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AGENCY OF PROTECTED AREAS



გეორგიის ფონდი  
Georgian Foundation

**Strengthening the financial sustainability of the system of  
protected areas in Georgia**

**Monitoring of Velvet Scoter *Melanitta fusca* Breeding  
at Lake Tabatskuri Georgia**

**Final Report**



**Contract N: CNF / 2023 / TAGA-GEO-272**

**Authors: Nika Paposhvili, Zura Javakhishvili, Nika Melikishvili, Niko Kerdikoshvili**

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## Summary

In accordance with historical data, Velvet Scoter *Melanitta fusca* once had a widespread breeding distribution throughout the Caucasus region, but recent studies indicate that this population has declined significantly and is now restricted to a single small breeding site at Lake Tabatskuri in the entire Caucasus. This project's main aim was to monitor Velvet Scoter breeding at Lake Tabatskuri to evaluate the breeding success and assess the direct causes of the Scoter's poor reproductive success to determine the need for special conservation efforts to safeguard future generations of this small disjunct population at its last location in the Caucasus. The study suggested that the number of Velvet Scoter nesting females on the island grew slowly and steadily to reach 46 breeding birds (including the two that nested on the small island) in 2023. However, the overall reproductive success of Velvet Scoter remains still poor (7%) due to the high disturbance/predation rate on the nest and ducklings by Armenian Gulls *Larus armenicus*; disturbance by boating/fishing and bycatch. Hence, the long-term survival of this tiny population of Velvet Scoter remains at risk and needs greater investment in long-term surveys and active conservation including the control of the Armenian gull population and elimination of illegal movements/fishing at the lake to safeguard the Scoters' future in the Caucasus.

## Introduction

The Velvet Scoter (*Melanitta fusca*) is considered to be decreasing worldwide and is classified as Vulnerable by IUCN (BirdLife International 2021). Two distinct populations are recognised within the Western Palearctic, of these, the largest in numbers (141 000–268 000 mature individuals) breeds across the boreal and montane regions of northern Europe and western Asia and winters mainly in the north and northwest Europe (Cramp & Simmons 1977; Dagys 2016; BirdLife International 2021). However, a small, isolated population also breeds in eastern Turkey, Georgia and Armenia, wintering most probably in the Caspian and Black Sea areas (Cramp & Simmons 1977; Dagys 2016; BirdLife International 2021). The breeding population of Velvet Scoter was no more than 1,500 individuals in the mid-1990s in Georgia, Turkey and Armenia, but all indications suggest a rapid decline in recent years (Wetlands International 2012). The sharp drop in the water level of Lake Sevan has led to the loss of the Velvet Scoter nesting area, resulting in the extinction of the species nesting population in Armenia (Adamian & Klem 1997). As a result of habitat loss, disturbance, and climate change, the breeding population of Velvet Scoter is also considered extinct in Turkey (Boyla et al. 2019). According to published information, the breeding distribution of the Velvet Scoter in Georgia extended to the Saghamo, Paravani, Khanchali, Bughdasheni, Madatapa, Kartsakhi and Tabatskuri Lakes on the Javakheti plateau of southern Georgia in the 1960s and 1990s (Janashvili et al. 1960; Flint et al. 1968; Kutubidze 1985; Boehme et al. 1987; Zhordania et al. 1999). Even as late as the early 2000s, Velvet Scoters were reported breeding at Khanchali, Bughdasheni and Madatapa Lakes on the Javakheti plateau, with 10–20 breeding pairs on Khanchali Lake and smaller numbers on Bughdasheni and Madatapa Lakes (Matcharashvili et al. 2004; Gavashelishvili et al. 2005). BirdLife International reported 20–50 breeding pairs of Velvet Scoter at Lake Kartsakhi in Georgia at that time (BirdLife International 2004). According to the latest studies, due to the degradation of nesting sites caused by human impact,



the breeding population of Velvet Scoter, 25-35 pairs, currently remains only in Tabatskuri Lake in Georgia, and the Scoter's reproductive success is quite poor and the long-term survival of the population remains at risk (Paposhvili 2018).

## The Research Goals

The research aims to evaluate the breeding success of Velvet Scoter breeding at Lake Tabatskuri and assess the direct causes of the Velvet Scoter's poor reproductive success to determine the need for special conservation efforts and then, based on data collected over several years design a long-term action plan for conservation of Velvet Scoter breeding at Lake Tabatskuri to safeguard future generations of this small disjunct population at its last location in the Caucasus.

The main objectives are:

1. Evaluating potential breeding pairs of Velvet Scoter at Lake Tabatskuri
2. Detecting and monitoring Velvet Scoter nests on the breeding island
3. Monitoring of Velvet Scoter broods at Lake Tabatskuri

## The Study Area and Research Methods

The Tabatskuri Lake (41°39'N, 43°38'E) is located at 2,000 m above sea level, has a surface area of 14.2 km<sup>2</sup>, a maximum depth of 43 m (average depth = 15 m) and retains a clean water column. The area experiences cold winters with snow cover extending to 150 days. Mean daily temperatures are -8°C in January and 12°C in July. The small island (1 ha) in the northern part of the lake is now the only natural breeding place for Velvet Scoter in Georgia, potentially in the whole Caucasus.

The research was conducted in May-October 2023 (29 field workdays in total) at Lake Tabatskuri. At the beginning of the breeding season (late April and May), the whole lake was surveyed once a week (5 times in total) using telescopes and binoculars from fixed points overlooking the entire lake, with the number of males and females present being counted (direct counting single-species using "Look down" methods from vantage points, Bibby et al. 2000) on each date (Fig. 1 & 2).

Within the incubation time (June-July), the Velvet Scoters nests were detected and mapped by two or three observers walking closely abreast intensively searching the island for nests (Fig. 3; 4 & 5); All of the nests were checked again after the main hatching period (August) to count the numbers of hatched/addled eggs (Fig. 6) in each nest (9 field workdays in total). This time, camera traps were not installed directly to monitor the Scoters' nests to avoid incubation birds' disturbance. However, 5 camera traps were used to monitor the island to identify visitors. 4 of them were deployed on the shores around the breeding island, and 1 of them on the island (2 field workdays in total) (Fig. 7 & 8).

After the hatching period (late July), observations were conducted in the north part of the lake on the broods once a week in the first three weeks, and then once a 10-12 days until the November (3-5 hours on each monitoring day), from a safe distance without disturbing them using telescopes and binoculars from fixed points overlooking the entire lake (Fig. 9), to count/determine the survival ducklings' number and potential threats to the species (13 field workdays in total).

The five main areas of the lake differential using Velvet Scoters during different periods of the summer are mapped in Figure 10.

**Field equipment:** binoculars (Vanguard ED 8x32; Vanguard ED 10x42; Zeiss Conquest HD 10x42), GPS receiver (Garmin 64x), radios (Motorola T402), camera (Canon 7D Mark II + Canon 100-400 L II) and spotting scope (Swarovski ATS-80, 25-50x80mm and Zeiss Conquest Gavia 85, 30-60x85mm) owned by Ilia State University Institute of Ecology and the environmental organization "Garieli".

Field research was conducted by Nika Paposhvili, a Ph.D. student at the Faculty of Natural Sciences and Medicine at Ilia State University. Niko Kerdikoshvili (PhD student), Nika Melikishvili (M.Sc. Student) at the same university, were also involved in the field research.

The report was prepared by Nika Paposhvili. Cover photo: Nika Melikishvili – “The Scoter brood”.



**Figure 1.** The image showing the counting point with the equipment (spotting scope) that was used to survey/count the number of males and females Velvet Scoter present on the lake. Photo by Nika Paposhvili.



**Figure 2.** The image showing the birds (male and female Velvet Scoters) through a spotting scope. Photo by Nika Paposhvili.



**Figure 3.** The image showing the observers searching the island for the nests. Photo by Nika Melikishvili.



**Figure 4.** The image showing the Velvet Scoters nest (before incubation start). Photo by Nika Paposhvili.



**Figure 5.** The image showing the Velvet Scoters nest. Photo by Nika Paposhvili.



**Figure 6.** Successful nest with remained hatched eggs shell and addled egg. Photo by Nika Paposhvili.



**Figure 7.** The image showing the camera trap deployed to the shore.



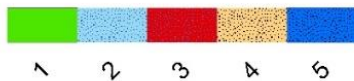


**Figure 8.** The image showing the camera trap deployed to the island. Photo by Nika Paposhvili.

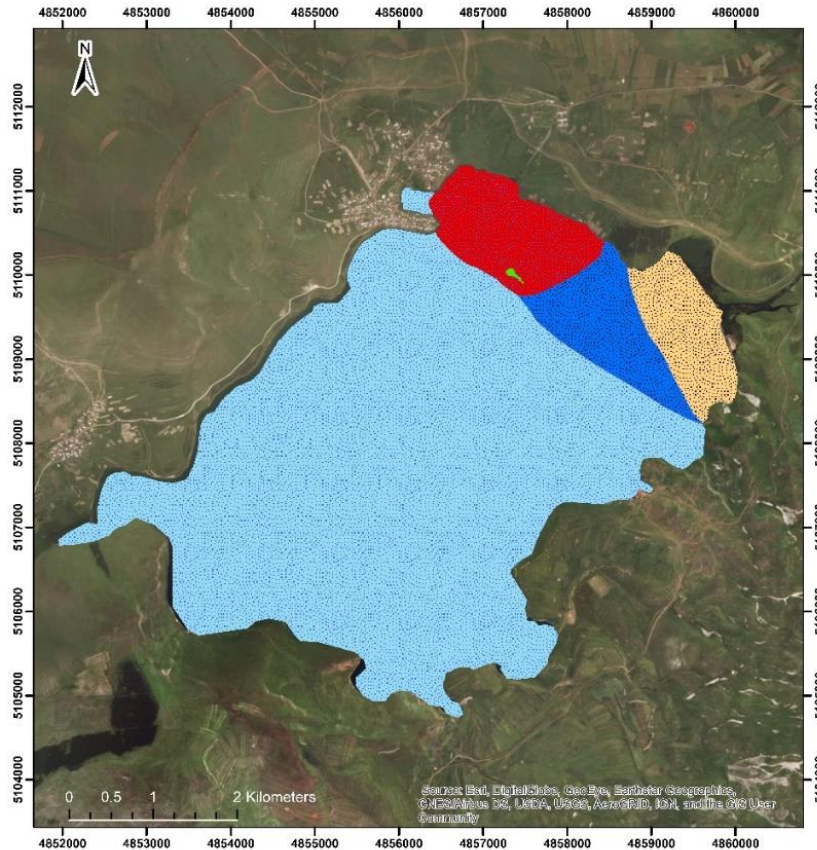


**Figure 9.** The image showing the brood after they moved to the water (the image was pictured during the observations through a spotting scope). Photo by Nika Paposhvili.

### Legend



1. Core area used during nesting
2. Area unused by birds
3. Area used for mating and feeding
4. Area used for moulting and feeding
5. Corridor area hardly used by birds



**Figure 10.** The map of Tabatskuri Lake showing the five main areas of the lake and their differential use by Velvet Scoters during different periods of the summer.

## Research Results

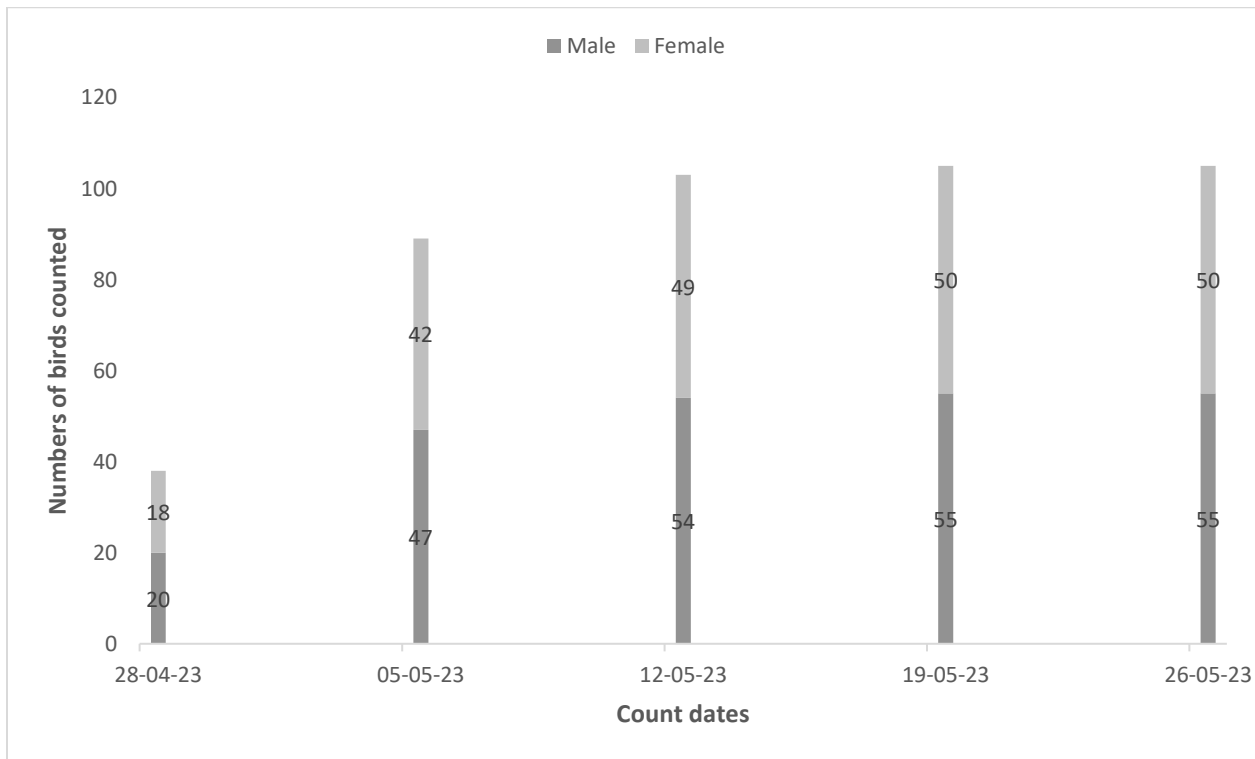
Weekly counts made at Tabatskuri Lake at the beginning of the breeding season (late April and May) located a total of 38 – 105 birds from 28 April to 26 May (peaking at 105 on 16 and 26 May) in 2023 and during this period, the sex ratio ranged from 1,0 (12,19,26 April) to 1.12 (5 May), with a mean of 1.1 males per female (Fig. 11).

In 2023, 46 nests were found. The nests are mapped in Figure 12. From these 46 nests, only 26 were successful. Table 1 shows the clutch size and hatching success in 2023. A total of 364 eggs were found in all these 46 nests, of which 185 eggs failed to hatch, a hatching rate of 0.49 (49%). Unfortunately, it was not possible to determine duckling survival rates from individual broods, but the 179 hatched eggs gave rise to 25 fully-fledged young (Fig.13), which assuming all nests to have been found amounts to a 0.14 (14%) fledging rate, or 0.07 (7%) success rate from 364 eggs originally laid.

The five cameras took a total of 29,624 photos. Armenian Gulls (*Larus armenicus*), Great Cormorants (*Phalacrocorax carbo*) and Velvet Scoters were mostly included in the shot (Fig 14; 15; 16). However,

there are three photos showing fishermen approaching/moving to the island (Fig. 17) and eight photos showing tourists approaching/going to the island (7 cases guided by a fisherman. Fig. 18).

During the monitoring on the broods after they moved to water, a total of the 7 broods with 43 ducklings (Table 2) were observed in the north part of the lake Tabatskuri in 2023 (Fig. 9 & 10). Note that, there was probably more broods reached to the feeding place, but due to the amalgamation in some cases one female led several different broods united together. The whole observation time for all 7 broods was 45 h in total. During this time, from these 7 broods (43 ducklings) eleven (26%) of the ducklings were predated by Armenian gulls before the age of 3 weeks (mostly very first days); one (2%) of the ducklings were entangled and drowned in abandoned fishing net; six (14%) of the ducklings disappeared (it is likely they became a victim of Armenian gull, or have got entangled in a fishing net, or died due to a lack of food and bad weather), and only twenty-five of the duckling were fledged.



**Figure 11.** Numbers of male and female Velvet Scoter counted on Tabatskuri Lake, Georgia during regular counts made before nesting season in 2023.



**Figure 12.** Aerial image showing the location of individual Velvet Scoter nests (in total 46 nests) on the island in Lake Tabatskuri during 2023. Green points = successful nests (56%); yellow = predated nests (22%); blue = abandoned nests (22%).

**Table 1.** Brood size and hatching success for all Velvet Scoter nests found at Tabatskuri Lake, Georgia in summer 2023. Note that it was not possible to determine the fledging success of individual nests, but 27 ducklings ultimately fledged at the site from 179 hatched eggs in 2023.

Nest Code	Clutch Size	Hatched
1/2023	9	9
2/2023	10	0
3/2023	9	0
4/2023	8	5
5/2023	9	7
6/2023	9	0
7/2023	9	6
8/2023	9	0
9/2023	5	0
10/2023	9	6
11/2023	12	0
12/2023	7	0
13/2023	8	0



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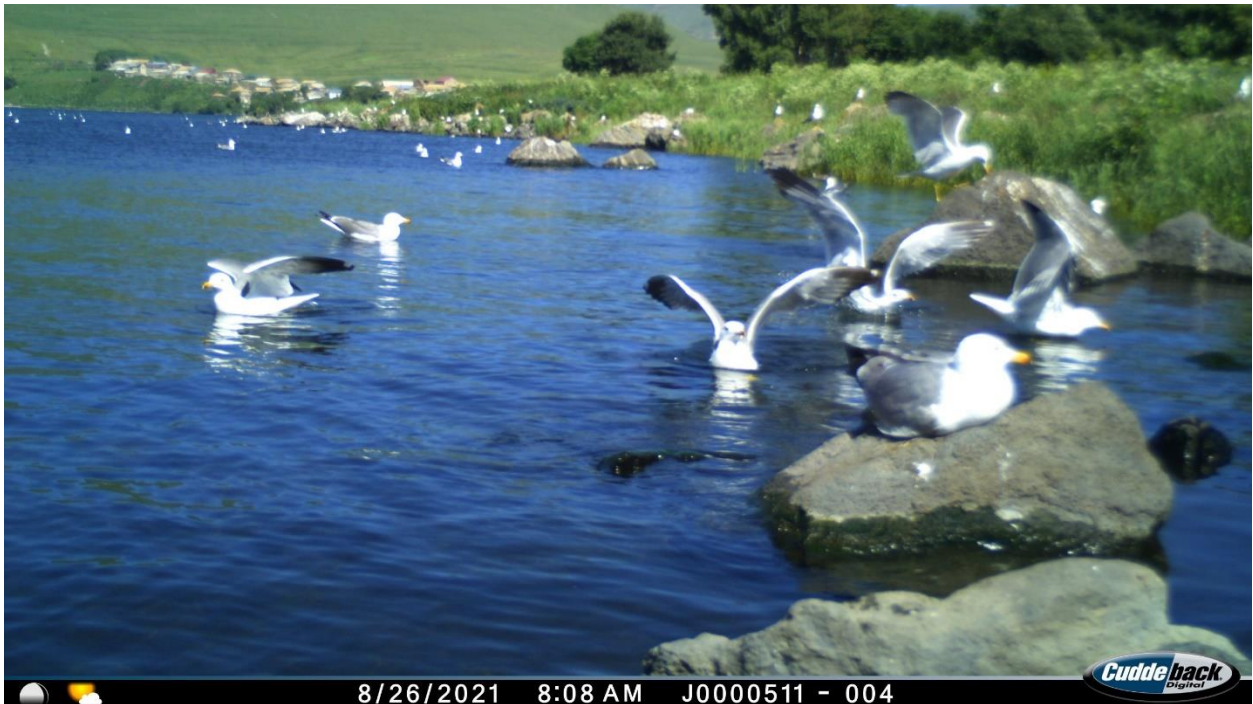


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14/2023	4	0
15/2023	10	9
16/2023	8	7
17/2023	6	0
18/2023	7	0
19/2023	8	8
20/2023	9	7
21/2023	10	8
22/2023	8	5
23/2023	5	0
24/2023	4	0
25/2023	7	0
26/2023	8	6
27/2023	5	0
28/2023	9	8
29/2023	5	0
30/2023	5	0
31/2023	4	0
32/2023	9	7
33/2023	8	7
34/2023	8	6
35/2023	7	6
36/2023	11	9
37/2023	8	8
38/2023	9	3
39/2023	7	6
40/2023	10	9
41/2023	13	8
42/2023	7	0
43/2023	9	5
44/2023	5	0
45/2023	9	6
46/2023	9	8
<b>Total in 2023</b>	<b>364</b>	<b>179 (49%)</b>



**Figure 13.** The image showing the fully-fledged young Scoters.



**Figure 14.** The image showing Armenian Gulls.

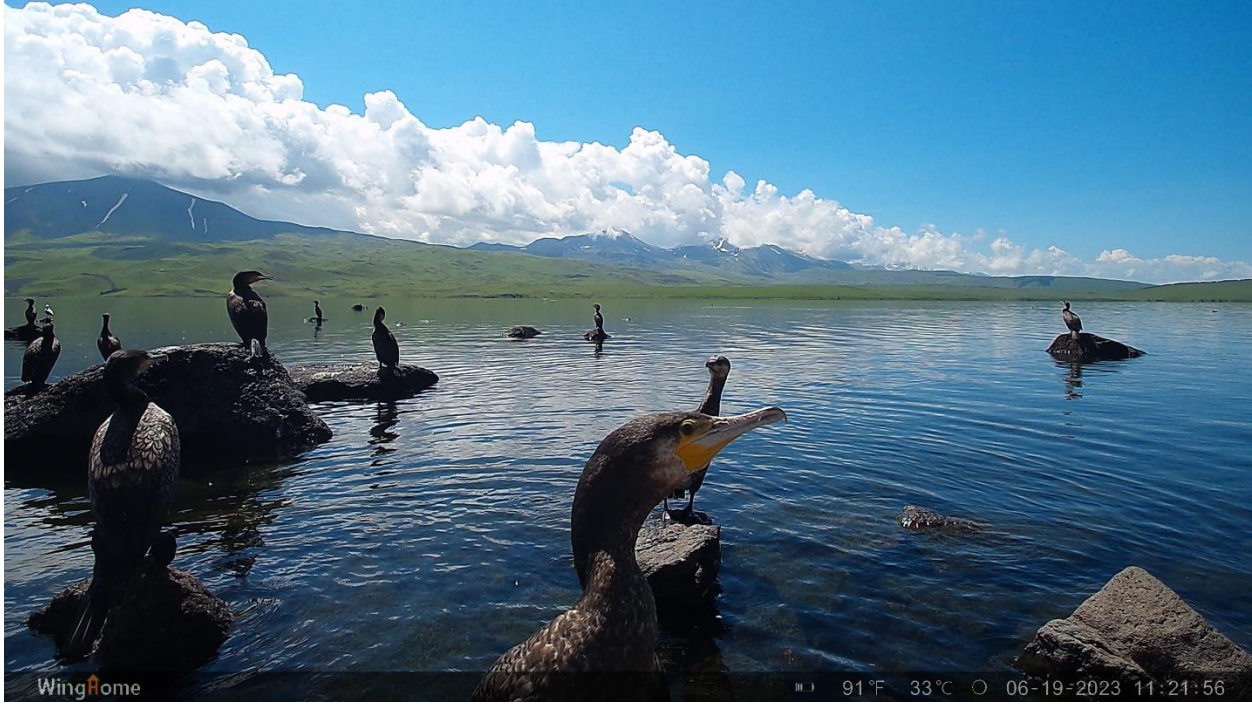


Figure 15. The image showing Great Cormorants.

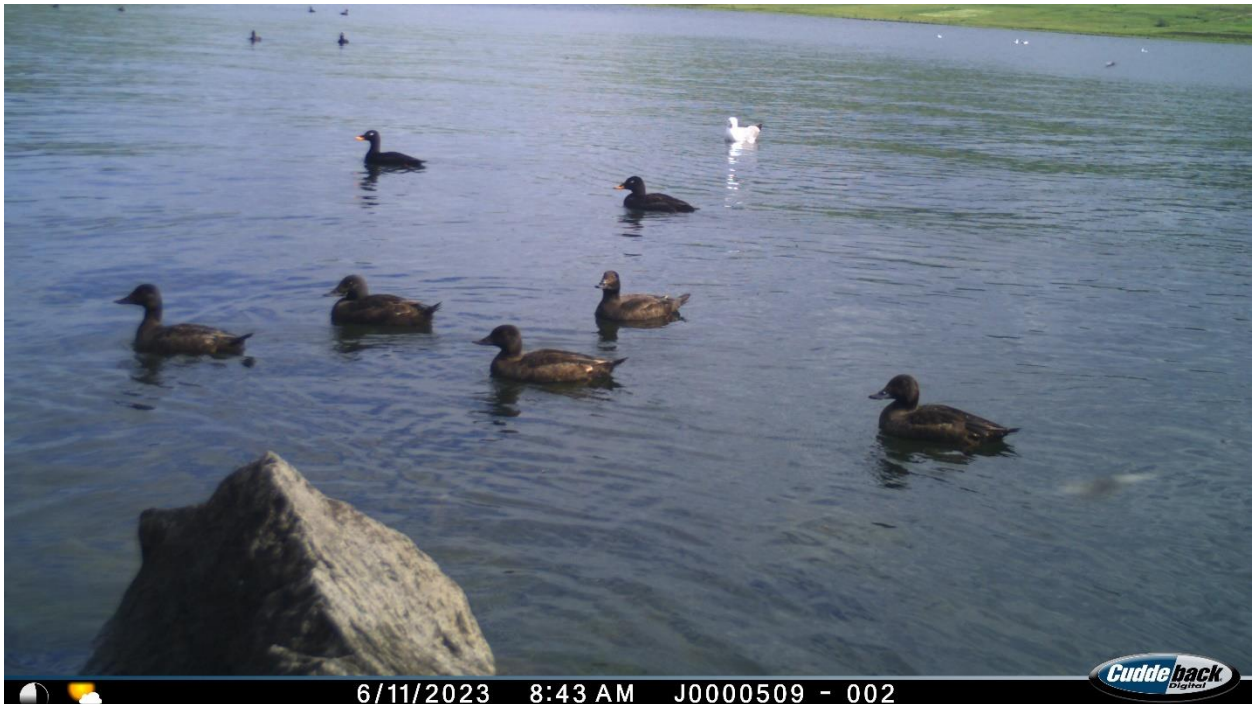


Figure 16. The image showing Velvet Scoters.



Figure 17. The image showing fishermen approaching/moving to the island





**Figure 18.** The image showing fishermen guiding tourists to the island.

**Table 2.** The brood size and fledging success for the monitored seven Velvet Scoter brood observed at the Lake Tabatskuri, Georgia in summer 2023.

Brood code	Brood Size	Predated	Drowned	Disappeared	Fledged
1	6	6	-	-	0
2	5	1	-	1	3 (60%)
3	7	-	-	1	6 (6%)
4	9	-	1	1	7 (78%)
5	7	-	-	2	5 (71%)
6	4	4	-	-	0
7	5	-	-	1	4 (58%)
<b>Total</b>	<b>43</b>	<b>11 (26%)</b>	<b>1 (2%)</b>	<b>6 (14%)</b>	<b>25 (58%)</b>



## Conclusions

There were slightly more pairs (number of counted birds on the lake) present at the lake each year from May to mid-June 2017-2022 than nesting individuals (number of nests) (Paposhvili 2018; Paposhvili 2021; Paposhvili et al. 2023). Difference might be due to the existence of young (nonbreeding) individuals or by the scarcity of nesting territory. Previous studies (Paposhvili 2018; Paposhvili 2021) suggest that the number of nesting females on the island grew slowly to reach 46 breeding birds (including the two that nested on the small island). Increase of numbers of nesting females is probably the result of the conservation activity under the CLP grant that has been carried out at Lake Tabatskuri since 2017 leading by Nika Paposhvili. Detailed information about these conservation activities can be found at the following link:

<https://www.conservationleadershipprogramme.org/news/new-film-celebrates-clp-conservation-georgia/>

The five camera traps, deployed to the island's shore to control the island, suggested that visitors (fishermen and tourists) do not visit the island often and the all-recorded cases were in August-September. However, it is certainly possible that they (visitors) visited the island during the breeding period as well, but they could not be recorded due to the small number of camera traps or the easy visibility of the installed ones.

Overall nesting success (49%) for Velvet Scoter breeding at Lake Tabatskuri in 2023 was lower than it was in 2021 (54%), and also, both results are lower than the 67–92% reported by Brown & Brown (1981) and 72–89% by Traylor et al. (2004) from North American studies of White-winged Scoter (*M. deglandi*). It is clear that the low nesting success is caused by nest predation and abandonment, which are most probably the result of the large number of Armenian Gull colonies (239 breeding pairs) on the island and human impact (moving to the island and illegal fishing).

For these reasons, plus predation on the ducklings by the gulls, bycatch, and possibly other factors such as lack of food, disease and weather, the overall success of Velvet Scoter breeding at Lake Tabatskuri was very poor (7%) in 2023. That is a little bit lower than it was in 2021 (9%), and also, both years' results are lower than that recorded either in Finland (30%), or in North America (Mikola et al. 1994), but was similar (5–10%) to parts of North America (Traylor & Alisauskas 2006) where gull predation also played a major part in duckling loss.

Consequently, the Velvet scoters' poor reproductive success is caused mostly by disturbance, predation and bycatch as well. The main predator on the Scoters' nests and ducklings on Lake Tabatskuri is the Armenian Gull, and the main threats from the humans are disturbance and illegal fishing. Therefore, the control of the gull population, and elimination of illegal movements/fishing by regulations here would potentially have a positive impact on the scoters' reproductive success. In addition, a potential threat in the future could be the Great Cormorant that has appeared on the lake in recent years. The number of Great Cormorants increases every year, and if they start nesting on the island, they will contribute to the degradation of the last breeding island of Velvet Scoter in the Caucasus.



There are several measures of large white headed gull control (lethal and non-lethal) designed to improve duck productivity and duckling survival (Donehower & Bird, 2008). However, the effectiveness of these measures depends on the local circumstances of the breeding Lake and the duck-gull interaction. Measures to reduce the number of gulls suggested in the Management Plan may increase the survival rate of the Scoters' ducklings. Oiling Armenian Gull eggs on the nesting Island can be done as a first step to prevent hatching and increase the food demand of the hatchlings. At the same time, additional measures may be required, to protect Scoter ducklings from Armenian Gulls specialized in predation.

The results obtained in recent years suggest that the last breeding populations of Velvet Scoter are still in danger in the Caucasus and require further research and conservation measures in the coming years:

1. Setting up a long-term monitoring system of Velvet Scoter breeding at Lake Tabatskuri to ensure assessment of the conservation impact of the activities (including the Scoters' food base study and monitoring the Armenian Gull population here).
2. Strengthen regulations and their enforcement to ensure the elimination of human factors during breeding season.
3. Rise motivation in the local rangers, train and provide all relevant equipment (binoculars, telescope, boat) to ensure monitoring and control of illegal activities.

At the same, time raising awareness and cooperation in the local community (including involving locals in the project) is crucial for the long-term survival of the Scoter in Lake Tabatskuri, potentially in the entire Caucasus.

## Bibliography

Adamian M. S. & Klan D. 1997. Birds of Armenia. Published by the American University of Armenia. Yerevan, Armenia.

Bibby C. J., Burgess N. D., Hill D.A., Mustoe S. H. 2000. Bird Census Techniques. Academic Press. Great Britain. ISBN 0-12-095831-7

BirdLife International 2004. Birds in Europe Population Estimates, Trends and Conservation Status. BirdLife International, Cambridge, UK.

BirdLife International. 2020. *Melanitta fusca*. The IUCN Red List of Threatened Species 2020: e.T22724836A183801134. <https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T22724836A183801134.en>. Accessed on 16 November 2023.

Boehme R.L., Zhordania, R.G., Kuznetsov, A.A. 1987. Птицы Грузии. [Birds of Georgia] Publishing "Сабчота Сакартвело" Tbilisi.



Boyla, K.A., Sinav, L. ve Dizdaroğlu D.E. (2019). Türkiye Üreyen Kuş Atlası. WWF-Türkiye, Doğal Hayatı Koruma Vakfı. İstanbul.

Brown, P.W. & Brown, M.A. 1981. Nesting biology of the White-winged Scoter. *Journal of Wildlife Management* 45: 38–45.

Cramp, S. & Simmons, K.E.L. 1977. *Handbook of the Birds of Europe, the Middle East, and North Africa; the Birds of the Western Palearctic, Volume 1: Ostrich-Ducks*. Oxford University Press, Oxford, UK.

Dagys, M. 2016. Species status report for Velvet Scoter *Melanitta fusca*: West Siberia & Northern Europe/NW European Population. LIFE Project: Coordinated Efforts for International Species Recovery Euro SAP. Report commissioned by the European Commission Directorate General for the Environment. Lithuanian Ornithological Society, Vilnius, Lithuania.

Donehower, C. E., & Bird, D. M. (2008). Gull Predation and Breeding Success of Common Eiders on Stratton Island, Maine. *Waterbirds*, 31(3), 454–462. doi:10.1675/1524-4695-31.3.454

Flint V.E., Boehme R.L., Kostin I. V., Kuznetsov, A.A. 1968. ПТИЦЫ СССР [Birds of CCCP]. Moscow.

Gavashelishvili, L., Gokhelashvili, R., Javakhishvili, Z. & Tarknishvili, D. 2005. *A Birdwatching Guide to Georgia, with Information on Other Wildlife*. Georgian Center for the Conservation of Wildlife and Buneba Print Publications, Tbilisi, Georgia.

Janashvili A., Kutubidze L., Zarkua D. 1960. *Georgian Bird Mirror*, Tbilisi University Press.

Kutubidze, M.E. 1985. *The Guide to the Birds of Georgia*. Tbilisi State University, Tbilisi, Georgia.

Matcharashvili, I., Arabuli, G., Darchiashvili, G. & Gorgadze, G. 2004. *Javakheti Wetlands: Biodiversity and Conservation*. NACRES, Tbilisi, Georgia.

Mikola, J., Miettinen, M., Lehikoinen, E. & Lehtilä, K. 1994. The effects of disturbance caused by boating on survival and behaviour of velvet scoter *Melanitta fusca* ducklings. *Biological Conservation* 67: 119–124.

Paposhvili N. 2018. The status of Velvet Scoter *Melanitta fusca* breeding in Georgia. *Wildfowl* 68: 183-192.

Paposhvili N. 2020. Supporting the conservation of Velvet Scoter at Lake Tabatskuri by determining the direct causes of the Scoters' poor reproductive success. Final Evaluation Report for the Rufford Foundation.

Traylor, J.J., Alisauskas, R.T. & Kehoe, F.P. 2004. Nesting ecology of white-winged scoters (*Melanitta fusca deglandi*) at Redberry Lake, Saskatchewan. *Auk* 121: 950–962.

Traylor, J.J. & Alisauskas, R.T., 2006. Effects of Intrinsic and Extrinsic Factors on Survival of White-Winged Scoter (*Melanitta fusca deglandi*) Ducklings. *Auk* 123: 67–81.



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Wetlands International. 2012. Waterbird Population Estimates: Fifth Edition. Summary Report. Edited by Taej Mundkur and Szabolcs Nagy. Wetlands International, Wageningen, the Netherlands.

Zhordania, R.G., Boehme, R.L., Kuznetsov, A.A. 1999. Птицы Грузии. Полевой определитель [The birds of Georgia. A field guide] Tbilisi.