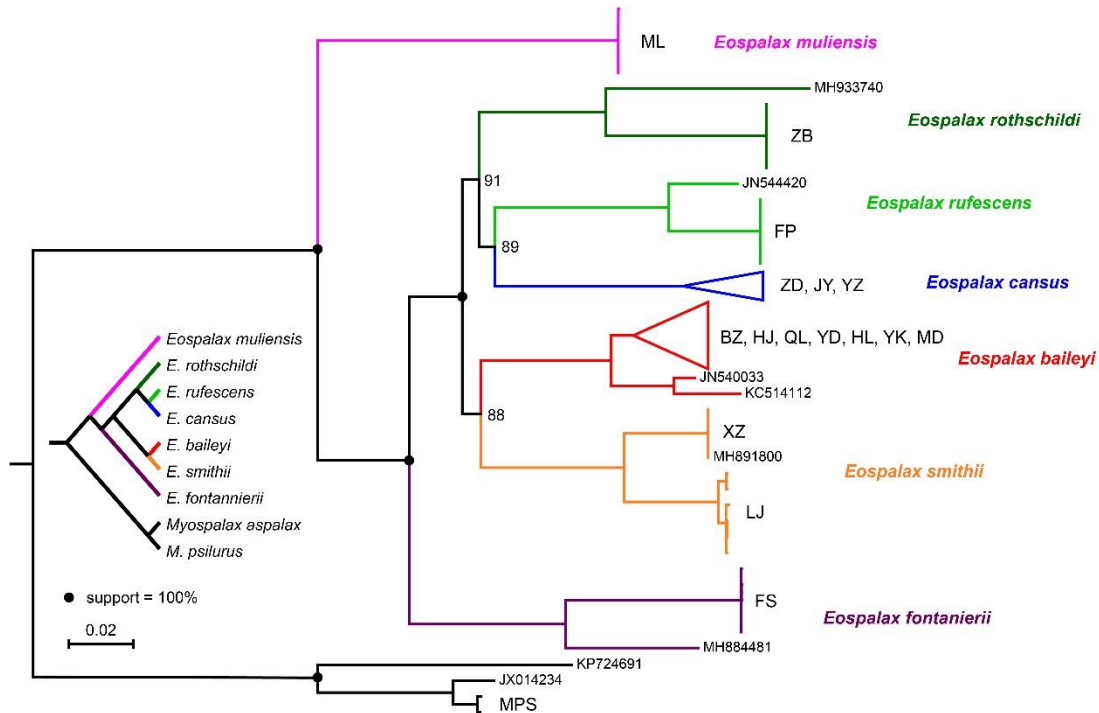
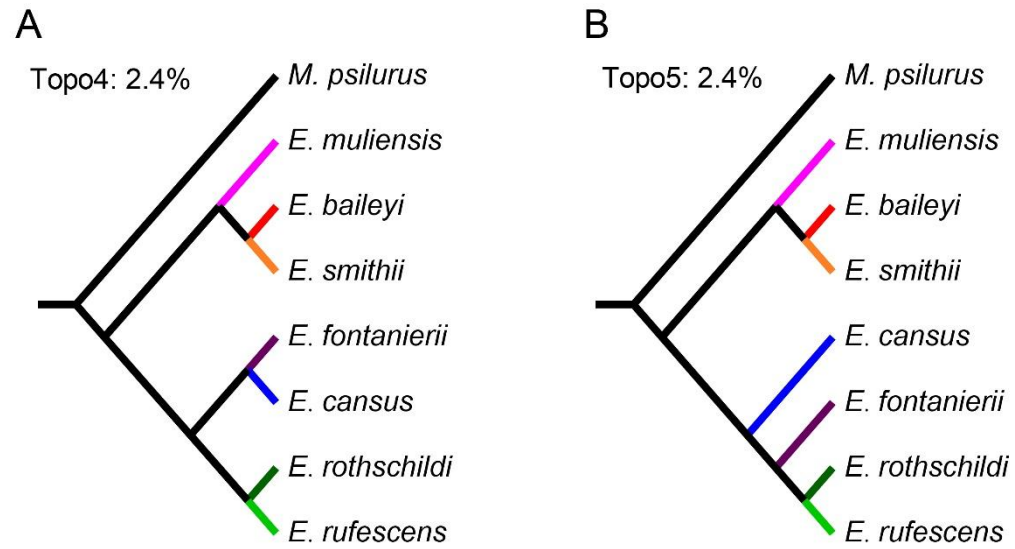


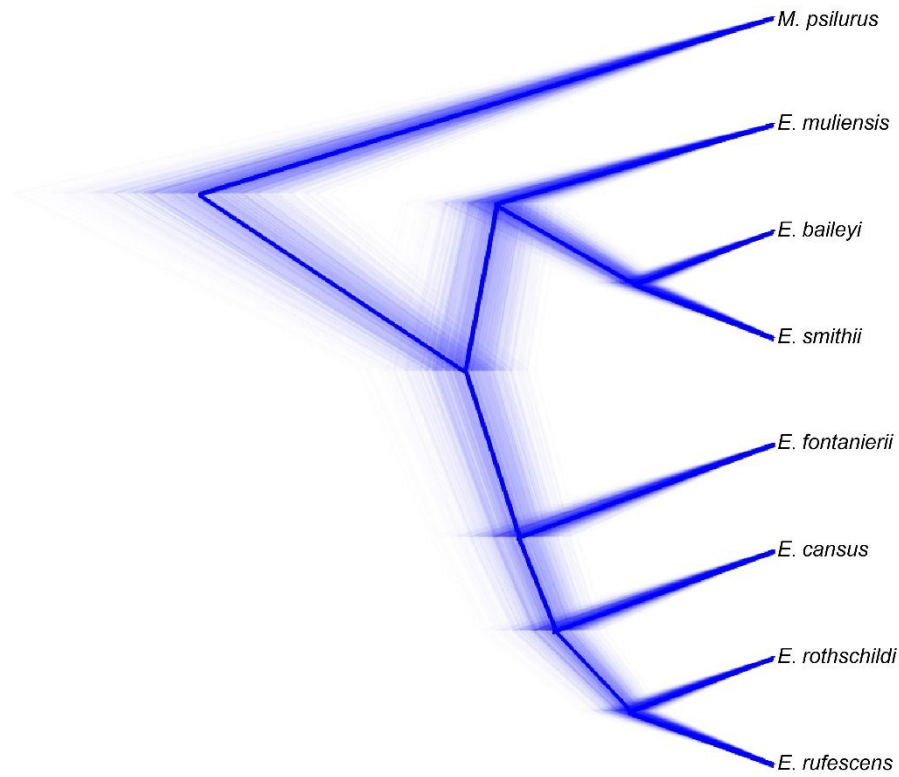
Supplementary Materials



Supplementary Figure S1. Phylogeny of species in *Eospalax* genus inferred by mitogenomes. Phylogeny was inferred from 13 protein-coding genes and two rRNA genes in mitogenomes; 1 000 bootstraps were applied; node support <100% is given at respective nodes; scale bar represents levels of similarity. Accession numbers in terminal nodes represent previously published mitogenomes. Inset is simplified phylogeny inferred from mitogenomes.



Supplementary Figure S2. Fourth (A) and fifth (B) supported topologies based on Twisst analyses. Weighting is shown in upper left corner.



Supplementary Figure S3. All posterior trees sampled by SNAPP. Dark lines represent consensus tree.



Supplementary Figure S4. Habitat of *Eospalax muliensis* sp. nov. Habitat is typical alpine meadow (altitude ~3 700 m), surrounded by shrubs.

Supplementary Table S1. Overview of sampling site information and sequencing statistics

Species	Population	Altitude	Location	Longitude	Latitude	Sample ID	Total bases
<i>Myospalax psilurus</i>	MPS	NA	Hulun lake, Nei Monggol Autonomous Region	NA	NA	MPS1	1.275E+11
						MPS2	1.360E+11
<i>Eospalax muliensis</i>	ML	3700	Kangwu pasture, Tibetan Autonomous County of Muli, Sichuan Province	101.196° E	28.135° N	ML002	1.320E+11
						ML003	1.241E+11
						ML004	1.287E+11
						ML009	1.287E+11
						ML010	1.253E+11
<i>E. fontanierii</i>	FS	1700	Shiziping Village, Fanshi County , Shanxi Province	113.632° E	39.115° N	FS2018050301	1.288E+11
						FS2018050302	1.306E+11
						FS2018050401	1.109E+11
						FS2018050403	9.835E+10
						FS2018050407	1.361E+11
<i>E. rufescens</i>	FP	1200	Foping County, Shaanxi Province	108.022° E	33.592° N	FP2018042301	1.153E+11
						FP2018042401	1.291E+11
						FP2018042402	1.010E+11
						FP2018042403	1.130E+11
						FP2018042502	1.217E+11
<i>E. rothschildi</i>	ZB	1600	Bashan forestry farm, Zhenba County, Shaanxi Province	107.657° E	32.615° N	ZB2018042703	1.275E+11
						ZB2018042704	1.289E+11
						ZB2018042804	1.292E+11
						ZB2018042901	1.257E+11

<i>E. smithii</i>	LJ	2700	Lvjing Town, Min County, Gansu Province	104.550° E	34.285° N	ZB2018042907	1.264E+11
						LJ2018050801	1.306E+11
						LJ2018050802	1.320E+11
						LJ2018050902	1.366E+11
						LJ2018050903	1.360E+11
						LJ2018050904	1.341E+11
						LJ2018050905	1.366E+11
<i>E. cansus</i>	XZ	2700	Xizhai Town, Min County, Gansu Province	103.847° E	34.516° N	XZ2018050901	1.372E+11
						XZ2018050902	1.012E+11
						XZ2018051001	1.208E+11
	ZD	1300	Zhidan County, Shaanxi Province	108.966° E	36.906° N	ZD2017042201	1.479E+11
						ZD2017042404	1.575E+11
						ZD2017042501	1.716E+11
						ZD2017042502	1.848E+11
						ZD2017042503	1.694E+11
						ZD2017042504	1.472E+11
	JY	2000	Jingyuan County, Ningxia Hui Autonomous Region	106.371° E	35.503° N	JY2017041901	1.879E+11
						JY2017041907	1.516E+11
						JY2017042002	1.584E+11
JY2017042003						1.760E+11	
YZ	2200	Yuzhong County, Gansu Province	104.277° E	35.942° N	JY2017042004	1.361E+11	
					YZ2017042802	1.713E+11	
						YZ2017042901	1.377E+11

YZ2017042902	1.639E+11
YZ2017042908	1.557E+11
YZ2017043001	1.392E+11

Supplementary Table S2. Character loadings, eigenvalues, and percentages of variance explained by first three components from principal component analysis. Abbreviations of each variable are given in the Methods.

Variables	Principal component		
	1	2	3
MDL	0.885	0.162	0.348
LLM	0.859	0.075	0.175
CBL	0.822	0.413	0.352
LUTR	0.821	0.426	0.346
LAB	0.818	0.397	0.022
BL	0.816	0.425	0.351
CBL	0.814	0.408	0.359
PL	0.799	0.447	0.295
ZMW	0.775	0.444	0.349
MTW	0.714	0.515	0.353
LBTR	0.710	0.529	0.281
NSL	0.703	0.502	0.263
RSW	0.643	0.624	0.282
BCH	0.573	0.438	0.457
LUM	0.469	0.010	-0.017
IOB	0.089	0.834	0.103
FIB	0.520	0.719	0.163
LLI	0.505	0.635	0.187
GBFM	0.230	-0.045	0.790
DAB	-0.034	0.452	0.678
M ² -M ²	0.303	0.212	0.628
Eigenvalue	9.26	4.53	2.97
Variance explained (%)	44.08	21.57	14.13

Supplementary Table S3. Means and observed ranges of external and craniodental measurements of *E. baileyi*, *E. cansus*, *E. fontanierii*, *E. rothschildi*, *E. rufescens*, and *E. smithii* from Luo et al. (2000).

	Sex	BW	HB	TL	HF	GLS	CBL	NSL	PL	ZMW	IOB	MTW	LUM
<i>E. fontanierii</i>	♂	436.8 (200-620)	219.7 (160-265)	56.6 (30-71)	33.1 (27-38)	54 (50.7-58)	52.3 (47.8-56.4)	21.3 (19.6-22.5)	26.7 (25.8-28.3)	40.6 (35.6-44.4)	8.4 (7.0-8.4)	36.6 (31.4-40.7)	12.1 (11.2-13.0)
	♀	277.1 (170-381)	198.1 (160-220)	54.4 (42-59)	34.4 (22-38)	46.7 (42.8-49.4)	44.8 (42.8-47.8)	16.8 (16.4-17.2)	22.4 (20.0-23.1)	32.8 (30.8-34)	8.5 (8.0-9.5)	28.7 (27.5-30.6)	10.7 (10.1-11.1)
<i>E. cansus</i>	♂	349.1 (150-469)	179.7 (145-230)	52.3 (36-61)	33.8 (25-35)	45.4 (39.4-52.1)		16.9 (14.5-20.1)		30.5 (24.9-36.4)	7.8 (7.6-8.3)	29.4 (26.9-35.8)	10.6 (9.5-11.5)
	♀	276.2 (130-381)	166.8 (125-200)	45.6 (31-48)	29.1 (22-34)	42.4 (36.3-46.0)		15.6 (13.0-19.4)		27.9 (21-31.6)	6.8 (5.2-7.9)	27.2 (24.5-31.8)	9.8 (9.0-10.8)
<i>E. rufescens</i>	♂	372.1 (285-450)	215.2 (182-250)	50 (40-64)	34.9 (29-40)	49.3 (42.4-52.8)	45.8 (40-49.9)	19.4 (16.3-21.0)	25.6 (24.7-26.1)	34.2 (28.5-38.5)	7.1 (6.1-8.3)	31 (26.5-34.4)	11.2 (9.9-11.9)
	♀	230.9 (162-290)	191.2 (171-210)	44 (33-48)	30.5 (22-37)	46 (41-48)	42.1 (36.5-45.0)	17.7 (16.5-19.8)	23.3 (22-24)	30.7 (26.5-32.5)	7.2 (5.7-7.5)	27.2 (23.4-28.7)	10.8 (9.0-11.8)
<i>E. baileyi</i>	♂	360.5 (184-574)	206 (170-225)	52.9 (38-64)	34.2 (24-44)	48.7 (42-52.5)	45.2 (40-48.6)	19.2 (17-20.5)	23.5 (18.5-25.2)	35.4 (29.5-38.3)	8.3 (7.5-9.3)	29.5 (21.8-33.6)	10.2 (9.0-11.1)
	♀	282.4 (190-380)	188 (172-220)	47 (34-58)	30.9 (23-37)	45.6 (40-50.3)	42.3 (37.3-46.0)	17.9 (15.8-19.3)	21.7 (15.2-23.8)	31 (27.9-34.1)	8.3 (7.0-9.4)	28.2 (25.0-30.3)	9.9 (8.9-10.4)
<i>E. rothschildi</i>	♂	147.3 (118-178)	166 (144-179)	31.3 (28-37)	23.2 (21-26)	40.4 (39-41.8)		16.6 (15.6-17.7)		26.5 (24.7-29.5)	6.5 (5.7-7.4)	23.2 (21.6-25.3)	9.6 (9.2-10.1)
	♀	123 (85-165)	157.9 (138-171)	29.6 (23-38)	22.9 (21-26)	38.6 (25.9-40.1)		15.6 (14.3-17.4)		24.7 (22.8-26.1)	6.8 (6-7.7)	21.4 (19-22.7)	9.6 (8.9-10.0)

<i>E. rothschildi</i>	♂	197.4	177.5	40.4	25.8	42.2		16.6		29.5	6.8	25.8	9.9
<i>.hubeiensis</i>		(148-235)	(163-200)	(38-46)	(24-27)	(40.1-44.0)		(15.4-18.4)		(27.9-31.0)	(6-8)	(21.3-27.1)	(9.5-10.5)
	♀	168	178.6	42.6	24.6	41.8		17.1		28.5	6.7	25.5	9.7
		(150-185)	(174-192)	(40-46)	(24-26)	(40.5-44.4)		(16.0-17.8)		(27-30.4)	(5.8-7.5)	(22.9-26.8)	(9.1-10.2)
<i>E. smithii</i>		254	188.7	44.7	29.1	45.6	42.7	17.8	26.1	30.3	7.9	26.6	9.9
		(180-460)	(172-225)	(37-55)	(25-33)	(41.6-51.4)	(38.0-48.0)	(15.8-21.0)	(23.4-26.2)	(26.3-34.4)	(6.9-8.4)	(23.6-30.2)	(9.1-10.7)

Character abbreviations (unless specifically, all in mm): BW: body weight (grams); HB: head and body length; TL: tail length; HF: hindfoot length; GLS: greatest length of skull; CBL: condylobasal length; NSL: nasal length; PL: palatal length; ZMW: zygomatic width; IOB: interorbital breadth; MTW: mastoid width; LUM: length of upper molars.

Supplementary Table S4. K2P distance of *CYT B* gene in zokor species

	<i>E. fontanierii</i>	<i>E. rufescens</i>	<i>E.baileyi</i>	<i>E. cansus</i>	<i>E.smithii</i>	<i>E. rothschildi</i>	<i>E. muliensis</i>	<i>M. psilurus</i>
<i>E. fontanierii</i>								
<i>E. rufescens</i>	0.154							
<i>E.baileyi</i>	0.134	0.120						
<i>E. cansus</i>	0.130	0.127	0.119					
<i>E.smithii</i>	0.142	0.134	0.119	0.116				
<i>E. rothschildi</i>	0.132	0.125	0.114	0.115	0.116			
<i>E. muliensis</i>	0.144	0.143	0.143	0.155	0.146	0.153		
<i>M. psilurus</i>	0.159	0.181	0.158	0.163	0.171	0.174	0.145	
<i>M. aspalax</i>	0.166	0.168	0.175	0.176	0.177	0.196	0.152	0.087