

**Table S1.** Information of giant pandas released.

Name	Individual source	Gender	Age	Release region	Release date	Result
Shenglin 1	Rescued from the wild	Female	3	Longxi-Hongkou Nature Reserve	2005.08	> one year
Luxin	Rescued from the wild	Female	5	Liziping Nature Reserve	2009.05	> one year
Taotao	Captive breed	Male	2	Liziping Nature Reserve	2012.10	> one year
Zhangxiang	Captive breed	Female	2	Liziping Nature Reserve	2013.11	> one year
Xuexue	Captive breed	Female	2	Liziping Nature Reserve	2014.10	Dead
Huajiao	Captive breed	Female	2	Liziping Nature Reserve	2015.11	> one year
Huayan	Captive breed	Female	3	Liziping Nature Reserve	2016.10	Unknown
Zhangmeng	Captive breed	Female	2	Liziping Nature Reserve	2016.10	> one year
Baxi	Captive breed	Male	2	Liziping Nature Reserve	2017.11	> one year
Yingxue	Captive breed	Female	2	Liziping Nature Reserve	2017.11	> one year
Qinxin	Captive breed	Female	2	Longxi-Hongkou Nature Reserve	2018.12	> five weeks
Xiaohetao	Captive breed	Female	2	Longxi-Hongkou Nature Reserve	2018.12	> five weeks

**Table S2.** Pairwise comparison of the monthly mean distance from individual TT's activity sites to the release site.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1		-0.14 70	-0.22 31	-0.497 9*	-1.663 0*	-2.242 3*	-2.803 4*	-2.453 4*	-4.396 7*	-5.548 2*	-3.496 4*	-3.889 8*	-5.600 5*	-5.145 3*	-5.449 0*	-6.912 6*	-4.004 4*	-3.081 7*	-4.170 6*	-7.355 3*	-3.629 4*	-3.231 4*	-2.637 1*	-4.872 5*	
2	0.89 9		-0.07 61	-0.351 0*	-1.516 0*	-2.095 3*	-2.656 5*	-2.306 4*	-4.249 7*	-5.401 3*	-3.349 5*	-3.742 9*	-5.453 5*	-4.998 4*	-5.302 1*	-6.765 6*	-3.857 4*	-2.934 8*	-4.023 6*	-7.208 4*	-3.482 5*	-3.084 4*	-2.490 2*	-4.725 5*	
3	0.15 4	1.000		-0.274 8*	-1.439 9*	-2.019 2*	-2.580 3*	-2.230 3*	-4.173 6*	-5.325 1*	-3.273 3*	-3.666 7*	-5.377 4*	-4.922 2*	-5.225 9*	-6.689 5*	-3.781 3*	-2.858 6*	-3.947 5*	-7.132 3*	-3.406 3*	-3.008 3*	-2.414 1*	-4.649 4*	
4	<0.0 01	<0.00 1	0.006		-1.165 1*	-1.744 4*	-2.305 5*	-1.955 5*	-3.898 7*	-5.050 3*	-2.998 5*	-3.391 9*	-5.102 5*	-4.647 4*	-4.951 1*	-6.414 7*	-3.506 5*	-2.583 8*	-3.672 6*	-6.857 4*	-3.131 5*	-2.733 4*	-2.139 2*	-4.374 6*	
5	<0.0 01	<0.00 1	<0.00 1	<0.001		-0.579 3*	-1.140 4*	-0.790 4*	-2.733 7*	-3.885 2*	-1.833 4*	-2.226 8*	-3.937 5*	-3.482 3*	-3.786 0*	-5.249 6*	-2.341 4*	-1.418 7*	-2.507 6*	-5.692 4*	-1.966 4*	-1.568 4*	-0.974 2*	-3.209 5*	
6	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001		-0.561 1*	-0.211 1	-2.154 4*	-3.305 9*	-1.254 1*	-1.647 5*	-3.358 2*	-2.903 0*	-3.206 7*	-4.670 3*	-1.762 1*	-0.839 4*	-1.928 23*	-5.113 1*	-1.387 1*	-0.989 1*	-0.394 9*	-2.630 2*	
7	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001		0.3500 *	-1.593 3*	-2.744 8*	-0.693 0*	-1.086 4*	-2.797 0*	-2.341 9*	-2.645 6*	-4.109 2*	-1.201 0*	-0.278 3*	-1.367 1*	-4.551 9*	-0.826 0*	-0.427 9*	0.1663	-2.069 1*	
8	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	0.235	<0.001		-1.943 3*	-3.094 8*	-1.043 0*	-1.436 4*	-3.147 1*	-2.691 9*	-2.995 6*	-4.459 2*	-1.551 0*	-0.628 3*	-1.717 2*	-4.901 9*	-1.176 0*	-0.778 0*	-0.183 7	-2.419 1*	
9	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001	<0.001		-1.151 5*	0.9002 *	0.5068 *	-1.203 8*	-0.748 7*	-1.052 3*	-2.515 9*	0.3923 *	1.3149 *		0.2261	-2.958 7*	0.7673 *	1.1653 *	1.7595 *	-0.475 8*
10	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		2.0518 *	1.6584 *	-0.052 2	0.4029 *	0.0992	-1.364 4*	1.5438 *	2.4665 *	1.3777 *		-1.807 1*	1.9188 *	2.3168 *	2.9111 *	0.6757 *
11	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-0.393 4*	-2.104 0*	-1.648 9*	-1.952 6*	-3.416 2*	-0.508 0*	0.4147 *	-0.674 1*		-3.858 9*	-0.133 0	0.2651 *	0.8593 *	-1.376 1*
12	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-1.710 6*	-1.255 5*	-1.559 2*	-3.022 8*	-0.114 6	0.8081 *	-0.280 7*		-3.465 5*	0.2604 *	0.6585 *	1.2527 *	-0.982 7*

1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.000	<0.001	<0.001		0.4551	0.1514	-1.312	1.5961	2.5187	1.4299	-1.754	1.9710	2.3691	2.9633	0.7280
3	01	1	1											*		1*	*	*	*	9*	*	*	*	*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-0.303	-1.767	1.1409	2.0636	0.9748	-2.210	1.5159	1.9140	2.5082	0.2728
4	01	1	1												7*	3*	*	*	*	0*	*	*	*	*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.999	<0.001	<0.001	0.930	0.010		-1.463	1.4446	2.3673	1.2785	-1.906	1.8196	2.2176	2.8119	0.5765
5	01	1	1													6*	*	*	*	3*	*	*	*	*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			2.9082	3.8309	2.7420	-0.442	3.2832	3.6812	4.2754	2.0401
6	01	1	1														*	*	*	8*	*	*	*	*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.990	<0.001	<0.001	<0.001			0.9227	-0.166	-3.350	0.3750	0.7730	1.3673	-0.868
7	01	1	1															*	2	9*	*	*	*	1*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			-1.088	-4.273	-0.547	-0.149	0.4446	-1.790
8	01	1	1																9*	6*	7*	6	*	8*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	0.052	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	<0.001			-3.184	0.5411	0.9392	1.5334	-0.701	
9	01	1	1																8*	*	*	*	9*	
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		3.7259	4.1240	4.7182	2.4829
0	01	1	1																		*	*	*	*
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.914	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.3981	0.9923	-1.243
1	01	1	1																			*	*	1*
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.800	<0.001	<0.001	<0.001		0.5942	-1.641
2	01	1	1																				*	1*
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	0.560	0.403	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-2.235
3	01	1	1																					3*
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
4	01	1	1																					

Values above the diagonal line are mean differences while values below the diagonal line are significance levels. \* = the difference is significant.

**Table S3.** Pairwise comparison of the monthly mean distance from individual HJ's activity sites to the release site.

	1	2	3	4	5	6	7	8	9	10	11
1		-0.5279*	-0.8979*	-1.4699*	-2.5605*	-4.2195*	-2.0562*	-3.8562*	-2.9162*	-3.7221*	-7.9708*
2	<0.001		-0.3699*	-0.9420*	-2.0326*	-3.6916*	-1.5283*	-3.3282*	-2.3883*	-3.1941*	-7.4429*
3	<0.001	<0.001		-0.5721*	-1.6626*	-3.3217*	-1.1583*	-2.9583*	-2.0184*	-2.8242*	-7.0730*
4	<0.001	<0.001	<0.001		-1.0906*	-2.7496*	-0.5863*	-2.3862*	-1.4463*	-2.2521*	-6.5009*
5	<0.001	<0.001	<0.001	<0.001		-1.6590*	0.5043*	-1.2957*	-0.3557*	-1.1616*	-5.4103*
6	<0.001	<0.001	<0.001	<0.001	<0.001		2.1633*	0.3634*	1.3033*	0.4975*	-3.7513*
7	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-1.7999*	-0.8600*	-1.6659*	-5.9146*
8	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.9399*	0.1341	-4.1146*
9	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-0.8059*	-5.0546*
10	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.287	<0.001		-4.2487*
11	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	

Values above the diagonal line are mean differences while values below the diagonal line are significance levels. \* = statistically significant.

**Table S4.** Pairwise comparison of the monthly mean distance from individual ZX's activity sites to the release site.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		-0.07 00	-0.22 97	-0.505 7*	-0.879 9*	-1.298 6*	-1.209 6*	-2.762 4*	-3.616 5*	-5.769 0*	-5.474 4*	-4.354 7*	-5.345 6*	-4.974 1*	-5.177 0*	-5.531 8*	-5.443 4*	-5.205 0*	-5.873 3*	-4.211 6*	-4.710 7*	-5.392 9*	-5.447 6*	-5.215 2*
2	0.45 7		-0.15 97	-0.435 7*	-0.809 9*	-1.228 6*	-1.139 6*	-2.692 4*	-3.546 6*	-5.699 0*	-5.404 5*	-4.284 8*	-5.275 6*	-4.904 1*	-5.107 1*	-5.461 8*	-5.373 5*	-5.135 1*	-5.803 4*	-4.14 16*	-4.640 8*	-5.322 9*	-5.377 6*	-5.145 2*
3	<0.0 01	0.954		-0.276 0	-0.650 2*	-1.068 9*	-0.980 0*	-2.532 8*	-3.386 9*	-5.539 3*	-5.244 8*	-4.125 1*	-5.115 9*	-4.744 4*	-4.947 4*	-5.302 1*	-5.213 8*	-4.975 4*	-5.643 7*	-3.98 19*	-4.481 1*	-5.163 2*	-5.217 9*	-4.985 6*
4	<0.0 01	<0.00 1	0.268		-0.374 2*	-0.792 9*	-0.704 0*	-2.256 7*	-3.110 9*	-5.263 3*	-4.968 8*	-3.849 1*	-4.839 9*	-4.468 4*	-4.671 4*	-5.026 1*	-4.937 8*	-4.699 4*	-5.367 7*	-3.70 59*	-4.205 1*	-4.887 2*	-4.941 9*	-4.709 5*
5	<0.0 01	<0.00 1	<0.00 1	0.005		-0.418 7*	-0.329 7*	-1.882 5*	-2.736 7*	-4.889 1*	-4.594 6*	-3.474 9*	-4.465 7*	-4.094 2*	-4.297 2*	-4.651 9*	-4.563 6*	-4.325 2*	-4.993 4*	-3.33 17*	-3.830 9*	-4.513 0*	-4.567 7*	-4.335 4*
6	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001		0.0889	-1.463 8*	-2.318 0*	-4.470 4*	-4.175 9*	-3.056 2*	-4.047 0*	-3.675 5*	-3.878 5*	-4.233 2*	-4.144 9*	-3.906 5*	-4.574 8*	-2.91 30*	-3.412 2*	-4.094 3*	-4.149 0*	-3.916 6*
7	<0.0 01	<0.00 1	<0.00 1	<0.001	0.001	1.000		-1.552 8*	-2.406 9*	-4.559 3*	-4.264 8*	-3.145 1*	-4.135 9*	-3.764 4*	-3.967 4*	-4.322 2*	-4.233 8*	-3.995 4*	-4.663 7*	-3.00 20*	-3.501 1*	-4.183 3*	-4.238 0*	-4.005 6*
8	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001		-0.854 1*	-3.006 6*	-2.712 0*	-1.592 3*	-2.583 1*	-2.211 6*	-2.414 6*	-2.769 4*	-2.681 0*	-2.442 6*	-3.110 9*	-1.44 92*	-1.948 3*	-2.630 5*	-2.685 2*	-2.452 8*
9	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001	<0.001		-2.152 4*	-1.857 9*	-0.738 2*	-1.729 0*	-1.357 5*	-1.560 5*	-1.915 2*	-1.826 9*	-1.588 5*	-2.256 8*	-0.59 50*	-1.094 2*	-1.776 39*	-1.831 0*	-1.598 7*
10	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.2945 *	1.4142 *	0.4234 *	0.7949 *	0.5919 *	0.2372 *	0.3255 *	0.5639 *	-0.104 4	1.5574 *	1.0582 *	0.3761 *	0.3214 *	0.5538 *
11	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		1.1197 *	0.1289	0.5003 8*	0.2974 *	-0.057 3	0.0310	0.2694 *	-0.398 9*	1.2629 *	0.7637 *	0.0816	0.0269	0.2592 *
12	<0.0 01	<0.00 1	<0.00 1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-0.990 8*	-0.619 3*	-0.822 3*	-1.177 0*	-1.088 7*	-0.850 3*	-1.518 6*	0.1432	-0.356 01*	-1.038 1*	-1.092 8*	-0.860 5*

1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.000	0.692	<0.001		0.3714	0.1685	-0.186	-0.097	0.1405	-0.527	1.1340	0.6348	-0.047	-0.102	0.1303
3	01	1	1											5*	*	2*	9		8*	*	*	3	0	
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-0.203	-0.557	-0.469	-0.231	-0.899	0.7625	0.2633	-0.418	-0.473	-0.241
4	01	1	1											0*	7*	4*	0*	3*	*	*	*	8*	5*	2*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.999	<0.001	<0.001	0.050	0.001		-0.354	-0.266	-0.028	-0.696	0.9655	0.4663	-0.215	-0.270	-0.038
5	01	1	1												7*	4*	0	3*	*	*	*	8*	5*	2
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.000	<0.001	0.022	<0.001	<0.001		0.0883	0.3267	-0.341	1.3202	0.8210	0.1389	0.0842	0.3166
6	01	1	1														0*	5*	*	*	*		*	*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.000	0.990	0.912	<0.001	<0.001	0.951		0.2384	-0.429	1.2319	0.7327	0.0506	-0.004	0.2282
7	01	1	1														*	9*	*	*	1*		1	*
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.347	<0.001	1.000	<0.001	<0.001		-0.668	0.9935	0.4943	-0.187	-0.242	-0.010
8	01	1	1																3*	*	*	8	5*	2
1	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.903	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		1.6617	1.1626	0.4805	0.4257	0.6581
9	01	1	1																	*	*	*	*	*
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.377	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		-0.499	-1.181	-1.236	-1.003
0	01	1	1																		2*	3*	0*	6*
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00		-0.682	-0.736	-0.504
1	01	1	1																	1		1*	8*	5*
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.999	<0.001	1.000	<0.001	0.005	0.559	1.000	0.062	<0.001	<0.00	<0.001		-0.054	0.1777
2	01	1	1																	1			7	
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.000	<0.001	0.965	<0.001	<0.001	0.995	1.000	0.001	<0.001	<0.00	<0.001	1.000		0.2324
3	01	1	1																	1				*
2	<0.0	<0.00	<0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.551	<0.001	1.000	<0.001	<0.001	1.000	<0.001	<0.00	<0.001	0.131	0.002	
4	01	1	1																	1				

Values above the diagonal line are mean differences while values below the diagonal line are significance levels. \* = statistically significant.