

Supplementary material

Pliocene Origin, Ice Ages and Postglacial Population Expansion Have Influenced a Panmictic Phylogeography of the European Bee-Eater *Merops apiaster*

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Table S1 Sampling localities of *Merops apiaster* specimens used in this study and including also the other species belonging to the family Meropidae. GenBank accession numbers MH217684 - MH218120.

Species	Locality	IPMB Nr.	Source
<i>Merops apiaster</i>	Spain.	558, 80236-80238, 87441.	IPMB
<i>Merops apiaster</i>	Kreta, Greece.	3530, 3586, 6946, 11470, 19675, 19685-19687.	
<i>Merops apiaster</i>	Alexandroupolis, Greece.	87458-87462.	IPMB
<i>Merops apiaster</i>	Slovakia.	22139-22172.	IPMB
<i>Merops apiaster</i>	Istanbul, Turkey.	26660-26663.	IPMB
<i>Merops apiaster</i>	Egypt.	28481, 28482.	IPMB
<i>Merops apiaster</i>	Georgia.	77370, 77371, 66306.	IPMB
<i>Merops apiaster</i>	Kivik, Sweden.	87463.	SMNH
<i>Merops apiaster</i>	Denmark.	87473.	SMNH
<i>Merops apiaster</i>	Kazakhstan.	84586, 84587.	ZMBU
<i>Merops apiaster</i>	Benfontein, South Africa.	86798-86800.	IPMB
<i>Merops apiaster</i>	Tunisia.	27934.	IPMB
<i>Merops apiaster</i>	Merseburg, Saxony-Anhalt, Germany.	79208-79211.	Vogelwarte Sempach and NABU Saxony-Anhalt
<i>Merops apiaster</i>	Friedeburg, Saxony-Anhalt, Germany.	84619-84627.	Vogelwarte Sempach and NABU Saxony-Anhalt
<i>Merops apiaster</i>	Zehren, Saxony-Anhalt, Germany.	85000-85009, 85013-85023, 85030-85046, 89111-89127.	Vogelwarte Sempach and NABU Saxony-Anhalt
<i>Merops apiaster</i>	Rottewitz, Saxony-Anhalt, Germany.	85010-85012, 85024-85019.	Vogelwarte Sempach and NABU Saxony-Anhalt
<i>Merops apiaster</i>	Seelitz, Saxony-Anhalt, Germany.	85047-85052, 89093-89095.	Vogelwarte Sempach and NABU Saxony-Anhalt
<i>Merops apiaster</i>	Churschütz, Saxony, Germany.	85053-85061, 89085-89092, 89128-89138, 89142-89165.	Vogelwarte Sempach and NABU Saxony-Anhalt
<i>Merops apiaster</i>	Eisenberg, Rhineland-Palatinate, Germany.	79212-79214, 84679-84700, 87513-87520, 88224-88229.	Vogelwarte Radolfzell and DO-G FG "Bienenfresser"
<i>Merops apiaster</i>	Nimitz, Saxony, Germany.	89096-89110, 89139-89141.	Vogelwarte Sempach and NABU Saxony-Anhalt
<i>Merops apiaster</i>	Freiburg, Baden-Württemberg.	79215-79222.	Vogelwarte Radolfzell and DO-G FG "Bienenfresser"
<i>Merops apiaster</i>	Al Ah'madi Governorate, Kuwait.	89641-89650.	LSUMNS
<i>Merops apiaster</i>	Malawi, Africa.	89622-89626.	FMNH
<i>Merops apiaster</i>	Bashkortostan, Nagaev, Russia.	90969.	ZMBU
<i>Merops apiaster</i>	Qizil-Aghaj Reserve, Azeibajan.	90936.	ZMBU
<i>Merops albicollis</i>	Benin, Africa.	47368, 47373, 47408, 47451, 47467, 51078.	IPMB
<i>Merops albicollis</i>	Cameroon, Africa.	87476, 87480.	ZMUC
<i>Merops breweri</i>	Nigeria, Africa.	47185.	IPMB
<i>Merops bulocki</i>	Nigeria, Africa.	47276.	IPMB
<i>Merops bulocki</i>	Ghana, Africa.	89651.	LSUMNS
<i>Merops bullockoides</i>	Tanzania, Africa.	64706, 77603, 77604.	IPMB
<i>Merops bullockoides</i>	Beestekraal, South Africa.	87478.	ZMUC
<i>Merops boehmi</i>	Malawi, Africa.	86801-86803, 89627, 89628.	FMNH
<i>Merops boehmi</i>	Tanzania, Africa.	87442.	ZMUC

<i>Merops gullaris</i>	Benin, Africa.	50514.	IPMB
<i>Merops gullaris</i>	Ghana, Africa.	89652.	LSUMNS
<i>Merops hirundineus</i>	Benin, Africa.	47155, 47335, 47361, 61304-61306, 75286.	IPMB
<i>Merops hirundineus</i>	Benfontein, South Africa.	86793-86795.	IPMB
<i>Merops hirundineus</i>	Nigeria, Africa.	47355.	IPMB
<i>Merops hirundineus</i>	Botswana, Africa.	49993.	IPMB
<i>Merops hirundineus</i>	Namibia, Africa.	46958.	IPMB
<i>Merops malimbicus</i>	Benin, Africa.	51168.	IPMB
<i>Merops nubicus</i>	Benin, Africa.	75250.	IPMB
<i>Merops nubicus</i>	Tanzania, Africa.	57513-57516.	IPMB
<i>Merops nubicoides</i>	Namibia, Africa.	33271-33274.	IPMB
<i>Merops orientalis</i>	Burkina Faso, Africa.	59075.	IPMB
<i>Merops orientalis</i>	Egypt, Africa.	87454.	ZMUC
<i>Merops orientalis</i>	Israel.	87464.	ZMUC
<i>Merops persicus</i>	Al Ah'madi Governorate, Kuwait.	89653, 89654.	LSUMNS
<i>Merops persicus</i>	Faeroe Islands, Denmark.	87456.	ZMUC
<i>Merops persicus</i>	El Fayum, Egypt.	87481, 87482.	ZMUC
<i>Merops phillipinus</i>	Java, Indonesia.	61385.	IPMB
<i>Merops pusillus</i>	Nigeria, Africa.	47188, 87471, 87472.	ZMUC
<i>Merops pusillus</i>	Benin, Africa.	61330, 75285.	IPMB
<i>Merops pusillus</i>	Malawi, Africa.	86792-86797, 89632- 89635.	FMNH
<i>Merops pusillus</i>	Tanzania, Africa.	87466, 87470.	ZMUC
<i>Merops pusillus</i>	Cameroon, Africa.	87477	ZMUC
<i>Merops oreobates</i>	Uganda, Africa.	89629, 89630.	FMNH
<i>Merops oreobates</i>	Democratic Republic Congo, Africa.	89631.	FMNH
<i>Merops orientalis</i>	Israel.	87464.	ZMUC
<i>Merops superciliosus superciliosus</i>	Madagascar, Africa.	89636, 89637.	FMNH
<i>Merops variegatus</i>	Uganda, Africa.	89638.	FMNH
<i>Merops viridis</i>	Punti-Cagayon, Philippines.	87479.	ZMUC
<i>Merops americanus</i>	Philippines, Asia.	89639, 89640.	FMNH

IPMB Nr.: Internal numbers of the Institute of Pharmacology and Molecular Biotechnology for each sample used in this research:

Table S2 Genetic diversity and demographic population parameters based on the Cytochrome Oxidase I gene of different populations of *Merops apiaster*. Significant values $p < 0.05$ are displayed in bold.

Locality	N	H	s	Hd	Pi	Fu and Li's F	Fu's Fs	Tajima's D
RLP/BW	7	2	2	0.286	0.0015	-1.3740	0.856	-1.2371
Saxony-Anhalt	34	6	8	0.622	0.0046	-0.8456	-0.575	-0.9002
Slovakia	9	5	27	0.722	0.0216	-0.1364	2.665	-0.5813
Russia	5	4	5	0.900	0.0034	-1.1558	-1.012	-1.1239
All samples available	61	11	70	0.650	0.0137	-4.7989	0.835	-2.5629

N-Number of samples, H-Number of Haplotypes, s-Number of polymorphic (segregating) sites, Hd-Haplotype diversity, Pi-Nucleotide diversity.

Table S3 Wilcoxon sign rank tests for heterozygosity excess in six populations of *Merops apiaster* based on six microsatellite loci and the allele frequency distribution. Three mutation models were tested: IAM-Infinite alleles model; SMM- Stepwise mutation model and TPM- Two-phase mutation model.

Population	N	Wilcoxon test			Allele frequency distribution
		IAM	SMM	TPM	
RLP/BW	39	0.039	0.421	0.921	Normal L-shaped distribution
Saxony-Anhalt	145	0.218	0.921	0.976	Normal L-shaped distribution
Greece	14	0.023	0.078	0.578	Normal L-shaped distribution
East Europe	32	0.718	0.976	0.992	Normal L-shaped distribution

Western Asia	16	0.039	0.421	0.656	Normal L-shaped distribution
South Africa	7	0.218	0.218	0.421	Normal L-shaped distribution
