



**Figure S1.** Developmental time of different growth stages of four predatory mite species in Tibetan Plateau, the egg period (A), larva stage (B), protonymph stage (C) and deutonymph stage (D) were listed, respectively. The same letters above columns represent homogeneous groups in post-hoc tests ( $P > 0.05$ ) following an ANOVA.

**Table S1.** Parameter estimates of four predatory species' functional response when feeding on different stages of TSSM by Holling II functional response model (after release for 1d), the 1<sup>st</sup> repeat.

Predatory mite species	<i>Tetranychus urticae</i> (green) stage	Functional response model ( $N_a=$ )	R2	Chi-square value	P value
<i>Amblyseius swirskii</i>	adult	$0.238N_0/(1+0.206 N_0)$	0.992	120.000	0.000
	nymph	$1.346 N_0/(1+0.751 N_0)$	0.751	83.905	0.000
	egg	$1.178 N_0/(1+0.506 N_0)$	0.767	49.699	0.002
<i>Neoseiulus cucumeris</i>	adult	$0.238 N_0/(1+0.329 N_0)$	0.783	0.000	0.000
	nymph	$0.759 N_0/(1+0.289 N_0)$	0.925	50.400	0.000
	egg	$0.928 N_0/(1+0.186 N_0)$	0.922	71.429	0.000
<i>Neoseiulus barkeri</i>	adult	$0.246 N_0/(1+0.241 N_0)$	0.988	90.000	0.000
	nymph	$0.925 N_0/(1+0.561 N_0)$	0.873	40.000	0.000
	egg	$0.808 N_0/(1+0.343 N_0)$	0.879	40.000	0.000
<i>Neoseiulus californicus</i>	adult	$0.246 N_0/(1+0.241 N_0)$	0.985	93.333	0.000
	nymph	$0.925 N_0/(1+0.561 N_0)$	0.965	98.800	0.000
	egg	$0.808 N_0/(1+0.343 N_0)$	0.826	61.200	0.000

**Table S2.** Parameter estimates of four predatory species' functional response when feeding on different stages of TSSM by Holling II functional response model (after release for 1d), the 2<sup>nd</sup> repeat.

Predatory mite species	<i>Tetranychus urticae</i> (green) stage	Functional response model ( $N_a=$ )	$R^2$	Chi-square value	$P$ value
<i>Amblyseius swirskii</i>	adult	0.204N/(1+0.048N)	0.977	84.308	0.000
	nymph	0.894N/(1+0.132N)	0.893	73.943	0.004
	egg	0.605N/(1+0.027N)	0.965	100.457	0.000
<i>Neoseiulus cucumeris</i>	adult	0.430N/(1+0.079N)	0.963	64.286	0.002
	nymph	0.629N/(1+0.063N)	0.963	84.600	0.000
	egg	0.835N/(1+0.043N)	0.986	72.600	0.001
<i>Neoseiulus barkeri</i>	adult	0.235N/(1+0.160N)	0.978	90.000	0.000
	nymph	0.453N/(1+0.117N)	0.949	44.970	0.001
	egg	0.973N/(1+0.244N)	0.875	56.800	0.002
<i>Neoseiulus californicus</i>	adult	0.199N/(1+0.026N)	0.973	66.458	0.000
	nymph	1.020N/(1+0.352N)	0.760	61.857	0.003
	egg	1.098N/(1+0.146N)	0.912	69.333	0.000

**Table S3.** Parameter estimates of four predatory species' functional response when feeding on different stages of TSSM by Holling II functional response model (after release for 1d), the 3<sup>rd</sup> repeat.

Predatory mite species	<i>Tetranychus urticae</i> (green) stage	Functional response model ( $N_a=$ )	$R^2$	Chi-square value	$P$ value
<i>Amblyseius swirskii</i>	adult	0.431N/(1+0.064N)	0.961	49.727	0.002
	nymph	0.935N/(1+0.180N)	0.941	71.000	0.000
	egg	0.885N/(1+0.126N)	0.946	73.000	0.001
<i>Neoseiulus cucumeris</i>	adult	0.426N/(1+0.117N)	0.916	91.700	0.000
	nymph	0.662N/(1+0.118N)	0.907	58.800	0.001
	egg	1.028N/(1+0.112N)	0.920	69.600	0.011
<i>Neoseiulus barkeri</i>	adult	0.529N/(1+0.385N)	0.886	99.500	0.000
	nymph	0.703N/(1+0.172N)	0.914	54.600	0.004
	egg	0.882N/(1+0.122N)	0.940	67.500	0.001
<i>Neoseiulus californicus</i>	adult	0.445N/(1+0.196N)	0.919	83.786	0.000
	nymph	0.657N/(1+0.083N)	0.934	62.700	0.000
	egg	1.059N/(1+0.133N)	0.917	59.686	0.023

**Table S4.** Parameter estimates of four predatory species' functional response when feeding on different stages of TSSM by Holling II functional response model (after release for 15d), the 1<sup>st</sup> repeat.

Predatory mite species	<i>Tetranychus urticae</i> (green)	Functional response equation	R2	Chi-square value	P value
<i>Amblyseius swirskii</i>	adult	$0.209N/(1+0.075N)$	0.982	104.933	0.000
	nymph	$0.631N/(1+0.091N)$	0.939	79.200	0.000
	egg	$1.064N/(1+0.097N)$	0.929	85.000	0.000
<i>Neoseiulus cucumeris</i>	adult	$0.214N/(1+0.063N)$	0.995	99.545	0.000
	nymph	$0.645N/(1+0.096N)$	0.915	66.800	0.001
	egg	$0.867N/(1+0.075N)$	0.979	77.357	0.000
<i>Neoseiulus barkeri</i>	adult	$0.240N/(1+0.340N)$	0.784	120.00	0.000
	nymph	$0.466N/(1+0.234N)$	0.899	109.200	0.000
	adult	$0.701N/(1+0.225N)$	0.914	102.600	0.000
<i>Neoseiulus californicus</i>	adult	$0.853N/(1+0.491N)$	0.844	75.900	0.000
	nymph	$1.093N/(1+0.131N)$	0.921	87.000	0.000
	adult	$1.170N/(1+0.503N)$	0.820	49.371	0.000

**Table S5.** Parameter estimates of four predatory species' functional response when feeding on different stages of TSSM by Holling II functional response model (after release for 15d), the 2<sup>nd</sup> repeat.

Predatory mite species	<i>Tetranychus urticae</i> (green)	Functional response equation	<i>R</i> <sup>2</sup>	Chi-square value	<i>P</i> value
<i>Amblyseius swirskii</i>	adult	0.459N/(1+0.018N)	0.913	66.400	0.060
	nymph	0.919N/(1+0.154N)	0.934	62.800	0.000
	egg	0.731N/(1+0.029N)	0.930	69.600	0.003
<i>Neoseiulus cucumeris</i>	adult	0.196N/(1+0.010N)	0.968	94.857	0.000
	nymph	1.171N/(1+0.308N)	0.821	66.229	0.000
	egg	1.099N/(1+0.100N)	0.977	92.200	0.000
<i>Neoseiulus barkeri</i>	adult	0.428N/(1+0.092N)	0.956	71.500	0.000
	nymph	0.663N/(1+0.105N)	0.930	53.000	0.006
	adult	0.644N/(1+0.062N)	0.939	61.257	0.017
<i>Neoseiulus californicus</i>	adult	0.197N/(1+0.010N)	0.963	104.000	0.000
	nymph	0.861N/(1+0.076N)	0.988	96.200	0.000
	adult	1.104N/(1+0.123N)	0.898	77.000	0.000

**Table S6.** Parameter estimates of four predatory species' functional response when feeding on different stages of TSSM by Holling II functional response model (after release for 15d), the 3<sup>rd</sup> repeat.

Predatory mite species	<i>Tetranychus urticae</i> (green)	Functional response equation	<i>R</i> <sup>2</sup>	Chi-square value	<i>P</i> value
<i>Amblyseius swirskii</i>	adult	0.940N/(1+0.195N)	0.918	65.829	0.006
	nymph	0.903N/(1+0.153N)	0.917	67.400	0.000
	egg	0.608N/(1+0.030N)	0.947	88.200	0.001
<i>Neoseiulus cucumeris</i>	adult	0.455N/(1+0.195N)	0.910	97.500	0.000
	nymph	1.046N/(1+0.228N)	0.852	69.700	0.002
	egg	0.833N/(1+0.054N)	0.950	69.200	0.012
<i>Neoseiulus barkeri</i>	adult	0.432N/(1+0.126N)	0.927	70.714	0.002
	nymph	0.657N/(1+0.112N)	0.959	63.467	0.000
	adult	0.653N/(1+0.076N)	0.907	73.600	0.001
<i>Neoseiulus californicus</i>	adult	0.438N/(1+0.164N)	0.913	93.000	0.000
	nymph	0.830N/(1+0.078N)	0.903	82.000	0.001
	adult	0.605N/(1+0.051N)	0.864	83.400	0.000

**Table S7.** Multiple linear regression analysis of the attack rate ( $\alpha$ ) with predatory mite species, TSSM growth stages and predatory period.

	<i>B</i>	$\beta$	<i>t</i>	p-value	<i>f</i>	<i>R</i> <sup>2</sup>
predatory mite species	3.199	2.832	7.619	< 0.001	20.460	0.451
TSSM growth stages	-1.064	-2.908	-7.824	< 0.001		
predatory period	-0.006	-0.035	-0.394	0.695		
attack rate ( $\alpha$ )	0.930		2.741	0.008		



**Table S8.** Multiple linear regression analysis of the handling time ( $T_h$ ) with predatory mite species, TSSM growth stages and predatory period.

	<i>B</i>	$\beta$	<i>t</i>	p-value	<i>f</i>	<i>R</i> <sup>2</sup>
predatory mite species	-7.860	-1.483	-3.278	0.002	6.443	0.221
TSSM growth stages	2.242	1.1306	2.887	0.005		
predatory period	0.240	0.283	2.645	0.010		
handling time ( $T_h$ )	10.109		5.373	< 0.001		