	-	This study
MTD T 14448	Slovakia: Istragov	4	r30	r3	0.00	0.85	-	This study
MTD T 8641	Slovakia: Janova Lehota	4	r3	r29	0.00	0.98	0.12	Kindler *et al.* (2013)
MTD T 9011	Slovakia: Jurský Šúr	4	r4	r53	0.00	0.98	0.05	Kindler *et al.* (2013)
MTD T 14754	Slovakia: Kalinkovo - Hrušovská zdrž	4	r3	r10	0.00	0.99	0.27	This study
MTD T 8635	Slovakia: Kamenica nad Hronom	4	r8	-	-	-	-	Kindler *et al.* (2013)
MTD T 12983	Slovakia: Kosorín	4	r4	r46	0.00	0.95	0.10	This study
MTD T 8632	Slovakia: Kraľovany: Kraľovanská dolina	3	y1	y14	0.00	0.85	-	Kindler *et al.* (2013)
MTD T 14772	Slovakia: Kysak: Hornád river	4	r3	r5	0.00	0.99	0.28	This study
MTD T 14776	Slovakia: Liptovský Hrádok: Belá river	4	r1	r10	0.00	0.95	0.69	This study
MTD T 14762	Slovakia: Maňa: Žitavský luh	4	r4	r34	0.00	0.83	-	This study
MTD T 14773	Slovakia: Margecany: Ružín Dam	4	r3	r3	0.00	0.87	-	This study
MTD T 12947	Slovakia: Marianka	4	r3	r10	0.01	0.97	0.40	This study
MTD T 12948	Slovakia: Marianka	4	r4	r56	0.00	0.97	0.12	This study
MTD T 12949	Slovakia: Marianka	4	r8	r64	0.00	0.95	0.13	This study
MTD T 12950	Slovakia: Marianka	4	r4	r34	0.00	0.94	-	This study
MTD T 12951	Slovakia: Marianka	4	r4	r34	0.00	0.99	0.13	This study
MTD T 12952	Slovakia: Marianka	4	r3	r10	0.00	0.76	-	This study
MTD T 12953	Slovakia: Marianka	4	r3	r10	0.00	0.89	-	This study
MTD T 12954	Slovakia: Marianka	4	r4	r56	0.00	0.99	0.23	This study
MTD T 12955	Slovakia: Marianka	4	r3	r10	0.00	0.90	-	This study
MTD T 12956	Slovakia: Marianka	4	r4	r53	0.00	0.93	-	This study
MTD T 12957	Slovakia: Marianka	4	r4	r34	0.00	0.94	-	This study
MTD T 12958	Slovakia: Marianka	4	r4	r48	0.00	0.76	-	This study
MTD T 12959	Slovakia: Marianka	4	r4	r34	0.00	0.96	0.03	This study
MTD T 14774	Slovakia: Michalovce: Širavský kanál	4	r3	r2	0.00	0.92	-	This study
MTD T 9019	Slovakia: Muránska Lehota	4	r31	r26	0.00	0.79	-	Kindler *et al.* (2013)
MTD T 12943	Slovakia: near Marcelová	4	r4	r34	-	-	-	This study
MTD T 9018	Slovakia: Regetovka	4	r3	r7	0.00	0.98	0.59	Kindler *et al.* (2013)
MTD T 14449	Slovakia: Rusovce	4	r23	-	0.00	0.98	0.05	This study
MTD T 9016	Slovakia: Rusovce	4	r4	r34	0.00	0.96	0.17	Kindler *et al.* (2013)
MTD T 11594	Slovakia: Ružomberok	3	y1	y14	0.00	0.93	-	This study
MTD T 9009	Slovakia: Silica: Farárova jama	4	r4	-	0.00	0.99	0.37	Kindler *et al.* (2013)
MTD T 8637	Slovakia: Strážne	4	r3	r3	0.00	0.84	-	Kindler *et al.* (2013)
MTD T 9020	Slovakia: Stupava	4	r8	r64	0.00	0.98	0.07	Kindler *et al.* (2013)
MTD T 10937	Slovakia: Svätý Jur	4	r4	r36	0.00	0.95	0.14	This study
MTD T 12971	Slovakia: Svätý Jur	4	r3	r34	0.00	0.88	-	This study
MTD T 12972	Slovakia: Svätý Jur	4	r3	r3	0.00	0.98	0.10	This study
MTD T 12973	Slovakia: Svätý Jur	4	r4	r57	0.00	0.90	-	This study
MTD T 12974	Slovakia: Svätý Jur	4	r3	r3	0.00	0.97	0.14	This study
MTD T 12975	Slovakia: Svätý Jur	4	r4	r56	0.00	0.89	-	This study
MTD T 12976	Slovakia: Svätý Jur	4	r4	r34	0.00	0.74	-	This study
MTD T 12977	Slovakia: Svätý Jur	4	r15	r34	0.00	0.95	0.12	This study
MTD T 12978	Slovakia: Svätý Jur	4	r4	r66	0.00	0.87	-	This study
MTD T 12979	Slovakia: Svätý Jur	4	r4	r50	0.00	0.89	-	This study
MTD T 12980	Slovakia: Svätý Jur	4	r8	r56	0.00	0.85	-	This study
MTD T 12981	Slovakia: Svätý Jur	4	r3	r10	0.00	0.96	0.08	This study
MTD T 12982	Slovakia: Svätý Jur	4	r4	r34	0.01	0.96	0.51	This study
MTD T 8638	Slovakia: Svetlice	4	r3	-	0.00	0.92	-	Kindler *et al.* (2013)
MTD T 9015	Slovakia: Tatra Mountains: Žiar	3	y1	y14	0.00	0.76	-	Kindler *et al.* (2013)
MTD T 9022	Slovakia: Uličě	4	r3	r3	0.00	0.98	0.38	Kindler *et al.* (2013)
MTD T 14768	Slovakia: Veľké Leváre	4	r32	r3	0.00	0.71	-	This study
MTD T 9010	Slovakia: Weitov lom	4	r3	r10	0.00	0.95	0.08	Kindler *et al.* (2013)
MTD T 10899	Slovenia: Bela krajina: Zjot	4	r21	r34	-	-	-	This study
MTD T 12729	Slovenia: Bilje: Vipava river	4	r4	r42	0.02	0.03	-	This study
MTD T 11526	Slovenia: Bled	4	r4	r34	0.00	0.44	-	This study
MTD T 13540	Slovenia: Borjana	4	r4	r34	0.01	0.10	-	This study
MTD T 11116	Slovenia: Borovnica	4	r4	r47	0.00	0.38	-	This study
MTD T 11209	Slovenia: Borovnica	4	r4	r34	0.00	0.55	-	This study
MTD T 12783	Slovenia: Celje: Voglajna river	4	r4	r34	0.00	0.35	-	This study
MTD T 11535	Slovenia: Cerknica Lake	4	r4	r38	0.02	0.30	-	This study
MTD T 11536	Slovenia: Cerknica Lake	4	r4	r38	0.01	0.04	-	This study
MTD T 11537	Slovenia: Cerknica Lake	4	r4	r38	0.01	0.09	-	This study
MTD T 11529	Slovenia: Cerknica Lake	4	r4	-	-	-	-	This study
MTD T 11538	Slovenia: Cerknica Lake	4	r4	r34	0.00	0.24	-	This study
MTD T 13541	Slovenia: Dragonje	4	r4	r34	0.03	0.02	-	This study
MTD T 10887	Slovenia: Koper: Škocjanski zatok	4	r4	r34	-	-	-	This study
MTD T 10888	Slovenia: Koper: Škocjanski zatok	4	r17	r60	0.00	0.16	-	This study
MTD T 10889	Slovenia: Koper: Škocjanski zatok	4	r17	r60	0.01	0.03	-	This study
MTD T 10890	Slovenia: Koper: Škocjanski zatok	4	r17	r60	0.01	0.02	-	This study
MTD T 10891	Slovenia: Koper: Škocjanski zatok	4	r17	r60	0.00	0.14	-	This study
MTD T 10892	Slovenia: Koper: Škocjanski zatok	4	r4	r34	0.10	-	-	This study
ZFMK 65382	Slovenia: Ljubljana	4	r4	r34	0.00	0.83	-	Kindler *et al.* (2013)
MTD T 14346	Slovenia: Ljubljana moor: Curnovec	4	r4	r34	0.00	0.39	-	This study
MTD T 14349	Slovenia: Ljubljana moor: Deponija Vic	4	r4	r34	0.03	0.52	-	This study
MTD T 10885	Slovenia: Ljubljana moor: Draga pri Igu	4	r4	r34	0.04	0.48	-	This study
MTD T 10886	Slovenia: Ljubljana moor: Draga pri Igu	4	r4	r34	0.00	0.10	-	This study
MTD T 14347	Slovenia: Ljubljana moor: Draga pri Igu	4	r4	r34	0.00	0.13	-	This study
MTD T 14348	Slovenia: Ljubljana moor: Draga pri Igu	4	r4	r40	0.00	0.06	-	This study
MTD T 11533	Slovenia: Ljubljana: Večna pot	4	r16	r55	-	-	-	This study
MTD T 11212	Slovenia: Ljubljansko barje	4	r4	r34	0.00	0.04	-	This study
MTD T 11213	Slovenia: Ljubljansko barje: Bistra	4	r4	r34	0.00	0.02	-	This study
MTD T 11534	Slovenia: Ljubljansko barje: Log pri Brezovici	4	r4	r34	0.00	0.12	-	This study
MTD T 10900	Slovenia: Ljubljansko barje: Pako	4	r4	r34	0.01	0.24	-	This study
MTD T 10901	Slovenia: Ljubljansko barje: Pako	4	r4	r34	0.00	0.12	-	This study
MTD T 10902	Slovenia: Ljubljansko barje: Pako	4	r4	r34	0.00	0.39	-	This study
MTD T 10893	Slovenia: Lukavci near Ljutomer	4	r4	r56	0.00	0.89	-	This study
MTD T 10894	Slovenia: Lukavci near Ljutomer	4	r4	r41	0.00	0.88	-	This study
MTD T 12784	Slovenia: Lukavci near Ljutomer	4	r4	r63	0.00	0.54	-	This study

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
MTD T 10895	Slovenia: Lukavci near Ljutomer	4	r12	r34	0.00	0.29	-	This study
MTD T 11113	Slovenia: Mele	4	r4	r34	0.00	0.30	-	This study
MTD T 11114	Slovenia: Murski Petrovci	4	r25	r34	0.03	0.65	-	This study
MTD T 11527	Slovenia: near Maribor: Cigonca Forest	4	r8	r33	0.00	0.80	-	This study
MTD T 11530	Slovenia: near Maribor: Racki Ribnik	4	r4	r34	0.01	0.34	-	This study
MTD T 11208	Slovenia: Podlipa	4	r4	r34	0.05	0.04	-	This study
MTD T 11531	Slovenia: Pragersko	4	r4	r41	0.00	0.06	-	This study
MTD T 12178	Slovenia: Sentjur	4	r4	r46	0.00	0.71	-	This study
MTD T 11528	Slovenia: Slovenia: Divača	4	r4	r49	0.00	0.16	-	This study
MTD T 11115	Slovenia: Tišina	4	r4	r51	0.00	0.78	-	This study
MTD T 11210	Slovenia: Zadolje	4	r17	r64	0.06	-	-	This study
ZMH R09056	Sweden: Blekinge: Augerum	3	y1	y20	0.00	0.99	0.93	This study
ZFMK 36114	Sweden: Gotland	3	y1	y5	-	-	-	Kindler *et al.* (2013)
ZFMK 38356	Sweden: Gotland	4	r3	r10	-	-	-	Kindler *et al.* (2013)
BEV.6418	Sweden: Gotland: near Burgsvik	8	gn1	gn1	0.00	0.99	-	This study
MTD T 11582	Sweden: Närke: Klockhammar	3	y1	y5	0.01	0.99	0.88	Kindler *et al.* (2014)
ZMH R09209	Sweden: Öland: between Stenasa and Resmo: Mockelmossen	3	y1	y20	0.00	0.99	0.94	This study
MTD T 10920	Sweden: Öland: Halltorps Hage	3	y36	y17	0.05	0.99	0.95	Kindler *et al.* (2014)
MTD T 10921	Sweden: Öland: Halltorps Hage	3	y1	y5	0.01	0.99	0.93	Kindler *et al.* (2014)
MTD T 10922	Sweden: Öland: Halltorps Hage	3	y1	y5	0.01	0.99	0.92	Kindler *et al.* (2014)
ZMH R09024	Sweden: Skåne: Maglehem	3	y20	-	-	-	-	This study
ZMH R09026	Sweden: Skåne: Olseröd	3	y1	-	-	-	-	This study
MTD T 10919	Sweden: Småland: Kråksmåla	3	y25	y28	0.00	0.99	0.95	Kindler *et al.* (2014)
MTD T 11580	Sweden: Södermanland: near Boo	3	y1	y5	0.01	0.99	0.93	Kindler *et al.* (2014)
MTD T 11579	Sweden: Södermanland: near Nyköping	3	y1	y17	0.01	0.99	0.95	Kindler *et al.* (2014)
MTD T 11581	Sweden: Södermanland: near Nyköping	3	y1	y17	0.00	0.99	0.94	Kindler *et al.* (2014)
BEV.6417	Sweden: Uppland: Forsmark	3	y1	y25	-	-	-	This study
BEV.6419	Sweden: Uppland: near Uppsala: Östervåla	3	y4	y25	0.00	0.99	0.85	This study
BEV.6420	Sweden: Uppland: near Uppsala: Östervåla	3	y6	y28	-	-	-	This study
MTD T 14859	Sweden: Västergötland: Rännaväg	3	y1	y17	0.02	0.99	0.96	This study
MTD T 14860	Sweden: Västergötland: Vegby	3	y1	y1	0.01	0.99	0.96	This study
ROH01	Switzerland: Aargau: Aarau: Rohr	E	h1	h19	1.00	-	-	This study
ROH02	Switzerland: Aargau: Aarau: Rohr	E	h9	h23	1.00	-	-	This study
ROH04	Switzerland: Aargau: Aarau: Rohr	E	h1	h19	1.00	-	-	This study
BAD01	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.16	-	-	This study
BAD02	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.05	0.98	0.09	This study
BAD03	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.02	0.98	0.21	This study
BAD04	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.30	-	-	This study
BAD05	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.01	0.99	0.11	This study
BAD06	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.22	-	-	This study
BAD07	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.18	-	-	This study
BAD08	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.35	-	-	This study
BAD09	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.19	-	-	This study
BAD10	Switzerland: Aargau: Bad Zurzach	3	y1	y1	0.29	-	-	This study
KGN01	Switzerland: Aargau: Böttstein	E	h1	h1	1.00	-	-	This study
KGN02	Switzerland: Aargau: Böttstein	E	h1	h1	1.00	-	-	This study
BRU01	Switzerland: Aargau: Brugg	E	h1	h20	1.00	-	-	This study
BRU02	Switzerland: Aargau: Brugg	E	h9	h23	1.00	-	-	This study
BRU03	Switzerland: Aargau: Brugg	E	h1	h1	1.00	-	-	This study
AGO01	Switzerland: Aargau: Eiken	E	h9	h23	0.79	-	-	This study
AGO02	Switzerland: Aargau: Eiken	E	h9	h23	0.67	-	-	This study
AGO03	Switzerland: Aargau: Eiken	E	h9	h23	0.90	-	-	This study
GIP01	Switzerland: Aargau: Gippingen	E	h1	h1	0.98	-	-	This study
GIP02	Switzerland: Aargau: Gippingen	E	h9	h23	0.86	-	-	This study
GIP03	Switzerland: Aargau: Gippingen	E	h9	h23	1.00	-	-	This study
GIP04	Switzerland: Aargau: Gippingen	E	h9	h23	1.00	-	-	This study
GIP05	Switzerland: Aargau: Gippingen	E	h1	h1	1.00	-	-	This study
KLI01	Switzerland: Aargau: Klingnau	E	h1	h19	1.00	-	-	This study
MUE06	Switzerland: Aargau: Merenschwand	unknown	-	-	1.00	-	-	This study
RIM01	Switzerland: Aargau: Rietheim	3	y37	y1	0.15	-	-	This study
ROT01	Switzerland: Aargau: Rottenschwil	E	h1	h10	1.00	-	-	This study
REG02	Switzerland: Basel-Landschaft: Binningen	E	h1	h11	0.98	-	-	This study
MBL14	Switzerland: Basel-Landschaft: Liestal	E	h1	h11	1.00	-	-	This study
REG01	Switzerland: Basel-Landschaft: Pratteln	E	h1	h1	1.00	-	-	This study
BBE01	Switzerland: Bern: Airport Bern	E	h1	h1	1.00	-	-	This study
BBE02	Switzerland: Bern: Airport Bern	E	h1	h18	1.00	-	-	This study
BBE03	Switzerland: Bern: Airport Bern	E	h1	h1	1.00	-	-	This study
BBE04	Switzerland: Bern: Airport Bern	E	h1	h23	0.99	-	-	This study
BBE05	Switzerland: Bern: Airport Bern	E	h1	h23	1.00	-	-	This study
BBE06	Switzerland: Bern: Airport Bern	E	h1	h1	1.00	-	-	This study
MBE10	Switzerland: Bern: Airport Bern	E	h1	h1	1.00	-	-	This study
MBE11	Switzerland: Bern: Mühleberg	E	h1	h2	1.00	-	-	This study
MTD T 10083	Switzerland: Bern: near Bern	E	h1	h1	0.99	-	-	Kindler *et al.* (2013)
MTD T 10085	Switzerland: Bern: near Meiringen: Gadmental	E	-	h1	1.00	-	-	Kindler *et al.* (2013)
MTD T 10086	Switzerland: Bern: near Meiringen: Gadmental	E	h3	-	1.00	-	-	Kindler *et al.* (2013)
MBE09	Switzerland: Bern: Sutz-Lattrigen	E	h1	h23	1.00	-	-	This study
MTD T 10084	Switzerland: Fribourg: between Neuchâtel, Bern and Biel: Grosses Moos	E	h1	-	0.99	-	-	Kindler *et al.* (2013)
MTD T 10095	Switzerland: Fribourg: between Neuchâtel, Bern and Biel: Grosses Moos	E	h1	-	1.00	-	-	Kindler *et al.* (2013)
CHU01	Switzerland: Graubünden: Chur	E	h1	h9	1.00	-	-	This study
BGR01	Switzerland: Graubünden: Filisur	E	h1	h9	1.00	-	-	This study
FLA01	Switzerland: Graubünden: Fläsch	E	h1	h9	1.00	-	-	This study
FLA02	Switzerland: Graubünden: Fläsch	E	h1	h9	0.99	-	-	This study
FLA03	Switzerland: Graubünden: Fläsch	E	h1	h9	1.00	-	-	This study
LAA01	Switzerland: Graubünden: Laax	E	h1	h9	1.00	-	-	This study
LAA02	Switzerland: Graubünden: Laax	E	h1	h9	0.99	-	-	This study
JUR01	Switzerland: Jura: Beurnevésin	unknown	-	-	1.00	-	-	This study
JUR02	Switzerland: Jura: Beurnevésin	unknown	-	-	1.00	-	-	This study
SHO01	Switzerland: Schaffhausen: Hallau	3	y1	y1	0.24	-	-	This study
SHO02	Switzerland: Schaffhausen: Hallau	3	y1	y1	0.22	-	-	This study
SHO03	Switzerland: Schaffhausen: Hallau	3	y1	y1	0.22	-	-	This study
SAR01	Switzerland: Schaffhausen: Hemishofen	3	y1	y1	0.04	0.99	0.52	This study
SAR02	Switzerland: Schaffhausen: Hemishofen	3	y37	y1	0.13	-	-	This study
SAR03	Switzerland: Schaffhausen: Hemishofen	3	y1	y1	0.03	0.98	0.11	This study
SHF01	Switzerland: Schaffhausen: Herblingen	3	y1	y1	0.07	-	-	This study
SHF02	Switzerland: Schaffhausen: Herblingen	3	y1	y12	0.12	-	-	This study
SHF03	Switzerland: Schaffhausen: Herblingen	3	y1	y1	0.08	-	-	This study
MTD D 30567	Switzerland: St. Gallen: Altenrhein	3	y1	HF679958	0.07	-	-	Kindler *et al.* (2013)
ALT01	Switzerland: St. Gallen: Altstätten	E	h1	h9	0.97	-	-	This study
ALT02	Switzerland: St. Gallen: Altstätten	E	h1	h9	0.97	-	-	This study
ALT03	Switzerland: St. Gallen: Altstätten	E	h1	h1	0.80	-	-	This study
ALT04	Switzerland: St. Gallen: Altstätten	E	h1	h9	0.99	-	-	This study
ALT05	Switzerland: St. Gallen: Altstätten	E	h1	h9	0.79	-	-	This study
BAL01	Switzerland: St. Gallen: Balgach	E	h1	h9	0.56	-	-	This study
BAL02	Switzerland: St. Gallen: Balgach	E	h1	h9	0.96	-	-	This study
BAL03	Switzerland: St. Gallen: Balgach	3	y40	y1	0.66	-	-	This study
BAL04	Switzerland: St. Gallen: Balgach	E	h1	h9	0.98	-	-	This study
BAL05	Switzerland: St. Gallen: Balgach	E	h1	h9	0.71	-	-	This study
BCZ01	Switzerland: St. Gallen: Berneck	unknown	-	-	0.37	-	-	This study
BCZ02	Switzerland: St. Gallen: Berneck	3	y1	-	0.25	-	-	This study
BCZ03	Switzerland: St. Gallen: Berneck	3	y1	y1	0.27	-	-	This study
BCZ04	Switzerland: St. Gallen: Berneck	E	h1	h16	1.00	-	-	This study
BCZ05	Switzerland: St. Gallen: Berneck	E	h1	h22	0.99	-	-	This study
BCZ06	Switzerland: St. Gallen: Berneck	E	h1	h22	1.00	-	-	This study
BCZ07	Switzerland: St. Gallen: Berneck	E	h1	h10	1.00	-	-	This study
BCZ08	Switzerland: St. Gallen: Berneck	E	h1	h1	0.94	-	-	This study
BCZ09	Switzerland: St. Gallen: Berneck	E	h1	h1	1.00	-	-	This study
BCZ10	Switzerland: St. Gallen: Berneck	E	h1	h1	0.99	-	-	This study
BCZ11	Switzerland: St. Gallen: Berneck	E	h1	h1	0.99	-	-	This study
DIE01	Switzerland: St. Gallen: Diepoldsau	3	y40	y1	0.64	-	-	This study
DIE02	Switzerland: St. Gallen: Diepoldsau	3	y40	y1	0.66	-	-	This study
DIE03	Switzerland: St. Gallen: Diepoldsau	3	y1	y1	0.93	-	-	This study
DIE04	Switzerland: St. Gallen: Diepoldsau	unknown	-	-	0.61	-	-	This study
MTD T 10088	Switzerland: St. Gallen: Lake Constance: near Thal	3	y1	-	0.25	-	-	Kindler *et al.* (2013)
OBE01	Switzerland: St. Gallen: Oberuzwil	3	y1	y1	0.05	0.98	0.62	This study

• **Table S1 continued**

		mtDNA data			Microsatellite data			
Voucher	**Locality**	**mtDNA clade**	**ND4 haplotype**	**cyt *b* haplotype**	**First STRUCTURE run**	**Second STRUCTURE run**	**Third STRUCTURE run**	**Reference**
OBE02	Switzerland: St. Gallen: Oberuzwil	**3**	**y1**	**y1**	0.07	-	-	This study
OBE03	Switzerland: St. Gallen: Oberuzwil	**3**	**y42**	**y36**	0.08	-	-	This study
OBE04	Switzerland: St. Gallen: Oberuzwil	**3**	**y42**	**y36**	0.05	0.98	0.04	This study
OBE05	Switzerland: St. Gallen: Oberuzwil	**3**	**y1**	**y1**	0.01	0.99	0.25	This study
OBE06	Switzerland: St. Gallen: Oberuzwil	**3**	**y1**	**y1**	0.01	0.99	0.24	This study
OBE07	Switzerland: St. Gallen: Oberuzwil	**3**	**y42**	**y36**	0.04	0.98	0.06	This study
QUI01	Switzerland: St. Gallen: Quinten	**E**	**h1**	**h12**	1.00	-	-	This study
SMN01	Switzerland: St. Gallen: Schmeikon	**E**	**h1**	**h13**	1.00	-	-	This study
SMN02	Switzerland: St. Gallen: Schmeikon	**E**	**h1**	**h13**	0.99	-	-	This study
SMN03	Switzerland: St. Gallen: Schmeikon	**E**	**h1**	**h3**	0.91	-	-	This study
SEW01	Switzerland: St. Gallen: Sennwald	**E**	**h1**	**h9**	1.00	-	-	This study
NEB01	Switzerland: St. Gallen: Thal	**3**	**y40**	**y1**	0.28	-	-	This study
NEB02	Switzerland: St. Gallen: Thal	**E**	**h1**	**h9**	0.24	-	-	This study
NEB03	Switzerland: St. Gallen: Thal	**3**	**y1**	**y1**	0.32	-	-	This study
NEB04	Switzerland: St. Gallen: Thal	**3**	**y1**	**y1**	0.27	-	-	This study
NEB05	Switzerland: St. Gallen: Thal	**E**	**h1**	**h9**	0.31	-	-	This study
THA01	Switzerland: St. Gallen: Thal	**3**	**y1**	**y1**	0.22	-	-	This study
THA02	Switzerland: St. Gallen: Thal	**3**	**y40**	**y36**	0.36	-	-	This study
THA03	Switzerland: St. Gallen: Thal	**3**	**y1**	**y1**	0.21	-	-	This study
WIL01	Switzerland: St. Gallen: Will	**3**	**y1**	**y36**	0.16	-	-	This study
AAD01	Switzerland: Thurgau: Aadorf	**3**	**y37**	**y1**	0.28	-	-	This study
AAD02	Switzerland: Thurgau: Aadorf	**3**	**y37**	**y1**	0.45	-	-	This study
AAD03	Switzerland: Thurgau: Aadorf	**3**	**y37**	**y1**	0.23	-	-	This study
JUV01	Switzerland: Thurgau: Alterswilen	**3**	**y28**	**y1**	0.01	0.99	0.12	This study
JUV02	Switzerland: Thurgau: Alterswilen	**3**	**y29**	**y1**	0.12	-	-	This study
JUV03	Switzerland: Thurgau: Alterswilen	**3**	**y27**	**y1**	0.11	-	-	This study
JUV04	Switzerland: Thurgau: Alterswilen	**3**	**y1**	**y1**	0.36	-	-	This study
JUV05	Switzerland: Thurgau: Alterswilen	**3**	**y27**	**y1**	0.11	-	-	This study
JUV06	Switzerland: Thurgau: Alterswilen	**3**	**y27**	**y1**	0.23	-	-	This study
NWN01	Switzerland: Thurgau: Alterswilen	**3**	**y1**	**y1**	0.19	-	-	This study
NWN02	Switzerland: Thurgau: Alterswilen	**3**	**y1**	**y1**	0.16	-	-	This study
BUR01	Switzerland: Thurgau: Bürglen	**3**	**y1**	**y1**	0.17	-	-	This study
BUR02	Switzerland: Thurgau: Bürglen	**3**	**y1**	**y1**	0.16	-	-	This study
FRA01	Switzerland: Thurgau: Frauenfeld	**3**	**y1**	**y1**	0.23	-	-	This study
FRA02	Switzerland: Thurgau: Frauenfeld	**3**	**y37**	**y1**	0.09	-	-	This study
KRE01	Switzerland: Thurgau: Kreuzlingen	**3**	**y1**	**y1**	0.09	-	-	This study
KRE02	Switzerland: Thurgau: Kreuzlingen	**3**	**y1**	**y1**	0.29	-	-	This study
KRE03	Switzerland: Thurgau: Kreuzlingen	**3**	**y1**	**y1**	0.19	-	-	This study
MUE01	Switzerland: Uri: Erstfeld	**E**	**h1**	**h1**	1.00	-	-	This study
GEN01	Switzerland: Vaud: Begnins	**E**	**h1**	**h1**	1.00	-	-	This study
MTD T 10079	Switzerland: Vaud: Vinzel	**E**	**h1**	-	1.00	-	-	Kindler *et al.* (2013)
DAT01	Switzerland: Zürich: Dätwil	**3**	**y37**	**y1**	0.16	-	-	This study
DAT02	Switzerland: Zürich: Dätwil	**3**	**y37**	**y1**	0.20	-	-	This study
DUB01	Switzerland: Zürich: Dübendorf	**3**	**y1**	**y1**	0.98	-	-	This study
DUB02	Switzerland: Zürich: Dübendorf	**3**	**y1**	**y1**	0.99	-	-	This study
DUB03	Switzerland: Zürich: Dübendorf	**3**	**y1**	**y1**	0.98	-	-	This study
DUB04	Switzerland: Zürich: Dübendorf	**3**	**y1**	**y1**	0.99	-	-	This study
FIS01	Switzerland: Zürich: Fischenthal	**E**	**h1**	**h1**	0.86	-	-	This study
FIS02	Switzerland: Zürich: Fischenthal	**E**	**h1**	**h9**	1.00	-	-	This study
FIS03	Switzerland: Zürich: Fischenthal	**E**	**h1**	**h1**	1.00	-	-	This study
FCH01	Switzerland: Zürich: Flaach	**3**	**y37**	**y1**	0.02	0.96	0.09	This study
FCH02	Switzerland: Zürich: Flaach	**3**	**y1**	**y1**	0.12	-	-	This study
FCH03	Switzerland: Zürich: Flaach	**3**	**y37**	**y1**	0.17	-	-	This study
FCH04	Switzerland: Zürich: Flaach	**3**	**y1**	**y1**	0.14	-	-	This study
FCH05	Switzerland: Zürich: Flaach	**unknown**	-	-	0.17	-	-	This study
FCH06	Switzerland: Zürich: Flaach	**3**	**y1**	**y1**	0.20	-	-	This study
GAT01	Switzerland: Zürich: Gattikon	**E**	**h11**	**h23**	0.98	-	-	This study
GAT02	Switzerland: Zürich: Gattikon	**E**	**h1**	**h1**	0.98	-	-	This study
PFA01	Switzerland: Zürich: Lake Pfäffikon	**E**	**h1**	**h26**	0.97	-	-	This study
MUE07	Switzerland: Zürich: Langnau am Albis	**E**	**h1**	**h1**	0.99	-	-	This study
MAR01	Switzerland: Zürich: Marthalen	**3**	**y38**	**y42**	0.08	-	-	This study
MAR02	Switzerland: Zürich: Marthalen	**3**	**y1**	**y35**	0.25	-	-	This study
MAR03	Switzerland: Zürich: Marthalen	**3**	**y38**	**y42**	0.04	0.97	0.09	This study
NEE01	Switzerland: Zürich: Neerach	**3**	**y1**	**y1**	0.31	-	-	This study
NEE02	Switzerland: Zürich: Neerach	**3**	**y1**	**y1**	0.16	-	-	This study
NEE03	Switzerland: Zürich: Neerach	**3**	**y1**	**y1**	0.23	-	-	This study
NEE04	Switzerland: Zürich: Neerach	**3**	**y1**	**y32**	0.05	0.99	0.13	This study
OBF01	Switzerland: Zürich: Obfelden	**E**	**h1**	**h1**	1.00	-	-	This study
OBF02	Switzerland: Zürich: Obfelden	**E**	**h1**	**h10**	1.00	-	-	This study
PFU01	Switzerland: Zürich: Pfungen	**3**	**y33**	**y1**	0.46	-	-	This study
PFU02	Switzerland: Zürich: Pfungen	**3**	**y1**	**y1**	0.31	-	-	This study
PFU03	Switzerland: Zürich: Pfungen	**3**	**y1**	**y1**	0.28	-	-	This study
STA01	Switzerland: Zürich: Stäfa	**E**	**h1**	**h1**	0.91	-	-	This study
STA02	Switzerland: Zürich: Stäfa	**E**	**h1**	**h1**	0.96	-	-	This study
STA03	Switzerland: Zürich: Stäfa	**E**	**h1**	**h1**	0.88	-	-	This study
STA04	Switzerland: Zürich: Stäfa	**E**	**h1**	**h1**	0.97	-	-	This study
MUE02	Switzerland: Zürich: Stallikon	**unknown**	-	-	0.96	-	-	This study
TAT01	Switzerland: Zürich: Thalheim an der Thur	**3**	**y1**	**y1**	0.12	-	-	This study
GRF01	Switzerland: Zürich: Uster	**E**	**h1**	**h1**	0.78	-	-	This study
WEI01	Switzerland: Zürich: Weiach	**3**	**y1**	**y1**	0.16	-	-	This study
WEI02	Switzerland: Zürich: Weiach	**3**	**y1**	**y36**	0.21	-	-	This study
WEI03	Switzerland: Zürich: Weiach	**3**	**y33**	**y1**	0.02	0.96	0.06	This study
MUE03	Switzerland: Zürich: Wettswil am Albis	**unknown**	-	-	0.99	-	-	This study
MUE04	Switzerland: Zürich: Wettswil am Albis	**unknown**	-	-	0.99	-	-	This study
WIN01	Switzerland: Zürich: Winterthur: Sennhof	**E**	**h1**	**h1**	0.44	-	-	This study
WIN02	Switzerland: Zürich: Winterthur: Sennhof	**E**	**h1**	**h1**	0.21	-	-	This study
WIN03	Switzerland: Zürich: Winterthur: Sennhof	**E**	**h1**	**h1**	0.41	-	-	This study
WIN04	Switzerland: Zürich: Winterthur: Sennhof	**E**	**h1**	**h1**	0.31	-	-	This study
ZEL01	Switzerland: Zürich: Zell	**E**	**h1**	**h1**	0.38	-	-	This study
ZEL02	Switzerland: Zürich: Zell	**E**	**h1**	**h1**	0.31	-	-	This study
ZEL03	Switzerland: Zürich: Zell	**E**	**h1**	**h1**	0.25	-	-	This study
ZEL04	Switzerland: Zürich: Zell	**E**	**h1**	**h1**	0.44	-	-	This study
ZEL05	Switzerland: Zürich: Zell	**E**	**h1**	**h1**	0.58	-	-	This study
ZEL06	Switzerland: Zürich: Zell	**E**	**h1**	**h1**	0.38	-	-	This study
ZEL07	Switzerland: Zürich: Zell	**E**	**h1**	**h1**	0.39	-	-	This study
ZHC01	Switzerland: Zürich: Zürich	**E**	**h1**	**h1**	0.96	-	-	This study
ZHC02	Switzerland: Zürich: Zürich	**E**	**h1**	**h1**	1.00	-	-	This study
ZHN01	Switzerland: Zürich: Zürich: Affoltern	**E**	**h1**	**h12**	1.00	-	-	This study
ZHN02	Switzerland: Zürich: Zürich: Affoltern	**E**	**h1**	**h3**	0.83	-	-	This study
KLO01	Switzerland: Zürich: Zürich: Airport	**3**	**y1**	**y1**	0.31	-	-	This study
KLO02	Switzerland: Zürich: Zürich: Airport	**3**	**y1**	**y1**	0.25	-	-	This study
KLO03	Switzerland: Zürich: Zürich: Airport	**3**	**y1**	**y1**	0.41	-	-	This study
KLO04	Switzerland: Zürich: Zürich: Airport	**E**	**h1**	**h12**	0.35	-	-	This study
KLO05	Switzerland: Zürich: Zürich: Airport	**3**	**y1**	**y1**	0.22	-	-	This study
KLO06	Switzerland: Zürich: Zürich: Airport	**3**	**y1**	**y1**	0.34	-	-	This study
KLO07	Switzerland: Zürich: Zürich: Airport	**E**	**h1**	**h12**	0.26	-	-	This study
KLO08	Switzerland: Zürich: Zürich: Airport	**3**	**y1**	**y1**	0.44	-	-	This study
KLO09	Switzerland: Zürich: Zürich: Airport	**3**	**y1**	**y1**	0.26	-	-	This study
KLO10	Switzerland: Zürich: Zürich: Airport	**3**	**y1**	**y1**	0.33	-	-	This study
ZFMK 47034	Turkey: Aegean Region: between Söke and Doğanbey	**7**	-	**gy12**	0.02	0.03	-	Kindler *et al.* (2013)
ZFMK 82946	Turkey: Aegean Region: Dalyan	**7**	HF679889	**gy13**	0.01	0.03	-	Kindler *et al.* (2013)
MTD D 25227	Turkey: Aegean Region: Selçuk	**7**	**gy11**	HF680188	0.02	0.01	-	Kindler *et al.* (2013)
MTD D 25229	Turkey: Aegean Region: Selçuk	**7**	**gy8**	-	0.15	-	-	Kindler *et al.* (2013)
MTD D 25230	Turkey: Aegean Region: Selçuk	**7**	**gy8**	HF680189	0.03	0.02	-	Kindler *et al.* (2013)
NHMW 38053	Turkey: Black Sea Region: 10 km E Gerede	**8**	**gn14**	**gn16**	0.02	0.02	-	This study
ZFMK 71143	Turkey: Black Sea Region: between Hopa and Arhavi	**8**	-	**gn15**	0.00	0.02	-	Kindler *et al.* (2013)
ZFMK 71144	Turkey: Black Sea Region: between Hopa and Arhavi	**8**	-	**gn14**	0.00	0.01	-	Kindler *et al.* (2013)
ZFMK 71145	Turkey: Black Sea Region: Borçka	**8**	**gn13**	**gn18**	0.00	0.02	-	Kindler *et al.* (2013)
BEV.17392	Turkey: Marmara Region: Beşevler	**7**	**gy7**	**gy8**	0.00	0.02	-	This study
MTD D 42725	Ukraine: Crimea: Luchyste	**8**	**gn2**	**gn8**	0.00	0.03	-	Kindler *et al.* (2013)
MTD D 42724	Ukraine: Oblast Herson: Hola Prystan': Heroïs'ke	**8**	**gn6**	**gn12**	0.00	0.04	-	Kindler *et al.* (2013)

Museum acronyms of vouchers for Table S1:

BEV – Laboratoire de Biogéographie et Ecologie des Vertébrés, Centre d'Ecologie Fonctionnelle & Evolutive, Montpellier
LMNM – Landesmuseum Natur und Mensch, Oldenburg
MTD D – Museum of Zoology, Senckenberg Dresden (Herpetological Collection)
MTD T – Museum of Zoology, Senckenberg Dresden (Tissue Collection)
MWLK – Museum der Westlausitz, Kamenz
NHMW – Naturhistorisches Museum Wien
NME – Naturkundemuseum Erfurt
SMF – Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt a.M.
SMNS – Staatliches Museum für Naturkunde Stuttgart
SMNK – Staatliches Museum für Naturkunde Karlsruhe
ZFMK – Zoologisches Forschungsmuseum Alexander Koenig, Bonn
ZMB – Museum für Naturkunde Berlin
ZMH – Zoologisches Museum Hamburg
ZMUO – Zoologisk museum, Universitetet i Oslo
ZSM – Zoologische Staatssammlung München
ZSUM – Zoologische Sammlung der Philipps-Universität Marburg

Table S2. Akaike Information Criterion (AIC) scores for fitted clines under different models using the R package HZAR (Derryberry *et al.* 2014). Bold values in blue indicate the best-fit model from the 15-model comparison.

	Contact zone I		Contact zone II	
	Microsatellites	**mtDNA**	**Microsatellites**	**mtDNA**
Null Model	152.846	184.261	68.427	254.247
Model 1	38.966	**17.566**	11.670	**74.262**
Model 2	22.132	n/a	**11.366**	n/a
Model 3	17.449	21.839	15.249	78.504
Model 4	18.120	25.038	18.909	n/a
Model 5	17.692	n/a	18.865	82.518
Model 6	23.491	30.390	22.930	86.930
Model 7	29.795	21.169	15.795	78.360
Model 8	**13.501**	n/a	15.365	n/a
Model 9	19.169	26.013	18.782	82.610
Model 10	36.967	21.694	15.573	78.360
Model 11	26.258	n/a	15.353	n/a
Model 12	21.600	26.034	19.168	82.724
Model 13	15.214	21.694	15.111	78.360
Model 14	15.295	n/a	15.119	n/a
Model 15	20.469	25.999	19.306	82.733

Table S3. European Nucleotide Archive (ENA) accession numbers of ND4 and cyt *b* haplotypes.

ND4 haplotype	Accession number	cyt *b* haplotype	Accession number
		helvetica	
h1	LT839092	**h1**	LT839229
h2	LT839093	**h2**	LT839230
h3	LT839094	**h3**	LT839231
h4	LT839095	**h4**	LT839232
h5	LT839096	**h5**	LT839233
h6	LT839097	**h6**	LT839234
h7	LT839098	**h7**	LT839235
h8	LT839099	**h8**	LT839236
h9	LT839100	**h9**	LT839237
h10	LT839101	**h10**	LT839238
h11	LT839102	**h11**	LT839239
h12	LT839103	**h12**	LT839240
		h13	LT839241
		h14	LT839242
		h15	LT839243
		h16	LT839244
		h17	LT839245
		h18	LT839246
		h19	LT839247
		h20	LT839248
		h21	LT839249
		h22	LT839250
		h23	LT839251
		h24	LT839252
		h25	LT839253
		h26	LT839254
		h27	LT839255
		h28	LT839256
		h29	LT839257
Yellow lineage (lineage 3 of Kindler *et al*., 2013)			
y1	LT839104	**y1**	LT839258
y2	LT839105	**y2**	LT839259
y3	LT839106	**y3**	LT839260
y4	LT839107	**y4**	LT839261
y5	LT839108	**y5**	LT839262
y6	LT839109	**y6**	LT839263
y7	LT839110	**y7**	LT839264
y8	LT839111	**y8**	LT839265
y9	LT839112	**y9**	LT839266
y10	LT839113	**y10**	LT839267
y11	LT839114	**y11**	LT839268
y12	LT839115	**y12**	LT839269
y13	LT839116	**y13**	LT839270
y14	LT839117	**y14**	LT839271
y15	LT839118	**y15**	LT839272
y16	LT839119	**y16**	LT839273
y17	LT839120	**y17**	LT839274
y18	LT839121	**y18**	LT839275
y19	LT839122	**y19**	LT839276
y20	LT839123	**y20**	LT839277
y21	LT839124	**y21**	LT839278

• Table S3 continued

Yellow lineage (lineage 3 of Kindler *et al*., 2013)			
y22	LT839125	**y22**	LT839279
y23	LT839126	**y23**	LT839280
y24	LT839127	**y24**	LT839281
y25	LT839128	**y25**	LT839282
y26	LT839129	**y26**	LT839283
y27	LT839130	**y27**	LT839284
y28	LT839131	**y28**	LT839285
y29	LT839132	**y29**	LT839286
y30	LT839133	**y30**	LT839287
y31	LT839134	**y31**	LT839288
y32	LT839135	**y32**	LT839289
y33	LT839136	**y33**	LT839290
y34	LT839137	**y34**	LT839291
y35	LT839138	**y35**	LT839292
y36	LT839139	**y36**	LT839293
y37	LT839140	**y37**	LT839294
y38	LT839141	**y38**	LT839295
y39	LT839142	**y39**	LT839296
y40	LT839143	**y40**	LT839297
y41	LT839144	**y41**	LT839298
y42	LT839145	**y42**	LT839299
y43	LT839146		
Red lineage (lineage 4 of Kindler *et al*., 2013)			
r1	LT839147	**r1**	LT839300
r2	LT839148	**r2**	LT839301
r3	LT839149	**r3**	LT839302
r4	LT839150	**r4**	LT839303
r5	LT839151	**r5**	LT839304
r6	LT839152	**r6**	LT839305
r7	LT839153	**r7**	LT839306
r8	LT839154	**r8**	LT839307
r9	LT839155	**r9**	LT839308
r10	LT839156	**r10**	LT839309
r11	LT839157	**r11**	LT839310
r12	LT839158	**r12**	LT839311
r13	LT839159	**r13**	LT839312
r14	LT839160	**r14**	LT839313
r15	LT839161	**r15**	LT839314
r16	LT839162	**r16**	LT839315
r17	LT839163	**r17**	LT839316
r18	LT839164	**r18**	LT839317
r19	LT839165	**r19**	LT839318
r20	LT839166	**r20**	LT839319
r21	LT839167	**r21**	LT839320
r22	LT839168	**r22**	LT839321
r23	LT839169	**r23**	LT839322
r24	LT839170	**r24**	LT839323
r25	LT839171	**r25**	LT839324
r26	LT839172	**r26**	LT839325
r27	LT839173	**r27**	LT839326
r28	LT839174	**r28**	LT839327
r29	LT839175	**r29**	LT839328
r30	LT839176	**r30**	LT839329
r31	LT839177	**r31**	LT839330

• Table S3 continued

Red lineage (lineage 4 of Kindler *et al*., 2013)			
r32	LT839178	**r32**	LT839331
r33	LT839179	**r33**	LT839332
		r34	LT839333
		r35	LT839334
		r36	LT839335
		r37	LT839336
		r38	LT839337
		r39	LT839338
		r40	LT839339
		r41	LT839340
		r42	LT839341
		r43	LT839342
		r44	LT839343
		r45	LT839344
		r46	LT839345
		r47	LT839346
		r48	LT839347
		r49	LT839348
		r50	LT839349
		r51	LT839350
		r52	LT839351
		r53	LT839352
		r54	LT839353
		r55	LT839354
		r56	LT839355
		r57	LT839356
		r58	LT839357
		r59	LT839358
		r60	LT839359
		r61	LT839360
		r62	LT839361
		r63	LT839362
		r64	LT839363
		r65	LT839364
		r66	LT839365
Lilac lineage (lineage 5 of Kindler *et al*., 2013)			
l1	LT839180	**l1**	LT839366
l2	LT839181	**l2**	LT839367
l3	LT839182	**l3**	LT839368
l4	LT839183	**l4**	LT839369
l5	LT839184	**l5**	LT839370
l6	LT839185	**l6**	LT839371
l7	LT839186	**l7**	LT839372
l8	LT839187	**l8**	LT839373
l9	LT839188	**l9**	LT839374
l10	LT839189	**l10**	LT839375
l11	LT839190	**l11**	LT839376
l12	LT839191	**l12**	LT839377
l13	LT839192	**l13**	LT839378
l14	LT839193	**l14**	LT839379
l15	LT839194	**l15**	LT839380
l16	LT839195	**l16**	LT839381
l17	LT839196	**l17**	LT839382
l18	LT839197	**l18**	LT839383

• Table S3 continued

Lilac lineage (lineage 5 of Kindler *et al*., 2013)			
l19	LT839198	**l19**	LT839384
l20	LT839199	**l20**	LT839385
		l21	LT839386
		l22	LT839387
Grey lineage (lineage 7 of Kindler *et al*., 2013)			
gy1	LT839200	**gy1**	LT839388
gy2	LT839201	**gy2**	LT839389
gy3	LT839202	**gy3**	LT839390
gy4	LT839203	**gy4**	LT839391
gy5	LT839204	**gy5**	LT839392
gy6	LT839205	**gy6**	LT839393
gy7	LT839206	**gy7**	LT839394
gy8	LT839207	**gy8**	LT839395
gy9	LT839208	**gy9**	LT839396
gy10	LT839209	**gy10**	LT839397
gy11	LT839210	**gy11**	LT839398
		gy12	LT839399
		gy13	LT839400
Green lineage (lineage 8 of Kindler *et al*., 2013)			
gn1	LT839211	**gn1**	LT839401
gn2	LT839212	**gn2**	LT839402
gn3	LT839213	**gn3**	LT839403
gn4	LT839214	**gn4**	LT839404
gn5	LT839215	**gn5**	LT839405
gn6	LT839216	**gn6**	LT839406
gn7	LT839217	**gn7**	LT839407
gn8	LT839218	**gn8**	LT839408
gn9	LT839219	**gn9**	LT839409
gn10	LT839220	**gn10**	LT839410
gn11	LT839221	**gn11**	LT839411
gn12	LT839222	**gn12**	LT839412
gn13	LT839223	**gn13**	LT839413
gn14	LT839224	**gn14**	LT839414
gn15	LT839225	**gn15**	LT839415
gn16	LT839226	**gn16**	LT839416
		gn17	LT839417
		gn18	LT839418
		gn19	LT839419
		gn20	LT839420
		gn21	LT839421
Lineage C of Kindler *et al.* (2013)			
c1	LT839227	**c1**	LT839422
		c2	LT839423
Lineage F of Kindler *et al.* (2013)			
f1	LT839228	**f1**	LT839424

Table S4. Used microsatellite loci. For primer sequences, annealing temperature and multiplex-sets, see Pokrant *et al.* (2016).

Locus	Repeat motif	Allele size range [bp]	Number of alleles	Original reference
Natnat09	$(AC)_{22}$	80 - 144	25	Meister *et al.* (2009)
Natnat05	$(GT)_{16}$	136 - 194	23	Meister *et al.* (2009)
µNt8new	$(AC)_{15}$	75 - 123	20	Meister *et al.* (2009)
Nsµ3	$(ATCT)_{14}$ $ATC(CA)_{20}$	139 - 457	39	Prosser *et al*. (1999)
µNt3	$(AC)_{16}$	111 - 163	24	Gautschi *et al*. (2000)
µNt7	$(AC)_{17}$	164 - 212	25	Gautschi *et al.* (2000)
30	$(CA)_{14}$	225 - 271	20	Burns & Houlden (1999)
Natnat11	$(GA)_{13}$	102 - 228	25	Meister *et al.* (2009)
Natnat06	$(GT)_{21}$	145 - 185	16	Meister *et al.* (2009)
Tbu A09	$(AC)_{7}$	110 - 146	17	Sloss *et al.* (2012)
3TS	$(GATA)_{19}$	186 - 270	20	Garner *et al.* (2002)
Eobµ1	$(TG)_{21}$	120 - 142	12	Blouin-Demers & Gibbs (2003)
Eobµ13	$(AC)_{20}$	118 - 162	19	Blouin-Demers & Gibbs (2003)

Table S5. Genetic diversity of STRUCTURE clusters based on 13 microsatellite loci. *n* number of individuals, n_A number of alleles, $n_{\bar{A}}$ average number of alleles per locus, n_P number of private alleles, AR allelic richness, H_O average observed heterozygosity, H_E average expected heterozygosity. F_{IS} inbreeding coefficient, F_{ST} fixation index. Individuals with mixed ancestries not considered. All F_{IS} and F_{ST} values were statistically significant.

Microsatellites									
Cluster	***n***	n_A	$n_{\bar{A}}$	n_P	***AR***	H_O	H_E	F_{IS}	F_{ST}
First STRUCTURE run									
helvetica	350	156	12.000	45	4.505	0.404	0.548	0.265	0.40
Eastern lineages*	953	230	17.692	119	5.761	0.501	0.612	0.182	
Second STRUCTURE run									
Yellow + red lineage	502	121	9.308	19	7.185	0.453	0.510	0.112	0.18
Adjacent lineages**	100	186	14.308	84	14.006	0.510	0.712	0.285	
Third STRUCTURE run									
Yellow	175	83	6.385	12	6.025	0.423	0.467	0.095	0.11
Red	122	102	7.846	31	7.722	0.501	0.555	0.098	

*Yellow, red, lilac, grey and green lineages
**Lilac, grey and green lineages

Table S6. Simulated data. Twenty samples of each parental group were chosen as pure parental genotypes. Using this data, 20 genotypes of each hybrid class (F_1, F_2 and the two backcrosses) were modelled in HYBRIDLAB and analyzed with STRUCTURE. Individuals with *Q* values ≥ 92% were reliably identified as pure *helvetica*, individuals with *Q* values ≥ 95% as eastern grass snakes. Regarding the yellow and red lineages, the differentiation from backcrosses was more difficult. Although there was a misassignment rate of 5% for the pure yellow lineage, we decided to treat grass snakes with at least 80% cluster membership as pure yellow because otherwise the misidentification rate with backcrosses would be too high. Individuals with at least 83% were treated as pure red.

	Parental group 1	**Parental group 2**	**F_1 (referred to parental 1 cluster)**	**F_1 (referred to parental 2 cluster)**	**F_2 (referred to parental 1 cluster)**	**F_2 (referred to parental 2 cluster)**	**Backcross parental 1**	**Backcross parental 2**
	helvetica	**Eastern lineages**						
Average *Q* score	0.965	0.971	0.493	0.507	0.467	0.533	0.772	0.765
SD	0.013	0.007	0.034	0.034	0.095	0.095	0.078	0.066
Minimum *Q*	0.921	0.954	0.444	0.444	0.328	0.319	0.634	0.661
Maximum *Q*	0.997	0.979	0.556	0.556	0.681	0.672	0.968	0.912
Misassignment	if *Q* < 92%: 0%	if *Q* < 95%: 0%	if *Q* < 92%: 0%	if *Q* < 95%: 0%	if *Q* < 92%: 0%	if *Q* < 95%: 0%	if *Q* < 92%: 5%	if *Q* < 95%: 0%
	Yellow lineage	**Red lineage**						
Average *Q* score	0.880	0.890	0.480	0.520	0.580	0.420	0.740	0.720
SD	0.049	0.033	0.149	0.149	0.192	0.192	0.140	0.148
Minimum *Q*	0.770	0.825	0.191	0.310	0.206	0.150	0.442	0.353
Maximum *Q*	0.935	0.940	0.690	0.809	0.850	0.794	0.925	0.917
Misassignment	if *Q* < 80%: 5%	if *Q* < 83%: 0%	if *Q* < 80%: 0%	if *Q* < 83%: 0%	if *Q* < 80%: 15%	if *Q* < 83%: 0%	if *Q* < 80%: 40%	if *Q* < 83%: 30%

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