

ACTION PLAN FOR THE DALMATIAN PELICAN IN MONTENEGRO

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Reviews

This action plan should be reviewed and updated every five years. An emergency review will be undertaken if sudden major environmental changes, liable to affect the individuals occurring in the Montenegrin wetlands.

Geographical scope

This action plan needs to be implemented in Montenegro

Threats and limiting factors

1. Disturbance - **high**
2. Nest destruction and shooting - **low**
3. Disruption of functioning of the fishery and hunting enterprises - **critical**
4. Habitat degradation in breeding and wintering areas - **low**
5. Contamination by heavy metals and pesticides - **unknown**
6. Climatic changes - **unknown**

Conservation priorities

General Description

1. Introduction

The Dalmatian Pelican *Pelecanus crispus* is classified by IUCN as Globally Threatened in the Category Lesser Risk/conservation dependent (Hilton-Taylor 2000). It was formerly listed as Vulnerable owing to its small and declining population. At European level it is still considered as Vulnerable (Tucker & Heath 1994). 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 15,000 and 20,000 individuals. (Hatzilacou 1993 and Crivelli et al. 1997 in BirdLife International 2002). Newest estimates of nesting population are between 4031 and 5196 pairs (Crivelli et al. 2000, Wetlands International 2002). Only about 10 % of the population nests in the Mediterranean region: 15-20 pairs in Albania, 7 pairs in Montenegro, 250 pairs in Greece and 120 pairs in Turkey (Hoffman et al. 1996). The Mediterranean population is however considered to be stable (Perennou et al. 2000).

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. Nevertheless the regulation is not fully implemented and the existence of the last colony is now under high risk. From more than 50 breeding pairs in the 70' now Montenegro shelters not more than 7 nesting couples (Rubinič, Saveljić & Vizi, in prep. 2004). This large reduction calls for a very urgent Action Plan. The AP will identify the main threats and the main actions to be undertaken in order to enhance the population of the species and to restore some of the degraded habitats.

2. Background information

2.1. Distribution

The Dalmatian Pelican is a colonial waterbird that breeds in Montenegro. Most of the data reported by different authors concern nesting birds. The only breeding place of Dalmatian Pelican in Montenegro is now Skadar lake. Until the end of 19th century the species bred in Zogajsko blato that was transformed into Ulcinj saltpans in 30'es.

First records on occurrence of Dalmatian Pelican at Skadar Lake are published by Brusina in 1891. Brusina only records species' presence on the lake. In 1894 in Hum bay (now an ornithological reserve Pančeva oka) 39 pairs are recorded building nests (Führer 1894). Most probably an error occurred when this work was printed. As Führer explains he took eggs from 15 nests, living eggs from remaining 14 nests untouched, the total number of nests was

actually 29. Remaining nests were later destroyed by flooding (Führer 1894). In 1896 a colony of 20 pairs is recorded in 1896 (Reiser & Führer 1896).

After Reiser and Führer detailed research of birds from Skadar lake is missing completely and records on pelican's occurrence are lacking.

Only in 1965 42 pelicans are recorded in the mating season on the same place they were breeding at the end of 19th century (Ivanović 1970). The author detects colony disturbance by hunters.

Intensive research on Dalmatian Pelican begins by Vizi in 1972.

In May 1972 he visits the colony for the first time and records 20 nests with 16 to 18 young birds. He continues research in subsequent years and records severe disturbance by predators and flooding (Vizi 1975).

The original colony is displaced because of human disturbance in 1975 and exists until 1990 mainly on another place, Crni žar – a peat island, situated about 1500 m to the South (Vizi 1979).

Until 1977 when it reached its maximum of 52 pairs the number of nesting pelicans had been increasing gradually. In 1978 colony had once more been destroyed by high water level (Vizi 1979). During 80-ies pelicans were mainly nesting both on Crni žar as well as on Pančeva oka.

Number of successfully fledged young pelicans was continuously low, although disturbances were not recorded (Vizi, pers. comm.). In 1990 21 pairs were recorded on Crni žar but all the eggs and a young bird were later destroyed by hail (Vizi, pers. comm.).

During 1991 and 1992 colony was situated on a stone island Grmožur. Continuous disturbance by tourists resulted in complete abundance 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 sport plane on the height of 300 feet over 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).

Figure 1. Number of nesting Dalmatian Pelicans on Skadar lake from 1894 to 2003 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).(Rubinič, Saveljić & Vizi, in prep. 2004).

Year	N. of pairs/ nests	N. of youngs	Breeding success	Type of disturbance ¹	Nesting location	Reference
1894	39(29)	-	-	E, F	Pančeva oka	FÜHRER 1894
1896	20	-	-		Pančeva oka	REISER & FÜHRER 1896
1965	21	-	-	H	Pančeva oka	IVANOVIĆ 1970
1967	30	-	-		-	TERRASSE ET AL. 1969
1972	20	16-18	0,8-0,9		Pančeva oka	VIZI 1975
1973	24	18	0,75		Pančeva oka	VIZI 1975
1974*	16	0	0	P	Pančeva oka	VIZI 1975
1975	29	11	0,38		Crni žar	VIZI 1979
1977	52	46	0,88		Crni žar	VIZI 1979
1978*	-	0	0	F	Crni žar	VIZI 1979
1979	-	3	?		-	VIZI 1979
1983	11	6	0,55		Crni žar, Pančeva oka	VIZI, pers. com.
1984	11	5	0,45		Crni žar, Pančeva oka	VIZI, pers. com.
1986	8	9	1,13		Crni žar	VIZI, pers. com.
1987	14	19	1,36		Crni žar	VIZI, pers. com.
1989	29	7	0,24		Crni žar	VIZI, pers. com.
1990*	21	0	0	G	Crni žar	VIZI, pers. com.
1991	7	2	0,29	T	Grmozur	VIZI 1991, VIZI 1995
1992	15	11	0,73	T	Grmozur	VIZI 1995
2002	5	2	0,4		Pančeva oka	This work
2003	7	10	1,43		Pančeva oka	This work
Average (SD)	19 (±11,7)	9,8 (±11,2)				

3. Life history

3.1. Breeding

Breeding colonies of the Dalmatian Pelican in Montenegro are located only on Skadar lake. Dalmatian Pelicans have bred on three ecologically different places inside 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 11 m deep layers of Sphagnum peat-bog. The complex spreads along N coast of lake from Morača river to Albanian border and covers an area of about 5 km².

Pančeva oka is a complex of hardly-accessible floating peat-bog rafts, freshwater pools and thick Salic vegetation. Among other vegetation *Salix alba*, *S.fragilis*, *Typha angustifolia*, *T.latyfolia* are found there. Pelican's colony is situated on a floating raft 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 bigger pool and not far from open water (Rubinič, Saveljić & Vizi, in prep. 2004).

Second locality where pelicans' nests were found is Crni žar. The area covers few km² and lies south to the Pančeva oka. This is a complex of mostly live floating vegetation most of which is formed by *Nuphar luteum*, *Nymphaea alba*, *Phragmites australis*, *Trappa 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 a raft of dead vegetation, surrounded with the colony of Common *Sterna hirundo* and Wiskered Terns *Chlidonias hybrida* and few other non-colony nesting species of waterbirds (Rubinič, Saveljić & Vizi, in prep. 2004).

Third locality where pelicans were found nesting in years 1991 and 92 is Grmožur island. The rocky island is found close to NW coast of the lake, between Virpazar and Seoca settlements. The island is not more than few hectares big, mostly bare. Vegetation, present mostly on highest points of the island, consists of few *Ficus carica*, *Punica granatum* and *Vitex agnus-castis*. Pelicans' nests were situated close to the water, only few meters from the coast (Rubinič, Saveljić & Vizi, in prep. 2004).

3.2. Wintering and passage

The main winter quarters of the Dalmatian Pelican are located in coastal areas of the Mediterranean and Caspian Seas as well as the Persian Gulf (Crivelli 1994). In Montenegro the most important wintering and passage sites are Ulcinj salt-pans, Skadar lake and Šasko lake (Saveljić & Rubinič, in prep. 2004).

The number of wintering individuals in Ulcinj salt-pans is between 5 and 20 individuals with the maximum of 56 individuals, registered on November the 14th 2003 (Saveljić & Rubinič, in prep. 2004)

3.3. Feeding

The adult of a Dalmatian Pelican eat only fish and feed alone or in groups (Crivelli *et al.* 1991). The composition of its diet has been studied in details at the colony of Skadar lake

(Vizi 1981). Rudds (*Scardinius erythrophthalmus*) and Rovellas (*Rutilus rubilio*) were the main prey. Other species including Eel (*Anguilla anguilla*) and Gibel (*Carassius auratus gibelio*) were also consumed.

The chicks' diet is a bit different from the adults. At least during first days of their life, chicks are fed with shrimps (Bino *pers. obs.*). The diet changes with the age of the chick. Small size eels and mullet become predominant after 1-2 weeks from hatching. After that period the diet becomes similar with that of the adults.

3.4. Habitat requirements

The Dalmatian Pelican needs safe breeding and roosting sites. Those sites are surrounded with water and thus totally isolated from the mainland in order to avoid predators (Fox, Pine Marten, Jackal, Ferral Dogs and Ferral Cats) as well as human intruders (Crivelli 1994). The absence of adequate roosting sites and heavy disturbance prevent pelicans using an area at any time of the year.

The hydrological regime and natural changes of the wetlands are further key factors in successful feeding and breeding. Flood effects on Skadar lake vipped off the pelican's nests several times and completely reduced the breeding success (Rubinič, Saveljić & Vizi, in prep. 2004).

4. Threats and limiting factors

4.1. Disturbance, nest destruction and shooting

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5. Conservation status and recent conservation measures

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Justification

Republic of Montenegro / State Union Serbia and Montenegro is contracting party for International Conventions that are defining the Conservation status of Dalmatian Pelican as a Globally Threatened Species. Montenegro just started process of the preparation of its own Biodiversity Strategy and Action Plan that should include certain measures devoted to conservation of endangered / threatened species such as Dalmatian Pelican. On the other

hand, Dalmatian Pelican is well known symbol of conservation efforts in Montenegro, which was applied on of the National Park “Skadar Lake” logo. Consequently, this Action Plan, as a national priority, will improve the conservation status of the species at Skadar Lake and neighboring sites as well.

Targets

This Action Plan has three goals of different time-scale: short, medium and long-term. For each goal are foreseen management objectives whose fulfillment would need a set of described actions.

The Action Plan aims

1. In the short term to prevent the further decline of the species below the level of 2003 in the population size of the Dalmatian Pelican
2. In the short term to maintain the present breeding and wintering distribution range of the species.
3. In the medium to long term to increase the population size of the Dalmatian Pelican to a level at which it no longer qualifies as Endangered species in Montenegro

The aim and generic objectives are grouped under four headings:

- Improve the policy and legislation
- Ensure the species and habitat protection
- Undertake monitoring and research
- Raise public awareness

Each objective has been derived into a series of actions followed by a brief description. Each action is given a priority rating and time-scale during which the action should be carried out.

Four categories of priorities are used:

- essential : an action that is needed to prevent a large decline in the population which would lead to the species extinction;
- high : an action that is needed to prevent a decline of more than 20% of the population in 20 years or less;
- medium : an action that is needed to prevent a decline of less than 20% of the population in 20 years or less;

- low : an action that is needed to prevent local population declines or which is likely to have only a small impact on the population across the range

Time-scale is classified in five categories:

- Immediate : completed within the next year
- Short : completed within the next 1-3 years
- Medium : completed within the next 1-5 years
- Long : completed within the next 1-10 years
- Ongoing : an action that is currently being implemented and should continue

1. Policy and legislation

1.1. *Improve and Implement Legislation*

Activities:

- Ensure strict control regime over the ornithological reserve "Panceva oka" (Skadar lake) which is breeding place for Dalmatian Pelican. Access to the site shouldn't be allowed for fishermen.
- Promote the protection of Dalmatian Pelican into designated areas of Ulcinj salt-pans and Šasko Lake.
- Promote a ban on burning reedbeds on key sites

Priority: essential

Responsibility : Public Enterprise National Parks of Montenegro (PENP) - National Park Skadar Lake, Institute for the Protection of Nature (INP), Ministry of Environment (MOE)

Stake-holders : PENP, INP, MOE, local communities, municipalities Podgorica and Ulcinj, local NGOs, scientific institutions, etc.

Time-scale: immediate

1.2. *Promote sustainable development in wetlands*

An integrated approach to the conservation of wetlands should be promoted which will also benefit the conservation of other species. Such an approach will need to address the protection of sites from development, pollution, changes in the hydrological regime, tourism and fishing policy etc. The welfare of local people should be taken in account. The involvement of local communities in conservation and management is of critical importance.

Activities:

- Promote the zonation of "Panceva oka" ornithological reserve (Skadar lake) to be used as the successful conservation model for further replication of the protection of Dalmatian Pelican on its breeding places in Montenegro
- Promote "Panceva oka" sustainable tourism development model (outside of the core area) on other key sites for the Dalmatian Pelican (Šasko lake, Ulcinj salt-pans) as ecotourism and naturalistic tourism
- Zoning of Skadar lake (nest site)

Priority : essential

Responsibility : PENP, Institute Ornithologica Balcanica IOB, MOE, INP

Stake-holders: PENP, MOE, INP, Touristic organization of Montenegro (TOM), local communities and local NGOs

Time-scale: short/ongoing

1.3. Strengthen the International cooperation

Activities:

- Establish and enhance co-operation with biodiversity conservation authorities in neighboring Albania. 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.

Priority: medium

Responsibility: MOE, PENP, INP, Local NGOs

Stake-holders: MOE, PENP, INP, REA office in Shkoder, municipalities of Podgorica, Ulcinja and Shkoder, local NGOs, etc.

Time-scale: short/ongoing

1.4. Elaboration, coordination and implementation of National Action Plan for Dalmatian Pelican in Montenegro.

Activities:

- Prepare, coordinate work of institutions and ensure implementation of the National Action Plan for Dalmatian Pelican

Priority: essential

Responsibility : INP, MoE

Stake-holders : MoE, INP, local municipalities, local NGOs, hunter associations, scientific institutions, etc.

Time-scale : short

2. Ensure the species and habitat protection

2.1. Ensure the protection of sites relevant for Dalmatian Pelican in Montenegro

2.1.1. Designation of protected areas

- Designation of protected areas important for breeding / feeding/ nesting places and wintering areas over the territory of Montenegro

Activities:

- Ensure the protection of key breeding sites at Skadar see as special ornithological reserves with the limited access
- Ensure the designation of Ulcinj salt-pans and Šasko Lake as Protected Areas.

Priority: essential

Responsibility: MOE, INP, municipality Ulcinj, local NGOs hunters associations.

Stake-holders: MOE, INP, Fishery Department (MAF), local fishing enterprises, local municipality, local NGOs, hunters associations, scientific institutions, etc.

Time-scale: immediate/ongoing

2.1.3. Ensure safeguarding of the Dalmatian Pelican colony

Activities:

- Encourage the establishment of statutory (temporarily or permanently) core zones prohibited for disturbances around the colonies. Human intrusion should be forbidden, including fishermen, birdwatchers, photographers, tourists or even unauthorized researchers.
- Hire two wardens from January-July to safeguard the existing colony in "Panceva oka" and potential sites of new colonies from intruders
- Establish a non-intrusion zone 200 m around the existing colony and potential new colonies at Skadar lake

Priority : essential

Responsibility : PENP, MOE, Ministry of Interior (MoI), INP, local fishermen

Stake-holders : PENP, MoE, MoI, INP, local fishermen, local municipalities Podgorica and Ulcinj, local NGOs, hunters associations, scientific institutions, etc.

Time-scale : immediate/ongoing

2.2. Placing the Information Boards and Warning signs

Activities:

- Warning signs should be placed at 200 meters on each access to the protected areas relevant for Dalmatian Pelican.
- Key instructions how to behave in surroundings of protected areas as well as information about the sites should be presented on Information Boards accompanied to Warning Signs.

Priority : high

Responsibility : PENP

Stake-holders : PENP, MoE, MoI, INP, local fishermen, local municipalities Podgorica and Ulcinj, local NGOs, hunters associations

Time-scale : immediate

2.3. Stimulate nesting through the use of artificial structures

Activities :

- Technical design and construction of the artificial structures appropriate for the nesting of Dalmatian Pelican
- At the specific locations on Skadar Lake and Šasko Lake that are relevant as shelters for the Pelicans, adequate artificial structures - floating rafts should be placed
- Advertise in media locations of Information Boards and Warning signs

Priority : essential

Responsibility : Center for the Research and Protection of Birds (CRPB), PENP, INP

Stake-holders : CRPB, PENP, INP local municipalities, local NGOs, hunters associations, scientific institutions, etc.

Time-scale : Short/ongoing

2.4. Improve the hydrological management

Carry out proper water management of the Ulcinj salt-pans.

Activities :

- Harmonization of inflow and outflow water regime should be done at Ulcinj salt-pans

Priority : medium

Responsibility : Ulcinj salt-pans authorities

Stake-holders : Ulcinj salt-pans authorities, INP, municipality Ulcinj, local NGOs

Time-scale : short/ongoing

2.5. Control over the pollution

Activities :

- Prevent wastewater discharges and dumping of waste from the catchment areas of Dalmatian Pelican Protected sites
- Provide regular monitoring of the Eutrophication on Pelican sites and their vicinity

Priority : medium

Responsibility : MoE, Public Utilities in Podgorica and Ulcinj, local municipalities and Center for Ecotoxicological Research (CER)

Stake-holders : MoE, CER, Public Utilities in Podgorica and Ulcinj, local municipalities, INP, local NGOs

Time-scale : short

3. Carry out monitoring and research

3.1. Monitor breeding birds

Activities :

- Annually monitor the number of breeding pairs and their reproductive success using trained staff only

Priority : essential

Responsibility : Centre for the Protection of Birds, Institute Ornis balcanica, INP

Stake-holders : MOE, INP, local municipalities, local NGOs, hunters associations, scientific institutions, etc.

Time-scale : ongoing

3.2. Monitor wintering birds

Activities :

- Monitor the number of wintering birds every mid-January on all registered and potential wintering sites

Priority : essential

Responsibility : Centre for the Protection of Birds, Institute Ornithologica, INP

Stake-holders : MOE, INP, local municipalities, local NGOs, hunters associations, scientific institutions, etc.

Time-scale : short/ ongoing

3.3. Monitor ecological change

Activities :

- Monitor water level, water quality and ecological change at key wetland sites

Priority : essential

Responsibility: CER, Republican Hydrometeorological Institute (RHI), INP

Stake-holders : CER; RHI; INP; MOE, local municipalities, local NGOs, scientific institutions.

Time-scale : short

3.4. Monitor prey populations

Activities :

- Monitor fishery catches at the key Dalmatian Pelican sites in mutual cooperation of responsible institutions.

Priority : high

Responsibility : PENP, INP, local fishermen (individuals), Faculty of Biology

Stake-holders : MOE, INP, Fishery Department (MAF), local fishermen, Ministry of Agriculture, Forestry and Water management (MAFWM), local municipalities, local NGOs, scientific community.

Time-scale : medium

3.5. Identify mortality causes

Activities :

- Monitor dead Pelicans and identify the causes of death.

Priority : low

Responsibility : Nature History Museum (NHM) , Hunter organizations (HO),

Stake-holders : MOE, INP, NHM, HO, MAFWM), local municipalities, local NGO, scientific institutions, etc.

Time-scale : medium

3.6. *Survey the socio-economical aspects*

Activities :

- Procurement the socio-economical study on conflicts between the interest of people to exploit resources (peat) in areas important for Pelicans and need for the conservation of these sites.

Priority : medium

Responsibility : Team of Independent consultants

Stake-holders : MOE, INP, PENP, Ministry of Economy, local municipality, NGOs, scientific community

Time-scale : medium

3.7. *Introduce the Cost-benefit analysis in the considerations*

Activities :

- Procurement of the Cost-benefit analysis in order to identify and promote the economical benefits of the conservation of the Dalmatian Pelican and its protected areas.

Priority : Low

Responsibility : Team of Independent consultants

Stake-holders: MOE, INP, PENP, Ministry of Economy, local municipality, NGOs, scientific community

Time-scale : Low

3.8. *Monitoring of the Dalmatian Pelican dispersal*

Activities :

- Color Ringing of the young Dalmatian Pelicans living on Skadar lake
- Establish appropriate data base
- Regular data retrieval and maintenance of the data base

Priority : medium

Responsibility : INP

Stake-holders : MOE, INP, PENP, Scientific Institutions, etc.

Time-scale : medium

4. Raise public awareness and undertake training

4.1. Raise public awareness

Activities :

- Inform wetland resources users, variety of decision-makers at local and national level about the importance of the preservation of the Dalmatian Pelican.
- Undertake public awareness campaigns with hunters, fishermen, local communities, tourist agencies and officials involved in the Dalmatian Pelican conservation.
- Organize talks in primary and secondary schools in the area of Skadar lake
- Organize excursions for primary and secondary school
- Produce publications (leaflets, booklets, posters, etc.) about the national and international importance of the key sites.

Priority : high

Responsibility : CRPB

Stake-holders : MOE, INP, CRPB, local fishermen and hunters, Ministry of Education, local municipalities, local NGOs.

Time-scale : short/ongoing

4.2. Undertake Training

Activities :

- Provide training for members of biodiversity conservation orientated NGOs on environmental education, conservation and management of birds, wildlife in general and wetlands
- Provide training for wardens in PENP and HO on the key biodiversity conservation issues, protection of birds as well as conservation of the Pelicans

Priority : medium

Responsibility : INP

Stake-holders : INP, PENP, HO, MoE, MAFWM, local municipalities, local NGOs,

Time-scale : short

4.3. Promote sustainable types of tourism

Activities :

- Organize bird watching tours in key sites and promote sustainable types of tourism. Core of Protected areas for Dalmatian Pelicans and their buffer zone (200m) should be excluded from the tours

Priority : medium

Responsibility : CPRB and PENP

Stake-holders : MoE, INP, PENP, Ministry of Tourism, TOM, local municipalities, local NGOs

Time-scale : short

Prerequisites for implementation

The survival of the Pelicans colony at Skadar lake is the main prerequisite for the implementation of the Action Plan. Usually the preparation and the implementation of the Action Plan needs a lot of time. Time is spent not only in the preparatory phase but also in seeking funds, in organizing the work, in preparing institutional agreements etc. Meanwhile the colony itself is under high risk from the above-mentioned threats. If it disappears then it will be no need for an Action Plan. That means that the Montenegrine authorities should support any preliminary conservation action that would ensure the survival of the colony.

The active participation of all the stakeholders is another basic condition in the implementation of the Action Plan. Stake holders include the administration (Ministry of Environment, Institute for the Protection of Nature, Fishery Department –MAF), local municipalities, local NGOs, scientific institutions, local fishing enterprises and others. All the stakeholders should be highly involved in the process in order to implement successfully the foreseen activities of the Action Plan.

Expected problems for implementation

Apart from the financial problems and the further decrease of the number of breeding pairs there are no other particular problems for the implementation of the Action Plan.

Financial problems could be resolved through active fund-raising activities with local and international donors.

Short-term conservation activities have to be undertaken in order to ensure at least the stability of the breeding population. As any other study of applied ecology, our project has some implementation risks that are related with the uncontrolled natural and human factors.

Among natural factors that could risk the implementation of the project are :

1. Natural ecological catastrophes

- Harsh weather conditions (stormy weather, hard rain, strong wind, extremely low or high temperatures, floods of nesting sites, etc.)
- Starvation due to very low food resources
- Epidemics or illness among birds

2. Human impact

It is already known that the human factor expressed as human disturbance is the main factor influencing the breeding community of birds in Montenegro. If colonies are visited or mistreated by humans then the number of breeding birds will fall, their reproductive success will be very low or null, and the long-term result will be a further reduction of the number of Dalmatian Pelicans.

The influence of human factor is one of the most difficult to be measured. The only short-term way to prevent its bad impact is the protection of breeding sites (wardens). The long-term method is the raise of public awareness in order to convince the locals that birds such as the Dalmatian Pelican, represent an enormous economical interest for the development of ecotourism. But the second method is hard and very time consuming. The project would try to control as much as possible the negative human impact but we need first to stress that there are always possibilities that human factor could be harmful for birds and the project.

Implementation Calendar

Activities	Timing
<i>1.1 Improve and Implement Legislation</i>	
Ensure strict control regime over the ornithological reserve "Panceva oka" (Skadar lake) which is breeding place for Dalmatian Pelican. Access to the site shouldn't be allowed for fisherman.	Permanent, after establish the strict control regime in 1 st year.
Promote the protection of Dalmatian Pelican into designated areas of Ulcinj salt-pans and Šasko Lake.	3 rd year
Promote a ban on burning reedbeds on key sites	4 th and 5 th year
<i>1.2. Promote sustainable development in wetlands</i>	

Promote the zonation of "Panceva oka" ornithological reserve (Skadar lake) to be used as the successful conservation model for further replication of the protection of Dalmatian Pelican on its breeding places in Montenegro	1 st year
Promote "Panceva oka" sustainable tourism development model (outside of the core area) on other key sites of Dalmatian Pelican (Šasko lake, Ulcinj salt-pans) relevant for ecotourism and naturalistic tourism	1 st -5 th year
<i>1.3. Strengthen the International cooperation</i>	
Establish and enhance co-operation with biodiversity conservation authorities in neighbouring Albania. 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.	Permanent, after establish the Joint Body (MN-AL) in 1 st year.
<i>1.4. Elaboration, coordination and implementation of National Action Plan for Dalmatian Pelican in Montenegro.</i>	
Prepare, coordinate work of institutions and ensure implementation of the National Action Plan for Dalmatian Pelican	1 st -5 th year
<i>2.1.1. Designation of protected areas</i>	
Designation of protected areas important for breeding / feeding/ nesting places and wintering areas over the territory of Montenegro	2 nd -3 rd year
Ensure the protection of key breeding sites at Skadar see as special ornithological reserves with the limited access	1 st year
Ensure the designation of Ulcinj salt-pans and Šasko Lake as Protected Areas.	2 nd year
<i>2.1.3. Ensure safeguarding of the Dalmatian Pelican colony</i>	
Encourage the establishment of statutory (temporarily or permanently) core zones prohibited for disturbances around the colonies. Human intrusion should be forbidden, including fishermen, birdwatchers, photographers, tourists or even unauthorized researchers.	Permanent, after establish the core zones in 1 st year.
Hire two wardens from January-July to safeguard the existing colony in "Panceva oka" and potential sites of new colonies from intruders	1 st -5 th year
Establish a non-intrusion zone 200 m around the existing colony and potential new colonies at Skadar lake	1 st year
<i>2.2. Placing the Information Boards and Warning signs</i>	
Warning signs should be placed at 200 meters on each access to the protected areas relevant for Dalmatian Pelican	1 st year

Key instructions how to behave in surroundings of protected areas as well as information about the sites should be presented on Information Boards accompanied to Warning Signs	1 st year
<i>2.3. Stimulate nesting through the use of artificial structures</i>	
Technical design and construction of the artificial structures appropriate for the nesting of Dalmatian Pelican	1 st year
At the specific locations on Skadar Lake and Šasko Lake that are relevant as shelters for the Pelicans, adequate artificial structures - floating rafts should be placed	1 st year
Advertise in media locations of Information Boards and Warning signs	1 st year
<i>2.4. Improve the hydrological management</i>	
Plan for the harmonization of inflow and outflow water regime should be implemented at Ulcinj salt-pans	1 st -3 rd year
<i>2.5. Control over the pollution</i>	
Prevent wastewater discharges and dumping of waste from the catchment areas to the Dalmatian Pelican Protected sites	2 nd year
Provide regular monitoring of the Eutrophication on Dalmatian Pelican Protected sites and their vicinity	1 st -5 th year
<i>3.1. Monitor breeding birds</i>	
Annually monitor the number of breeding pairs and their reproductivity using trained staff only	1 st -5 th year
<i>3.2. Monitor wintering birds</i>	
Monitor the number of wintering birds every mid-January on all registered and potential wintering sites	1 st -5 th year
<i>3.3. Monitor of the ecological changes</i>	
Monitor water level, water quality and ecological change at key wetland sites	1 st -5 th year
<i>3.4. Monitor prey populations</i>	
Monitor fishery catches at the key Dalmatian Pelican sites in mutual cooperation of responsible institutions.	1 st -5 th year
<i>3.5. Identify mortality cause</i>	
Monitor dead Pelicans and identify the causes of death.	1 st -5 th year
<i>3.6. Survey the socio-economical aspects</i>	

Procurement the socio-economical study on conflicts between the interest of people for the exploitation of resources (peat) in areas important for Pelicans and need for the conservation of these sites.	3 rd year
<i>3.7. Introduce the Cost-benefit analysis in the considerations</i>	
Procurement of the Cost-benefit analysis in order to identify and promote the economical benefits of the conservation of the Dalmatian Pelican and its protected areas.	3 rd year
<i>3.8. Monitoring of the Dalmatian Pelican dispersal</i>	
Color Ringing of the young Dalmatian Pelicans living on Skadar lake	1 st -5 th year
Establish appropriate data base	1 st year
Regular data retrieval and maintains of the data base	1 st -5 th year
<i>4.1. Raise public awareness</i>	
Deliver the information (Leaflet. poster) about the importance of Dalmatian Pelican conservation to the wetland resources users and variety of decision-makers at local and national level.	2 nd year
Undertake public awareness campaigns with hunters, fishermen, local communities, tourist agencies and officials involved in the Dalmatian Pelican conservation.	2 nd year
Organize talks in primary and secondary schools in the area of Skadar lake	3 rd and 4 th year
Organize excursions for primary and secondary school	4 th and 5 th year
Produce publications (leaflets, booklets, posters, etc.) about the national and international importance of the key sites.	5 th year
<i>4.2. Undertake Training</i>	
Provide training for members of biodiversity conservation orientated NGOs on environmental education, conservation and management of birds, wildlife in general and wetlands	4 th year
Provide training for wardens in PENP and HO on the key biodiversity conservation issues, protection of birds as well as conservation of the Pelicans	3 rd year
<i>4.3. Promote sustainable types of tourism</i>	
Organize bird watching tours in key sites and promote sustainable types of tourism. Core of Protected areas for Dalmatian Pelicans and their buffer zone (200m) should be excluded from the tours	3 rd - 5 th year

Budget

Activities	Explanation	Budget
<i>1.1 Improve and Implement Legislation</i>	Project office space should be established in the INP. Project office supplies need to be provided.	15.000 €
<i>1.2. Promote sustainable development in wetlands</i>	Procurement of the Study. Following equipment should be provided: GPS device, one PC, licensed software (Arc Info), satellite images, topographic maps and aerial photos	22.500€
<i>1.3. Strengthen the International cooperation</i>	Travel costs and accommodation should be provided	5.000 €
<i>1.4. Elaboration, coordination and implementation of National Action Plan for Dalmatian Pelecan in Montenegro.</i>	Procurement of the Plan. Costs for the meetings.	10.000€
<i>2.1.1. Designation of protected areas</i>	Inventories for Protected Areas should be completed (INP). Costs for the Field work of INP associates should be covered.	5.000€
<i>2.1.3. Ensure safeguarding of the Dalmatian Pelican colony</i>	Salaries for 2 wardens (5 years), equipment, including observing towers and one boat with costs for fuel	32.000€
<i>2.2. Placing the Information Boards and Warning signs</i>	Fixed and floating Information Boards and Warning signs should be constructed and placed at 9 locations	3.000€
<i>2.3. Stimulate nesting through the use of artificial structures</i>	Technical design, construction and placing of the artificial structures – floating rafts on Sasko lake (2) and Skadar Lake (2)	4.000€
<i>2.4. Improve the hydrological management</i>	Procurement of the Plan	500€
<i>2.5. Control over the pollution</i>	Monitoring of the Eutrophication should be one part of the overall Monitoring programme which will be estimated under 3.3.	
<i>3.1. Monitor breeding birds</i>	Monitoring of the Breeding birds should be one part of the Monitoring programme for Birds which will be estimated under 3.2.	
<i>3.2. Monitor wintering birds</i>	Monitoring programme for Birds (for 3.1. and 3.2.) will be Conducted for the period of 5 years	14.000€
<i>3.3. Monitor of the ecological changes</i>	Monitoring of the Eutrophication (2.5.) as well as water level, water quality and ecological change at key wetland sites (3.3.) will be conducted	15.000€
<i>3.4. Monitor prey populations</i>	Expertise of the content of disgorges. Reports on the content of disgorges should be done.	1000€
<i>3.5. Identify mortality cause</i>	Expertise (X-ray or dissection of deaths), Reports should	1.000€

	be done	
3.6. Survey the socio-economical aspects	Procurement of the Study	2.500€
3.7. Introduce the Cost-benefit analysis in the considerations	Procurement of the Cost-benefit analysis	2.500€
3.8. Monitoring of the Dalmatian Pelican dispersal	Color Ringing of young. Create and retrieval of the Data Base.	2.000€
4.1. Raise public awareness	Organize the round tables, workshops and public stands. Prepare and deliver leaflet, posters. Organize the excursions.	5.000€
4.2. Undertake Training	Organize training workshops (2x)	2.000€
4.3. Promote sustainable types of tourism	Organize bird watching tours. Two boats should be rented as well as 2 mini buses.	10.000€
Total		152.000€

Monitoring

Activities planned by the Action Plan should be monitored in order to provide fulfillment of its the goals. Following aspects should be applied:

- Size and number of the protected areas relevant for Dalmatian Pelican
- Size of the population of Dalmatian Pelican
- Level of public awareness

These aspects are of direct importance for success of the project.

Investment Portfolio

References

- Andrusenko, N.N. (1994): Ecology of *Pelecanus crispus* in the Tengiz-Kurgaldzhin depression in Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.
- Annekov, B.P. (1994): Trends in the breeding distribution of *Pelecanus onocrotalus* and *P. crispus* on the Alakol' Lakes, Kazakhstan in Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.
- Azarov, V.I. (1994): *Pelecanus crispus* in the south of Tyumen region in Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.
- Bego, F., Bino, T., Jorgo, G. (1998): Faunistic values of the delta of Drini. Albania. MedWet 2. 38-?
- BirdLife International (2001): Threatened birds of Asia: the BirdLife International Red Data Book. Cambridge, UK: BirdLife International.
- Blinov, V.N., T.K. Blinova & V.V. Yakimenko (1994): *Pelecanus crispus* on the Saltaim-Tengiz lakes in Omsk Region in Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.
- Burić, M., M. Radulović (1983): Skadarsko jezero-najveći hidrografski objekat kopna SR Crne Gore. Crnogorska Akademija nauka i umjetnosti. Radovi sa Simpozijuma 9. 37-44. Titograd
- Catsadorakis, G., A. Crivelli (2001): Nesting Habitat Characteristic and Breeding Performance of Dalmatian Pelicans in Lake Mikri Prespa, NW Greece. Waterbirds 24(3):386-393.
- Catsadorakis, G., M. Malakou, A. Crivelli (1996): The Effects of the 1989/1990 drought on the Colonial Waterbirds Nesting at Lake Mikri Prespa, Greece, with Special Emphasis on

Pelicans *in Ecology, Conservation and management of colonial waterbirds in the Mediterranean region. Colonial waterbirds. Special publication 19. 1996.*

Crivelli, A. J. 1996. Action Plan for the Dalmatian Pelican (*Pelecanus crispus*). Pp 53-66. in B. Heredia, L. Rose and M. Painter, eds, *Globally threatened birds in Europe: action plans*. Strasbourg. Council of Europe and BirdLife International.

Crivelli A.J.j Vizi O.(1981): The Dalmatin pelican, *Pelecanus crispus* Bruch 1832, a recently world endangered bird species. *Biol.Conserv.* 20 p 297-310

Crivelli, A., G. Catsadorakis, D. Hatzilacou, D. Hulea, M. Malakou, M. Marinov, T. Michev, D. Nazirides, N. Peja, G. Sarigul, M. Siki (2000): Status and population development of Great White Pelican *Pelecanus onocrotalus* and Dalmatian Pelican *Pelecanus crispus* breeding in the Palearctic. *Monitoring and Conservation of Birds, Mammals and Sea Turtles of the Mediterranean and Black Sea. Proceedings of the 5th Medvaravis Symposium Gozo, Malta. Environment Protection Department Malta.*

Dhora, D., D. Saveljić, D. (2001): Bibliography an chek list on Shkodra/Skadar lake. Section VII – Ornithology – Birds. Promotion of networks and exchanges in the countries of the South Eastern Europe. REC & SDC. Podgorica & Shkodra. 52-65.

Firer, Lj. (1894): Jedna godina ornitološkog izučavanja u Crnoj Gori. *Glasnik Zemaljskog muzeja u Bosni i Hercegovini*, 7. 241-258. Sarajevo

Gordienko, N.S. (1994): Pelicans in northern Kazakhstan *in Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.*

Grimmett, R.F.A & Jones, T.A.(1989): Important Bird Areas in Europe (IBA). International Council for Bird Preservation, ICBP Technical public 9. Cambridge

Hoffmann, L., H. Hafner, T. Salathe (1996): The Contribution of Colonial Waterbird Research to Wetland Conservation in the Mediterranean Region *in Ecology, Conservation and management of colonial waterbirds in the Mediterranean region. Colonial waterbirds. Special publication 19.1996*

Ivanović, B. (1970): Neka ornitološka zapažanja na Skadarskom jezeru. *Larus*, 21-22.137-160. Zagreb

Kazakov, B.A., A.N. Khokhlov, Yu.V. Pishvanov & M.Kh. Yemtyl (1994): Pelicans on wetlands of Predkavkaz'e region (north of the Caucasus) *in* Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.

Krivososov, G.A., G.M. Rusanov & N.N. Gavrilov (1994): Pelicans on the northern Caspian Sea *in* Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.

Linkov, A.B. (1994): *Pelecanus onocrotalus* and *P. crispus* in Kalmykia *in* Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.

Peja, N., G. Sarigul, M. Siki, A. Crivelli (1996): The Dalmatian Pelican, *Pelecanus crispus*, Nesting in Mediterranean Lagoon in Albania and Turkey *in* Ecology, Conservation and management of colonial waterbirds in the Mediterranean region. Colonial waterbirds. Special publication 19. 1996.

Perennou, C., Sadoul, N., Pineau, O., Johnskon, A., Hafner, H.(2000): Menagement of nest sites for colonial waterbirds. Conservation of Mediterranean Wetlands, 4. Tour du Valat. Arles

Poslavski, A.N. & Y.Yu. Chernov (1994): Spring/summer sightings and breeding of *Pelecanus crispus* and *P. onocrotalus* in Turkmenia *in* Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.

Reiser, O., Fuhrer, L. (1896): Materialien zu einer Ornithologia Balcanica, 4 Montenegro. Carl Gerold's Sohn. Wien

Romashova, A.T. (1994): Breeding biology and feeding ecology of *Pelecanus crispus* and *P. onocrotalus* in the northern Caspian in Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.

Trucker, G.M & Heath, M.F (1994): Birds in Europe: their conservation status. BirdLife International Conservation Series 3. Cambridge

Vasić, V. Vizi, O. (2000): Rezultati zimskog prebrojavanja ptica na Skadarskom jezeru. Republički zavod za zaštitu prirode Podgorica. Report. Republički zavod za zaštitu prirode. Podgorica.

Vasić, V., Puzović, S., Vizi, O (1992): Capacities of Skadar lake in relation to European regional populations of water birds. Glasnik Republičkog zavoda za zaštitu prirode - Prirodnjačkog muzeja Podgorica. 25. 53-62. Podgorica

Vizi, O. (1975): O gnezdjenju pelikana kudravog (*Pelecanus crispus* Bruch 1832) na Skadarskom jezeru i problem njegove zaštite. Glasnik Republičkog zavoda za zaštitu prirode - Prirodnjačkog muzeja 8: 5-13. Titograd

Vizi, O. (1979): New data on breeding of Dalmatian Pelican (*Pelecanus crispus* Bruch, 1832) on Skadar Lake. Glasnik Republičkog zavoda za zaštitu prirode - Prirodnjačkog muzeja 12: 125-139. Titograd

Vizi, O. (1981): The Dalmatian Pelican on Skadar Lake. The Biota and Limnology of Lake Skadar. 419-424

Vizi, O. (1991): Ornitološke odlike ostrvceta Grmožur na Skadarskom jezeru. Glasnik Republičkog zavoda za zaštitu prirode - Prirodnjačkog muzeja 24: 13-28. Podgorica

Vizi, O. (1995a): Zaštita Skadarskog jezera od zagađenja. Naučni skup "Prirodne vrijednosti i zaštita Skadarskog jezera, CANU 44. 31-37 Podgorica

Vizi, O. (1995b): Uticaj povećanog uznemiravanja na neke ugrožene vrste ptica na Skadarskom jezeru. Naučni skup "Prirodne vrijednosti i zaštita Skadarskog jezera, CANU 44.321-330, Podgorica

Wetlands International (2002): Waterbird Population Estimates-Third Edition. Wetlands International Global series 12. Wageningen. The Netherlands

Zhatkanbaev, A.Zh. (1994a): Present status of pelicans in the Ili Delta, Kazakhstan *in* Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.

Zhatkanbaev, A.Zh. (1994b): Some aspects of the ecology of *Pelecanus crispus* and *P. onocrotalus* in the Ili Delta, Kazakhstan *in* Crivelli, A.J., V.G. Krivenko & V.G. Vinogradov (eds) (1994): Pelicans in the former USSR. IWRB Publ. 27.