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« Pelicans in Montenegro: Their regional link with Amvrakikos Gulf/
Mikri Prespa Lake (Greece) and Karavasta Lagoon / Narta Lagoon
(Albania) »



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Object of the this Contract/Study

There were two main objects of this very Study which had to be implemented:

- To assist Montenegro with the implementation of its National Action Plan for the Dalmatian Pelican.
- To strengthen the international cooperation between Montenegro, Albania and Greece for the protection of these species in their key areas.

According to the two goals the following tasks were to be undertaken by the National Consultant:

- To collect information from the above mentioned countries on the state of the species through contact with relevant institutions, NGOs and experts.
- To develop a sub-regional proposal for the conservation and monitoring of the Dalmatian Pelican, tailored to the needs of the following areas:
 - ❖ Amvrakikos Gulf/ Mikri Prespa Lake (Greece)
 - ❖ Karavasta Lagoon / Narta Lagoon (Albania)
 - ❖ Skadar Lake / Ulcinj Salina (Montenegro)
- To assure coordination with the National Focal Points of those countries, assisted by RAC/SPA to exchange information with relevant expert scientists, institutions and when possible decision makers for the preparation of this proposal.
- To set up a web site about the Dalmatian Pelican and put on the existing data on their distribution and biology in the region.
- To ring the Skadar lake breeding colony (*to ask the Biological Station Tour de Valat from France for the plastic color rings for the pelicans breeding on Skadar Lake, which haven't been ringed for last 30 years*)

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SUMMARY

The Dalmatian Pelican *Pelecanus crispus* is classified by IUCN as Vulnerable.

Species' nesting population is local and confined to the SE Europe, Middle East and Central Asia. World population of Dalmatian Pelican is estimated to be stabilized between 10,400 and 13,900. Newest estimates of nesting population are between 4031 and 5196 pairs. About 20 % of the population nests in the Mediterranean region. The Dalmatian Pelican is included in Appendix II of the Bern Convention, in Annex I of the EU Wild Birds Directive, in Appendix I of CITES, in Appendix II of the Bonn Convention and in the Agreement for the Conservation of African-Eurasian Migratory Waterbirds (AWEA) under the Bonn Convention.

In Montenegro Dalmatian Pelicans occur more or less regularly on three localities: Skadar Lake, which is the only breeding site of the species in MN, Šasko Lake, feeding and resting place during migration and wintering and Ulcinj Salina, the most important wintering site in MN.

Skadar Lake is situated in the very SE part of Montenegro. It is the biggest lake on the Balkan Peninsula with the size of water surface between 354 and 505.8 km² according to the season and water level. The presence of Dalmatian Pelicans at Skadar Lake were firstly recorded 1891.

Intensive research on Dalmatian Pelican has started 1972. In May 1972 the colony was visited for the first time and 20 nests were recorded. Until 1977, when the maximum of 52 pairs was reached, the number of nesting pelicans had been increasing. Numbers of successfully fledged young pelicans are continuously low, although disturbances were not recorded. In the period from 1993 to 2001 nesting of Dalmatian Pelican has not been recorded on Skadar lake. Recent record of nesting pelicans on Skadar lake has been confirmed on July 2002 - 5 pairs. On the same place in 2003 during two visits 7 pairs with 10 successfully fledged young birds. In the period between 2003 and 2006 the nesting of pelicans was mostly unsuccessful, the main reasons being human disturbance and nest destruction by water level oscillations. In 2007 7 to 15 breeding pairs have produced 13 to 16 fledged young birds. In 2008 nesting was again unsuccessful. 7 pairs started nesting in February but soon after storms destroyed nests.

Disturbance is probably main limiting factor for the DP population on Skadar lake. One of main causes of human disturbance still remains hunting. Although officially banned in 2001, hunting continues on Skadar lake as an illegal activity. This is still apparent even in ornithological reserves where pelicans nest.

Lack of zonation in the very National Park (zonation actions at Skadar lake are proposed as part of AP) results in nest colonies, feeding and resting areas of DP to be under constant pressure by fishermen, which are main users of this space.

60% of the lake's water is provided by river Morača. River is 98 km long and gets majority of its water from the high mountains of Montenegro. The river's character is swift and mountainous and regular floods are annual. River's weekly water level variations in its middle current can be more than 6 m in floody spring period. This effects considerably to water level variation of the lake during DP reproductive

period and can result in nest end eggs destruction. Beginning of nesting period of DP namely coincides with the snow melting period in higher mountains of MN and higher precipitation values in MN submediterranean regions (where Skadar lake is situated).

Ulcinj Salina or Ulcinj salt pans are one of the biggest salt pans of the Adriatic coast. They are situated at the very SW end of Montenegro. The area's value is even greater due to the marshy habitats and to the vicinity of the sea. It is completely anthropogenic guided ecosystem, where all factors significant for the birds are controlled by man. The salt-pans originated in the area of the former Zoganj Mud, a 25 km² large marshy area with brackish water.

First data about the Dalmatian Pelicans from the Ulcinj Salina are from the end of 19th century where 20 nesting pairs were found. Pelicans resisted and remained to be regular guests in the salina although hunting pressure in the pools of salina grew very high in late nineties and continued since at least 2003. In 1999 an intensive monitoring of Ulcinj salina took place and a maximum of 56 birds have been observed in 2003. After 2004 hunting has been effectively banned in the Salina and thus disturbance of pelicans has been significantly reduced. In 2004 the maximum number of observed pelicans raised to 96 birds.

Color ringing records of DP which are registered regularly in Montenegro on wintering show that birds come to MN on regular basis from the Amvrakikos Gulf in Greece and from Karavasta Lagoon in Albania.

Mikri Prespa is a mountainous lake which lies 849 m a.s.l. and has a surface of 54 km² and average depth of 6.7 m. It is closely linked to a bigger Megali Prespa lake. First data on DP nesting at Mikri Prespa date from 1968. Until active protection of DP took place, main conservation problems at this site which also heavily influenced breeding success of the species were disturbance, especially by fishermen and tourists together with erosion and human destruction of reed islets on which DP nest. Active protection of the species at Mikri Prespa resulted nesting pair numbers rise from 100 breeding pairs in 1988 to more than 1000 BP in 2008. Protective measures included disturbance reduction, strict approach prohibition to the core nesting areas during nesting period and zonation of the lake, particularly for fishermen and visitors, management of the colonies and establishment of water level control. Soon after those measures were undertaken Mikri Prespa became the biggest colony of DP in the World In 1983-1988 period (before active measures took place) number of DP BP rose from 114 BP to 165 BP. In early nineties rapid population increase started (following active protection) – from 201 BP in 1990 to 650 BP in 2000 and finally to more than 1000 pairs in last years

The Amvrakikos Gulf is a semi-closed sea situated in north-western Greece, stretching over about 35 km and covering an area of approximately 400 km² (excluding its enclosed marshes and lagoons). In this gulf pelicans nest mainly on dikes or artificial islets. Due to disturbance, lack of optimal nesting sites, and – in comparison to Mikri Prespa – less considered management of nesting islets, the growth of DP population in Amvrakikos Gulf was less dramatic in absolute numbers as in Mikri Prespa but same when relative values are compared. As on Mikri Prespa also on this site management actions have resulted in steep increase of DP population over past 20 years which once again proves the immense importance of AP measures implementation. Although activities are less intensive at this site as on Mikri Prespa and less energy is spent on nest site management, DP population is stable in last few years and positive overall trend has been recorded in past decade. This indicates that already relatively modest and reduced protective measures can have a great positive effect on DP population (D. Hatzilacou, pers.com). From less than 20 pairs in 1982, the colony reached over 100 pairs in 2000 and even 170 BP in 2008. The most important type of disturbance in Amvrakikos gulf are anthropogenic – people approaching near the breeding islands of pelicans, fishing, tourist activities, photographs... Until recently a part of a breeding colony in Amvrakikos was monitored through a camera which was connected to Visitor's Centre via optical cable. Both researchers and visitors could observe nesting behavior of the pelicans without any interference. Unfortunately due to the equipment damage the camera is temporarily out of use.

Karavasta is the largest wetland in Albania with the Karavasta lagoon forming the largest part of the complex. In 2002 19 BP of Dalmatian Pelicans have breed in Karavasta lagoon. Since then no published records exist on DP nesting population data at this locality. Tour de Valat biological station has ceased color ringing program in 2002 due to intensive disturbance by hunters and life threats to the researchers conducting the ringing program. Karavasta is also an important resting and non breeding site for DP. In 1996 up to 62 resident birds have been counted and in the same year up to 171 birds have been counted wintering in the lagoon

Narta lagoon and Vlora Salina are parts of an extensive 35.000 ha large Vlora Bay, Karaburun peninsula and Cika mountain IBA. This marshland is second in size in Albania, similar in size and habitats with Karavasta lagoon which lies only some 30 km to the North. One half of the lagoon is transformed into salt pans which is still active. Salina is filled by the sea water which is spread over salina pools. There is no systematic research on this lagoon, but data gathered on IWC and accidental sightings suspect this site is of national and international importance for pelicans.

Until first color ringing reading results in 2005 the origin of birds occurring at Ulcinj salina in winter months remained completely unclear. Where do up to 100 birds occurring in a single day in salina come from, is the colony at Skadar lake mixing with birds from other sites in the region, where do large flocks of DP that come to salina frightened by hunter's gun shots from Velipoja come from since there are only up to 19 BP nesting in Karavasta, the only Albanian colony? Some of the questions like those were answered after a single color ringing reading of a flock of pelicans resting in Ulcinj salina in October 2005 took place by the authors of this text. 9 rings were read and data was sent to the IUCN's Committee for pelicans chairman, Dr Alain Crivelli, who coordinates the whole DP color ringing programme.

The very results which indicated that the DP originated from Karavasta and Amvrakikos were responsible to encourage the authors of AP and this text to start with intensive networking of all the existing experts and DP important sites in the region to get a more complete knowledge about the population condition of the species and their movements through the region.

Due to the lack of sufficient analysis it remains largely speculative that Skadar lake DP population rarely mixes with other populations in the region. Lack of ringing programme in past decades as an example of monitoring method for this species disables in great deal any serious analysis of their movements through the region. It is obvious that due to the very low breeding success in past years the colony of DP on Skadar lake acts as a sink population and we could assume that the population will remain to struggle at the edge of the existence or even stop existing if AP implementation does not start.

Ulcinj Salina is a wintering site and a resting stopover after breeding period for DP in region. Figures from past few IWC (International waterbird census) confirm that Ulcinj salina is the most important wintering site for the species in E part of Adriatic. Still more, facts that DP nested in what is now Ulcinj salina and that a very place in a wintering site for many DP from the region encourages us to think of a possibility that species could once again become a breeder of this extensive wetland. AP should stimulate this possibility through certain activities such as artificial nesting site building and increase the possibility that increase of the closely linked populations from Amvrakikos (and possibly Mikri Prespa) might in near future result in new breeding site for DP in Montenegro.

For a effective protection of DP in Montenegro and exchange of experience about the status and trends of species' population in the region, especially in Albania and Montenegro, constant cooperation between institutions and experts from the region is of vital importance. Data exchange on birds of Skadar lake, including DP, has already been intensified in 2008 with Taulant Bino with whom a monitoring of the birds of Skadar lake (both MN and AI part of the lake) have been

conducted. This was a first trans-border monitoring scheme in MN which already proved to be very useful and successful.

With the very launch of cooperation between MN and colleagues from Amvrakikos and Mikri Prespa in Greece during this trip in September/October 2008 common willingness and interest for unified work on conservation of DP in region has been defined

When asked upon, our colleagues from Albania and Greece have expressed special intention and willingness to help in implementation of the AP for Montenegro in the following actions:

- Establish and enhance co-operation with biodiversity conservation authorities. Cooperation among scientific institutions of both countries should be enlarged on the protection of biodiversity in key wetlands, especially in trans-border sites. Promote joint / team work and information exchange. Improve co-operation between NGOs from both countries.
- Technical design and construction of the artificial structures appropriate for the nesting of Dalmatian Pelican
- Provide training for members of biodiversity conservation orientated NGOs on environmental education, conservation and management of birds, wildlife in general and wetlands
- Establish a non-intrusion zone around the existing colony and potential new colonies at Skadar lake
- Monitor dead Pelicans and identify the causes of death.
- Undertake public awareness campaigns with hunters, fishermen, local communities, tourist agencies and officials involved in the Dalmatian Pelican conservation.

1 Introduction

Like already mentioned main goals of this study were to collect information from the field, meet the responsible institutions and subjects that work in conservation of Dalmatian Pelican in the region. Further on a platform for the future cooperation between countries of the W Balkans region (Montenegro, Albania, Greece) has to be built in order to exchange information during and after the implementation of AP for the species in Montenegro

In order the implementation of AP to be as successful as possible, those sites in the region were chosen where Dalmatian Pelicans breed and winter on regular basis and which are on the other hand (on the basis of color-ringing recoveries) connected with Montenegrine breeding pelican population. Those sites are Amvrakikos Gulf (Greece), Karavasta Lagoon and Narta Lagoon (Albania). Until now no record of pelicans ringed at Mikri Prespa colony (Greece) have been recorded. Nevertheless, size of the colony (the biggest colony of the species in the World), importance/success of pelican conservation at that site (growth from 200 pairs in 1991 to a stable number of more than 1000 pairs in last few years) and close distance (180 km of aerial distance) make Mikri Prespa an extremely important example for Montenegro and a site that had to be included in the study. This site case (the site as well being very similar to MN breeding site) is probably the best example of implementation of AP for the very species in the World and as such for vital importance in implementation of the Montenegrine AP.

During the study trip authors of report, apart from the planned ones, have visited also few other sites of regional importance for Dalmatian Pelicans: Velipoja Lagoon (Albania) and Kastoria Lake (Greece).

We are sure that exchange of information with relevant expert scientists, NGOs and institutions which was agreed upon during the study trip is going to be of great significance, specially during the implementation of activities linked to conservation and recovery of pelican colony in Montenegro.

Last but not least, from the Station Tour de Valat from France in May 2008, thanks to Dr Alain Crivelli, 150 orange plastic rings for the pelicans breeding on Skadar Lake, which haven't been ringed for last 30 years have been supplied. Unfortunately nesting of DP was not successful in 2008 and no young pelicans could be ringed. Orange rings were originaly intended for ringing of pelicans in Karavasta Lagoon in Albania but ringing has been brought to a standstill since 2002 due to intensive hunting pressure and life threats for the ringers. Beside the blue rings which have been used by the National Park Skadar Lake Management few decades ago, this was a first attempt of ringing of the Skadar Lake pelican population.

The complete report, data on pelicans in Montenegro and in the region have been put to the web site: <http://www.birdwatchingmn.org/index.php?lng=cg&page=46>

2 Dalmation Pelican and its conservation status

The Dalmatian Pelican *Pelecanus crispus* is classified by IUCN as Vulnerable.

Species' nesting population is local and confined to the SE Europe, Middle East and Central Asia. World population of Dalmatian Pelican is estimated to be stabilized between 10,400 and 13,900 (Birdlife International, [Data zone, www: http://www.birdlife.org/datazone/species/index.html?action=SpchTMDetails.asp&sid=3811&m=0](http://www.birdlife.org/datazone/species/index.html?action=SpchTMDetails.asp&sid=3811&m=0)).

Newest estimates of nesting population are between 4031 and 5196 pairs. About 20 % of the population nests in the Mediterranean region: 15-20 pairs in Albania, 7 pairs in Montenegro, more than 1000 pairs at Mikri Prespa and up to 170 pairs in Amvrakikos Gulf in Greece. There are around 450 pairs in the Danube Delta and about 120 pairs in Turkey.

The Mediterranean population is however considered to be increasing – mostly due to great recovery of the Mikri Prespa and Amvrakikos colonies (which are direct results of the national AP implementation for the species!).

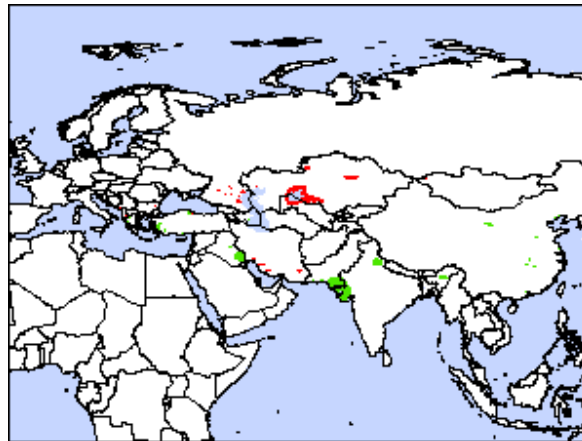


Figure 1: World distribution of the Dalmatian Pelican *Pelecanus crispus*. Source: BirdLife International

2.1 Conventions/ Laws

The Dalmatian Pelican is included in Appendix II of the Bern Convention, in Annex I of the EU Wild Birds Directive, In Appendix I of CITES, in Appendix II of the Bonn Convention and in the Agreement for the Conservation of African-Eurasian Migratory Waterbirds (AWEA) under the Bonn Convention.

In Montenegro the Dalmatian Pelican is included in the list of Strictly Protected Species. It has the same status also in Albania and Greece.

3 Dalmatian Pelicans in Montenegro

In Montenegro Dalmatian Pelicans occur more or less regularly on three localities: Skadar Lake, which is the only breeding site of the species in MN, Šasko Lake, feeding and resting place during migration and wintering and Ulcinj Salina, the most important wintering site in MN.

Of those three sites, Šasko Lake can be excluded of further analysis since pelicans only visit this place rarely and in small numbers. The same can probably be said for few other places where pelicans are irregular or accidental guests: Tivat Salina, Velika plaža by Ulcinj and Bojana river. Those sites must be taken in account in further analysis and properly evaluated but their importance for this report is negligible.

Since the two remaining sites, which bear the vast share of importance for the species in MN, are very different from each other, as are ecological conditions at each of them, they will be described in details separately.

3.1 Skadar Lake

IBA criteria A1, A3, A4i, A4iii, B1i, B2

3.1.1 Skadar Lake statuses of protection

- **1968** ornithological reserves: Pančeva oka (300 ha) and Manastirska tapija
- **1983** National Park (40.000 ha)
- **1989** IBA –international important bird area (40.000 ha)
- **1995** Ramsar – wetland of international importance (20.000 ha)
- **2006** Emerald habitat of Bern Convention (40.000 ha)

3.1.2 General description

Skadar Lake is situated in the very SE part of Montenegro. It is the biggest lake on the Balkan Peninsula with the size of water surface between 354 and 505.8 km² according to the season and water level. It is 44 km long and 15 km wide. Its main water source is Morača river, which provides more than 60% of the lake's water. Besides Morača there are many other smaller rivers and sublacustic springs flowing into the lake.

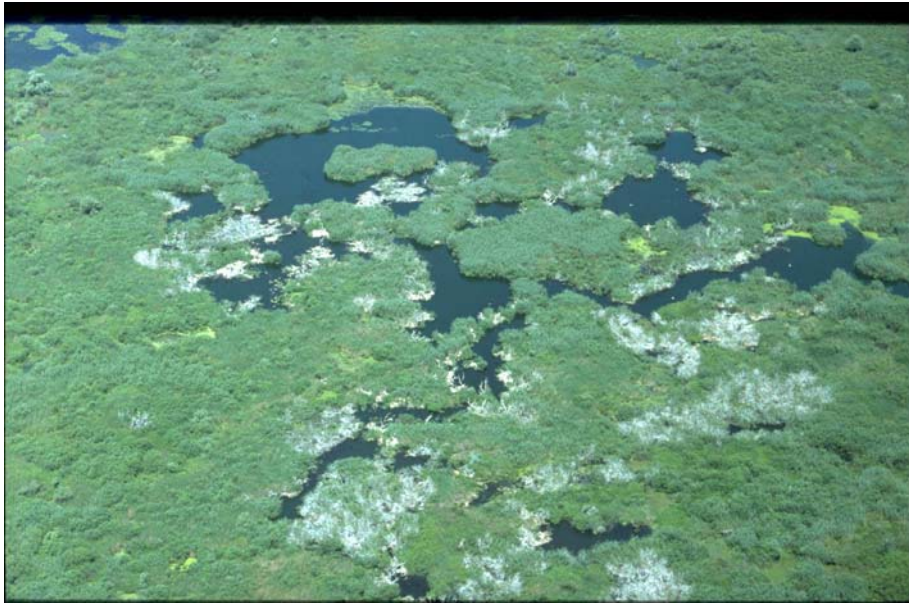


Figure 2: Dalmatian Pelican nesting site in ornithological reserve Pančeva Oka, Skadar Lake, Montenegro. Photo: Euronatur.

3.1.3 Dalmatian Pelicans on Skadar Lake

The presence of Dalmatian Pelicans at Skadar Lake were firstly recorded by Brusina (1891). In 1894 in Hum bay on Skadar Lake 29 pairs were recorded building nests (Führer 1894). As Führer explains he took eggs from 15 nests, leaving the eggs from remaining 14 nests untouched. Remaining 14 nests were later destroyed by flooding (Führer 1894). In 1896 Reiser & Führer (1896) recorded again a colony of 20 pairs. After Reiser and Führer till 1972 detailed research on the birds of Skadar lake is missing and records on pelican's occurrence are lacking. Only in 1965, 42 pelicans were recorded in the mating season at the former breeding place (Ivanović 1970). The colony was disturbed by hunters then.

Intensive research on Dalmatian Pelican has started 1972 (Vizi 1975). In May 1972 the colony was visited for the first time and 20 nests with 16 to 18 young birds were recorded. In subsequent years severe disturbances of the colony by predators and flooding was recorded (Vizi 1975). The original colony site, Panceva oka, was displaced because of human disturbance in 1975 to the other place, Crni žar, an area consisting of floating peat island and floating vegetation, situated about 1.5 km to the south (Vizi 1979). Until 1977, when the maximum of 52 pairs was reached, the number of nesting pelicans had been increasing. In 1978 the colony was once more destroyed by high water level (Vizi 1979). During the 80-ies pelicans were mainly nesting both on Crni žar as well as on Pančeva oka.

Numbers of successfully fledged young pelicans are continuously low, although disturbances were not recorded. In 1990 21 pairs were recorded on Crni žar but all the eggs and a young bird were later destroyed by hail. During 1991 and 1992 colony was situated on a stone island Grmožur. Continuous disturbance by tourists resulted in complete abandonment of the colony in subsequent years (Vizi 1995a). In the period from 1993 to 2001 nesting of Dalmatian Pelican has not been recorded on Skadar lake.

Recent record of nesting pelicans on Skadar lake has been confirmed on 11th of July 2002 when 5 pairs leading 2 fledged youngs were seen while flying with a small airplane on the height of 900 feet over the hardly accessible colony in Pančeva oka.

On the same place in 2003 during two visits 7 pairs with 10 successfully fledged youngs were recorded only 20 m away from nesting rafts set there by the recommendation of MedWet (Perennou et al. 2001). In the period between 2003 and 2006 the nesting of pelicans was mostly unsuccessful, the main reasons being human disturbance and nest destruction by water level oscillations.

In 2007 7 to 15 breeding pairs have produced 13 to 16 fledged youngs. In 2008 nesting was again unsuccessful. 7 pairs started nesting in February but soon after storms destroyed nests. Nesting was repeated in a short while but again with no success.

Dalmatian Pelicans have bred on three ecologically different places on Skadar Lake.

First and most frequented nesting locality is Pančeva oka. Pančeva oka (meaning "Pelican's pools" in local language) is a vast complex of dead and live flooding vegetation a base of which is formed by up to 11 m deep layers of Sphagnum peat-moss. Pančeva oka is a complex of hardly-accessible floating peat island, freshwater pools and thick *Salix* vegetation. Among other vegetation *Salix alba*, *S. fragilis*, *Typha angustifolia*, *T. latifolia* are found there. Pelican's colony is situated on a floating island of peat on the southern edge of the Pančeva oka complex and is surrounded by big colonies of Cormorant *Phalacrocorax carbo*, Pygmy Cormorant *P. pygmeus*, Little Egret *Egretta garzetta* and Squacco Heron *Ardeola ralloides*. The Pelican's colony is on the edge of a bigger pool and not far from open water.

Second locality where pelicans' nests were found is Crni žar. This area covers a few km² and lies south to the Pančeva oka. It is a complex of mostly live floating vegetation most of which is formed by *Nuphar luteum*, *Nymphaea alba*, *Phragmites australis* and *Trapa natans*. Numerous small islands are formed by dead vegetation and peat. On the islands *S. alba* and *S. fragilis* are growing. Pelican's colony was situated on an island of dead vegetation, surrounded with the colony of Common *Sterna hirundo* and Wiskered Terns *Chlidonias hybrida* and a few other non-colony nesting species of waterbirds.

Third locality where pelicans were found nesting in the years 1991 and 1992 is Grmožur island. The rocky island is found close to the NW coast of the lake, between Virpazar and Seoca settlements. The island is not more than a few hectares big, mostly bare. Vegetation, present mostly on highest points of the island, consists of a few *Ficus carica*, *Punica granatum* and *Vitex agnus-castis*. Pelicans' nests were situated close to the water, only a few meters from the coast.

Table 1. Number of nesting Dalmatian Pelicans on Skadar lake from 1894 to 2008 with number of successfully fledged youngs, type of disturbance and nesting location (*year when all the eggs and/or youngs were completely destroyed; ¹Type of disturbance: F-flooding, H-hunting, E-egg collection, P-predation, G-hail, T-tourism; - data is missing). (Saveljić et al. 2004).

Year	No of pairs	No of nestlings	Breeding success	Disturbance type	Breeding site
1894	29	-	-	E, F	Pančeva oka
1896	20	-	-		Pančeva oka
1965	21	-	-	H	Pančeva oka
1967	30	-	-		-
1972	20	16-18	0.8-0.9		Pančeva oka
1973	24	18	0.7		Pančeva oka
1974*	16	0	0.0	P	Pančeva oka
1975	29	11	0.4		Cmi žar
1977	52	46	0.9		Cmi žar
1978*	-	0	0.0	F	Cmi žar
1979	-	3	?		-
1983	11	6	0.5		Cmi žar, Pančeva oka
1984	11	5	0.4		Cmi žar, Pančeva oka
1986	8	9	1.1		Cmi žar
1987	14	19	1.4		Cmi žar
1989	29	7	0.2		Cmi žar
1990*	21	0	0.0	G	Cmi žar
1991	7	2	0.3	T	Grmožur
1992	15	11	0.7	T	Grmožur
2002	5	2	0,4		Pančeva oka
2003	7	10	1.4		Pančeva oka
2004					Pančeva oka
2005					Cmi žar
2006	-	0		F	Pančeva oka
2007		13-16		F	Cmi žar
2008	5-7		0	F	Pančeva oka

3.2. Ulcinj Salina

IBA criteria: A1, A4i, B1i, B2

3.2.1 Ulcinj Salina statuses of protection

- **1989** IBA –international Important Bird Area (1400 ha)
- **2005** The First private Nature Park in Montenegro
- **2006** Emerald habitat of Bern Convention (40.000 ha)
- **2008** application procedure for Ramsar Site

3.2.2 General description

Ulcinj Salina or Ulcinj salt pans are one of the biggest salt pans of the Adriatic coast. They are situated at the very SW end of Montenegro. The area's value is even greater due to the marshy habitats and to the vicinity of the sea. It is completely anthropogenic guided ecosystem, where all factors significant for the birds are controlled by man. The salt-pans originated in the area of the former Zoganj Mud, a 25 km² large marshy area with brackish water. The oldest salt-pan basins were built in the period from 1926 to 1934. From the mid 20th century the salt-pans gradually grew in size; in the beginning of the 1980s they were enlarged by 60% of their total territory and today cover 14.5 km²



Figure 3: Resting Dalmatian pelicans in Ulcinj Salina with color rings from Amvrakikos Gulf and Karavasta lagoon. Photo: B.Rubinić.

3.2.3 Pelicans on Ulcinj salina

First data about the Dalmatian Pelicans from the Ulcinj Salina are from the end of 19th century (Führer 1895). Führer had found 39 Pelican nests, mainly with one egg, in the area of former Zogaj Mud during March 1894. Two years later more than 20 nesting pairs were found in the same area (Reiser & Führer 1896).

From 1924 until 1936 the hydro-melioration works were conducted and the part of the swamp has been transformed into the salt pans. There is no data in the literature covering the period of the time from the end of 19th century (Reiser & Führer 1896) until late seventies (Vasić 1979), when, in July of 1975, 'few' Dalmatian Pelicans had been registered. Additional one young Dalmatian Pelican was observed resting on one of the salt pans basins in 1984 (Ham 1986). Pelicans resisted and remained to be regular guests in the salina although hunting pressure in the pools of salina grew very high in late nineties and continued since at least 2003. In 1999 an intensive monitoring of Ulcinj salina took place and a maximum of 56 birds have been observed in 2003. After 2004 hunting has been effectively banned in the Salina and thus disturbance of pelicans has been significantly reduced. In 2004 the maximum number of observed pelicans raised to 96 birds (Saveljić 2004) which represents about 3% of the biogeographical population (Black Sea and Mediterranean population) of the species (Schneider et al. 2006, Wetlands International 2002). The other effect of lesser disturbance was that pelicans were rarely shy after 2004 and could be usually observed from not more than 50-100 m of distance.

3.3 Limiting factors of Dalmatian Pelican population survival on Skadar Lake

Factors which effect pelican population on Skadar lake in negative way can be divided into two groups – anthropogenic and natural:

3.3.1 Anthropogenic factors

Disturbance is probably main limiting factor for the DP population on Skadar lake. One of main causes of human disturbance still remains hunting. Although officially banned in 2001, hunting continues on Skadar lake as an illegal activity. This is still apparent even in ornithological reserves where pelicans nest.

Lack of zonation in the very National Park (zonation actions at Skadar lake are proposed as part of AP) results in nest colonies, feeding and resting areas of DP to be under constant pressure by fishermen, which are main users of this space.

Similar happens also by other user groups, such as tourists and accidental visitors. Even completely unintentional disturbance can cause much damage in pelican population and can be a key limiting factor for the reproductivity success. Lack of zonation enables tourist boats to reach important and fragile parts of DP habitat at the lake without any control. With more than 20.000 visitors that are recorded annually (NP Skadar Lake Management data, unpubl.) to visit the lake cruising over the lake on tourist boats and hundreds of small registered fishing boats, this is an important and increasing threat for DP population.

Unfortunately one of the disturbing factors for DP population at this site is also unsustainable research of DP nesting and too frequent and not conscious enough visits of breeding colony. Besides monitoring or research activities also filming of DP are a threat for their nesting success. Cases when national and numerous private TV companies have entered DP colony in the midst of the nesting period trying to film the life cycle of DP when DP are most susceptible for disturbance are not rare. Often it was documented in this cases DP left the nests and during their absence nest got destroyed by crows and magpies – *Corvidae*. Similar problems were frequent at Mikri Prespa lake until AP implementation considered zonation to core areas and complete prohibition of entrance to breeding colonies until July. This measure had immense positive effect for the breeding success of DP at Mikri Prespa.

3.3.2 Natural factors

It was already mentioned that 60% of the lake's water is provided by river Morača. River is 98 km long and gets majority of its water from the high mountains of Montenegro. The river's character is swift and mountainous and regular floods are annual. River's weekly water level variations in its middle current can be more than 6 m in floody spring period. This effects considerably to water level variation of the lake during DP reproductive period and can result in nest end eggs destruction. Beginning of nesting period of DP namely coincides with the snow melting period in higher mountains of MN and higher precipitation values in MN submediterranean regions (where Skadar lake is situated).

Stronger precipitations, storms and hail are frequent in spring in MN and can be an important factor for pelican's breeding success, specially on breeding islets where erosion is another limiting factor (mainly pit or reed islets) which is usually the case at Skadar lake.

Animal predation, such as nest predation by *Corvidae* can be another limiting factor of DP breeding success at Skadar lake, although the last is usually connected with human interference (see above).

4. The status of Dalmatian Pelican population in Greece

Colour ringing records of DP which are registered regularly in Montenegro on wintering show that birds come to MN on regular basis from the Amvrakikos Gulf in Greece and from Karavasta Lagoon in Albania. In continuation state of population of DP at those sites will be described. Special focus is assigned also to Mikri Prespa lake in Greece, largest colony of DP in the World, possible origination site for at least some wintering birds in MN and best example of AP implementation for the whole region.

Most of the data was collected by the special questionnaire which was designet for- and later on filled up- by contact points met during the field trip.

4.1 Mikri Prespa

IBA criteria: A1, A4i, B1i, B2, C1, C2, C3, C6

4.1.1 Mikri Prespa protection statuses

- part of IBA covered by Wildlife Refuge (Vronterou, 900 ha),
- part of IBA covered by Wildlife Refuge (Sfina, Prespon, 6,700 ha)
- part of IBA covered by National Park (Prespes, 19,470 ha)
- part IBA covered by Biogenetic Reserve (Council of Europe) (Ethnikos Drymos Prespon (Dasos Kedron), 12 ha)
- part of IBA covered by Ramsar Site (Lakes Mikri Prespa and Megali Prespa, 8,000 ha)
- part of IBA covered by Special Protection Area (Ethnikos Drymos Prespon, 26,620 ha) (BirdLife International, 2008)

4.1.2 General description

Mikri Prespa is a mountainous lake which lies 849 m a.s.l. and has a surface of 54 km² and average depth of 6.7 m. It is closely linked to a bigger Megali Prespa lake and as such presents a unique IBA and protected area in Greece. About 90% of surface area of the lake belongs to Greek territory and the rest to Albania. Megali Prespa (259 km²) is shared between Greece, Macedonia and Albania.



Figure 4: Mikri Prespa lake. Photo: D.Saveljić.

4.1.3 Dalmatian Pelicans on Mikri Prespa

First data on DP nesting at Mikri Prespa date from 1968 (Terrasse et al. 1969).

Until active protection of DP took place, main conservation problems at this site which also heavily influenced breeding success of the species were disturbance, especially by fishermen and tourists together with erosion and human destruction of reed islets on which DP nest. If we add disturbance by hunters to the above list, we could presume Montenegro with Skadar lake as the only breeding place of DP had a very similar starting position as Mikri Prespa lake when considering the protection of species' population.

In whole of the Greece DP population in 1990 was 500-550 pairs which were limited to two main colonies (Mikri Prespa and Amvrakikos Gulf) (Crivelli et al, 2000). Active protection of the species at Mikri Prespa resulted nesting pair numbers rise from 100 breeding pairs in 1988 to more than 1000 BP in 2008. Protective measures included disturbance reduction, strict approach prohibition to the core nesting areas during nesting period and zonation of the lake, particularly for fishermen and visitors, management of the colonies and establishment of water level control. Soon after those measures were undertaken Mikri Prespa became the biggest colony of DP in the World In 1983-1988 period (before active measures took place) number of DP BP rose from 114 BP to 165 BP. In early nineties rapid population increase started (following active protection) – from 201 BP in 1990 to 650 BP in 2000 and finally to more than 1000 pairs in last years (2003-2008)(Figure 1).

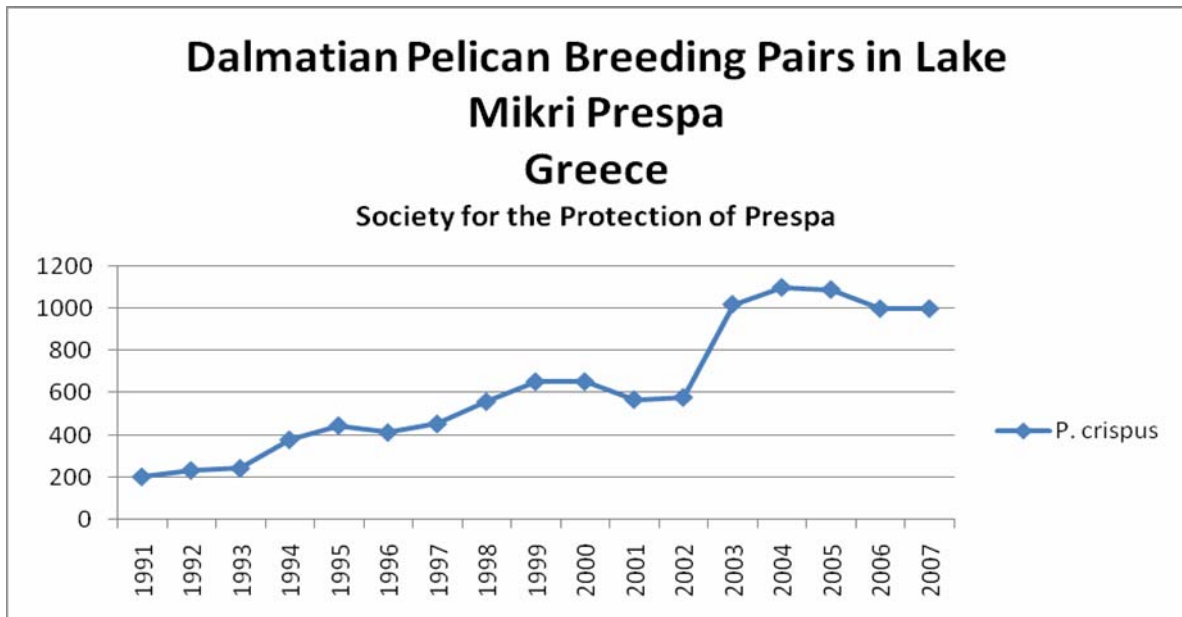


Figure 5: Number of Dalmatian Pelican *Pelecanus crispus* breeding pairs at Mikri Prespa lake in 1991-2007 period (source: Society for the protection of Prespa).

One of main measures, as mentioned a couple of times, was the complete prohibition of entrance to the breeding colonies during the breeding period. This measure has also been beneficial to another pelican species, the White Pelican *Pelecanus onocrotalus* with a colony which rose to more than 400 BP after the Greek ornithologists took those strict measures.

During our field trip on 30th and 31st September 2008 we only recorded 16 Dalmatian (and no White) Pelicans at both Mikri and Megali Prespa lakes. Most pelicans fly to Thrace (mostly to lake Kerkini) until September each year due to regular frosts of the Prespa lakes in winter half of the year. The site has thus little importance for the pelicans during wintering period.

4.2 Amvrakikos Gulf

IBA criteria: A1, A4i, A4iii, B1i, B2, C1, C2, C3, C4, C6

4.2.1 Amvrakikos Gulf statuses of protection

- part of IBA covered by Wildlife Refuge (Limnothalassa Tsoukalio kai Valtos Rodias, 10,500 ha)
- part of IBA covered by Ramsar Site (Amvrakikos Gulf, 23,649 ha)
- part of IBA covered by Special Protection Area (Amvrakikos Kolpos, 21,239 ha) (BirdLife International, 2008)

4.2.2 General description

The Amvrakikos Gulf is a semi-closed sea situated in north-western Greece, stretching over about 35 km and covering an area of approximately 400 km² (excluding its enclosed marshes and lagoons). It is virtually a closed basin as its only link to the open Ionian Sea is a narrow strait, the Preveza channel, 370 m wide and 5 m deep in its narrowest and shallowest points. The sea floor is mostly 30 m deep (max depth 60 m) and covered with mud or sand.



Figure 6: Amvrakikos Gulf. Photo: D.Saveljić.

4.2.3 Pelicans at the Amvrakikos Gulf

In this gulf pelicans nest mainly on dikes or artificial islets. Due to disturbance, lack of optimal nesting sites, and – in comparison to Mikri Prespa – less considered management of nesting islets, the growth of DP population in Amvrakikos Gulf was less dramatic in absolute numbers as in Mikri Prespa but same when relative values are compared. As on Mikri Prespa also on this site management actions have resulted in steep increase of DP population over past 20 years which once again proves the immense importance of AP measures implementation. Although activities are less intensive at this site as on Mikri Prespa and less energy is spent on nest site management, DP population is stable in last few years and positive overall trend has been recorded in past decade. This indicates that already relatively modest and reduced protective measures can have a great positive effect on DP population (D. Hatzilacou, pers.com).

Until recently a part of a breeding colony in Amvrakikos was monitored through a camera which was connected to Visitor's Centre via optical cable. Both researchers and visitors could observe nesting behaviour of the pelicans without any interference. Unfortunately due to the equipment damage the camera is temporarily out of use.

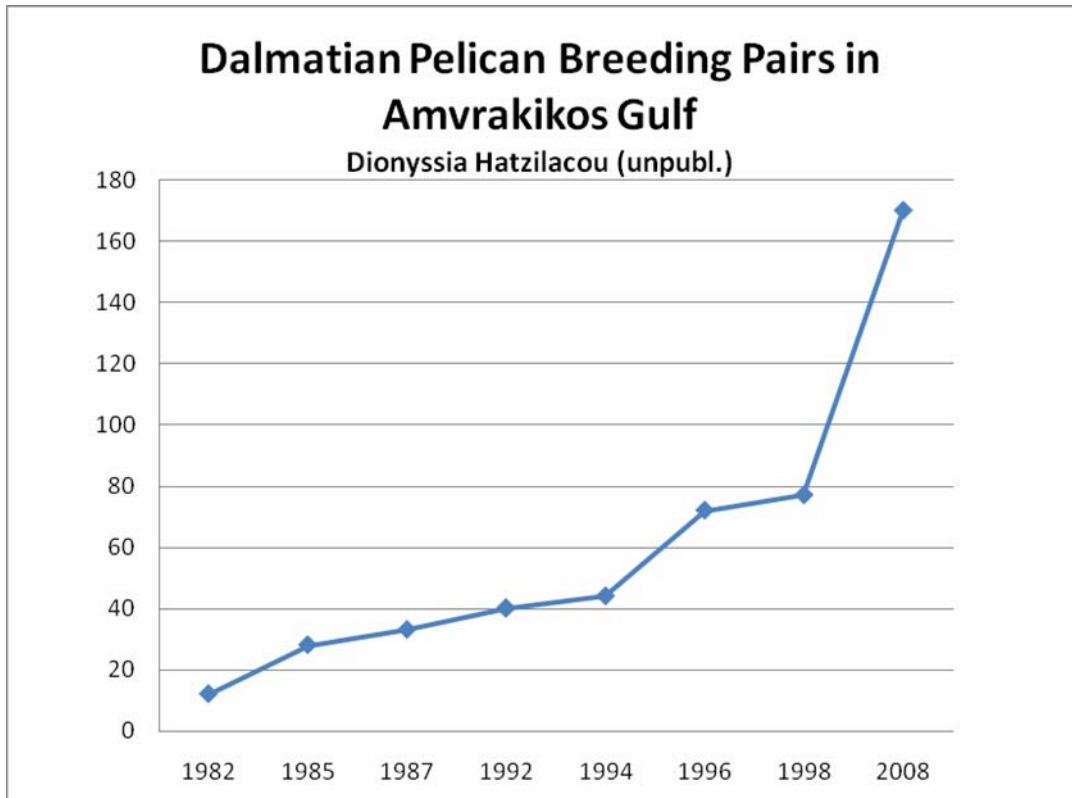


Figure 7: Number of Dalmatian Pelican *Pelecanus crispus* breeding pairs at Amvrakikos Gulf for selected years in 1982-2008 period (source: Dionyssia Hatzilacou, unpubl.).

4.2.4 Pelican disturbance in Amvrakikos Gulf

In this section we describe in greater detail the types of disturbance at Amvrakikos Gulf based on interview with D.Hatzilacou which we find valuable as an example of problems and way of finding solutions to handle them. The data is particularly valuable since it reflects very similar conditions to those on Skadar lake and can thus be very important for the implementation of AP in Montenegro.

The most important type of disturbance in Amvrakikos gulf are anthropogenic – i.e. people approaching near the breeding islands of pelicans. By the term people we mean:

- i. lay fishermen (who do not belong to the local lagoon cooperative) who approach either because they cut reeds or other vegetation for their fishing activities. This accounts for few instances during the year. There are also the fishermen of the cooperative (who exploit regularly the lagoons) and they visit the islands “just to check how the birds are, if they have eggs and if chicks have hatched”. These are the main reasons that have been identified since 1987 in Amvrakikos.
- ii. Tourists or journalists who hire some local fisherman to take them near the island and shoot pictures (e.g. for a magazine/ newspaper article). This kind of disturbance is the most dangerous, as these people have no knowledge of the birds biology and behaviour and they remain too long to “get the right frame”.
- iii. Hunters often cause disturbance at breeding islands during winter within the protected zones, at a time when DP pair formation is taking place. They hunt ducks often at the vicinity of the islands. Although they have seldom shot birds, mainly in the past, they indirectly influence the

choice (or abandonment) of a breeding site early in the season.

During our visit of this site on September 29th, we have observed intensive fishing activities of local fishermen and heard few gun shots by illegal hunting activities.

In order to face and solve the above problems, conservationist at the Amvrakikos gulf have conducted the following measures:

- i. Lay fishermen were informed in person, during field work, and through the years they have become sensitized.
- ii. Tourist/journalists are very hard to handle, sometimes it was necessary to contact the Ministry for Agriculture (which has the responsibility to control illegal activities in protected areas) and report the journalists intentions in order to stop them. Under Greek Law for the Environment (1986) it is forbidden to undertake recreation activities in core areas. Hence a special permit must be issued if one wants to conduct research or (perhaps) shoot a documentary. The Management Body of the protected site controls/deters through wardening such activities and permits them only if the permission has been given from the Central Government. If the site (or the breeding islands) does not come under some kind of a protection shield, it is almost impossible to impose prohibitions and control public access.
- iii. Hunters are also a difficult target group. The forestry service is responsible to control hunting in the core protected area. This has not been very effective in Amvrakikos, because the personnel is not sufficient, and hunting takes place during weekends, when the forestry service is not operating! Since early 2008, the Management Body of Amvrakikos has hired 6 wardens who patrol every day, on changing shifts, the entire area and report illegal activities to the Management Body.

4.3 Kastoria lake

IBA Criteria A1, A4i, B1i, B2, C1, C2, C3, C6

We took the opportunity and visited another important DP site in W part of Greece on our way from Amvrakikos Gulf to Mikri Prespa. We stopped at the lake for a couple of hours on September 29th. We recorded 6 DP on lake on that day. Part of the lake is urbanized since the town of Kastoria lies on the lake shores. Pelicans are recorded regularly on the lake during non breeding period in groups of 50-100 birds (BirdLife International 2008).



Figure 8. Dalmatian Pelicans on Kastoria Lake. Photo: B.Rubinić.

5. The status of Dalmatian Pelican population in Albania

For the use of protection of DP in Albania an Action Plan has been proposed but implementation did not start until now (Bino 2000).

There are two most important sites for Dalmatian Pelican in Albania: Karavasta and Narta lagoons.

5.1 Karavasta

IBA criteria: A1, A4i, A4iii, B1i, B2

5.1.1 Karavasta lagoon statuses of protection

- part of IBA covered by National Park (Divjaka, 1.250 ha)
- part of IBA covered by Game Reserve (4.200 ha)
- part of IBA covered by Ramsar Site (Karavasta Lagoon; 20,000 ha)(BirdLife International 2008).

5.1.2 General description

Karavasta is the largest wetland in Albania with the Karavasta lagoon forming the largest part of the complex. The lagoon is shielded from the sea by a sandy bar (Divjaka) covered with pine forest dominated by *Pinus pinaster* and *P. pinea*. Karavasta comprises a shallow inner lagoon, and a smaller outer lagoon. The inner lagoon has many peninsulas and small, low islands with muddy shores and some areas of bare sand. A sandy bar covered by pines separates the two lagoons. In the inner lagoon only artisanal fishery is practiced, but in the outer one there are more intensive fisheries (BirdLife International 2008).



Figure 9: Karavasta Lagoon. Photo: B.Rubinić.

5.1.3 Dalmatian Pelicans in Karavasta

In 2002 19 BP of Dalmatian Pelicans have breed in Karavasta lagoon. Since then no published records exist on DP nesting population data at this locality. Tour de Valat biological station has ceased color ringing program in 2002 due to intensive disturbance by hunters and life threats to the researchers conducting the ringing program.

During our visit on September 27th 33 pelicans have been registered of which one was feeding not more than 50 m away from a fishing boat. Irrespective to that it was obvious even during our short visit that disturbance is a big problem in Karavasta. We have noticed a large number of fishermen, hunting activity was obvious by the big number of empty hunting cartridges found on the ground and by a number of gun shots we have heard during our visit.

Karavasta is also an important resting and non breeding site for DP. In 1996 up to 62 resident birds have been counted and in the same year up to 171 birds have been counted wintering in the lagoon (BirdLife International 2008).

5.2 Narta lagoon/Vlora Salina

IBA criteria: B2

5.2.1 Narta lagoon/Vlora Salina statuses of protection

Narta lagoon and Vlora Salina are parts of an extensive 35.000 ha large Vlora Bay, Karaburun peninsula and Cika mountain IBA. Although of great importance for waterbirds this site has not yet been properly internationally evaluated and hence the IBA criteria only refer to Golden Eagle populations in surrounding hills of Karaburun peninsula and Cika mountain. It is obvious that IBA status of this areas, needs to be reconsidered, especially for the marshy areas of Narta lagoon and Vlora salina.

Areas, including the whole IBA have no legal protection status.

5.2.2 General description

Narta lagoon and Vlora salt pans are a uniform system of brackish lagoon close to the SW Albanian coastal town of Vlorë. This marshland is second in size in Albania, similar in size and habitats with Karavasta lagoon which lies only some 30 km to the North. One half of the lagoon is transformed into salt pans which is still active. Salina is filled by the sea water which is spread over salina pools.



Figure 10: Narta lagoon with flamingos and fishermen. Photo: B.Rubinić.

5.2.3 Dalmatian Pelicans in Narta lagoon and Vlora salina

There is very little data about birds from this site. The lagoon, salt-pans complex is known to hold significant breeding shorebird and seabird populations. Pelicans of both species (Dalmatian and white) are thought to occur on Narta/ Vlore salina regularly (Mima et al. 2003, Bino pers. com.). During our visit 32 pelicans have been observed, of which 2 white and 30 Dalmatian.

Pelicans we observed seemed quite vary and flew away when approached to not less than 200 m. After they were being flushed, the flock of pelicans remained in thermals, circling above lagoon, for about half an hour and subsequently landed on salina again. Presence of fishermen and hunters which we saw during the visit, together with vary pelican behavior suggested that disturbance might be an important issue at the very site.

5.3 Velipoja lagoon

IBA criteria: A1

5.3.1 Velipoja lagoon statuses of protection

- marine reserve
- part of IBA is Velipoja Game Reserve (694 ha)
- Ramsar site

5.3.2 General description

The site includes two coastal areas: the Viluni (or Velipoja lagoon) (390 ha) and surrounding Velipoja Game Reserve (694 ha); and the inland Dumit wetland (Keneta e Dumit) comprising a large reedbed. Viluni lagoon is a large, shallow coastal lagoon at the feet of a rocky and forested mountain area (Bregulbunes mountains). The surrounding marshes and the Dumit wetland are drained by a channel. Sand-dunes, beaches and small brackish pools are found along the coastline, while along the Buna river and its delta (to the north and within the IBA) there is riparian deciduous woodland. The main land-uses are hunting, fishing, agriculture and tourism.



Figure 11: Velipoja marshland. Photo: D.Saveljić.

5.3.3 Dalmatian Pelicans at Velipoja lagoon

Velipoja lagoon is less than 10 km away from Ulcinj salina, the most important DP wintering site in Montenegro. Pelicans use both marshlands in seasonal and also daily movements. Different pelican

activities between the two sites are particularly obvious in winter months. Specially during winter Velipoja is an important hunting ground for local and foreign (specially Italian) hunters. Salina then serves as a refugee zone, whereas in quiet periods Velipoja has also foraging and resting potential for up to 100 DP that winter in this area.

Velipoja, although Ramsar site and partly a protected area, still suffers from great hunting pressure, specially intensive in winter months.

6. Links between Dalmatian Pelicans in Montenegro with populations in the region

Until first color ringing reading results in 2005 the origin of birds occurring at Ulcinj salina in winter months remained completely unclear. Where do up to 100 birds occurring in a single day in salina come from, is the colony at Skadar lake mixing with birds from other sites in the region, where do large flocks of DP that come to salina frightened by hunter's gun shots from Velipoja come from since there are only up to 19 BP nesting in Karavasta, the only Albanian colony? Some of the questions like those were answered after a single colour ringing reading of a flock of pelicans resting in Ulcinj salina in October 2005 took place by the authors of this text. 9 rings were read and data was sent to the IUCN's Committee for pelicans chairman, Dr Alain Crivelli, who coordinates the whole DP color ringing programme.

The very results which indicated that the DP originated from Karavasta and Amvrakikos were responsible to encourage the authors of AP and this text to start with intensive networking of all the existing experts and DP important sites in the region to get a more complete knowledge about the population condition of the species and their movements through the region.

Due to the lack of sufficient analysis it remains largely speculative that Skadar lake DP population rarely mixes with other populations in the region. Lack of ringing programme in past decades as an example of monitoring method for this species disables in great deal any serious analysis of their movements through the region. It is obvious that due to the very low breeding success in past years the colony of DP on Skadar lake acts as a sink population and we could assume that the population will remain to struggle at the edge of the existence or even stop existing if AP implementation does not start.

Ulcinj Salina is a wintering site and a resting stopover after breeding period for DP in region. Figures from past few IWC (International waterbird census) confirm that Ulcinj salina is the most important wintering site for the species in E part of Adriatic. Still more, facts that DP nested in what is now Ulcinj salina and that a very place in a wintering site for many DP from the region encourages us to think of a possibility that species could once again become a breeder of this extensive wetland. AP should stimulate this possibility through certain activities such as artificial nesting site building and increase the possibility that increase of the closely linked populations from Amvrakikos (and possibly Mikri Prespa) might in near future result in new breeding site for DP in Montenegro.

6.1 Regional cooperation

For an effective protection of DP in Montenegro and exchange of experience about the status and trends of species' population in the region, especially in Albania and Montenegro, constant cooperation between institutions and experts from the region is of vital importance.

Data exchange on birds of Skadar lake, including DP, has already been intensified in 2008 with Taulant Bino with whom a monitoring of the birds of Skadar lake (both MN and AI part of the lake) have been conducted. This was a first transborder monitoring scheme in MN which already proved to be very useful and successful.

With the very launch of cooperation between MN and colleagues from Amvrakikos and Mikri Prespa in Greece during this trip in September/October 2008 common willingness and interest for unified work on conservation of DP in region has been defined (See section 6).

Furthermore, we have to thank Dr Alain Crivelli, president of the World Committee by IUCN for pelicans, working for Biological Station Tour du Valat in France.

Dionissya Hatzilacou and Darko Saveljić are members of the same Committee by IUCN.

7. Joint activities

When asked upon, our colleagues from Albania and Greece have expressed special intention and willingness to help in implementation of the AP for Montenegro in the following actions:

- Establish and enhance co-operation with biodiversity conservation authorities. Cooperation among scientific institutions of both countries should be enlarged on the protection of biodiversity in key wetlands, especially in trans-border sites. Promote joint / team work and information exchange. Improve co-operation between NGOs from both countries.
- Technical design and construction of the artificial structures appropriate for the nesting of Dalmatian Pelican
- Provide training for members of biodiversity conservation orientated NGOs on environmental education, conservation and management of birds, wildlife in general and wetlands
- Establish a non-intrusion zone around the existing colony and potential new colonies at Skadar lake
- Monitor dead Pelicans and identify the causes of death.
- Undertake public awareness campaigns with hunters, fishermen, local communities, tourist agencies and officials involved in the Dalmatian Pelican conservation.

Establishment of joint cooperation and platform for all the subsequent activities can be a warranty for successful implementation of the AP in MN which automatically means better chances for the survival of this species on our Planet, stability of population in the region and even eventual areal expansion to the sites and possibly countries (Dalmatia (in Croatia) – Dalmatian Pelican!) where this species has once been a breeder but has been extinct for a long time.

Implementation of this Action Plan can also be of a great encouragement for Albania which has its own AP ever since 2000 (Bino 2000) but has not yet started with its implementation.

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Apenndix I Report on color ringing of Dalmatian Pelicans on Skadar lake, Montenegro in 2008

Status of Dalmatian Pelican *Pelecanus crispus* population in Montenegro in breeding season 2008

1st. *Intermediate report, August 2008.*

Preface

Conservation status of Dalmatian Pelican *Pelecanus crispus* is according to **IUCN Red List Category 2008** (as evaluated by BirdLife International - the official Red List Authority for birds for IUCN): **Vulnerable.**

Dalmatian Pelicans' global population is estimated to 10.400-13.900 birds and at present species trend is decreasing. Dalmatian Pelicans breed in Eastern Europe and Central Asia: in Montenegro, Albania, Greece, Romania, Bulgaria, Russia, Azerbaijan, Turkey, Ukraine, Mongolia, Iran, Turkmenistan, Uzbekistan and Kazakhstan. European breeders winter in the eastern Mediterranean countries, Russian and central Asian breeders in Iran, Iraq and the Indian subcontinent, and Mongolian birds along the east coast of China.

The majority of birds breed in the countries of the former Soviet Union (2,700-3,500 pairs), although the largest colony is at Lake Mikri Prespa, Greece, with nearly 1,000 breeding pairs. There are also around 450 pairs in the Danube Delta (Romania and Ukraine).

Conservation in Montenegro

Due to persistent population decrease at global level, in 1996 EU set the Action Plan for Dalmatian Pelican. Measures were taken at Mikri Prespa. In very short time Mikri Prespa became the most important breeding place for the species with biggest breeding colony in the World.

As the westernmost breeding place of the species, Montenegro, being also one of the countries interested in conservation of Dalmatian Pelican, recently got the AP for the very species.

Species' population status in Montenegro

In Montenegro the only breeding area of Dalmatian Pelican is Skadar Lake, whereas the species winters on regular basis also on two other localities, Šasko Lake and Ulcinj Salina.

First breeding records at Skadar Lake are from the end of 19th Century when the species was still breeding also at Zogaj Mud (nowadays Ulcinj salina). Probably ever since then the population of Dalmatian Pelican is at the verge of extinction in Montenegro. This statement can be supported by a large number of recorded unsuccessful breeding attempts (see Tab.1) mainly caused by nest flooding, predation and disturbance.

2008 Breeding season in Montenegro

Unfortunately the nesting of Dalmatian Pelican on Skadar lake was once again unsuccessful also this year. In February 2008 some ten pairs in breeding plumage were observed on lake. During May some nests with eggs were found in Pančeva oka ornithological reserve at the lake. Since Dalmatian Pelicans usually start with egg laying already in February, eggs found in May were most probably their second brood, indicating their first breeding attempt was not successful. Unfortunately unusually heavy rainfall in spring 2008 was followed with storms that obviously resulted in destruction of pelican's second brood and nest site abandonment. Subsequent visits of the colony in June and July showed there were no pelicans at the colony. The colony had produced no young birds in 2008.

It is, however, worth mentioning that the NP Skadar Lake Management did a considerable step forward in Dalmatian Pelican conservation on the lake. Above all, the Management assured better protection (boat access regulation/prohibition) of the Pančeva oka reserve, where usually the nesting colony of pelicans is located.

For the pelican ringing requirements at the end of May 2008 150 orange plastic rings were provided by the chairman of IUCN Committee for pelicans, Dr Alain Crivelli (one of the authors, Darko Saveljić, is a member of the same Committee) from the Biological Station Tour Du Valat, France. The rings were however not used since there were no young birds at the lake this year as reported.
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Conclusion

Although the unsuccessfulness of the nesting in 2008 was probably (at least for the second attempt; pelicans are not frequently visited at the colony not to be disturbed, so the reasons for the failure of success with the first breeding attempt remain uncertain) caused by natural rather than human factors, we believe the implementation of AP for Dalmatian Pelican in Montenegro is vital for the survival of this Globally threatened species in our country. We strongly believe solutions such of those implemented in Mikri Prespa (breeding rafts, better protection of breeding colonies from human and avian disturbance etc.) could very much improve the situation of the species in Montenegro. For an old and struggling population that most of the time presents a sink population that might be the last chance for survival.

Report set by

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Apenndix 2 Itinerary of a study tour September 25th to October 3rd 2008.

During September 25th and October 3rd Darko Saveljić (DS) and Borut Rubinić (BR) visited 5 most important sites for Dalmatian Pelican in W Balkans. During the trip we organized meetings and brainstorming with three specialist for Dalmatian Pelican in Albania and Greece. Below you will find the summary of our activities between September 25th and October 3rd:

Days 1 and 2 (2008/09/24-25): Ljubljana –Dubrovnik – Podgorica

Travel to Podgorica and final arrangements for the visit.

Day 3 (2008/09/26): Podgorica (Montenegro) – Tirana (Albania)

At the evening we met Mr. Taulant Bino, a leading Albanian ornithologist, ministerial adviser by the Ministry of ecology of Albania. We had an intensive three-hour meeting with Mr. Bino during which he informed us about the problems and challenges Albania is facing in protection of the only Dalmatian Pelican breeding site, the Karavasta lagoon. He also directed us to visit another important area, where pelicans occur during non-breeding period – the Narta lagoon and Vlora salinas on S Albanian coast.

Day 4 (2008/09/27): Tirana – Karavasta - Vlore – Narta lagoon and salt pans

We visited Karavasta lagoon, the only breeding place for pelicans in Albania (10-20 pairs in recent years). During half-day visit we could observe 32 Dalmatian Pelicans a couple of which were hunting (fishing) not more than 100 m from a fishing boat. That confirmed Taulant Bino's comments that hunters don't (or rarely) shoot at pelicans. Cartridges were however very numerous and seems human pressure (disturbance) is a main threat factor in this lagoon. The lagoon is (what was obvious from our observations) heavily used by fishermen, hunters, mariculture, recreation (holiday camp site and "recreation" zones are very close to the lagoon). Some new infrastructure (new house in the salt-marsh zone) is also obvious which might pose a serious threat in near future.

In the evening of the same day we managed to visit Narta lagoon and Vlore salinas. Here we observed 30 Dalmatian and 2 White Pelicans. After coming at 200-300 m of distance to the flock which was resting at the salt pans, the pelicans flew away and lifted very high in the sky (500 to 1000 m). We observed the same flock about an hour later in Narta lagoon, resting on a dike. In Narta we also observed ca. 170 flamingos and a few hundred shorebirds (ruff was a dominant species, redshanks, greenshanks, dunlins etc.). We observed four hunters and few fishermen but in comparison to Karavasta human pressure here looked less intensive.

Day 5 (2008/09/28): Vlore – Arta (Greece)

We spent this whole day (>10 hours) for driving from Vlore to Arta, a town close to Amvrakikos Gulf. We met Mrs. Dionyssia Hatzilacou in Arta at that evening. We had a long and thorough discussion about her work in Amvrakikos gulf, status of Dalmatian Pelican population, threats, problems and successes in Amvrakikos.

Day 6 (2008/09/29): Amvrakikos Gulf – Grevena

We spent the whole morning in Amvrakikos Gulf under guidance of Mrs. Hatzilacou. Amvrakikos gulf is the most important breeding site for Dalmatian Pelican in E Adriatic/Ionian coast. The colour ringing recoveries data from Montenegro (e.g. Ulcinj Salinas) and Albania suggest that birds from that colony move northwards all the way to Montenegro on regular basis. The importance of Amvrakikos population follows from the fact that its size has grown from 20 pairs in nineties to 120 pairs at present. The colony

is very likely a source population for all other sites at E Adriatic/Ionian coast. The extensive information about the site and pelican population and excellent cooperation basis with main specialist for this site, Mrs. Hatzilacou, was extremely valuable part of our trip.

In the afternoon we drove towards Mikri and Megali Prespa Lakes on Macedonian border and reached to the town of Grevena on two thirds of the way.

Day 7 (2008/09/30): Grevena – Prespa lakes

We reached Prespa lakes only in the late afternoon due to long drive from Grevena. Hence we could not meet Mrs. Malakou as it was previously planned. We visited few most important sites of both Mikri and Megali Prespa lakes – Mikrolimni, Agios Achileos, Psarades... The sum number of observed Dalmatian Pelicans was very low – just about 15 birds on both lakes. Mrs. Malakou explained us that lakes are located at a high altitude and usually get frozen in the winter. Pelicans leave the lakes in early autumn and move mostly to East, to lake Kerkini and wetlands of Thrace.

Day 8 (2008/10/01): Prespa lakes

We visited information centre of the Society for the protection of Prespa in Agios Germanos in the morning. Unfortunately Mrs. Myrsini Malakou had another meeting the same day and we could not meet her even after we made another appointment in Florina on the afternoon of the same day. The problem was we were late because of long distance from Grevena the day before when we had appointment.

Mrs. Malakou agreed she will answer a questionnaire we will prepare subsequently and send it by e-mail to her. We had a look at the office of the Society for the protection of Prespa in Agios Germanos and Information Centre in the same village.

Days 9 to 10 (2008/10/01-03): Prespa lakes – Bitola (Macedonia) – Skopje – Niš (Serbia) – Ljubljana and Podgorica

Preparation of the reports and travel back to home.

TOTAL: 3.500 km, 8 overnights, 7 W Balkan countries

Apenndix 3 Read color rings on Dalmation Pelicans at Ulcinj salina on October the 4/5 2005

<i>Pelecanus crispus</i> juv		
No	Orange, legged left	Orange, legged right
	Y345	Y346

<i>Pelecanus crispus</i> ad		
No.	Orange, legged left	Orange, legged right
	Y552	Y551

<i>Pelecanus crispus</i>		
No.	Orange, legged left	Orange, legged right
	Y562	Y599

<i>Pelecanus crispus</i> juv		
No.	Orange, legged left	Orange, legged right
	No ring	Y428

<i>Pelecanus crispus</i> ad		
No.	Yellow, legged leftt	Yellow, legged right
	C557	C693

<i>Pelecanus crispus</i> subad		
No.	Orange, legged left	Orange, legged right
	Y575	Y576

<i>Pelecanus crispus</i> juv		
No.	Orange, legged left	Orange, legged right
	Y447	No ring

<i>Pelecanus crispus</i> juv		
No.	Yellow, legged leftt	Yellow, legged right
	C853	C854

<i>Pelecanus crispus</i> ad		
No.	Orange, legged left	Orange, legged right
	?	Y430

Appendix 4 European IBA Criteria

Twenty IBA criteria have been developed for the selection of IBAs in Europe. These allow the identification of IBAs, based on a site's **international** importance for:

- Threatened bird species
- Congregatory bird species
- Assemblages of restricted-range bird species
- Assemblages of biome-restricted bird species

Criteria have been developed such that, by applying different ('staggered') numerical thresholds, the international importance of a site for a species may be categorized at three distinct geographical levels:

- Global ('A' criteria)
- European ('B' criteria)
- European Union ('C' criteria)

A: Global

A1. Species of global conservation concern

The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.

A2. Restricted-range species

The site is known or thought to hold a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).

A3. Biome-restricted species

The site is known or thought to hold a significant assemblage of the species whose breeding distributions are largely or wholly confined to one biome.

A4. Congregations

- The site is known or thought to hold, on a regular basis, $\geq 1\%$ of a biogeographic population of a congregatory waterbird species.
- The site is known or thought to hold, on a regular basis, $\geq 1\%$ of the global population of a congregatory seabird or terrestrial species.
- The site is known or thought to hold, on a regular basis, $\geq 20,000$ waterbirds or $\geq 10,000$ pairs of seabird of one or more species.
- The site is known or thought to be a 'bottleneck' site where at least 20,000 storks (Ciconiidae), raptors (Accipitriformes and Falconiformes) or cranes (Gruidae) regularly pass during spring or autumn migration.

B: European

B1. Congregations

- The site is known or thought to hold $\geq 1\%$ of a flyway or other distinct population of a waterbird species.
- The site is known or thought to hold $\geq 1\%$ of a distinct population of a seabird species.
- The site is known or thought to hold $\geq 1\%$ of a flyway or other distinct population of other congregatory species.
- The site is a 'bottleneck' site where over 5,000 storks, or over 3,000 raptors or cranes regularly pass on spring or autumn migration.

B2. Species with an unfavourable conservation status in Europe

The site is one of the 'n' most important in the country for a species with an unfavourable conservation status in Europe (SPEC 2, 3) and for which the site-protection approach is thought to be appropriate.

B3. Species with a favourable conservation status in Europe

The site is one of the 'n' most important in the country for a species with a favourable conservation status in Europe but concentrated in Europe (SPEC 4) and for which the site-protection approach is thought to be appropriate.

C: European Union

C1. Species of global conservation concern

The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.

C2. Concentrations of a species threatened at the European Union level

The site is known to regularly hold at least 1% of a flyway population or of the EU population of a species threatened at the EU level (listed on Annex I and referred to in Article 4.1 of the EC Birds Directive).

C3. Congregations of migratory species not threatened at the EU level

The site is known to regularly hold at least 1% of a flyway population of a migratory species not considered threatened at the EU level (as referred to in Article 4.2 of the EC Birds Directive) (not listed on Annex I).

C4. Congregatory – large congregations

The site is known to regularly hold at least 20,000 migratory waterbirds and/or 10,000 pairs of migratory seabirds of one or more species.

C5. Congregatory – bottleneck sites

The site is a 'bottleneck' site where at least 5,000 storks (Ciconiidae) and/or at least 3,000 raptors (Accipitriformes and Falconiformes) and/or 3,000 cranes (Gruidae) regularly pass on spring or autumn migration.

C6. Species threatened at the European Union level

The site is one of the five most important in the European region (NUTS region) in question for a species or subspecies considered threatened in the European Union (i.e. listed in Annex I of the EC Birds Directive).

C7. Other ornithological criteria

The site has been designated as a Special Protection Area (SPA) or selected as a candidate SPA based on ornithological criteria (similar to but not equal to C1–C6) in recognized use for identifying SPAs.