The Stummer's Racerunner (*Eremias stummeri* Wettstein, 1940) does occur in Northwest China

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Supplementary material

Table S1. Coordinates used for ecological niche modeling.

Country	Longitude	Latitude	Reference
Kyrgyzstan	75.216667	42.266667	Eremchenko and Panfilov (1999)
	75.58333	42.2	Eremchenko and Panfilov (1999)
	75.68193	41.93089	Eremchenko and Panfilov (1999)
	75.766667	42.216667	Eremchenko and Panfilov (1999)
	75.8	42.583333	Eremchenko and Panfilov (1999)
	75.9	42.366667	Eremchenko and Panfilov (1999)
	76.016667	42.333333	Eremchenko and Panfilov (1999)
	76.033333	42.45	Eremchenko and Panfilov (1999)
	76.166667	42.45	Eremchenko and Panfilov (1999)
	76.333333	42.333333	Eremchenko and Panfilov (1999)
	76.433333	42.5	Eremchenko and Panfilov (1999)
	76.533333	42.266667	Eremchenko and Panfilov (1999)
	76.666667	42.183333	Eremchenko and Panfilov (1999)
	76.75	42.583333	Eremchenko and Panfilov (1999)
	76.833333	42.116667	Eremchenko and Panfilov (1999)
	77	42.116667	Eremchenko and Panfilov (1999)
	77.033333	42.15	Eremchenko and Panfilov (1999)
	77.166667	42.133333	Eremchenko and Panfilov (1999)
	77.733333	42.233333	Eremchenko and Panfilov (1999)
	78.05	42.366667	Eremchenko and Panfilov (1999)
	78.2	42.433333	Eremchenko and Panfilov (1999)
	78.31666	42.6	Eremchenko and Panfilov (1999)
	78.36666	42.48333	Eremchenko and Panfilov (1999)
	75.65782	42.07661	this study
	75.73333	42.21667	this study
	76.67889	42.19139	this study
	76.82028	42.21972	this study
	77.1763	42.16013	this study
	78.221	42.403	Jablonski and Koleska (2017)
Kazakhstan	79.279	42.96403	this study
	79.29982	42.94732	this study
	79.3123	42.96483	this study
	79.31319	42.97481	this study
	80.07347	42.94057	this study
	80.08978	42.92633	this study

Table S2. The morphological traits used for morphometric analysis and their abbreviations.

Abbreviations	Description of morphological trait
SVL	Snout-vent length
TL	Tail length (from cloaca to the tip of the tail)[#]
Ga	Gleno-acetobular distance (from axilla to groin)
HL	Head length[#]
HW	Head width[#]
HH	Head height[#]
Lpil.	Pileus Length (from rostrum to the posterior border of parietals)[#]
NL	head length from snout tip to the anterior edge of collar (measured from ventral side)[#]
P.a. (Pes anterior)	Forelimb Length*[#]
P.p. (Pes posterior)	Hindlimb Length (from the glenoacetobular cavity to the base of the claw of the 4th finger)*[#]
Dist.P.fm.	Distance between femoral pore rows
Supralab.	Number of supralabials
Infralab.	Number of infralabials
Lab.min.	Number of supralabial shields anterior to subocular
Supracil.	Number of supraciliary scales
Submax.	Number of submaxillary shields
Sq. (Squamae)	Number of scales around middorsal*
Ventr.long.	Maximal number of longitudinal rows of ventral scales
Ventr. (Ventralia)	Number of transverse rows of ventral scales[##]
G. (Gularia)	Number of gular scales along mid-line of throat
Coll.	Number of collar scales
Lam.subdig.	Number of subdigital lamellae on the 4th toe of hindlimb[#]
P.fm. (Pori femoralis)	Number of femoral pores
Sc.p.fm.	Number of scales between femoral pore rows
Sc.p.fm.kn.	Number of scales from distal femoral pore to knee
Sq.cd. (Squamae caudalis)	Number of scales around the 9–10th tail ring[##]

*$P < 0.05$; Sexual dimorphism tested for individuals from Kazakhstan

[#]$P < 0.05$; Sexual dimorphism tested for individuals from China

[##] $P < 0.01$; Sexual dimorphism tested for individuals from China

Table S3. Primers used for PCR amplification and sequencing

Primer name	Primer sequence	Reference
E_COIF	TCAACCAACCACAAAGACATTGGCAC	Ward et al. (2005)
E_COIR	TAGACTTCTGGGTGGCCAAAGAATCA	Ward et al. (2005)
E_MaP1aF	GAGGACAAAGGCTTCAAGTCTCC	Portik et al. (2012)
E_MaP1aR	TGCTCCTCTTCCAGCAACTGA	Portik et al. (2012)

Table S4. The description of some major diagnostic traits of specimens of *E. stummeri* in this study.

Major diagnostic traits	Status
Subocular shield in contact with mouth	Yes
Three pairs of nasals	Yes
Subnasal not in contact with rostral shield	Yes
Subnasal is located above first to third	Unstable; it is located above first to second supralabials
Single frontonasal	Yes
Tow loreal shields	Yes
Four subocular shields	Unstable; three or five subocular shields in 6 or 4 out of
Additional shield between prefrontals	No, but there are 1 or 2 additional shields in two
Two supraoculars	Yes
Supraoculars separated from frontal and	No
Supraoculars separated from supraciliary by	Yes, but in two individuals supraoculars in partial contact
Three pairs of submaxillary shields in	Yes, but in three individuals there are only two pairs in
No split of last contacting pair of	Unstable; minor split in 17 out of 27 individuals
Last submaxillary shields in contact with	No, but explicitly in contact in one individual
Two enlarged scales in precloacal (preanal)	Yes, but explicit one enlarged scale in four individuals
The background color of the dorsum	Yes
Three longitudinal rows of explicit dark-	Yes
Two rows of the ocelli near the mid-dorsal	Yes, but in 4 out of 16 males the ocelli in the middle of
The third row of ocelli near the lateral body	Yes
The mid-dorsal between the two sides of	Yes

Table S5. Morphometric values on 11 metric and 15 meristic traits of all specimens of *E. stummeri* in this study; all metric measurements in mm; * — tail regenerated; \ — tail broken.

Voucher No.	Sex	Age	SVL	TL	Ga	HL	HW	HH	Lpil.	NL	P.a.	P.p.	Dist.P.fm.	Supralab.	Infralab.	Lab.min.	supracil.	Submax.	Sq.	Ventr.long.	Ventr.	G.	Coll.	Lam.subdig.	P.fm.	Sc.p.fm.kn.	Sc.p.fm.	Sq.cd.
Guo6505	♂	Adult	64.60	90.07	29.59	19.12	12.38	10.23	16.66	23.31	22.27	33.15	4.74	10	7	6	5	5	56	15	30	21	15	24	13	5	8	32
Guo6503	♂	Adult	66.33	60.05*	29.69	18.69	12.24	9.93	16.33	24.66	22.35	33.19	5.23	8	7	5	5	5	55	15	29	20	15	23	11	6	8	28
Guo6511	♂	Adult	56.37	56.24*	26.52	16.29	10.00	8.29	14.23	20.18	20.12	30.62	3.81	11	6	6	5	5	53	14	30	24	15	24	12	5	6	29
Guo6506	♂	Adult	61.11	73.83*	28.30	17.10	11.25	8.69	15.28	21.71	22.26	32.19	4.56	9	7	5	6	6	53	15	30	23	16	24	12	4	9	27
Guo6508	♂	Adult	60.03	82.25	26.50	16.83	10.72	8.76	15.03	21.05	22.27	31.88	4.05	12	7	6	7	5	53	15	31	23	15	25	15	4	8	29
Guo6509	♂	Adult	58.42	82.78	25.70	16.35	10.46	8.39	14.76	21.51	20.32	29.42	4.01	8	6	5	7	5	54	14	29	21	14	25	12	6	8	28
Guo6504	♂	Adult	65.86	87.58	30.28	18.56	11.63	9.52	16.82	22.22	22.71	32.96	4.16	10	6	6	7	5	55	15	29	22	16	24	10	7	8	30
Guo6510	♂	Adult	57.11	75.69	25.91	15.75	10.01	7.70	14.2	19.89	20.79	28.70	3.70	10	5	6	7	5	53	14	30	21	16	23	12	5	7	29
Guo6507	♂	Adult	56.66	75.19	23.37	15.85	9.16	7.36	14.51	21.61	20.72	29.34	4.05	9	5	5	6	5	54	17	29	24	16	25	12	4	7	29
Guo7477	♀	Adult	61.59	63.69	34.87	14.29	9.12	7.27	13.37	18.76	18.35	26.18	4.33	10	7	6	6	5	57	16	31	23	17	23	13	5	7	28
Guo7251	♀	Adult	58.37	63.99	30.16	14.07	7.74	6.09	12.96	18.07	18.35	26.64	4.92	8	7	5	6	5	53	15	32	21	17	23	11	4	7	25
Guo7478	♂	Adult	45.50	57.20	22.54	12.08	7.29	6.05	11.48	15.14	15.50	22.52	2.48	10	6	6	6	4	53	15	29	21	18	23	11	4	7	27
Guo7484	♀	Juvenile	39.08	41.32*	19.15	10.51	6.26	4.33	9.82	13.88	14.06	19.74	2.76	9	6	5	7	5	54	15	30	22	15	23	13	4	8	24
Guo7481	♂	Adult	68.37	72.84	32.88	18.43	11.03	9.33	16.17	23.25	21.09	31.24	5.29	10	6	6	7	5	60	15	29	25	16	25	13	6	9	30
Guo6384	♀	Adult	50.32	61.90	23.15	12.71	7.57	5.79	12.15	17.43	17.02	24.70	4.03	9	6	5	6	5	54	15	32	23	14	22	12	5	8	27
Guo4721	♂	Adult	51.46	65.21	23.18	13.27	7.44	6.76	12.25	17.25	18.37	26.96	5.20	10	7	6	6	6	57	15	28	22	12	21	10	5	12	27
Guo4723	♀	Adult	49.17	46.03	25.06	12.07	7.30	5.93	10.93	15.62	16.32	22.31	4.50	9	7	5	6	6	53	15	31	19	12	21	10	3	9	24
Guo4724	♀	Adult	48.36	56.87	23.57	12.27	7.39	5.90	10.98	17.36	17.38	23.63	5.02	10	8	5	7	5	57	16	29	27	13	22	11	4	10	28
Guo4725	♀	Adult	44.80	\	20.54	11.10	6.65	5.47	9.97	15.24	15.77	22.47	4.57	9	6	5	5	6	50	16	31	22	14	24	11	3	10	27
KZ6	♀	Adult	65.25	57.07*	36.35	15.26	9.57	8.02	14.00	20.17	17.97	25.67	4.61	9	6	5	6	6	54	16	31	18	16	24	12	5	6	24
KZG080	♂	Adult	63.53	66.92*	30.43	17.08	10.39	8.40	14.62	22.02	21.01	29.49	4.98	10	7	6	7	5	57	15	31	23	13	22	13	6	9	29
KZ52	♂	Adult	67.09	70.84*	33.45	17.94	11.02	9.15	15.77	24.67	20.54	30.14	4.32	6	6	5	5	5	59	15	29	20	12	24	12	5	7	28
KZ55	♀	Adult	60.69	49.9*	32.85	14.27	8.72	7.08	12.74	19.44	16.38	24.5	4.68	8	6	5	5	5	49	15	30	17	13	22	12	4	6	27
KZ51	♂	Adult	57.65	62.26	28.55	15.71	9.43	7.99	13.70	20.90	19.24	27.43	3.92	8	6	5	6	5	55	15	30	21	14	21	13	5	7	24
KZ53	♀	Adult	65.51	\	33.09	14.76	8.69	7.29	13.04	20.38	17.64	24.61	4.75	9	6	6	5	5	50	15	31	21	14	23	12	4	7	26
KZ5	♂	Adult	56.14	64.27	28.86	14.67	8.64	7.36	12.85	20.14	17.91	26.00	4.16	9	7	6	8	5	55	16	32	22	14	22	13	4	8	32
KZ54	♀	Adult	58.09	64.12	29.01	13.74	8.15	6.58	12.21	19.68	17.29	24.25	4.66	8	7	5	6	5	54	15	29	20	13	22	11	4	8	25

Note: The abbreviations of morphological traits correspond to those in Table S2.

Table S6. Principal component analysis on metric data measured from adult male and female specimens

Traits	Females		Males	
	PC1	PC2	PC1	PC2
SVL	**0.969**	0.214	**0.975**	0.020
TL	**0.834**	**-0.516**	**0.912**	0.130
Ga	**0.725**	**0.637**	**0.966**	-0.007
HL	**0.997**	0.009	**0.990**	0.027
HW	**0.969**	-0.139	**0.954**	-0.164
HH	**0.970**	0.015	**0.919**	-0.098
Lpil.	**0.980**	-0.110	**0.975**	-0.124
NL	**0.938**	0.128	**0.915**	0.080
Pa	**0.923**	-0.301	**0.756**	0.204
Pp	**0.969**	-0.216	**0.814**	0.020
Dist.P.fm.	**0.865**	0.403	0.085	**0.981**
Eigenvalues	9.414	1.065	7.648	1.065
Percent variation	85.58	9.69	76.48	10.65
% Cumulative variation	85.58	95.27	76.48	87.13

Factor loading scores above 0.5 are in bold. Eigenvalue scores and percent variation indicate relative contribution of the two PC axes in explaining total variation.

Table S7. Principal component analysis on meristic data measured from all specimens

Traits	PC1	PC2	PC3	PC4	PC5
Sq.c.cd.	**0.761**	0.045	-0.059	0.024	-0.051
Lab.min.	**0.738**	-0.003	0.084	-0.436	-0.270
Supralab.	**0.661**	0.129	0.427	-0.210	-0.448
G.	**0.646**	0.385	0.207	0.304	-0.037
Supracil.	**0.504**	0.273	0.185	-0.061	0.319
Sq.	0.499	0.462	-0.394	0.196	0.419
P.fm.	0.468	-0.308	0.377	-0.058	0.445
Submax.	-0.448	0.427	0.188	0.191	-0.344
Sc.p.fm	0.054	**0.894**	0.002	0.071	-0.252
Infralab.	-0.002	**0.684**	0.243	-0.184	0.194
Coll.	0.429	**-0.556**	0.186	0.250	-0.165
Ventr.	-0.138	-0.209	**0.747**	-0.261	0.254
Sc.p.fm.kn.	**0.522**	-0.036	**-0.654**	-0.093	0.116
Ventr.long.	-0.071	0.178	0.445	**0.676**	0.179
Lam.subdig.	0.452	-0.454	-0.055	**0.533**	-0.225
Eigenvalues	3.588	2.592	1.884	1.329	1.161
Percent variation	23.917	17.277	12.558	8.857	7.743
% Cumulative variation	23.92	41.2	53.75	62.61	70.35

Factor loading scores above 0.5 are in bold. Eigenvalue scores and percent variation indicate relative contribution of the five PC axes in explaining total variation.

Figure S1. Morphometric analyses of the 15 meristic traits. Colored circles correspond to individuals from Kyrgyzstan (green), Kazakhstan (blue) and China (red). Projection among PC1, PC2 and PC3 scores from PCA analysis in all specimens.