



Supplementary Material

Characterization of Cooperative Breeding for the Buff-throated Partridge (*Tetraophasis szechenyii*) Based on Parentage Testing

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Supplementary Table SI. Identified individuals and the candidate parent information of *Tetraophasis szechenyii*.

Offspring	Candidate mother	Candidate father
A1	A2,A3,B3,C1,D2,E1,F1,G1,H2	B1,B2,C3,E2,F2,G2,G3,G4,H1,H3,I1,I2,I3,J1
A3	A2, B3,C1,D2,E1,F1,G1,H2	A1,B1,B2,C3,E2,F2,G2,G3,G4,H1,H3,I1,I2,I3,J1
B1	A2,A3,B3,C1,D2,E1,F1,G1,H2	A1, B2,C3,E2, G2,G3,G4,H1,H3,I1,I2,I3,J1
C2	A2,A3,B3,C1,D2,E1,F1,G1,H2	A1,B1,B2,C3,E2,F2,G2,G3,G4,H1,H3,I1,I2,I3,J1
C3	A2,A3,B3,C1,D2,E1,F1,G1,H2	A1,B1,B2, E2,F2,G2,G3,G4,H1,H3,I1,I2,I3,J1
C4	A2,A3,B3,C1,D2,E1,F1,G1,H2	A1,B1,B2,C3,E2,F2,G2,G3,G4,H1,H3,I1,I2,I3,J1
C5	A2,A3,B3,C1,D2,E1,F1,G1,H2	A1,B1,B2,C3,E2,F2,G2,G3,G4,H1,H3,I1,I2,I3,J1
C6	A2,A3,B3,C1,D2,E1,F1,G1,H2	A1,B1,B2,C3,E2,F2,G2,G3,G4,H1,H3,I1,I2,I3,J1
D1	A2,A3,B3,C1,D2,E1,F1,G1,H2	A1,B1,B2,C3,E2,F2,G2,G3,G4,H1,H3,I1,I2,I3,J1
F2	A2,A3,B3,C1,D2,E1,F1,G1,H2	A1,B1,B2,C3,E2, G2,G3,G4,H1,H3,I1,I2,I3,J1
G1	A2, B3,C1,D2,E1,F1	A1,B1,B2,C3,E2,F2 ,G3,G4,H1, I3,J1
G2	A2, B3,C1,D2,E1,F1	A1,B1,B2,C3,E2,F2 ,G3,G4,H1, I3,J1
G4	A2, B3,C1,D2,E1,F1	A1,B1,B2,C3,E2,F2 ,G3,G4,H1, I3,J1
H1	A2, B3,C1,D2,E1,F1	A1,B1,B2,C3,E2,F2 ,G3,G4, I3,J1
H2	A2, B3,C1,D2,E1,F1	A1,B1,B2,C3,E2,F2 ,G3,G4,H1, I3,J1
H3	A2, B3,C1,D2,E1,F1	A1,B1,B2,C3,E2,F2 ,G3,G4,H1, I3,J1
I1	A2, B3,C1,D2,E1,F1	A1,B1,B2,C3,E2,F2 ,G3,G4,H1, I3,J1
I2	A2, B3,C1,D2,E1,F1	A1,B1,B2,C3,E2,F2 ,G3,G4,H1, I3,J1

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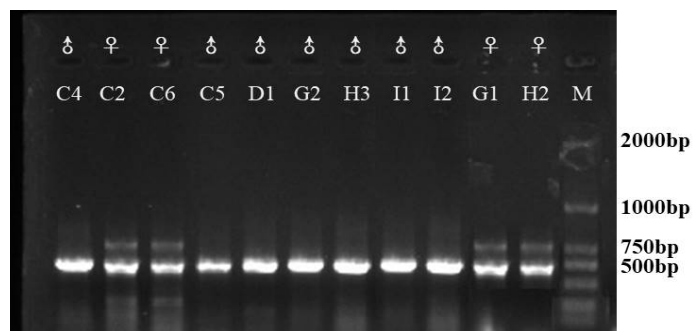
Supplementary Table SII. Parentage identified in *Tetraophasis szechenyii* and their relatedness.

Offspring	Candidate mother	Candidate father	r value of mother-child	r value of father-child	r value of mother-father
A1	A2	G2	0.4455	0.3757	0.1215
A3	-	G2		0.9094	
B1	A2	-	0.3880		
C2	C1	C3	0.4330	0.9056	0.4169
C3	C1	J1	0.4169	0.5476	0.0091
C4	B3	J1	0.9720	0.4962	0.0697
C5	B3	C3	0.3946	0.4995	0.1323
C6	-	C3		0.3333	
D1	-	G4		0.4029	
F2	A2	E2	0.4461	0.4627	0.1347
H2	-	H1		0.4106	
H3	B3	H1	0.4861	0.4469	0.1254
I1	-	I3		0.4453	
I2	E1	I3	0.3328	0.4577	0.0788
Mean r			0.4786	0.5149	0.1361

Supplementary Table SIII. Mean relatedness (r) between different family and in family of *Tetraophasis szechenyii*.

Famliy	A	B	C	D	E	F	G	H	I	J
A	0.37073									
B	0.17324	0.09485								
C	0.10339	0.01537	0.27375							
D	0.01871	0.12681	0.03382	0.15335						
E	0.1273	0.03488	0.06068	0.00974	0.30733					
F	0.39127	0.1566	0.03573	0.12157	0.0461	0.04150				
G	0.03628	0.06415	0.03993	0.0527	0.0169	0.04776	0.00523			
H	0.22515	0.07953	0.03494	0.10674	0.10175	0.05495	0.08368	0.28710		
I	0	0.14447	0.07728	0.1522	0.1032	0.06978	0.27858	0.01655	0.40450	
J	0.05448	0.09997	0	0.0768	0.03225	0.30345	0.07673	0.11824	0	-

Note: The bold italics are mean relatedness values greater than the threshold value 0.1875.



Supplementary Fig. S1. Sex identification for the buff-throated partridge using CHD gene.