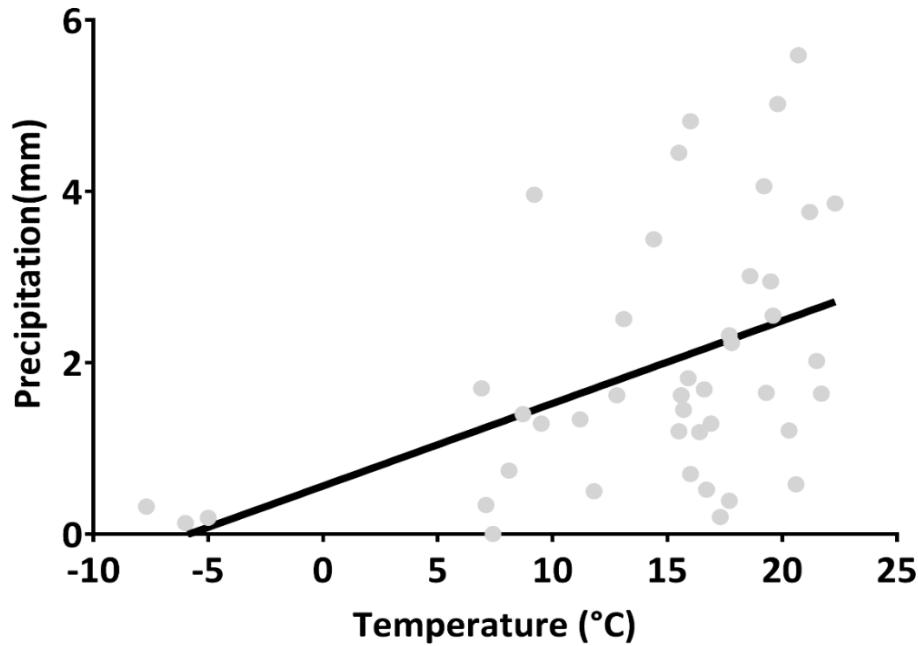**Figure S1.** Correlation between the average daily temperature and precipitation of each trapping interval between two successive trapping sessions (Pearson's r = 0.46, p = 0.002). Data from Zhenglan Qi Meteorological Station (ID.54205), Inner Mongolia, China, during 2014 - 2017.

Table S1. Modelling of recapture (p), survival (ϕ) and recruitment (f): the time scale and sex variation by the Cormack–Jolly–Seber (CJS) and Jolly–Seber (JS) models, respectively for Mongolian gerbils (*Meriones unguiculatus*) at Houhatai, Inner Mongolia, China from April 2014 through September 2017.

Model	AICc	ΔAICc	AICc Weight (w)	Model Likelihood	Par	Deviance
step 1: Modelling half-monthly temporal and sex variation for survival probabilities and recapture probabilities by CJS models. g =sex, t = half-month trapping session.						
$\phi(t)$ p(t)	**2219.419**	**0.000**	**0.998**	**1.000**	**62**	**863.717**
$\phi(t)$ p(g*t)	2232.071	12.650	0.002	0.002	79	838.449
ϕ(g*t) p(t)	2240.908	21.490	0.000	0.000	89	824.497
ϕ(g*t) p(g*t)	2257.954	38.540	0.000	0.000	106	801.952
ϕ(.) p(t)	2329.248	109.830	0.000	0.000	37	1027.510
ϕ(g) p(t)	2331.366	111.950	0.000	0.000	38	1027.510
$\phi(t)$ p(g)	2339.115	119.700	0.000	0.000	38	1035.258
$\phi(t)$ p(.)	2340.285	120.870	0.000	0.000	36	1040.663
ϕ(.) p(g*t)	2343.193	123.770	0.000	0.000	58	996.267
ϕ(g) p(g*t)	2344.405	124.990	0.000	0.000	59	995.290
ϕ(g*t) p(g)	2352.768	133.350	0.000	0.000	62	997.067
ϕ(g*t) p(.)	2355.859	136.440	0.000	0.000	61	1002.357

	AICc	ΔAICc			Par	
φ(.) p(g)	2487.402	267.980	0.000	0.000	3	1255.809
φ(g) p(g)	2489.319	269.900	0.000	0.000	4	1255.714
φ(.) p(.)	2491.204	271.780	0.000	0.000	2	1261.620
φ(g) p(.)	2493.190	273.770	0.000	0.000	3	1261.597

step 2: Modelling half-monthly temporal (*t*) variation for survival probabilities, recapture probabilities and recruitment by JS model. Set of candidate models based on Pradel (1996)

	AICc	ΔAICc			Par	
φ(*t*) p(*t*) *f*(*t*)	**4147.851**	**0.000**	**1.000**	**1.000**	**82**	**899.656**
φ(*t*) p(*t*) *f*(g**t*)	4174.546	26.690	0.000	0.000	99	887.203
φ(*t*) p(*t*) *f*(.)	4296.881	149.030	0.000	0.000	64	1088.996
φ(*t*) p(*t*) *f*(g)	4296.945	149.090	0.000	0.000	65	1086.851

Note: AICc and ΔAICc are Akaike information criterion corrected for small sample size and difference in AICc between the model and the most parsimonious model. Models in bold stand were selected in each step and used as starting point for the subsequent step. Par is the number of identifiable parameters