INTERNATIONAL WATERBIRD CENSUS

MONTENEGRO · 2019-2023

JU Prirodnjački muzej
Crne Gore Natural History
Museum of Montenegro

Mediterranean Waterbirds
Oiseaux d'eau Méditerranée
الطيور المائية بمنطقة البحر المتوسط

ACKNOWLEDGEMENTS AND LIST OF PARTICIPANTS

The International Waterbird Census is the oldest biodiversity monitoring program in Montenegro. Completely based on volunteer work with only limited financial support, it has achieved a special status among a small group of professionals and volunteers. For over 30 years they have overcome countless obstacles and joined forces to count birds. This report could not have been produced without the selfless efforts of like-minded people from Montenegro and abroad. The winter bird census is recognized as an important contribution to its national nature conservation efforts and obligations.

LIST OF INSTITUTIONS AND ORGANIZATIONS:

Natural History Museum of Montenegro (national coordinator), Public Enterprise for National Parks of Montenegro, Centre for Protection and Research of Birds / BirdLife Montenegro, Euronatur, Environmental Protection Agency of Montenegro, Natural History Association of Montenegro.

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International waterbird census. Montenegro report (2019-2023). Medwaterbirds Network, Tour du Valat, 12 p.

Cover image: Great Cormorants on Skadar Lake © A. Vizi / **Photo p.2:** Boat counts on Skadar Lake pelagic © A. Vizi
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General report
(2009-2018)

MOBILIZED **NATIONAL OBSERVERS**

The International Waterbird Census in Montenegro started in 1991 as an initiative of ornithologists from former Yugoslavian institutions. The census initially covered only Skadar Lake, the largest and most important wetland in Montenegro. Since 2006, the IWC has been continued by Montenegrin institutions with help from civil society organizations and individuals from the country and abroad.

NUMBER OF OBSERVERS:

20 OBSERVERS INVOLVED

The monitoring in Montenegro is carried out mostly by **professional ornithologists and birdwatchers with relevant experience.**

NUMBER OF SPECIES OBSERVED:

72 SPECIES OBSERVED IN MONTENEGRO (2019-2023)

MAXIMUM NUMBER OF SITES VISITED:

15 WETLANDS VISITED

NUMBER OF SITES REGULARLY VISITED:

7 WETLANDS REGULARLY VISITED (2019-2023)

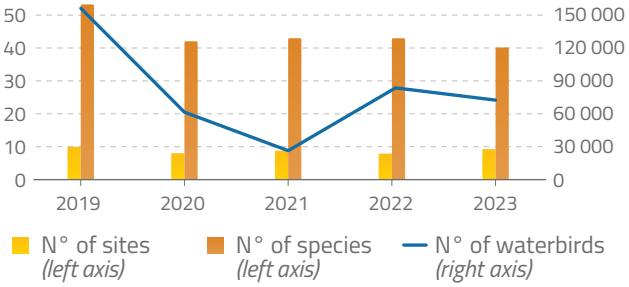
TWO MAJOR SITES

SKADAR LAKE and ULCINJ SALT PANS CONTAIN MORE THAN **90%** OF ALL WATERBIRDS IN MONTENEGRO.

Both were **regularly monitored** during this period.

EVOLUTION IN THE NUMBER OF SITES VISITED,

counted species and waterbirds (2019-2023)



The total number of sites monitored per year remained stable, with a total of 12 sites visited during the complete period. The number of species ranged from 42 to 55, which is, on average, higher than during the 2009-2018 period. The two largest wetlands, Skadar Lake and the Ulcinj Salina were monitored regularly. Weather conditions also strongly affected the count results, particularly on Skadar Lake, where boat counts are necessary.

SITES MONITORED in Montenegro (2009-2023)

Heightened interest in the IWC allowed us to increase the number of wetlands monitored. The overall number of counters and volunteers has increased from 3 to 34. Since 2012, regular monitoring is completed at 11 locations, which represents almost complete coverage of inland wetlands. Montenegro covers about 13.000 km^2 in the southeast Adriatic region, with a coast about 290 km long. The most important bird areas are at Skadar Lake and in the Bojana River drainage basin, while the continental area contains several reservoirs and natural lakes which are relevant stopover sites.

MAIN TRENDS (2019-2023) IN WATERBIRD POPULATIONS

DECLINING SPECIES, DURING THE ASSESSMENT PERIOD (2019-2023)

SPECIES		VALUES			
English name	Scientific name	Average nb. of birds	Nb. sites	Magn.*	±ES**
Little Grebe	*Tachybaptus ruficollis*	458	9	-0.56	0.25
Mallard	*Anas platyrhynchos*	787	10	-0.44	0.15
Eurasian Coot	*Fulica atra*	44577	7	-0.02	0.14

SPECIES		VALUES			
English name	Scientific name	Average nb. of birds	Nb. sites	Magn.*	±ES**
Common Pochard	*Aythya ferina*	6875	6	-0.11	0.28
Common Goldeneye	*Bucephala clangula*	88	4	-0.70	0.45
Gadwall	*Mareca strepera*	205	3	-1.36	1.11

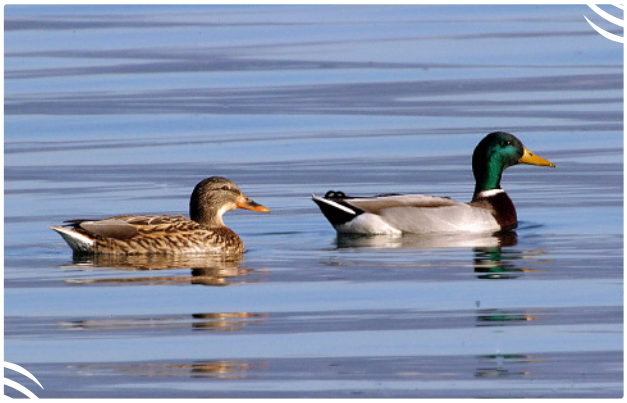
* **Magn.:** Magnitude / ** **±SE:** Standard error. The trends shown in the tables are at least significant at an alpha risk of 5%.

The table shows the species whose numbers are declining. Only two species have a statistically significant negative trend: the Mallard and Little Grebe, while some other common or numerous species during the IWC, (the Coot, Pochard and Goldeneye) show statistically inconclusive trends. Although a low magnitude of change may suggest stable trends, it can also be the result of fluctuations, but most likely is the consequence of a short reporting period and limited count numbers. The Gadwall, on the other hand, shows the largest negative trend magnitude, but a high standard error and p-value indicate a false result, particularly when compared to the increasing trend on the flyway level.

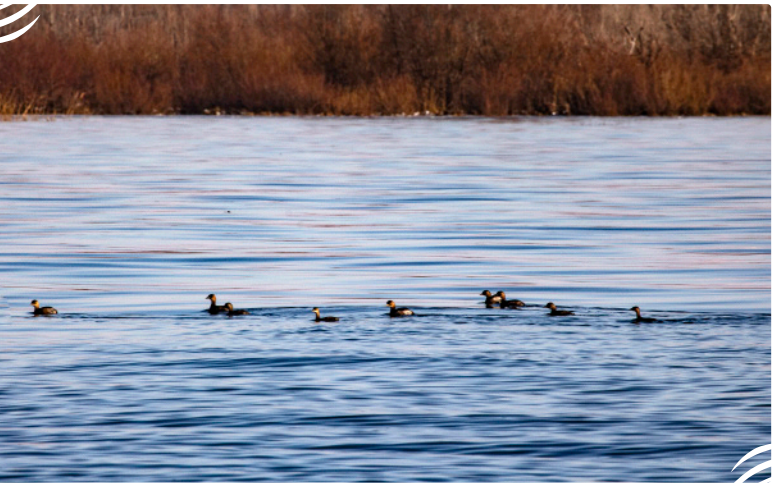
LITTLE GREBE AND MALLARDS

Little Grebe are recorded throughout Montenegro in winter, with most significant numbers occurring on Skadar Lake, Ulcinj Salina, and Plavsko Lake. This species showed a strong decline with a -0.56 slope (nbinom2), with a moderate standard error of ±0.25 and a low p-value, which provides a reliable estimate for this species. The decline in Little Grebe wintering numbers in Montenegro is likely related to their northward shift in response to global warming.

Mallards (*Anas platyrhynchos*) winter throughout Montenegro in relatively small numbers. A significant decline of -0.44 magnitude may also suggest increased human pressure, in addition to a climate induced range-shift.



A pair of Mallards on Skadar Lake © O. Vizi



A group of Little Grebes (*Tachybaptus ruficollis*) on Skadar Lake © A. Vizi

HIGHLIGHTS

The decline in wintering numbers of Little Grebe and Mallard may be the result of both human pressure and climate changes. Both species have a wide ecological valence and inhabit different wetland habitats which are abundant in Montenegro. Therefore, it is not likely that habitat loss or degradation is the cause of their decline. However, there is increasing evidence of a northward range-shift of many waterbird species in response to milder winters, where migration distances between breeding and wintering ranges tend to get shorter. Little Grebe and Mallard are also regular breeders in Montenegro, with estimated maximum numbers of 1200 and 100 pairs, respectively. Mallard is more likely to suffer from the pressure of illegal killing, even if the hunting ban in Montenegro encompasses the winter migration period. Further research is required to establish the fraction of sedentary birds and the effects of poaching.

INCREASING SPECIES,
DURING THE ASSESSMENT PERIOD (2019-2023)

SPECIES		VALUES			
English name	Scientific name	Average nb. of birds	Nb. sites	Magn.*	±ES**
Grey Plover	*Pluvialis squatarola*	1418	4	0.89	0.88
Common Sandpiper	*Actitis hypoleucos*	1	3	0.57	0.57
Norhern Lapwing	*Vanellus vanellus*	134	4	0.50	0.33
Dunlin	*Calidris alpina*	903	4	0.34	0.33

SPECIES		VALUES			
English name	Scientific name	Average nb. of birds	Nb. sites	Magn.*	±ES**
Northern Shoveler	*Spatula clypeata*	468	4	0.31	0.29
Grey Heron	*Ardea cinerea*	140	8	0.16	0.16
Great Cormorant	*Phalacrocorax carbo*	8074	10	0.12	0.15
Pygmy cormorant	*Microcarbo pygmaeus*	2085	6	0.11	0.23

* **Magn.:** Magnitude / ** **±SE:** Standard error. The trends shown in the tables are at least significant at an alpha risk of 5%.

During the 2019–2023 reporting period, no species showed a statistically significant increasing trend, likely due to the short timeframe and limited number of counts. The table highlights species with notable trend magnitudes, along with their corresponding p-values and standard errors.

Grey Plover exhibited the highest trend magnitude but also the largest standard error (±0.88), indicating uncertainty. According to WPE5, this species is generally declining across overlapping European and West Asian populations. Population trends for Northern Lapwing, Dunlin, Common Sandpiper, and Grey Heron appear stable or remain unknown. The increasing trends observed for Northern Shoveler and Pygmy Cormorant in Montenegro align with broader population patterns. For the most regular and abundant waterbirds, low trend magnitudes may suggest population stability, but could also reflect high interannual variability. Overall, the increasing trends observed during this period remain inconclusive.

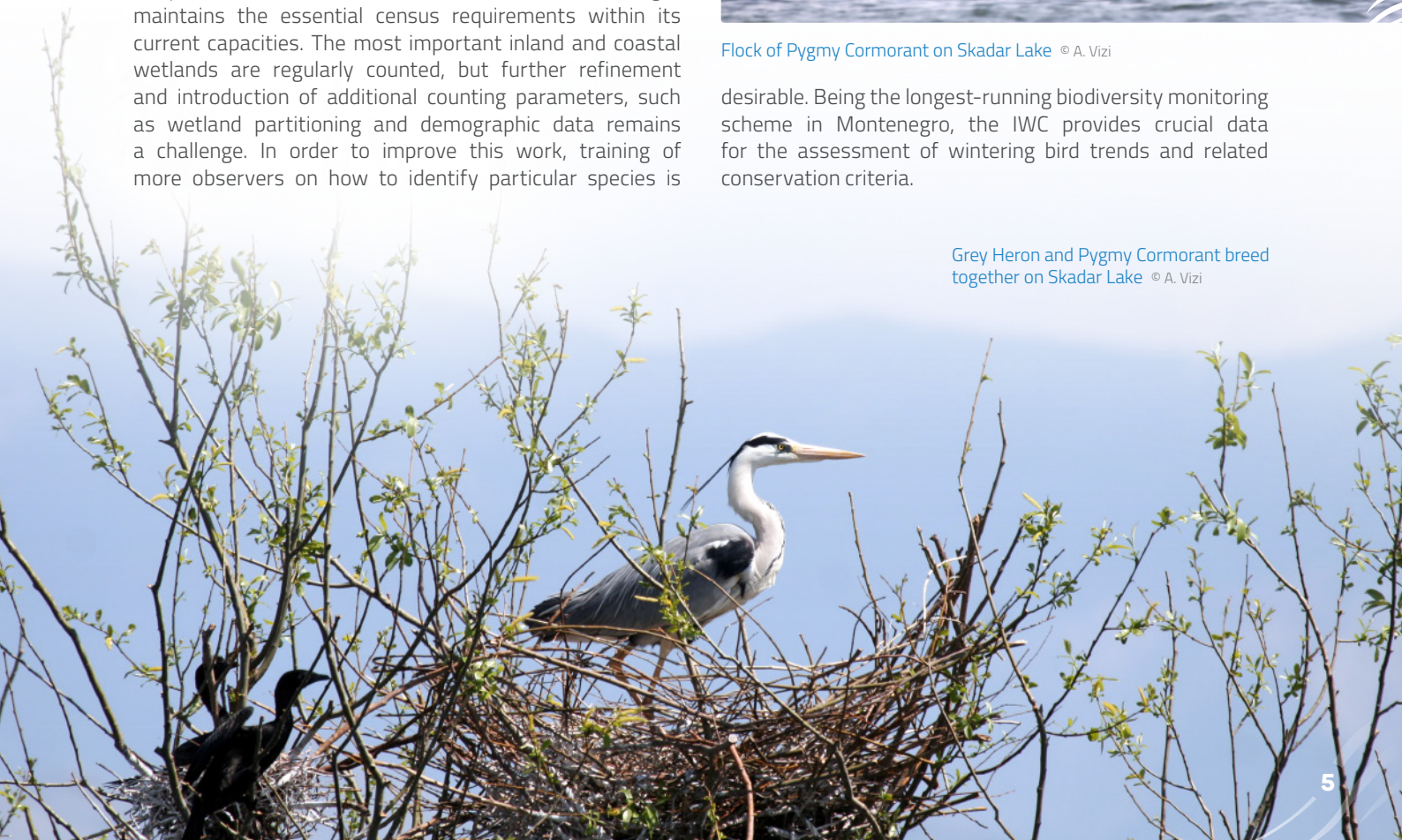
FOCUS

Among the species with potentially increasing trends are the **Great Cormorant** (*Phalacrocorax carbo*), **Pygmy Cormorant** (*Microcarbo pygmaeus*), and **Grey Heron** (*Ardea cinerea*). Although robust statistical evidence is lacking, these common and regularly observed species are likely to have either stable or slightly increasing trends during this period. These observations generally align with 10-year trends within allocated population ranges from Wetlands International (WPE5).

Flock of Pygmy Cormorant on Skadar Lake © A. Vizi

HIGHLIGHTS

Despite limited resources, the IWC network in Montenegro maintains the essential census requirements within its current capacities. The most important inland and coastal wetlands are regularly counted, but further refinement and introduction of additional counting parameters, such as wetland partitioning and demographic data remains a challenge. In order to improve this work, training of more observers on how to identify particular species is desirable. Being the longest-running biodiversity monitoring scheme in Montenegro, the IWC provides crucial data for the assessment of wintering bird trends and related conservation criteria.



Grey Heron and Pygmy Cormorant breed together on Skadar Lake © A. Vizi

3 WETLANDS MAY BE DESIGNATED AS AREAS OF INTERNATIONAL IMPORTANCE

Montenegro has 3 sites designated as Ramsar sites: Skadar Lake, Tivat Salina, and Ulcinj Salt Pans, which are also designated as IBAs. Three recently proclaimed IBAs: Bojana River Delta and Nikšićko polje (which encompasses the Krupac, Slano and Budoške bare IWC locations) are assessed for Ramsar criteria 5 and 6 based on IWC data. The table shows the overview of official and potential Ramsar sites in Montenegro, based on Ramsar criteria 5 and 6.

WETLANDS OF INTERNATIONAL IMPORTANCE FOR WATERBIRDS

Identification based on mid-January (2019-2023) count data for Ramsar Criteria 5 and 6*.
Empty cells in the "Ramsar site" column identify sites not included in the Ramsar network.

INTERNATIONAL IMPORTANCE SITE	*Designated Ramsar site*	*Important Bird Area*	*> 20 000 waterbirds*	Pygmy Cormorant	Great Cormorant	Common Pochard	Eurasian Coot	Dalmatian Pelican	Little Gull
Number of sites				1	1	1	1	1	1
Skadar Lake	Ⓡ	o	o	o	o	o	o	o	o
Tivat Salt Pans	Ⓡ	o							
Ulcinj Salt Pans	Ⓡ	o							
Nikšićko polje		o							
Bojana River Delta		o							

- **Criterion 5:** A wetland should be considered internationally important if it regularly* supports 20,000 or more waterbirds.
- **Criterion 6:** A wetland should be considered internationally important if it regularly* supports 1% of the individuals in a population of one species or subspecies of waterbirds.

** **To define the notion of "regularly,"** we have applied the following rule (currently under review by COP15 RAMSAR, 2025): A wetland is considered to regularly support a population of waterbirds of a given size if either of the following conditions is met:

1. The average of the annual maxima recorded over a period of at least five years reaches or exceeds the required threshold; or
2. The required number of birds is recorded in at least two-thirds of the years for which adequate data are available, provided that data are available for at least three years in total.

Based on the 2019-2023 IWC data, only Skadar Lake fulfils Ramsar criterion 5 (regularly hosts >20,000 waterbirds), and six species fulfil criterion 6 (1% of distinct global population as an average of numbers for last 5 years). The Ulcinj Salina and Tivat Salina did not meet any Ramsar criteria for water birds during this period. The potential Ramsar site Nikšićko polje (currently listed as an IBA), did not meet any Ramsar criteria. The potential Ramsar site IBAs (Bojana River Delta and Plavsko Lake) did not meet criteria 5 and 6.

Independent counting using binoculars during IWC
© O. Vizi

HIGHLIGHTS

The Ramsar network in Montenegro, assessed based on IWC data, can be regarded as adequate given the wetland properties and waterbird abundance there. However, only one proclaimed wetland (Skadar Lake) fulfilled Ramsar criteria during this period, while the Ulcinj and Tivat Salinas fell short in terms of bird abundance. However, other Ramsar criteria are still applicable for these locations.

SUGGESTED ACTIONS

The currently available Ramsar documentation for Skadar Lake is obsolete. It is essential to update and re-assess the criteria in alignment with the new form requirements and provide georeferenced maps. Based on IWC data for 2019-2023, Skadar Lake meets criterion 5 and also the 1% threshold for 6 species of waterbirds. Being a transboundary lake, IWC data only represent bird records of the Montenegrin part, which allows us to assume that there are more waterbird species which may satisfy criterion 6 if we take account of the entire lake. The potential Ramsar site, Nikšićko polje, which includes adjacent IWC locations, Slano, Krupac, and Budoške bare, is recommended to be assessed as a single location within official IBA borders, in order to utilize the total number of waterbirds. Similarly, the Bojana River Delta IBA and Šasko Lake, which constitute a functional whole with the Ulcinj Salina Ramsar site, have the potential to be listed as a joint Ramsar site. For better assessment of Ramsar sites, additional monitoring outside of the IWC time frame counts is required, in order to account for possible shifts in migration patterns or disturbance events.

SITES OF INTERNATIONAL IMPORTANCE FOR BIRDS

The most important wetlands in Montenegro are listed as Ramsar sites. Skadar Lake and Ulcinj Salina alone contain over 90% of wintering water birds. Regarding criteria 2 and 4, three additional wetlands have the potential to be listed as Ramsar sites. All sites are listed as IBAs.

Great cormorant drying its wings

FOCUS
ON A COUNTRY'S FLAGSHIP SPECIES

The Dalmatian Pelican is the iconic species of Skadar Lake, and is regularly observed on Skadar Lake in January. The increased presence of this species is the result of successful conservation measures at both the local and international levels.

The **Dalmatian Pelican** is an early breeder at Skadar Lake, where a small colony has survived for almost 150 years. The number of individuals in January is related to the availability of breeding space and the intensity of human disturbance. The species had been rarely observed in January before the late 1990s, but the greatest increase in numbers was recorded after 2014, when floating rafts for nesting were introduced.

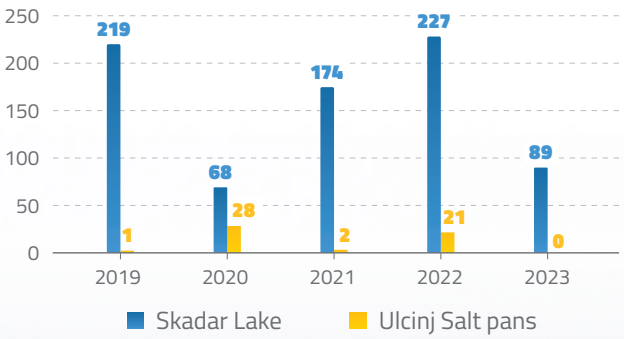
However, despite secured breeding and abundant fish resources, the problem of disturbance remains. Although direct persecution of pelicans did not occur, constant interruptions of the colony by fishers affected the population increase.

The conservation of this pelican thus remains an imperative, and an indicator of relevant institutions' efforts in nature protection.

Dalmatian Pelican on Skadar Lake © O. Vizi

Floating rafts have prevented flooding of the colony since 2014 © O. Vizi

DALMATIAN PELICAN POPULATION ON SKADAR LAKE AND ULCINJ SALT PANS
in January



Gliding above water saves energy for Dalmatian pelican © A. Vizi

The Greater Spotted Eagle *(Clanga clanga)* is a regular winter visitor of Skadar Lake.

WATERBIRD CENSUS AS A COHESIVE FACTOR IN NATURE CONSERVATION

The implementation of winter bird censuses in Montenegro has only limited resources in terms of experienced staff, equipment, and logistics, which renders the counting inflexible, particularly regarding the time frame requirements and transboundary collaboration. Yet it is a platform where government bodies, institutions and civil society work together synergistically.

The oldest biodiversity monitoring program in Montenegro, the IWC represents an important source for informing nature conservation policies and international obligations. Moreover, even without dedicated services, the winter counts often supersede their basic goal of counting birds, gathering data on illegal activities, or even taking immediate action.

IWC data provide a solid basis for analysing waterbird trends on the local scale, and provide valuable input for relevant organizations, including hunting associations, tourist operators, and licensing authorities. Establishing exchange of complementary data between relevant organizations provides adequate risk assessment, updated policies, and better conservation response. On the transboundary level, successful collaboration within the IWC network paves the way for coordinated conservation actions for complete ecosystems, as well as enhanced control of illegal wildlife trade.

Duck decoys observed on Skadar Lake during IWC © A. Vizi

A squadron of breeding pelicans above the colony at Pančeva oka
© A. Vizi

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Destroying an illegal hunting hide on Skadar Lake © O. Vizi

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Ruff (*Calidris pugnax*) roosting on the water lily roots on Skadar Lake © A. Vizi

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Telescope observation at Slano accumulation, Nikšićko polje © A. Vizi

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