

Table S1 Symbols used in model equations.

Symbols	Definition
NA_t	Number of adults in month t
NJ_t	Number of juveniles (L1, L2)in month t
NT_t	Number of total pikas in month t
NAF_t	Number of adult females in month t
MA_t	Monthly mortality of adult in month t
MJ_t	Monthly mortality of juvenile in month t
I	index of mortality
K	Environmental carrying capacity
LS	Litter size of first litter (L1) or second litter (L2)
FM	Final migration numbers
TM	the differences between immigration and emigration
PR	Pregnancy ratio
immigration	Number of individuals immigrated into the population
emigration	Number of individuals emigrated out of the population
TM1	net migration, emigration - immigration;
TM2	the migration occurs in Spring (Jan. - April)
FM	Number of final migration

Table S2 Description, values and sources of parameters used in the model.

Parameters	value	References
Environmental carrying capacity (K)	250	Qu (2011)
Mean litter size of first (L1) and second litters (L2)	3.2	Qu et al. (2012)
Pregnant ratio (PR)	0.95	Qu et al. (2012)
Mortality of adult (MA_t) in May, Jun., Jul., respectively	0.223, 0.165, 0.121	Qu et al. (2013)
Mortality of second litter (MJ_t) in Jun., Jul.	0.165, 0.121	Qu et al. (2013)
Monthly mortality of pikas in cold season (Sep. to Apr.)	0.04	Qu et al. (2013)

References

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