

**Table S1.** Details of geographical locations, altitude and effective sizes of natural populations of *C. spinosa*.

Code	Pop. Locality	Longitude	Latitude	Altitude (m)	Ne
Group WH (Western Himalayas)					
C01	Zabrang, Tibet, China	79°37'29.19" E	31°30'04.12" N	3612 m	<50
C02	Sarang, Tibet, China	79°03'24.54" E	31°33'37.94" N	3500 m	<1000
C03	Diya, Tibet, China	78°52'14.29" E	31°47'06.15" N	2989 m	<2000
Group EP (Eastern Pamirs)					
C04	Taxkorgan, Xinjiang, China	75°52'16.33" E	37°50'57.21" N	2855 m	>2000
C05	Akto, Xinjiang, China	75°34'18.22" E	39°02'28.16" N	2435 m	>2000
C06	Yengisar, Xinjiang, China	76°07'03.32" E	38°34'31.72" N	1966 m	>2000
C07	Yecheng, Xinjiang, China	76°53'23.16" E	37°42'49.90" N	1806 m	<200
C08	Wuqia, Xinjiang, China	75°40'17.50" E	39°44'18.00" N	1945 m	>1000
C09	Artux, Xinjiang, China	76°37'58.33" E	39°50'25.82" N	1230 m	>2000
C10	Jiashi, Xinjiang, China	78°00'48.70" E	39°55'44.00" N	1162 m	>2000
Group WT (Western Tianshan Mountains)					
K02	Almaty, Kazakhstan	78°45'29.16" E	44°10'46.20" N	1010 m	<1500
K01	Bishkek, Kyrgyzstan	74°40'33.96" E	42°41'10.32" N	1388 m	<1000
U01	Osh, Kyrgyzstan	72°46'59.52" E	40°31'42.96" N	1072 m	<1500
U02	Batken, Kyrgyzstan	72°05'27.24" E	40°02'24.36" N	1267 m	<1500
T01	Nurek, Khatlon, Tajikistan	69°14'02.73" E	38°21'21.35" N	954 m	<1500
C30	Bole, Xinjiang, China	82°04'14.70" E	44°44'07.50" N	565 m	<1000
C31	Yining, Xinjiang, China	82°12'59.44" E	43°35'53.22" N	766 m	<400
C32	Gongliu, Xinjiang, China	81°50'13.79" E	43°36'54.46" N	707 m	<500
Group ST (the southern piedmont of Tianshan Mountains)					
C11	Tumxuk, Xinjiang, China	79°31'55.51" E	39°56'23.18" N	1069 m	>2000
C12	Kalpin, Xinjiang, China	78°56'01.30" E	40°13'43.82" N	1104 m	>3000
C13	Wensu, Xinjiang, China	79°51'43.36" E	41°30'16.08" N	1314 m	>2000
C14	Baicheng, Xinjiang, China	83°02'55.14" E	41°58'58.68" N	1371 m	>3000
C15	Lunnan, Xinjiang, China	84°01'16.73" E	41°29'33.12" N	928 m	>3000
C16	Korla, Xinjiang, China	85°59'43.12" E	41°49'58.15" N	997 m	>3000
C17	Hejing, Xinjiang, China	86°18'37.41" E	42°23'32.52" N	1209 m	>3000
Group NT (the northern piedmont of Tianshan Mountains)					
C24	Jimsar, Xinjiang, China	89°07' E	43°55' N	945 m	>2000
C25	Urumqi, Xinjiang, China	87°07'38.49" E	43°43'34.08" N	1227 m	>3000
C26	Manas, Xinjiang, China	86°07'54.40" E	44°11'18.20" N	642 m	>3000
C27	Shihezi, Xinjiang, China	86°08'12.99" E	44°16'03.37" N	518 m	>3000
C28	Shawan, Xinjiang, China	85°35'10.61" E	44°18'07.91" N	577 m	>3000
C29	Wusu, Xinjiang, China	84°18'59.02" E	44°18'37.71" N	688 m	>3000
Group ET (Eastern Tianshan Mountains)					
C18	Toksun, Xinjiang, China	88°36'30.50" E	42°51'41.78" N	32 m	<200
C19	Turpan, Xinjiang, China	89°09'52.68" E	42°52'59.45" N	-74 m	>1500
C20	Shanshan, Xinjiang, China	90°39'29.95" E	43°01'27.46" N	483 m	>1500
C21	Hami, Xinjiang, China	94°08'56.15" E	42°31'16.51" N	773 m	<100
C22	Dunhuang, Gansu, China	94°56'48.61" E	40°29'17.22" N	1068 m	<100

C23	Guazhou, Gansu, China	95°34'22.29" E	40°21'50.70" N	1129 m	<500
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*N<sub>e</sub>*, effective population size.