



**Figure S1** Tick removal spoon (Dr. Kapiller®, Budapest, Hungary)

**Table S1.** Thermal profiles of PCR used for the GIV serogroup orbivirus RNA and *Flavivirus* RNA detection

GIV serogroup orbivirus PCR		
Initial denaturation	1×	95 °C, 1 min
Denaturation	40×	95 °C, 45 sec
Annealing		55 °C, 30 sec
Extension		72 °C, 45 sec
Final extension	1×	72 °C, 10 min
<i>Flavivirus</i> generic PCR		
1 <sup>st</sup> PCR		
Initial denaturation	1×	95 °C, 1 min
Denaturation	35×	95 °C, 30 sec
Annealing		50 °C, 45 sec
Extension		72 °C, 45 sec
Final extension	1×	72 °C, 5 min
2 <sup>nd</sup> PCR		
Initial denaturation	1×	95 °C, 1 min
Denaturation	40×	95 °C, 30 sec
Annealing		50 °C, 45 sec
Extension		72 °C, 45 sec
Final extension	1×	72 °C, 5 min

**Table S2.** The list of captured bird species and proportion of seropositive tick-infested and non-infested individuals in the screening and their migratory status

Bird species	No. of caught birds/ No. of tick-infested individuals	Migratory status	No. of seropositive / no. of tested						No. of co-infection (cross- reaction) per individual		
			Non-infested birds			Tick-infested birds			TBEV+	TBEV+	TRBV+
			TBEV	TRBV	KEMV	TBEV	TRBV	KEMV	TRBV	KEMV	KEMV
<i>Acrocephalus arundinaceus</i> / Great reed warbler	2/0	L	0/2	0/1	0/2	-	-	-	-	-	-
<i>Acrocephalus palustris</i> / Marsh warbler	10/0	L	0/10	2/6	1/7	-	-	-	-	-	-
<i>Acrocephalus scirpaceus</i> / Reed warbler	1/0	L	0/1	0/1	0/1	-	-	-	-	-	-
<i>Alcedo atthis</i> / Common kingfisher	1/0	S	0/1	0/1	NT	-	-	-	-	-	-
<i>Buteo buteo</i> / Common buzzard	1/0	S	0/1	NT	0/1	-	-	-	-	-	-
<i>Carduelis carduelis</i> / European goldfinch	2/0	S	0/2	0/1	0/1	-	-	-	-	-	-
<i>Coccothraustes coccothraustes</i> / Hawfinch	14/3	S	0/11	2/8	0/10	0/3	3/3	1/3	-	-	0 <sup>ni</sup> /1 <sup>i</sup>
<i>Cyanistes caeruleus</i> / Eurasian blue tit	7/0	S	0/7	0/2	0/4	-	-	-	-	-	-
<i>Emberiza citrinella</i> / Yellowhammer	4/0	S	0/4	0/3	0/3	-	-	-	-	-	-
<i>Emberiza schoeniclus</i> / Common reed bunting	1/0	S	0/1	NT	0/1	-	-	-	-	-	-
<i>Erithacus rubecula</i> / European robin	93/23	S	5/69	6/36	2/57	1/22	4/22	1/22	1 <sup>ni</sup> /1 <sup>i</sup>	-	2 <sup>ni</sup> /1 <sup>i</sup>
<i>Ficedula albicollis</i> / Collared flycatcher	1/0	L	0/1	NT	0/1	-	-	-	-	-	-
<i>Fringilla coelebs</i> / Common chaffinch	11/3	S	0/8	1/3	2/6	0/3	1/3	0/3	-	-	1 <sup>ni</sup> /0 <sup>i</sup>
<i>Fringilla montifringilla</i> / Brambling	1/0	S	0/1	NT	0/1	-	-	-	-	-	-

**Table S2. Continued**

Bird species	No. of caught birds/ No. of tick-infested individuals	Migratory status	No. of seropositive / no. of tested						No. of co-infection (cross- reaction) per individual		
			Non-infested birds			Tick-infested birds			TBEV+ TRBV	TBEV+ KEMV	TRBV+ KEMV
			TBEV	TRBV	KEMV	TBEV	TRBV	KEMV			
<i>Garrulus glandarius</i> / Eurasian jay	3/0	S	0/3	1/3	2/3	-	-	-	-	-	1 <sup>ni</sup> /0 <sup>i</sup>
<i>Chloris chloris</i> / European greenfinch	1/0	S	0/1	NT	0/1	-	-	-	-	-	-
<i>Lanius collurio</i> / Red-backed shrike	2/0	L	0/2	0/2	0/2	-	-	-	-	-	-
<i>Luscinia megarhynchos</i> / Common nightingale	10/2	L	1/8	0/5	0/8	0/2	0/2	0/2	-	-	-
<i>Parus major</i> / Great tit	72/18	S	0/54	8/36	2/47	0/14	1/14	1/14	-	-	2 <sup>ni</sup> /0 <sup>i</sup>
<i>Passer montanus</i> / Eurasian tree sparrow	1/0	S	0/1	0/1	NT	-	-	-	-	-	-
<i>Phoenicurus ochruros</i> / Black redstart	1/0	S	0/1	0/1	0/1	-	-	-	-	-	-
<i>Phylloscopus collybita</i> / Common chiffchaff	1/0	S/L	0/1	0/1	0/1	-	-	-	-	-	-
<i>Poecile palustris</i> / Marsh tit	5/0	N	0/5	NT	0/3	-	-	-	-	-	-
<i>Prunella modularis</i> / Dunnock	5/2	S	0/3	0/2	0/3	0/1	1/1	0/1	-	-	-
<i>Pyrrhula pyrrhula</i> / Eurasian bullfinch	1/0	S	0/1	0/1	NT	-	-	-	-	-	-
<i>Sitta europaea</i> / Wood nuthatch	2/0	N	0/2	0/2	0/2	-	-	-	-	-	-
<i>Sylvia atricapilla</i> / Eurasian blackcap	93/3	S/L	24/90	4/58	7/69	0/3	0/3	0/3	1 <sup>ni</sup> /0 <sup>i</sup>	1 <sup>ni</sup> /0 <sup>i</sup>	-
<i>Sylvia borin</i> / Garden warbler	1/0	L	0/1	NT	NT	-	-	-	-	-	-
<i>Sylvia curruca</i> / Lesser whitethroat	1/0	L	0/1	NT	NT	-	-	-	-	-	-
<i>Turdus iliacus</i> / Redwing	1/0	S	0/1	1/1	0/1	-	-	-	-	-	-

**Table S2. Continued**

Bird species	No. of caught birds/ No. of tick-infested individuals	Migratory status	No. of seropositive / no. of tested						No. of co-infection (cross- reaction) per individual		
			Non-infested birds			Tick-infested birds			TBEV+	TBEV+	TRBV+
			TBEV	TRBV	KEMV	TBEV	TRBV	KEMV	TRBV	KEMV	KEMV
<i>Turdus merula</i> / Common blackbird	31/27	S	2/4	1/4	0/4	4/21	10/21	5/21	0 <sup>ni</sup> /1 <sup>i</sup>	-	0 <sup>ni</sup> /4 <sup>i</sup>
<i>Turdus philomelos</i> / Song thrush	13/7	S	0/4	0/3	0/4	0/5	4/5	0/5	-	-	-

*Legend: no. – number; - – negative; NT – not tested, <sup>ni</sup> – non-infested birds; <sup>i</sup> – infested birds; L – species strictly long-distance migrant, S – species strictly short-distance migrant, S/L – species in which some individuals are short-distance migrants whereas others are long-distance migrants, N – non-migratory species*