

Supporting Materials

Nesting behaviour and factors affecting reproductive success of Velvet Scoter *Melanitta fusca* breeding at Lake Tabatskuri, Georgia

Annex S1. Supplementary text relating to the 16th camera trap

The 16th camera trap, not used in our analysis of factors affecting the reproductive success of Velvet Scoters *Melanitta fusca* breeding at Lake Tabatskuri, Georgia, was installed < 35 cm from the nest and used video mode (whereas all the others were installed at 70–90 cm away from the nests, were camouflaged and used picture mode). The female was initially very wary on returning to this nest and did not settle, but finally after several attempts (returning several times) she did resume incubation. She continued to be very nervous, however, and was highly aggressive to the camera, directly attacking and hitting it twice. She showed less nervousness from the day following deployment but continued to intermittently hiss at the camera throughout incubation. During incubation, this nest was also visited and occupied (for 2 h) by another female scoter (details described below), who paid no attention to the camera trap. Despite all this, the breeding attempt was successful, with four out of nine eggs hatched, but because of the numerous disturbances (the proximity of the camera, the video mode, and the occupation by another female), it was excluded from our analysis of the influence of camera traps on nesting success.

Annex S2. Supplementary text relating to other scoters visiting nests during incubation

In addition to Armenian Gulls *Larus armenicus* and Marsh Harriers *Circus aeruginosus*, the camera traps showed that nest visitors included other scoters on two occasions at nest no. N1 (in 2019) and nest no. N24 (in 2019).

In one case, where the incubating female was absent and the eggs left uncovered, a second female scoter with five ducklings visited and sat on the eggs with her own ducklings. After 1.4 h, the nest owner returned, attempted to reclaim her nest, but was robustly displaced by the second bird (leg-rings and data loggers enabled distinguishing between the two females). Five minutes later, the second female covered the eggs with down and attempted to take her own ducklings to the shore. When the ducklings failed to follow her, the second female resumed incubation. Returning 15 min after the first visit, the original female again attempted reoccupation, when the second female departed with her ducklings in the direction of the shore. The second female returned 10 min later, without ducklings, when the resident female robustly defended her nest and chased the invader away, after which it did not appear again. The owner successfully hatched four ducklings out of nine eggs two days later (of the remaining five eggs, one contained a dead embryo and four were added).

In a second case, three unattended scoter ducklings visited a nest, when the female sitting on the nest accepted them and proceeded to brood them, leaving the nest 9 h later. The female continued to incubate her own eggs, and three days later hatched eight ducklings out of 11 eggs (of the remaining three eggs, one contained a dead embryo and two were added).

Table S1. Brood size and hatching success for all Velvet Scoter nests found at Tabatskuri Lake, Georgia in the summers of (a) 2019, (b) 2020 and (c) 2021. Nests 1/2019, 7/2019, 19/2019, 21/2019, 23/2019, 24/2019, 26/2019, 6/2020, 24/2020, 29/2020, 30/2020, 2/2021, 7/2021, 9/2021, 19/2021, 26/2021 are the nests where the camera traps were installed.

(a) Summer 2019

Nest code	Clutch size	Hatched	Added	Suffocated	Predated
1/2019	9	4	4	1	0
2/2019	7	3	3	1	0
3/2019	8	8	0	0	0
4/2019	9	7	1	1	0
5/2019	4	0	0	0	4
6/2019	5	0	5	0	0
7/2019	9	8	0	0	1
8/2019	9	7	1	1	0
9/2019	8	6	2	0	0
10/2019	7	0	0	0	7
11/2019	7	5	1	1	0
12/2019	8	0	0	0	8
13/2019	8	8	0	0	0
14/2019	6	0	0	0	6
15/2019	9	0	0	0	9
16/2019	8	6	2	0	0
17/2019	7	0	0	0	7
18/2019	13	0	13	0	0
19/2019	6	2	3	1	0
20/2019	6	0	0	0	6
21/2019	8	4	1	1	2
22/2019	5	0	0	0	5
23/2019	9	6	2	0	1
24/2019	11	8	2	1	0
25/2019	10	3	6	1	0
26/2019	11	10	1	0	0
27/2019	7	5	1	1	0
28/2019	9	0	0	0	9
29/2019	8	0	0	0	8
30/2019	7	0	0	0	7
31/2019	8	0	8	0	0
32/2019	19	0	19	0	0
33/2019	15	0	15	0	0
Total in 2019	280	100 (36%)	90 (32%)	10 (3%)	80 (29%)

Table S1 (*continued*).**(b) Summer 2020**

Nest code	Clutch size	Hatched	Added	Suffocated	Predated
1/2020	9	5	4	0	0
2/2020	9	0	9	0	0
3/2020	8	6	1	1	0
4/2020	9	5	4	0	0
5/2020	10	8	2	0	0
6/2020	11	7	4	0	0
7/2020	4	0	0	0	4
8/2020	9	6	3	0	0
9/2020	9	6	3	0	0
10/2020	11	0	11	0	0
11/2020	12	0	0	0	12
12/2020	9	8	1	0	0
13/2020	9	7	2	0	0
14/2020	11	9	2	0	0
15/2020	11	9	2	0	0
16/2020	8	5	3	0	0
17/2020	22	0	22	0	0
18/2020	9	6	2	1	0
19/2020	9	5	4	0	0
20/2020	8	0	8	0	0
21/2020	3	1	2	0	0
22/2020	9	7	2	0	0
23/2020	10	0	2	8	0
24/2020	9	6	3	0	0
25/2020	12	8	3	1	0
26/2020	15	9	4	2	0
27/2020	9	8	1	0	0
28/2020	8	6	2	0	0
29/2020	8	6	2	0	0
30/2020	9	3	5	1	0
31/2020	7	0	7	0	0
Total in 2020	296	146 (49%)	120 (41%)	14 (5%)	16 (5%)

Table S1 (*continued*).**(c) Summer 2021**

Nest code	Clutch size	Hatched	Added	Suffocated	Predated
1/2021	8	6	0	1	1
2/2021	10	6	2	1	1
3/2021	9	7	2	0	0
4/2021	9	8	0	1	0
5/2021	9	8	0	1	0
6/2021	10	0	10	0	0
7/2021	9	7	0	1	1
8/2021	9	6	2	0	1
9/2021	11	10	1	0	0
10/2021	9	8	1	0	0
11/2021	9	7	2	0	0
12/2021	12	0	3	5	4
13/2021	8	8	0	0	0
14/2021	12	5	2	5	0
15/2021	9	1	8	0	0
16/2021	9	9	0	0	0
17/2021	19	0	19	0	0
18/2021	2	0	2	0	0
19/2021	9	6	3	0	0
20/2021	10	4	5	0	1
21/2021	26	0	24	0	2
22/2021	11	0	0	0	11
23/2021	9	9	0	0	0
24/2021	9	7	2	0	0
25/2021	2	0	0	0	2
26/2021	8	8	0	0	0
27/2021	8	0	5	0	3
28/2021	8	8	0	0	0
29/2021	7	6	1	0	0
30/2021	8	7	1	0	0
31/2021	8	5	0	2	1
32/2021	9	8	0	1	0
33/2021	8	5	3	0	0
34/2021	8	8	0	0	0
35/2021	4	0	4	0	0
Total in 2021	325	177 (55%)	102 (31%)	18 (5%)	28 (9%)



Figure S1. The island of Tabatskuri Lake, currently the only natural nesting area for the Velvet Scoter in the Caucasus. Photograph by Nika Paposhvili.



Figure S2. Three observers walking closely abreast, searching the entire island intensively for Velvet Scoter nests. Photograph by Nika Melikishvili.



Figure S3. Female Velvet Scoter sitting on her nest. Note: nest fidelity is so great among the scoters that they usually did not leave the nest when we approached. Photograph by Nika Paposhvili.



Figure S4. One of the nests where a camera trap was deployed. The female continued incubating her eggs, apparently without disturbance, and successfully hatched ducklings. Photograph from the camera trap at nest no. 24/2019.



Figure S5. A clutch which hatched successfully, with seven hatched eggshells and two unhatched eggs. Photograph by Nika Paposhvili.



Figure S6. One of the predated clutches. Photograph by Nika Paposhvili.



Figure S7. A suffocated nestling in the egg. Photograph by Nika Paposhvili.

(a)



(b)



Figure S8. Threat display (*i.e.* targeted opening bill/gap and hissing): (a) directed towards a threat coming from the side, and (b) when the direction the threat is unclear. Photograph from the camera trap (a) at nest no. 2/2021 and (b) at nest no. 24/2019.



Figure S9. A female rolling her eggs. Photograph from the camera trap at nest no. 2/2021.

(a)



(b)



Figure S10. Photographs showing (a) egg predation by Marsh Harrier and then (b) the return of the female to the nest. The Marsh Harrier visited this nest twice (on 24 and 25 August) but ate only one egg on each visit. On each occasion, the female managed to leave the nest safely, returned 3 h and 7 h later, respectively, and finally succeeded in hatching four ducklings. Note: this nest was one of the latest ever recorded at Lake Tabatskuri, which was probably the reason why the Marsh Harrier was able to approach the island so easily because there were few Armenian Gulls present at that time of the year. Photograph from the camera trap at nest no. 21/2019.

(a)



(b)



Figure S11. Scavenging by (a) a juvenile and (b) an adult Armenian Gull, taking addled or suffocated eggs from a Velvet Scoter nest where other eggs had already hatched successfully. Photograph from the camera trap (a) at nest no. 2/2021 and (b) at nest no. 7/2019.



Figure S12. Female Velvet Scoter predated while sitting on her nest. Photograph by Nika Paposhvili (nest no. 20/2020).



Figure S13. One of the Velvet Scoter dump nests on the island in Lake Tabatskuri, Georgia. Photograph by Nika Paposhvili (nest no. 21/2021).