Supplemental materials

Table S1. Model selection of the robust-design closed population models for the estimations of population sizes of Daurian pikas (*Ochotona dauurica*) in Inner Mongolia, China from May 2010 to October 2012. Letter *K* denotes the number of unknown parameters and *w* is the Akaike weight, Symbol *p*(*t*,.) denotes the probability of initial capture, which was assumed to change over the primary sessions but remain constant within a secondary session; *phi*(*t*) the estimate of apparent survival; *c*(*t*, .) the probability of recapture, which was assumed to change over the primary sessions but remained constant within a secondary session; γ' the probability of emigration; γ'' the probability of immigration; *N* population size; and *t* the time effect. Markov refers to random temporary emigration and Markov temporary emigration, respectively. Symbol AICc denotes the Akaike information criterion corrected for small population size and ΔAIC_c is the difference in AICc between a model and the best model. Deviance is 2 times negative log likelihood value of a model.

Model	AICc	ΔAIC_c	*w*	*K*	Deviance
{phi(t), p(., t)=c(.,t), N(t), γ'(.), γ''(.)}	1037.30	0.0	1.0	60	684.93
{phi(t), p(, t)=c(,t), N(t), γ'(t), γ''(t) Markov}	1053.87	16.57	0.0	70	677.72
{phi(t), p(., t)=c(.,t), N(t), γ'(.)=γ''(.)}	1056.93	19.63	0.0	59	706.90
{phi(t), p(., t)=c(., t), N(t), γ'(.)=γ''(.)=0}	1073.55	36.25	0.0	58	725.85
{phi(t) ,p(., t)=c(., t), N(t), γ'(t)=γ''(t)}	1087.45	50.15	0.0	85	674.38
{phi(t), p(., .), c(., .), N(t), γ'(.), γ''(.)}	1097.20	59.90	0.0	59	747.17
{phi(t), p(., .)=c(., .), N(t), γ'(.), γ''(.)}	1103.83	66.53	0.0	58	756.13
{phi(t), p(., .), c(., .), N(t), γ'(.)=γ''(.)=0}	1104.32	67.01	0.0	57	758.95
{phi(t), p(., t)=c(., t), N(t), γ'(t)=γ''(t)}	1106.59	69.29	0.0	112	622.95
{phi(t), p(., .), c(., .), N(t), γ'(.)=γ''(.)}	1106.65	69.34	0.0	58	758.95
{phi(t), p(t, .)=c(t,.), N(t), γ'(.), γ''(.)}	1117.80	80.49	0.0	85	704.73
{phi(t), p(., .), c(., .), N(t), γ'(t), γ''(t) Markov2}	1118.35	81.04	0.0	70	742.20

{phi(t), p(., .)=c(., .), N(t), γ'(t), γ''(t) Markov2}	1120.77	83.47	0.0	68	749.43
{phi(t), p(t, .)=c(t, .), N(t), γ'(t), γ''(t)Markov}	1126.91	89.60	0.0	92	696.07
{phi(t), p(t, .)=c(t,.), N(t), γ'(.)=γ''(.)}	1134.00	96.70	0.0	84	723.44
{phi(t), p(., .)=c(., .), N(t), γ'(.)=γ''(.)=0}	1135.87	98.56	0.0	56	792.82
{phi(t), p(t, .)=c(t, .), N(t), γ'(.)=γ''(.)=0}	1137.81	100.51	0.0	83	729.75
{phi(t), p(., .), c(., .), N(t), γ'(t)=γ''(t)}	1145.37	108.06	0.0	84	734.81
{phi(t), p(., .)=c(., .), N(t), γ'(t)=γ''(t)}	1148.26	110.96	0.0	83	740.20
{phi(t), p(t, .)=c(t, .), N(t), γ'(t)=γ''(t)}	1167.35	130.04	0.0	110	689.13
{phi(t), p(., .)=c(., .), N(t), γ'(t), γ''(t)}	1182.99	145.69	0.0	109	707.47
{phi(t), p(., .), c(., .), N(t), γ'(t), γ''(t)}	1184.07	146.76	0.0	110	705.85
{phi(t), p(t, .)=c(t, .), N(t), γ'(t), γ''(t)}	1206.04	168.74	0.0	137	651.87