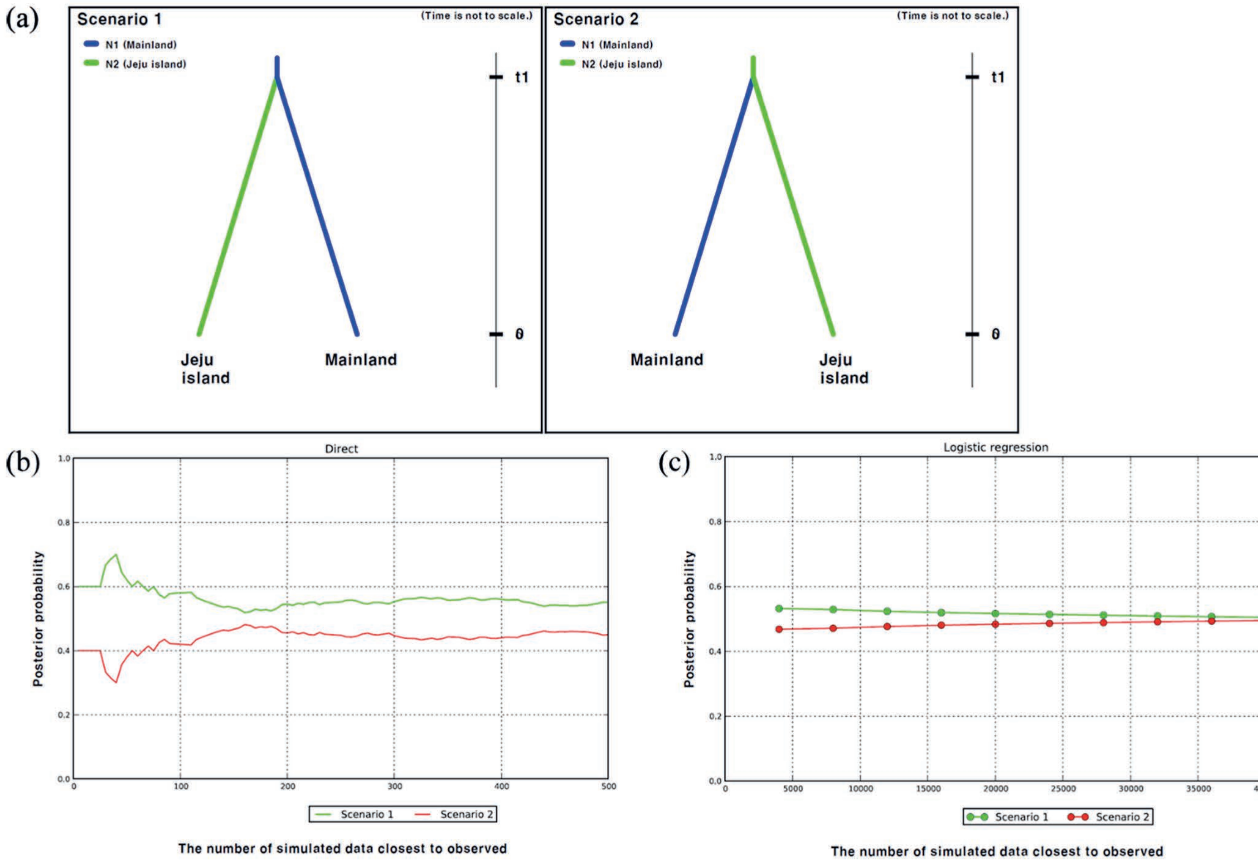

Supplementary Figure S1. The outputs of the Approximate Bayesian Computation (ABC) analysis as incorporated in DIYABC for identifying the most likely pattern of historical divergence between populations: (a) Scenario 1 (Mainland to Island) and Scenario 2 (Island to Mainland). Divergence times on the right axis are indicated in generations and not proportional to the actual scale. Posterior probability comparison between Scenario 1 and Scenario 2 with (b) direct approach and (c) logistic regression. Scenario 1 was chosen as the most likely one. For the confidence evaluation result between the two scenarios, see Supplementary Table S4.

Supplementary Table S1. GenBank accession numbers and geographical information for each Cytochrome *b* haplotype used in this study. *, #, ⁋, ※: each symbol indicates a set of sequences that are the same when missing characters are excluded.

Species	Haplo-type	Size	GenBank Accession No.	City / County, Country / Korean Province	Reference	Etc.
Rana uenoi	Hap 1	733	MW448298, KX024967, KX024968, KX024969	Yangsan, Busan, **southern Gyeongsang**; Tsushima, **Japan**	this study, Yang et al. 2017	*
Rana uenoi	Hap 2	733	MW448299	Yangsan, Busan, **southern Gyeongsan**	this study	#
Rana uenoi	Hap 3	733	MW448300	Cheongju, **northern Chungcheong** Yangsan, Busan, **southern Gyeongsang**	this study	⁋
Rana uenoi	Hap 4	767	MW448301	Jeongseon, **Gangwon**	this study	※
Rana uenoi	Hap 5	785	MW448302	Namwon, **northern Jeolla**	this study	
Rana uenoi	Hap 6	802	MW448303	Haman, **southern Gyeongsang**	this study	
Rana uenoi	Hap 7	802	MW448304	Hapcheon, **southern Gyeongsang** Suncheon, **southern Jeolla**	this study	
Rana uenoi	Hap 8	802	MW448305	Gokseoung, **southern Jeolla**	this study	
Rana uenoi	Hap 9	802	MW448306	Geoje, **southern Gyeongsang**	this study	
Rana uenoi	Hap 10	802	MW448307	Jeju, **Jeju**	this study	
Rana uenoi	Hap 11	802	MW448308	Jeju, **Jeju**	this study	
Rana uenoi	Hap 12	802	MW448309	Seogwipo, **Jeju**	this study	
Rana uenoi	Hap 13	802	MW448310	Jangheung, **southern Jeolla**	this study	
Rana uenoi	Hap 14	802	MW448311	Sacheon, **southern Gyeongsang** Namwon, **northern Jeolla** Gwangyang, **southern Jeolla**	this study	
Rana uenoi	Hap 15	802	MW448312	Daegu, **northern Gyeongsang**	this study	
Rana uenoi	Hap 16	802	MW448313	Hadong, **southern Gyeongsang**	this study	
Rana uenoi	Hap 17	802	MW448314	Uiryeong, **southern Gyeongsang**	this study	
Rana uenoi	Hap 18	802	MW448315	Jinju, **southern Gyeongsang**	this study	
Rana uenoi	Hap 19	802	MW448316	Chuncheon, Yangyang, **Gangwon** Namwon, **northern Jeolla**	this study	
Rana uenoi	Hap 20	802	MW448317	ChunCheon, **Gangwon**	this study	
Rana uenoi	Hap 21	802	MW448318	Yesan, **southern Chungcheong**	this study	
Rana uenoi	Hap 22	802	MW448319	Ulsan, **southern Gyeongsang**	this study	
Rana uenoi	Hap 23	802	MW448320	Yangju, **Gyeonggi**	this study	
Rana uenoi	Hap 24	802	MW448321	Yesan, **southern Chungcheong**	this study	
Rana uenoi	Hap 25	802	MW448322	Seoul, **Gyeonggi** Ulsan, **southern Gyeongsang**	this study	
Rana uenoi	Hap 26	802	MW448323	Inje, **Gangwon**	this study	
Rana uenoi	Hap 27	802	MW448324	Jangseong, **southern Jeolla**	this study	
Rana uenoi	Hap 28	802	MW448325	Gangneung, **Gangwon**	this study	
Rana uenoi	Hap 29	802	MW448326	Gurye, **southern Jeolla**	this study	
Rana uenoi	Hap 30	802	MW448327	Namwon, **northern Jeolla**	this study	
Rana uenoi	Hap 31	802	MW448328	Seoul, **Gyeonggi**	this study	
Rana uenoi	Hap 32	802	MW448329	Hamyang, **southern Gyeongsang**	this study	
Rana uenoi	Hap 33	802	MW448330	Sancheong, **southern Gyeongsang**	this study	
Rana uenoi	Hap 34	767	MW558894	Jeongseon, **Gangwon**	this study	⁋
Rana uenoi	Hap 35	772	MW558895	Namwon, **northern Jeolla**	this study	※
Rana uenoi	Hap 36	802	MW558896	Pohang, Gimcheon, Gyeongju, **northern Jeolla** Hadong, Geoje, **southern Gyeongsang** Gwangyang, Jangheung. Haenam, Wando, **southern Jeolla**	this study	*

Species	Haplo-type	Size	GenBank Accession No.	City / County, Country / Korean Province	Reference	Etc.
Rana uenoi	Hap 37	802	MW558897	Yangju, Seoul, Incheon, **Gyeonggi** Inje, **Gangwon** Goesan, Boeun, **northern Chungcheong** Asan, Seosan, Gongju, **southern Chungcheong** Hamyang, Sancheong, Gimhae, Jinju, Goseoung, Tongyeong, **southern Gyeongsang** Namwon, Jeonju, **northern Jeolla** Jangseong, Gokseoung, **southern Jeolla**	this study	⁋
Rana uenoi	Hap 38	802	MW558898	Uiryeong, **southern Gyeongsang**	this study	#
Rana uenoi	Hap 39	802	MW558899	Incheon, **Gyeonggi** Cheonan, **southern Chungcheong**	this study	⁋
Rana uenoi	Hap 40	802	MW558900	Ulsan, **southern Gyeongsang**	this study	#
Rana uenoi	Hap 41	802	MW558901	Pohang, **northern Gyeongsang**	this study	*
Rana uenoi	Hap 42	802	MW558902	Namwon, **northern Jeolla**	this study	⁋
Rana uenoi	Hap 43	761	MW626913	Incheon, **Gyeonggi**	this study	⁋
Rana uenoi	Hap 44	795	MW626915	Namwon, **northern Jeolla**	this study	
Rana uenoi	Hap 45	696	MW626914	Ulsan, **southern Gyeongsang**	this study	
Rana dybowskii	Hap 1	802	MW558891	Jilin Province, **China**; Primorsky Krai, **Russia**	this study	
Rana dybowskii	Hap 2	802	MW558892	Primorsky Krai, **Russia**	this study	
Rana dybowskii	Hap 3	802	MW558893	Primorsky Krai, **Russia**	this study	
Rana dybowskii			KF898355	Songhua River, Dailing, Heilongjiang, **China**	Li et al. 2016	
Rana dybowskii			JN984552	Mue Co., Dunhua City, Shanxi Province, **China**	Zhou et al. 2012	
Rana pirica			KX024972	Hokkaido Sapporo-shi Minam-no-sawa, **Japan**	Yang et al. 2017	
Rana chensinensis			KX269333	Huxian, Shaanxi, **China**	Yuan et al. 2016	
Rana huanrenensis			KT588071	Huanren, Liaoning Province, **China**	Dong et al. 2016	
Rana kukunoris			KX269332	Qinghai Lake, Qinghai, **China**	Yuan et al. 2016	
Rana grylio			AY083296	Walton County, Florida, **USA**	Austin et al. 2003	
Rana hecksheri			AY083298	Reed Bingham State Park, Georgia, **USA**	Austin et al. 2003	
Rana shuchinae			KX269356	Zhaojue, Sichuan, **China**	Yuan et al. 2016	
Rana johnsi			KX269328	Loc Bao, Lam Dong, **Vietnam**	Yuan et al. 2016	
Rana zhengi			KX269352	Zhangcun, Hongya, Sichuan, **China**	Yuan et al. 2016	
Rana arvalis			KX269344	Chamzinskii District, Mordovia, **Russia**	Yuan et al. 2016	
Rana temporaria			KX269343	Uzhgorod district, Zakarpatska, **Ukraine**	Yuan et al. 2016	
Rana asiatica			KX269346	47tuan, Xinjiang, **China**	Yuan et al. 2016	
Rana tagoi			KX269359	Kyoto, **Japan**	Yuan et al. 2016	
Rana longicrus			KX269336	Miaosu, Xiangtianhu, **Taiwan**	Yuan et al. 2016	
Rana zhenhaiensis			FJ349554	**China**	Jang-Liaw & Chou 2011	
Rana culaiensis			KX269337	Culaishan shan, Shandong, **China**	Yuan et al. 2016	
Rana jiemuxiensis			KX269365	Jiemuxi, Hunan, **China**	Yuan et al. 2016	
Rana dabieshanensis			MF172964	Dabie Mountains area, Anhui Province, **China**	Wang et al. 2017	
Rana omeimontis			KU246050	Yucheng, Ya'an, Sichuan, **China**	Yang et al. 2017	
Rana hanluica			KX269338	Maoershan shan, Guangxi, **China**	Yuan et al. 2016	
Rana chaochiaoensis			KU246048	Shimian, Ya'an, Sichuan, **China**	Yang et al. 2017	
Rana tsushimensis			KX269329	Tsushima, Nagasaki, **Japan**	Yuan et al. 2016	
Rana ulma			KX269360	Ryukyu Islands, **Japan**	Yuan et al. 2016	
Rana coreana			KX269348	**South Korea**	Yuan et al. 2016	
Rana amurensis			AF205094	**South Korea**	Lee et al. 1999	
Pelophylax nigromaculatus			AB043889	Ushita, Hiroshima City, **Japan**	Sumida et al. 2001	

Supplementary Table S2. GenBank accession numbers and detailed information for each microsatellite marker developed in this study. *, #, ※, †, ‡, §, ⁋, ☆, ★: each symbol indicates a linkage pair (e.g. § for linkage pair of RuMic_6 and RuMic_35).

Locus	GenBank Accession No.	Repeat motif	Size (bp)	Forward primer	Reverse primer	Linkage pair
RuMic_2	MW273296	(AGAC)16	187-547	TGTCAAGCACCTCATTGGAC	CAGCCCATAATGCCAAAAAG	*, #
RuMic_3	MW273297	(CTTT)18	147-343	CACTCCTGTGACCCACAAAA	TCCGCTTTAATGTCCTGTCC	⁋
RuMic_4	MW273298	(ATAC)19	70-162	CACTGTGCACCTGATGACAA	TGATGCATATGTAGTGCAGACG	
RuMic_6	MW273299	(GATA)19	138-466	AGTCAACAGCCACTGCTCCT	TGCATGAGCAACTTGTCCTC	*, ※, †, §, ☆
RuMic_7	MW273300	(AGAT)17	172-484	CAAGAACCACCTGCTGTTGA	TGTGTTTGCAGAGTTTCTGCTT	#, ※, ‡
RuMic_9	MW273301	(TAGA)17	221-489	ATAGTCTGGATGCTGGCAGG	TCTCCTTACAGTGCTCAAAGGTT	†, ‡, ★
RuMic_10	MW273302	(AAAG)18	144-336	CTGTAGAGCCTGCCCTGTGT	ATGACCTTTGACGCTAACGC	
RuMic_17	MW273303	(ATA)19	189-252	GACTGTTGATTTGGATGGGG	AAGATTTGGAGCCATGGGAT	
RuMic_21	MW273304	(TG)18	104-250	CTGGCAGATCATGGTGGAC	ATGTGACCATGCACACAGGT	
RuMic_28	MW273305	(GT)20	146-182	GAAGCCGACCAAAACAAAGA	TGACTTTCAGGTCGCACAAG	
RuMic_34	MW273306	(TAT)14	120-201	AGACCATGGAGCTGGAGTGT	GTGTTTCTGTTCGGCTGTCA	⁋
RuMic_35	MW273307	(TAA)17	205-262	AGCACTGCACAATCTGTTGG	GAGGAGTTCTGTCCCTGCTG	§
RuMic_39	MW273308	(AT)20	101-143	GCCATTACAGTGGAGGTGCT	GCGACCTGGACAGGTAAGTATC	☆, ★

Supplementary Table S3. Parameter estimation of two DIYABC scenarios between two *Rana uenoi* clusters based on microsatellites. N1 = effective population size of the cluster of Mainland populations (Korean mainland), N2 = effective population size of the cluster of Island populations (Jeju Island), t = coalescent time of two clusters measured in generations, q = quantiles for posterior mean values (e.g., q025 = 2.5% quantile).

(a) Scenario 1									
Parameter	Mean	Median	Mode	q025	q050	q250	q750	q950	q975
N1	7.63E+04	7.62E+04	7.58E+04	2.37E+04	2.92E+04	5.41E+04	9.91E+04	1.23E+05	1.27E+05
N2	4.60E+03	4.35E+03	3.55E+03	1.14E+03	1.45E+03	2.91E+03	6.07E+03	8.63E+03	9.28E+03
t	2.18E+04	1.97E+04	1.29E+04	3.94E+03	5.35E+03	1.19E+04	3.05E+04	4.50E+04	4.74E+04
(b) Scenario 2									
Parameter	Mean	Median	Mode	q025	q050	q250	q750	q950	q975
N1	7.48E+04	7.39E+04	6.72E+04	2.17E+04	2.71E+04	5.10E+04	9.88E+04	1.23E+05	1.26E+05
N2	2.93E+03	2.62E+03	2.05E+03	7.22E+02	9.18E+02	1.76E+03	3.73E+03	6.14E+03	7.15E+03
t	3.29E+04	3.39E+04	4.22E+04	1.09E+04	1.38E+04	2.50E+04	4.19E+04	4.82E+04	4.92E+04

Supplementary Table S4. Confidence evaluation of two DIYABC scenarios between two *Rana uenoi* clusters based on microsatellites. Numerical values in each cell indicate the number of times the scenario on the left has the highest posterior probability among 1,000 pseudo-observed data sets simulated with Scenario 1 (Mainland to Island) or Scenario 2 (Island to Mainland) above the cell. The number of times each scenario has the highest posterior probability was evaluated by the number of the scenario selected (Direct approach) and the logistic regression estimate of the scenario selected (Logistic regression).

		Pseudo-observed data sets simulated	
		Scenario 1	Scenario 2
Direct approach	Scenario 1	757	298
	Scenario 2	243	702
Logistic regression	Scenario 1	761	268
	Scenario 2	239	732

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