

ARMENIA

REPORT FOR CENTRAL ASIAN FLYWAY OVERVIEW

A. Brief Introduction

Armenia is a small (29,743 km²) landlocked country in the southern Caucasus region (38°50'-41°18'N and 43°27'-46°37'E). Its borders stretch for 1,254 km; bordering Azerbaijan on 787 km, Georgia on 164 km, Iran on 35 km, and Turkey on 268 km. Armenia is mainly composed of highlands; cut by a number of fast flowing mountain rivers, and the fertile soils of the Arax River valley plains. Open water covers 1,640 km², mires and marshes 42 km².

Major environmental problems are soil and water pollution, as well as deforestation and overgrazing, provoking erosion and desertification. Major problems to wetlands and waterbirds are water loss, water balance disturbance, soil deterioration, pollution, garbage dumping, over-exploitation, factor of disturbance, invasive species.

All major threats to Armenia's wetlands are human induced: water loss, water balance disturbance, soil deterioration, sedimentation, pollution, garbage dumping, factor of disturbance, deforestation.

At the heart of conflicts is underestimation of economical and especially ecological values of wetlands. In XX c. all more or less large wetland areas in Armenia had been crossed with drainage canals or drainage pipes. Dams and reservoirs had regulated the flow of many rivers. The main reason of draining the wetlands was land reclamation into agricultural and urban. Estimated area of wetland loss in Armenia is 40,000 ha.

Of 349 species of recorded birds 136 relates to wetlands and 118 are listed in the AEWA table. All globally threatened waterbirds of the Central Asian Flyway are represented in Armenia: Dalmatian Pelican (*Pelecanus crispus*), Lesser White-fronted Goose (*Anser erythropus*), Red-breasted Goose (*Branta ruficollis*), Marbled Teal (*Marmaronetta angustirostris*), Ferruginous Duck (*Aythya nyroca*), White-headed Duck (*Oxyura leucocephala*), Corncrake (*Crex crex*), and Sociable Plover (*Vanellus gregarius*) (IUCN Red List Database, 2000). Of them Dalmatian Pelican, Marbled Teal, Ferruginous Duck, White-headed Duck and Corncrake are breeders, and the Lesser White-fronted Goose appears during migrations and in winter.

Armenia lies on the migrating routes of many species of birds, including waterbirds. In Armenia part of migratory waterbirds listed in the AEWA list have settled way of living in and occur throughout the whole year, part of them are breeders that occur only during the breeding period, part of them occur only during migrations, and a few are wintering.

B. National administrative structures for migratory waterbirds and wetlands

The administrative unit of the Republic of Armenia is Marz (province). There are 10 marzes in Armenia: Aragatsotn, Ararat, Armavir, Gegharkunik, Kotayk, Lori, Shirak, Syunik, Tavoush, Vayots Dzor, and capital Yerevan. Wetlands, according the Ramsar definition, occur in all marzes. However, most important waterbird habitats are in Ararat, Armavir, Gegharkunik and Shirak marzes.

The Government of Armenia has 14 ministries: Healthcare, Trade and Economic Development, Justice, Foreign Affairs, Nature Protection, Agriculture, Energy, Education and Science, Culture and Youth Affairs, Defence, Labour and Social Affairs, Transport and Communication, Urban Development, Finance and Economy. Some of them in some extend relates to migratory waterbird and wetlands with regard to diseases (Ministry of Healthcare), wetland products trade (Ministry of Trade and Economic Development), development of waterbird and wetland related legislation (Ministry of Justice), accession to waterbird and wetland related international treaties (Ministry of Foreign Affairs), waterfowl and wetland use for agricultural purposes (Ministry of Agriculture), education and research on waterbird and wetland issues (Ministry of Education and Science), construction and management of roads on wetland areas (Ministry of Transport and Communication), provision of funds for migratory waterbird and wetland management and conservation (Ministry of Finance and Economy), etc. Nevertheless, administrative authority directly responsible for migratory waterbird and wetland management and conservation is the Ministry of Nature Protection with 3 implementing agencies (Table 1).

Table 1: National administrative structures responsible for managing migratory waterbirds and wetlands

Name of Agency (with contact details)	Geographic scope	Thematic Focus	Principle outputs on waterbirds and wetlands
Ministry of Nature Protection 3 rd Government	Whole territory of Armenia	All aspects of state environment policy development, protection and management planning: state management	General coordination of state policy development, protection, conservation, use

Building, Republic Square 375010 Yerevan, Armenia Tel.: +374-1-585349 Fax: +374-1-585469 E-mail: interdpt@rambler.ru		of nature (ore, soil, water, atmosphere, flora and fauna, including forest,) and nature protection (in and outside of especially protected natural areas) and state environmental control over nature protection	and reproduction of waterbirds and protection and maintenance of its habitats; establishment of yearly taking quotas, daily maximum bags, and dates of opening and closing of hunting season.
Agency on Biological Resources Management 3 rd Government Building, Republic Square 375010 Yerevan, Armenia Tel./Fax: +374-10-527952 E-mail: jender@arminco.com	Whole territory of Armenia	State management of animal and plant resources and especially protected natural areas; creation and conducting of bioresource database; estimation of state stock-taking of bioresources; creation and conducting of cadastre of protected areas; issuing licences and permits for use of bioresources; issuing permits for export and import of wild plant and animal species; collection of payments for use of bioresources.	State management of waterbirds and waterfowl resources; creation and conducting of waterbird database; estimation of state stock-taking of waterfowl; creation and conducting of cadastre of waterbird habitats; issuing licences and permits for waterfowl taking; collection of payments for use of waterfowl.
Republican Nature Protection Inspection 3 rd Government Building, Republic Square 375010 Yerevan, Armenia Tel.: +374-10-523799	Whole territory of Armenia	State environmental control over nature protection in the fields of environmental protection, rational use and reproduction of natural resources	State control over waterbird conservation, use and reproduction, protection of waterbird habitats, waterfowl hunting rules
Agency on Water Resources Management 3 rd Government Building, Republic Square 375010 Yerevan, Armenia Tel.: +374-10-540867	Whole territory of Armenia	State management of water resources; creation and conducting of water resource database; state stock-taking of water resources	State management of water resources in particular as waterbird habitats: maintenance of water quantities and water standards in waterbird habitats

C. National policy and legislation relating to migratory waterbirds and wetlands

Development of environmental legislation has started soon after independence from the former USSR (September 21, 1991). It should be mentioned to this moment Armenia hasn't officially approved national policy and legislation directly related to migratory waterbird and wetlands. Below are laws and Government decrees that relate in different extend to migratory waterbird and wetlands.

1991 Law on Principles of Environmental Protection

- ◆ Specifies principles of environmental policy of the State
- ◆ Establishes legal basis for development of environmental legislation

1991 Law on Especially Protected Natural Areas

Regulates

- ◆ Conservation of reference sites and ecosystems
- ◆ Protection of natural monuments
- ◆ Scientific research of nature
- ◆ Monitoring of environment

Defines

- ◆ Categories of protected areas

1991 The Land Code

- ◆ Specifies principles of land use policy of the State

- ◆ Establishes scope and framework for regulation of land use policy and relationships between different stakeholders

1994 The Forest Code

- ◆ Conservation, reproduction and sustainable use of water protective, soil protective, climate mitigating, health, recreational and other values of forests, including forested wetlands and wetlands in the forest zone

1998 Law on Payments for Nature Protection and Use of Natural Resources

- ◆ payments for nature protection
- ◆ payments for use of natural resources, including biological resources
- ◆ scope of payers
- ◆ forms of payments
- ◆ amenability against violations

2000 Law on Flora

Secures

- ◆ conservation of qualitative and quantitative values of flora, plant habitats and genetic diversity
- ◆ sustainable use of plant resources
- ◆ regulation of plant resource use

Regulates

- ◆ rights and responsibilities of plant resource users

2000 Law on Fauna

Secures

- ◆ conservation, protection, natural reproduction of animal genus and species diversity
- ◆ integrity of natural habitats
- ◆ survival of animal species and populations
- ◆ integrity of migration ways

Regulates

- ◆ sustainable use of resources of wild animals
- ◆ rights and responsibilities of plant resource users

2001 Law on Lake Sevan & 2002 Law on Lake Sevan Annual Action Programme

Regulate

- ◆ protection
- ◆ restoration
- ◆ reproduction
- ◆ natural development
- ◆ use natural resources of Lake Sevan, its watershed and ecosystems

Secure

- ◆ 6 m water level increase
- ◆ sustainable use
- ◆ drinking quality water
- ◆ fish stocks reproduction
- ◆ recreation development
- ◆ biodiversity
- ◆ administration improvement
- ◆ effective water management

2002 (1992) Water Code

- ◆ Establish the mechanisms of water resource management
- ◆ Protect and conserve water resource
- ◆ Prevent of negative reveal of water
- ◆ Water resource inventory
- ◆ Sustainable water supply
- ◆ Water supply and removal system secure
- ◆ Hydropower plant use regulation
- ◆ Water ecosystem management

In the second edition of the Code the word 'wetland' is first ever mentioned and defined as well as importance of wetlands for maintenance of water quality and quantity and biodiversity.

Government decrees:

1. About payment rates for use of natural resources /Government decree N°864, 1998, N°958, 2003/; Establish rates for use of wild animal and plant species for use on agricultural, commercial and social purposes. In particular, the following rates are established for waterbirds: *Anatidae* – Armenian Dram (AMD) 500; coot - AMD 300; *Charadriidae* - AMD 200; snipe - AMD 100. To compare EUR1=AMD600

2. About approval of state strategy of development and national action plan for especially protected natural areas /Protocol Government decree N°54, 2002/;

Regarding waterbirds and wetlands in this action plan the following is mentioned in particular:

- *Armenia intends to join to the following international treaties:*

- Convention on Protection of Wild Flora and Fauna and their Habitats (in 2003-2006)
- Convention on International Trade of Endangered Species of Wild Flora and Fauna (in 2003-2006)
- Convention on the Conservation of Migratory Species of Wild Animals and its African-Eurasian Migratory Water Bird Agreement (in 2003-2006)

- *Further development of environmental legislation, including new laws:*

- Law on Landscape Conservation (in 2004-2007)

It is expected that wetlands will be defined among landscapes of special conservation need.

- *Establishment of new protected areas:*

- Lake Arpi National Park (IUCN II category) in 2005-2008

The Lake Arpi Ramsar site (3,139 ha, 41°03'N 043°37'E) is located in Shirak Region. The catchment of Lake Arpi is 22,000 ha. The ornithofauna consists of around 100 species of birds Dalmatian Pelican, Great Cormorant (*Phalacrocorax carbo*), Glossy Ibis (*Plegadis falcinellus*), Black Stork (*Ciconia nigra*), Common Crane (*Grus grus*) occurred here rather frequently than elsewhere in Armenia.

- Khor Virap protected area (IUCN III category) in 2004 (in fact expected in 2005)

Khor Virap Marsh (surface 351 ha, altitude 820 m) on 90% is covered by emergent vegetation. Of 30 nesting species of waterfowl of particular interest is successful breeding of globally threatened Marbled Teal (*Marmoronetta angustirostris*) and White-headed Duck (*Oxyura leucocephalis*) and threatened Pygmy Cormorant (*Phalacrocorax pygmaeus*), Gadwall (*Anas strepera*), Black-winged Stilt (*Himantopus himantopus*), Avocet (*Recurvirostra avosetta*). Among ca. 100 species of migrants are Great Cormorant (*Phalacrocorax carbo*), Great White Egret (*Egretta alba*), Spoonbill (*Platalea leucorodia*), Glossy Ibis (*Plegadis falcinellus*), Greylag Goose (*Anser anser*), Shelduck (*Tadorna tadorna*), Shoveler (*Anas clypeata*), Sociable Plover (*Chettusia gregaria*), Oystercatcher (*Haematopus ostralegus longipes*).

3. About approval of procedure of use of water resources for hunting farming needs /Government decree N° 669-N, 2003/

According to this decree the following activities considered as hunting farming: conservation, breeding, reproduction, acclimatization, organization of hunt. The decree stated that the use of water resource for hunting needs is possible only upon permission for water use with exclusion of hunt for individual purposes.

4. About approval of procedure of use of water resources for piscicultural needs /Government decree N°703-N, 2003/

The use of water resources for piscicultural needs should exclude draining or further swamping of the territory. Only native species could be used for pisciculture in open water ecosystems.

5. About approval of procedure of use of water resources for tourist, sport and recreational needs /Government decree N°756-N, 2003 /

The use of water resources for tourist, sport and recreational needs should not worsen the water standards, as well as limit access to these areas of wide public.

6. About approval of procedure of signing of contracts on use of wildlife objects for social purposes /Government decree N° 884.-H, 2003 /

Following this decree contracts on use of wildlife objects could be signed on following purposes: conservation, protection, use and reproduction. Responsible government organization is Agency of Bioresource Management of the Ministry of Nature Protection. The list of game animals include, in particular: Great Crested Grebe (*Podiceps cristatus*), Teal (*Anas crecca*), Mallard (*Anas platyrhynchos*), Garganey (*Anas querquedula*), Red-crested Pochard (*Netta rufina*), Tufted Duck (*Aythya fuligula*), Moorhen (*Gallinula chloropus*), Coot (*Fulica atra*), Lapwing (*Vanellus vanellus*), Ruff (*Philomachus pugnax*), Snipe (*Gallinago gallinago*), Curlew Sandpiper (*Calidris ferruginea*).

It is evident that abovementioned legal documents do not encompass all aspects of protection and sustainable use of nature and migratory waterbird and wetlands in particular. Taking into account ecological socio-economic values of waterfowl and wetlands and current situation in the country it is time to:

1. join to the international treaties mentioned above and first of all to the CMS/AEWA;
2. to make alterations in the Law on Lake Sevan and Law on Especially Protected Natural Areas;
3. to approve formally national wetland policy.

D. National government institutions involved in migratory waterbirds and wetlands research/management

There is no government institutions specialized in research and management of different issues of migratory waterbirds and wetlands in Armenia. **Table 2** includes all organizations whose scope includes in different extend research, management, awareness-raising and conservation of migratory waterbirds and wetlands.

Table 2: National government institutions involved in migratory waterbirds and wetlands research/management

Name of Institution (with contact details)	Geographic scope	Thematic Focus or programmes	Principle outputs on waterbirds and wetlands
“Sevan National Park” State Non-Commercial Organization (SNCO) Tel./Fax: +374-261-24044 E-mail: sevanap@inbox.ru	Territory of the Park (150,000 ha) and Lake Sevan catchment (ha, protective zone), Gegharkunik Marz	Nature conservancy and research organization aimed on protection of Lake Sevan and its resources, rational use of natural resources, development of environmentally sound activities within the territory of Lake Sevan basin	Protection of wetlands as waterbird habitat, conservation of ca. 120 waterbird species at different stages of life cycle, especially during migration. The museum of Sevan NP provides educational lectures to local pupil, wide public awareness aimed on waterbirds and wetlands conservation
“Dilijan National Park” SNCO Tel.: +374-2680-4933	Territory of the Park (29,000 ha, of them only 0.3% wetland), Tavush Marz	Nature conservancy and research organization aimed on protection of nature, rational use of natural resources, development of environmentally sound activities within the territory of the Park	Protection of wetland biodiversity, local significance as waterbird habitat
“Khosrov Forest State Reserve” SNCO Tel.: +374-234-21352	Territory of the Reserve (29,200 ha, of them only 0.1% wetland), Ararat Marz	Nature conservancy and research organization aimed on protection of unique Khosrov Forest	Protection of wetland biodiversity, small local significance as waterbird habitat
“Shikahogh State Reserve” SNCO Tel.: +374-85-62813	Territory of the Reserve (10,000 ha, of them only 0.1% wetland), Syunik Marz	Nature conservancy and research organization aimed on protection of unique flora and fauna of Shikahogh	Protection of wetland biodiversity, small local significance as waterbird habitat
“Armenian Nature State Museum” SNCO Tel.: +374-10-527942 E-mail: iac@mpiac.am	Yerevan	Organization aimed on environmental education, public awareness and research	The museum provides educational lectures to local and provincial pupil, wide public awareness aimed on waterbirds and wetlands conservation

E. Main non-government organizations and academic institutions involved in migratory waterbirds and wetlands research/management

Traditional research institutions involved in different aspects in migratory waterbirds and wetlands research are Institute of Zoology and Institute of Botany of the National Academy of Sciences of Armenia. These institutes conducted a number of studies in frames of themes funded by the Government. Soon after independence from the former USSR research such activities have been suspended due to absence of funds. Involvement of other organizations, such as NGOs, Universities in research, management, awareness-raising and conservation of migratory waterbirds and wetlands, is determined mainly by availability of appropriate expert(s) in particular field(s). Most of them such experts have academic background. However, a new generation of well educated and enthusiastic experts seems, is on the way after some period of frustration. The list below in the **Table 3** does not pretend to be full and reflects those organizations that are active lately.

Table 3: Main non-government organizations and academic institutions involved in migratory waterbirds and wetlands research/management

Name of non-government organization/ University (with contact details)	Geo-graphic scope	Thematic Focus or programmes	Principle outputs on waterbirds and wetlands
<p><i>Professional and Entrepreneurial Orientation Union (Orientation Union)</i> Arabkir 51-st Street, 3, #60, Yerevan 375037, Armenia Tel.: +3 74-10-259110 E-mail: gkirakos@arminco.com</p>	<p>Armenia former USSR states</p>	<p>To promote different groups of citizens to make correct professional and entrepreneurial orientation on the basis of own knowledge, ability and preference; so as to use their potential with the greatest effect in the field of socio-economic reforms, development of scientific, educational, cultural and environmental policy, with special reference to nature conservation and sustainable use of natural resources.</p>	<ul style="list-style-type: none"> • <i>First National Training Course on Wetland Management, 1999</i> funded by the Ramsar Convention's "Evian Programme" [Outputs: a) 12 participants; b) 2 draft wetland management plans] • <i>Implementation of the Ramsar Strategic Plan in Management of Wetlands in Sevan National Park</i> funded by the SDA (1999-2000) [Outputs: a) 6 wetlands recognized of national importance; b) causes of negative influence of human activities on the wetlands; c) long term draft management plans for 6 wetlands] • <i>Second National Training Course on Wetland Management, 2000</i> funded by the SDA (2000) [Outputs: a) 12 participants; b) 1 draft wetland management plan] • <i>Ecologo-Economical Valuation of Armenian Wetlands</i> funded by the Ramsar SGF (2000-2002) [Outputs: a) the List of Armenian Wetlands; b) the List of Armenian Wetland Species; c) ecologo-economic survey on 6 wetlands; d) identified wetlands of international, national and local importance; e) draft National Wetland Policy] • <i>Regional Training Course on Wetland Management 2001</i> in cooperation with the Ministry of Nature Protection and funded by the Ramsar SGF and Dutch Embassy in Kyiv (2001) [Outputs: a) 19 participants from 6 countries; b) 2 management plans; c) 2 resolutions] • <i>Involvement of the population in wise use of the wetlands and others unvalued landscapes of South Caucasus</i> contact project funded by the SDA (2002) • <i>Wetland Management and Poverty Reduction in Mountain Regions Difficult of Access</i> funded by the World Bank SGF and <i>Fourth National Training Course on Wetland Management (2002)</i> [Outputs: a) 13 participants; b) 2 brochures] • <i>Identification of Ecological and Economical Values and Threats of Armenia's Peatlands</i> funded by the GPI (2003) [Outputs: inventory data on peatlands] • <i>Regional Seminar "Current Issues of Conservation and Wise Use of Wetlands and Wetland Biodiversity in the European New Independent States"</i>, 2003, in cooperation with the Ministry of Nature Protection and

			<p>funded by the Ramsar Convention's SGF and the LakeNet from the USAID [Outputs: a) 68 participants from 17 countries; b) 40 oral and poster presentations; c) Abstracts; d) 2 resolutions]</p> <ul style="list-style-type: none"> • <i>5th European Regional Meeting on the Implementation and Effectiveness of the Ramsar Convention, 2004</i>, in cooperation with the Ministry of Nature Protection and funded by the Government of Armenia and the Ramsar Convention's Secretariat [Outputs: a) 109 participants from 35 countries; b) illustrated brochure <i>About wetlands, and around wetlands, in Armenia</i>; c) 8 workshops]
<p>Armenian Society for the Protection of Birds (ASPB) Garegin Njdeh 27/2, 10, 375026 Yerevan, Armenia Tel.: +3 74-10-347695 E-mail: armbirds@yahoo.com</p>	Armenia	<p>Ensure wise stewardship of birds and areas of strategic importance to birds as a valuable Armenian natural resource; research and conservation of Armenian birds, especially those threatened and vulnerable classified globally and at national level, and the overall biological diversity through direct involvement of local communities using birds as important advocacy tool to leverage the environmental interest and concern.</p>	<ul style="list-style-type: none"> • <i>BirdLife International Project BiEII (Birds in Europe II)</i>. Collection of latest national population estimates and trends for all regular native breeding and wintering birds in Armenia. The book <i>Birds in Europe II</i> appeared in 2004 with the latest comprehensive contribution from Armenia. • <i>Important Bird Areas Program (IBA)</i>. ASPB has worked to designate 18 IBAs (Important Bird Areas) in Armenia, which are the areas of ornithological importance for species of special concern (e.g. those globally threatened and endangered). Of them 5 are wetland IBAs: <ul style="list-style-type: none"> Lake Sevan A1 Lesser White-fronted Goose A1 Ferruginous Duck A4i, B1i Armenian Gull Armash Fish Ponds A1, A4i, B1i Pygmy Cormorant A1 White-headed Duck A1, B2 Marbled Teal A1, A4i, B1i Ferruginous Duck A1 Black-winged Pratincole Metsamor River System A1, B2 Pygmy Cormorant B2 Great White Pelican A1, B2 Dalmatian Pelican B1i, B2 Purple Heron A1, A3, B2 Pallid Harrier A1, B2 Marbled Teal A1, B2 Ferruginous Duck A1, B2 Great Snipe Arpi Lake A1, A4i Dalmatian Pelican A1 Armenian Gull Amasia wetlands B1iv, B2 Common Crane A1, B1i, B2 Great Snipe B2 Common Quail A1, B2 Corncrake • <i>Wetlands International Waterbird Census (IWC)</i>. In 2003, 2004 and 2005 ASPB gained support from the Wetlands International (WI) to undertake winter counts of waterbirds at Lake Sevan and the Ararat Plain. The survey outcomes suggested that the official hunting season extended into February has had a very detrimental effect. Considering the severity of frosts in winter and the number of hunters after birds already found in extreme conditions, negative effects of these two factors combined severely affected the population numbers of wintering waterbirds.
"Khazer" Ecological	Armenia	The NGO has two	Leading NGO in the UNEP/GEF Restoration of Lake

<p>and Cultural NGO E-mail: khazer@nature.am</p>		<p>directions: Cultural and Ecological. In the field of ecology the NGO participates in study and certification of natural monuments, development of the concept of environmentally friendly development of mountain villages and monitoring of ozone layer. The NGO also carries out environmental education and awareness.</p>	<p>Gilly (see section G)</p>
<p>Armenian Center of Birds Lovers 7 Sevak, St., 375014 Yerevan, Armenia Tel.: 374-10-281502 E-mail: adamians@freenet.am</p>	<p>Armenia</p>	<p>The main goal of the Center is the increase of environmental awareness and public education of the forthcoming generation in the spirit of love of homeland and its nature</p>	<p>Class teachings and the extensive field trips for amateurs to obtain knowledge on behavior and breeding biology of birds (including waterbirds), on fundamentals of nature conservation. The bird identification skills in field served as a main prerequisite for training of birdwatching guides. The Center has developed birding itineraries and has an experience in organizing birding tours in the country for people, including children aged 8-16. Organization of a variety of workshops and actions, such as Annual celebration of the Bird Protection Day, actions in defense of the Armenian Gull (including sanitation works).</p>
<p>Birds of Armenia 40 Bagramyan Ave., 375019 Yerevan Tel.: 374-10-512818 Fax: 374-10-287922 E-mail: boa@aua.am</p>	<p>Armenia</p>	<p>Funded by American Armenian Sargis Hakobian, the Birds of Armenia Project was instituted with the goal of promoting conservation awareness in Armenia and introducing its rich natural treasures to the world.</p>	<p><u>A Field Guide to Birds of Armenia</u> M. S. Adamian and D. Klem, Jr. 1997. 223 pages, 61 color plates. Richly illustrated book depicts all 346 species of birds known to occur in Armenia, includes range maps showing where you are most likely to find each species, provides clear, concise text to aid you in identification, and has introductory chapters. <u>Handbook of the Birds of Armenia</u> M. S. Adamian and D. Klem, Jr. 1999. 656 pages. ISBN: 0-9657429 Hard Cover The most comprehensive and scientifically documented work on the birds of Armenia. An invaluable resource for anyone, but especially for ornithologists and other conservation and environmental professionals. <u>Reference Map for the Birds of Armenia Project</u> This most accurate map visually identifies the precise geographic location of each ornithological record.</p>
<p>Center for Ecological Noosphere Studies of Armenian Academy of Sciences (IHEI AAS) 68, Abovian St., 375025 Yerevan, Armenia Tel.: +374-10-569331 Fax: +374-10-580254 E-mail: ecocentr@sci.am</p>	<p>Whole territory of Armenia</p>	<p>Multidisciplinary investigations oriented at the complex assessment of the ecological state and elaboration of scientific-methodical fundamentals of ecological</p>	<p>The Center has important facilities and staff for complex assessment of wetlands</p>

		expertise, optimization of nature management processes.	
Institute of Zoology of AAS 7, Sevak Str., Yerevan 375014, Armenia Tel.: +374-10-281470 Fax: +374-10-281360 E-mail: zool@sci.am	Whole territory of Armenia	Study of biodiversity, taxonomy, zoology, morphology, ecology, evolution and zoogeography of vertebrates and invertebrates. Study of helminthofauna of wild and domestic animals. Development of biological bases of control of pests and parasites of life-stock and plants; Development of Armenian fauna conservation and use.	Study of biodiversity, ecology, evolution and zoogeography of waterbirds. Study of helminthofauna of waterbirds. Development of conservation and use of waterbirds.
Institute of Botany of AAS Avan, 375063, Yerevan, Armenia Tel.: +374-10-621781 Fax: +374-10-569281 E-mail: academy@sci.am	Whole territory of Armenia	Plants systematic, geobotany and genetics; industrially valuable plant species. Protection and preservation of plant biodiversity. Investigation and protection of the flora of Armenia; conservation of rare and endemic flora species <i>ex situ</i> . Conservation, rehabilitation and reproduction of forests in Armenia.	Research on wetland flora and wetland communities, including main waterfowl habitats
Institute of Hydroecology and Ichthyology of AAS 24D, Marshall Baghramian Ave., #907, Yerevan 375019, Armenia Tel.: +374-10-523830 Fax: +374-10-569411 E-mail: esu@sci.am	Lake Sevan, other water bodies	Study of regularities of biogeochemical circulation of substances and energy, qualitative and quantitative changes of the structure and functioning of nutritional chains, mechanisms of eutrophication in	Research on fish stocks and quantitative development of bottom animals, including those to which waterbirds are consumers.

		limnosystems. Development of methodology and measures on restoration, conservation and rational use of natural resources and biodiversity of mountain lakes, rivers and reservoirs. Study of ichthyofauna, restoration and rational use of fish resources.	
Department of Zoology, Biological Faculty of Yerevan State University 8 Charents Str., 375008 Yerevan, Armenia Tel.: +374-10-523830 E-mail: arpinej@yahoo.com		Teaching and study of biodiversity, hybridisation, zoology (including ornithology), morphology, zoogeography of vertebrates (mammals, birds, reptiles) and invertebrates.	Common research and education.
Department of Ecology and Nature Protection, Biological Faculty of Yerevan State Pedagogical University after Kh. Abovyan 5 Khanjyan Str., 375010 Yerevan, Armenia Tel.: +374-10-521533	Lake Sevan, other water bodies	Teaching and study of biodiversity, zoology (including ornithology), morphology, ecology, environmental protection	Research and education on different aspects of waterbird ecology.

F. International Instruments

Armenia is a contracting party to the Convention on Biological Diversity (since 1993) and Cartagena Protocol on Biosafety (2004), UN Framework Convention on Climate Change (1993) and Kyoto Protocol (2003), Convention on Wetlands (6 November 1993), World Heritage Convention (1993), UN Convention to Combat Desertification (1997), Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal (1999), Convention for the Protection of the Ozone Layer (1999), UNECE conventions on the Long-Range Transboundary Air Pollution (1997), on the Environmental Impact Assessment in a Transboundary Context (1997), on the Transboundary Effects of Industrial Accidents (1997), on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (2001), Convention on Persistent Organic Pollutants (2003), European Landscape Convention (2004).

Those international treaties that are most relevant to the list of breeding waterbirds (Table 6) are given in the Table 4.

Table 4: Main International Instruments (Treaties/Agreements) that are relevant to the migratory waterbirds and wetlands of the country

Instruments – formal	Geographic scope	Thematic Focus	Implementing Strategy or Action Plan
Convention on Biological Diversity	Worldwide	A global, comprehensive agreement addressing all	Biodiversity strategy and action plan of

(1993)		aspects of biological diversity: genetic resources, species, and ecosystems	Armenia, 1999
Convention on Wetlands (1993)	Worldwide	Provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.	-
World Heritage Convention (1993)	Worldwide	Encourages the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity	-
UN Convention to Combat Desertification (1997)	Worldwide	An overall framework for intergovernmental efforts to tackle the challenge posed by climate change	National Action Programme to Combat Desertification in Armenia,
European Landscape Convention (2004)	Europe	Aims at filling the legal vacuum caused by the absence, at European level, of a specific, comprehensive reference text devoted entirely to the conservation, management and improvement of European landscapes in the international legal instruments on the environment, regional planning and the cultural heritage.	-

Armenia intends to join to the Convention on Protection of Wild Flora and Fauna and their Habitats, Convention on International Trade of Endangered Species of Wild Flora and Fauna, and Convention on the Conservation of Migratory Species of Wild Animals and its African-Eurasian Migratory Water Bird Agreement during 2006.

G. International Programs and Activities

This discussion and table highlights each country's international waterbird program/activities/actions/projects. It should indicate the applicable geographic region, cooperating country, instrument and partners, and whether there are reports available (See Table 5).

Table 5: International activities involving the countries migratory waterbirds (initiated in or since 2000, earlier programmes may also be included)

Activity	Waterbird Group	International partners	Principle outputs
Training Courses and Seminars (1999-2004) (for more information Table 3, Orientation Union)	All	Ramsar, LakeNet, SDA, Wetlands International, Evian	More than 200 participants from 40 countries, 8 wetland draft management plans (basis for approved once), 4

			scientific and educational publications
Inventory and ecologo-economic valuation of Armenian wetlands (for more information Table 3, Orientation Union)	All	Ramsar, International Mire Conservation Group, Wetlands International	Identification and comprehensive valuation of different types of Armenian wetlands, including from the point of waterfowl habitat; waterbird monitoring in Lake Arpi an Lake Sevan Ramsar sites
Birds of Armenia Project (for more information Table 3 , Birds of Armenia)	All	Sargis Hakobian, USA Muhlenberg College in Allentown, Pennsylvania, USA	<u>A Field Guide to Birds of Armenia Handbook of the Birds of Armenia Reference Map for the Birds of Armenia Project</u>
BirdLife International Project BiEII (Birds in Europe II)	All	BirdLife International, countries of South Caucasus Region	Population estimates and trends for all breeding and wintering birds in Armenia
Important Bird Areas Program (IBA) (for more information Table 3, ASPB)	All	BirdLife International	Proposal (2006) for designation of 18 IBAs instead of 5 existing, of them 5 are wetland IBAs
Restoration of Lake Gilli	All	UNDP/GEF	Expected output is restored Lake Gilli (ca. 600 ha) that can serve as an effective wetland habitat for species of international significance
Establishment of Protected Areas in Armenia's Javakheti Region	All	Ministry of Cooperation and Development of Federative Republic of Germany and KfW, Georgia, Turkey potential partner in the future	Establishment of transboundary National Park and sanctuaries in accordance with IUCN categories on the borders with Georgia and Turkey. The area is of global significance for staging and breeding of at least 91 species of birds, of them most are waterbirds

H. List of Regular Breeding and Migratory Waterbirds

The **Table 6** is completed following Adamyan, Klemm, 1997, 1999, 2000. In limited cases later, including own observations also have been taken into account. Except 21 species of breeding birds that migrate outside the country after breeding season (Breeding bird), many species of breeders that present throughout the year (Year-round resident), also migrate outside the legal jurisdiction of the country. Of migrants (migrant, summer, fall, winter visitors) only the Little Stint is common, more 8 species are uncommon and 18 are rare.

Table 6: Full list of migratory waterbirds in Armenia

Key to table:

Abundance categories

Common	Expected to be seen on more than 50% of trips afield
Uncommon	Expected to be seen on 5-50% of trips afield
Rare	Expected to be seen on less than 5% of trips afield
Possible	Expected to be seen in appropriate habitat but no documented records exist

Status categories

Year-round resident	Breeder, present throughout the year
Breeding bird	Breeder, absent during non-breeding period
Year-round visitor	Non-breeder, present throughout the year
Fall visitor	Non-breeder, present in late summer, fall or early in winter
Winter visitor	Non-breeder, present in late fall, winter, or early spring
Migrant	Bird of passage, present primarily in fall and spring
Casual	Recorded 1-5 times; unexpected because normal range is distant from Armenia

Scientific name	English name	Abundance category	Status category
<i>Gavia stellata</i>	Red-throated Diver	-	Casual
<i>Gavia arctica</i>	Black-throated Diver	-	Casual
<i>Tachybaptus ruficollis</i>	Little Grebe	Common	Year-round resident
<i>Podiceps auritus</i>	Slavonian Grebe	-	Casual
<i>Podiceps grisegena</i>	Red-necked Grebe	Uncommon	Year-round resident
<i>Podiceps cristatus</i>	Great Crested Grebe	Common	Year-round resident
<i>Podiceps nigricollis</i>	Black-necked Grebe	Common	Year-round resident
<i>Phalacrocorax carbo</i>	Cormorant	Uncommon	Year-round resident
<i>Phalacrocorax pygmaeus</i>	Pygmy Cormorant	Common	Year-round resident
<i>Pelecanus onocrotalus</i>	White Pelican	Uncommon	Year-round visitor
<i>Pelecanus crispus</i>	Dalmatian Pelican	Rare	Breeding bird
<i>Ardea cinerea</i>	Grey Heron	Common	Year-round resident
<i>Ardea purpurea</i>	Purple Heron	Uncommon	Breeding bird
<i>Ardea alba</i>	Great White Egret	Uncommon	Year-round visitor
<i>Bubulcus ibis</i>	Cattle Egret	Rare	Breeding bird
<i>Egretta garzetta</i>	Little Egret	Uncommon	Year-round resident
<i>Ardeola ralloides</i>	Squacco Heron	Uncommon	Breeding bird
<i>Nycticorax nycticorax</i>	Night Heron	Uncommon	Year-round resident
<i>Ixobrychus minutus</i>	Little Bittern	Uncommon	Breeding bird
<i>Botaurus stellaris</i>	Bittern	Uncommon	Migrant , Winter visitor
<i>Ciconia nigra</i>	Black Stork	Rare	Breeding bird
<i>Ciconia ciconia</i>	White Stork	Common	Year-round resident
<i>Plegadis falcinellus</i>	Glossy Ibis	Uncommon	Breeding bird
<i>Platalea leucorodia</i>	Spoonbill	Rare	Year-round resident
<i>Phoenicopterus ruber</i>	Greater Flamingo	Rare	Fall visitor
<i>Cygnus olor</i>	Mute Swan	-	Casual
<i>Cygnus cygnus</i>	Whooper Swan	Uncommon	Winter visitor
<i>Cygnus columbianus</i>	Bewick's Swan	-	Casual
<i>Anser albifrons</i>	White-fronted Goose	Rare	Migrant , Winter visitor
<i>Anser erythropus</i>	Lesser White-fronted Goose	Rare	Migrant , Winter visitor
<i>Anser anser</i>	Greylag Goose	Common	Year-round resident
<i>Branta ruficollis</i>	Red-breasted Goose	-	Casual
<i>Tadorna ferruginea</i>	Ruddy Shelduck	Common	Year-round resident
<i>Tadorna tadorna</i>	Shelduck	Uncommon	Year-round resident
<i>Anas penelope</i>	Wigeon	Uncommon	Migrant , Winter visitor
<i>Anas strepera</i>	Gadwall	Common	Year-round resident
<i>Anas crecca</i>	Teal	Uncommon	Year-round resident

<i>Anas platyrhynchos</i>	Mallard	Common	Year-round resident
<i>Anas acuta</i>	Pintail	Uncommon	Year-round visitor
<i>Anas querquedula</i>	Garganey	Uncommon	Year-round resident
<i>Anas clypeata</i>	Shoveler	Uncommon	Year-round visitor
<i>Marmoronetta angustirostris</i>	Marbled Teal	Uncommon	Breeding bird
<i>Netta rufina</i>	Red-crested Pochard	Uncommon	Year-round resident
<i>Aythya ferina</i>	Pochard	Common	Year-round resident
<i>Aythya nyroca</i>	Ferruginous Duck	Uncommon	Year-round resident
<i>Aythya fuligula</i>	Tufted Duck	Uncommon	Year-round resident
<i>Aythya marila</i>	Scaup	Possible	Migrant , Winter visitor
<i>Melanita nigra</i>	Common Scoter	-	Casual
<i>Melanita fusca</i>	Velvet Scoter	Rare	former Breeding bird
<i>Bucephala clangula</i>	Goldeneye	-	Casual
<i>Mergus albellus</i>	Smew	Rare	Winter visitor
<i>Mergus serrator</i>	Red-breasted Merganser	Rare	Breeding bird
<i>Mergus merganser</i>	Goosander	Rare	Winter visitor
<i>Oxyura leucocephala</i>	White-headed Duck	Rare	Breeding bird
<i>Grus grus</i>	Crane	Uncommon	Breeding bird
<i>Anthropoides vigro</i>	Demoiselle Crane	Uncommon	Migrant
<i>Rallus aquaticus</i>	Water Rail	Uncommon	Year-round resident
<i>Porzana parva</i>	Little Crane	Rare	Breeding bird
<i>Porzana pusilla</i>	Baillon's Crane	-	Casual
<i>Porzana porzana</i>	Spotted Crane	Rare	Year-round resident
<i>Gallinula chloropus</i>	Moorhen	Common	Year-round resident
<i>Porphyrio porphyrio</i>	Purple Gallinule	Rare	Year-round visitor
<i>Crex crex</i>	Corncrake	Rare	Breeding bird
<i>Fulica atra</i>	Eurasian Coot	Common	Year-round resident
<i>Haematopus ostralegus</i>	Oystercatcher	Rare	Migrant
<i>Chettusia leucura</i>	White-tailed Plover	Rare	Breeding bird
<i>Chettusia gregaria</i>	Sociable Plover	-	Casual
<i>Vanellus vanellus</i>	Lapwing	Common	Year-round visitor
<i>Hoplopterus spinosus</i>	Spur-winged Plover	-	Casual
<i>Pluvialis squatarola</i>	Grey Plover	Rare	Migrant
<i>Pluvialis apricaria</i>	Golden Plover	Rare	Migrant
<i>Glareola nordmanni</i>	Black-winged Pratincole	Rare	Migrant
<i>Glareola pratincola</i>	Collared Pratincole	Common	Breeding bird
<i>Charadrius hiaticula</i>	Ringed Plover	Rare	Migrant
<i>Charadrius dubius</i>	Little Ringed Plover	Uncommon	Breeding bird
<i>Charadrius alexandrinus</i>	Kentish Plover	Uncommon	Breeding bird
<i>Charadrius leschenaultii</i>	Greater Sand Plover	Rare	Breeding bird
<i>Charadrius asiaticus</i>	Caspian Plover	-	Casual
<i>Eudromias morinellus</i>	Dotterel	-	Casual
<i>Numenius phaeopus</i>	Whimbrel	-	Casual
<i>Numenius arquata</i>	Curlew	Rare	Migrant
<i>Limosa limosa</i>	Black-tailed Godwit	Uncommon	Year-round visitor
<i>Limosa lapponica</i>	Bar-tailed Godwit	Rare	Migrant
<i>Tringa erythropus</i>	Spotted Redshank	Rare	Migrant
<i>Tringa totanus</i>	Redshank	Common	Year-round resident
<i>Tringa stagnalis</i>	Marsh Sandpiper	Rare	Migrant
<i>Tringa nebularia</i>	Greenshank	Rare	Migrant
<i>Tringa ochropus</i>	Green Sandpiper	Uncommon	Year-round resident
<i>Tringa glareola</i>	Wood Sandpiper	Uncommon	Migrant
<i>Xenus cinereus</i>	Terek Sandpiper	Rare	Migrant
<i>Actitis hypoleucos</i>	Common Sandpiper	Uncommon	Breeding bird
<i>Arenaria interpres</i>	Turnstone	Rare	Migrant
<i>Gallinago media</i>	Great Snipe	Uncommon	Migrant , Winter visitor
<i>Gallinago gallinago</i>	Snipe	Common	Year-round resident
<i>Scolopax rusticola</i>	Woodcock	Rare	Year-round resident
<i>Lymnocyptes minimus</i>	Jack-Snipe	-	Casual

<i>Calidris alba</i>	Sanderling	-	Casual
<i>Calidris minuta</i>	Little Stint	Common	Migrant
<i>Calidris temmincki</i>	Temminck's Stint	-	Casual
<i>Calidris alpina</i>	Dunlin	Uncommon	Migrant
<i>Calidris ferruginea</i>	Curlew Sandpiper	Uncommon	Migrant
<i>Limicola falcinellus</i>	Broad-billed Sandpiper	Rare	Migrant
<i>Philomachus pugnax</i>	Ruff	Uncommon	Migrant
<i>Himantopus himantopus</i>	Black-winged Stilt	Common	Breeding bird
<i>Recurvirostra avosetta</i>	Avocet	Uncommon	Year-round resident
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Rare	Migrant
<i>Stercorarius pomarinus</i>	Pomarine Skua	-	Casual
<i>Stercorarius longicaudus</i>	Long-tailed Skua	-	Casual
<i>Stercorarius parasiticus</i>	Arctic Skua	-	Casual
<i>Larus canus</i>	Common Gull	-	Casual
<i>Larus armenicus</i>	Armenian Gull	Common	Year-round resident
<i>Larus cachinnans</i>	Yellow-legged Gull	-	Casual
<i>Larus fuscus</i>	Lesser Black-backed Gull	-	Casual
<i>Larus ichthyaetus</i>	Great Black-headed Gull	Common	Winter visitor
<i>Larus melanocephalus</i>	Mediterranean Gull	-	Casual
<i>Larus ridibundus</i>	Black-headed Gull	Common	Year-round resident
<i>Larus genei</i>	Slender-billed Gull	Rare	Migrant
<i>Larus minutus</i>	Little Gull	Rare	Migrant
<i>Chlidonias hybridus</i>	Whiskered Tern	Common	Year-round resident
<i>Chlidonias leucopterus</i>	White-winged Black Tern	Common	Year-round resident
<i>Chlidonias niger</i>	Black Tern	Common	Year-round resident
<i>Sterna nilotica</i>	Gull-billed Tern	Uncommon	Year-round resident
<i>Sterna caspia</i>	Caspian Tern	-	Casual
<i>Sterna hirundo</i>	Common Tern	Uncommon	Year-round resident
<i>Sterna albifrons</i>	Little Tern	Common	Year-round resident

I. Migration Routes, Staging Sites, and Non-breeding Areas

Basically key breeding areas, key staging areas and non-breeding areas of the country's waterbirds coincide. However in many areas after breeding season part of breeders are replaced by staging and/or migrating species. In some cases after breeding season more northern populations of the same species replace local breeding populations, as, for example, in case of mallard. **Table 7** provides information about key waterbird areas as well as main waterbird species in these areas.

Table 7: Key waterbird areas with main waterbird species

Key waterbird areas with brief description	Main waterbird species - principle importance of the area
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Lake/reservoir Arpi Ramsar site (06/07/93, 3,139 ha) is located in Shirak Marz (41°03'N 043°37'E) at the altitude of 2,023 m a.s.l. The surface of the reservoir is 2,000 ha, the maximum volume 96 million m³. The catchment of the lake is 22,000 ha. Depending on the year the water-level drop changed from 3 to 5 m. The duration of ice cover period is 4-5 months. Some spring marshes are free of ice during the whole winter.

The bottom of the reservoir is silty and boggy. The fauna of wetland vertebrates consists of 8 species of fishes, 3 species of amphibians, 1 species of reptile, around 100 species of birds, and 4 species of mammals.

Key areas of waterbird concentration are islets, bogged shores and meandering areas of outlet River Akhuryan, including Amasia Floodplain.

Breeding species

- colonial

Armenian Gull (*Larus armenicus*) – the colony on 2 islets on Lake Arpi is the largest one in the world numbering up to 10,000 pairs

Dalmatian Pelican (*Pelecanus crispus*) – nests irregularly numbering up to 6 pairs; the site is the only nesting location in Armenia

- common

Mallard (*Anas platyrhynchos*)

Eurasian Coot (*Fulica atra*)

Green Sandpiper (*Tringa ochropus*)

Redshank (*Tringa totanus*)

Migrating species

– **occurred here rather frequently than elsewhere in Armenia**

Great Cormorant (*Phalacrocorax carbo*) -

Glossy Ibis (*Plegadis falcinellus*) -

Black Stork (*Ciconia nigra*) -

Common Crane (*Grus grus*)

– **occurred regularly**

Black-headed Gull (*Larus ridibundus*)

Mallard (*Anas platyrhynchos*)

Ruddy Shelduck (*Tadorna ferruginea*)

Greylag Goose (*Anser anser*)

Garganey (*Anas querquedula*)

Teal (*Anas crecca*)

Pochard (*Aythya ferina*)

Tufted Duck (*Aythya fuligula*)

Corncrake (*Crex crex*)

Great Snipe (*Gallinago media*)

<p>Lake Sevan Ramsar site (06/07/93, 489,100 ha) is located in Gegharkunik Marz (40°24'N 045°17'E) at the altitude of 1,897 m a.s.l. A total of 28 rivers flow into Lake Sevan. The outflow, River Hrazdan, is regulated artificially since 1933. Currently (2005) the surface of the lake is 1,250 km², the volume 33 km³. Lake Sevan is the greatest lake of the Caucasus Region. The basin of Lake Sevan (4,891 km²) makes up one sixth of the total territory of Armenia. Lake Sevan has a unique combination of large size, high mountain location, and comparatively little mineralised water. All other great lakes of the region are brackish to saline, notably the Caspian Sea, Lake Van (Turkey), and Lake Orumiyeh (Iran) are saline. In Lake Sevan basin are 6 species of fish, 4 species of amphibians, 18 species of reptiles, 210 species of birds, 36 species of mammals.</p> <p>Key areas of waterbird concentration are islets in Minor Sevan, bogged shores, oxbow lakes of Noratus, Lichk and Gilli, and meandering area of River Argichi (Madina Valley).</p>	<p>Breeding species - colonial Armenian Gull (<i>Larus armenicus</i>) – the colonies on 3-4 islets in Minor Sevan numbers total 6-8 thousands pairs - common Mallard (<i>Anas platyrhynchos</i>) Eurasian Coot (<i>Fulica atra</i>) Ruddy Shelduck (<i>Tadorna ferruginea</i>)</p> <p>Migrating species – occurred here rather frequently than elsewhere in Armenia Whooper Swan (<i>Cygnus cygnus</i>) up to 400 individuals Lesser White-fronted Goose (<i>Anser erythropus</i>) Red-crested Pochard (<i>Netta rufina</i>) several thousands Ferruginous Duck (<i>)</i> Common Crane (<i>Grus grus</i>) Demoiselle Crane (<i>Grus vigo</i>) in March up to 5- 8 thousand individuals Black-tailed Godwit (<i>Limosa limosa</i>) Little Stint (<i>Calidris minuta</i>) Dunlin (<i>Calidris alpina</i>) Great Black-headed Gull (<i>Larus ichthyaetus</i>) – occurred regularly Little Egret (<i>Egretta garzetta</i>) Black-headed Gull (<i>Larus ridibundus</i>) Mallard (<i>Anas platyrhynchos</i>) Greylag Goose (<i>Anser anser</i>) Garganey (<i>Anas querquedula</i>) Shoveler (<i>Anas clypeata</i>) Teal (<i>Anas crecca</i>) Pochard (<i>Aythya ferina</i>) Tufted Duck (<i>Aythya fuligula</i>)</p>
<p>Khor Virap Marsh (surface 351 ha) is located in semi-desert landscape zone in Ararat Marz (39°88'N 044°57'E) at the altitude of 820 m a.s.l. in the vicinity of the Monastery Khor Virap on the border with Turkey. Large drainage canals separate the territory of the marsh from surrounding agricultural land. Marsh has 3 ecological types of wetland vegetation: emergent, submerged and floating. Emergent vegetation covers 90% of the territory. Here are registered 8 species of fish, 2 species of amphibians, 16 species of reptiles, at least 30 species of breeding birds, 8 species of mammals.</p>	<p>Breeding species - colonial Pygmy Cormorant (<i>Phalacrocorax pygmaeus</i>) - common Little Egret (<i>Egretta garzetta</i>) Purple Heron (<i>Ardea cinerea</i>) Squacco Heron (<i>Ardeola ralloides</i>) Little Bittern (<i>Ixobrychus minutus</i>) Snipe (<i>Gallinago gallinago</i>) Black-winged Stilt (<i>Himantopus himantopus</i>) Gadwall (<i>Anas strepera</i>) Avocet (<i>Recurvirostra avosetta</i>)</p> <p>Migrating species Spoonbill (<i>Platalea leucorodia</i>) Shoveler (<i>Anas clypeata</i>), Sociable Plover (<i>Chettusia gregaria</i>) Eurasian Oystercatcher (<i>Haematopus ostralegus</i>)</p>

<p>Armash Fishponds (39°76'N 044°76'E, Ararat Marz) contains 25 great rectangular ponds consisting of 1,700 ha water surface area, and a number of smaller ponds used for growing young fish. They are situated at the junction of Armenia with Iran, Turkey and the Nakhichevan enclave of Azerbaijan. More or less extensive reed stands and muddy areas surround the ponds. The farm area is crossed by several channels that empty into the ponds and artesian springs contribute to a stable water level. The surrounding land is semi-desert and saline vegetation. The fish being farmed are Carp (<i>Cyprinus carpio</i>), Silver Carp (<i>Hypophthalmichthys molitrix</i>), and Grass Carp (<i>Ctenopharygodon idella</i>). The Armash Fishponds used to be the biggest fish farming enterprise in the South Caucasus, with a total capacity of several thousand tones per year.</p>	<p>Breeding species - occurred in mixed colonies Pygmy Cormorant (<i>Phalacrocorax pygmaeus</i>) Glossy Ibis (<i>Plegadis falcinellus</i>) Squacco Heron (<i>Ardeola ralloides</i>) Little Egret (<i>Egretta garzetta</i>) Purple Heron (<i>Ardea cinerea</i>) Spoonbill (<i>Platalea leucorodia</i>) - common Cattle Egret (<i>Bubulcus ibis</i>) Greylag Goose (<i>Anser anser</i>) Marbled Teal (<i>Marmoronetta angustirostris</i>) Red-crested Pochard (<i>Netta rufina</i>) Ferruginous Pochard (<i>Aythya nyroca</i>) White-headed Duck (<i>Oxyura leucocephala</i>) Eurasian Coot (<i>Fulica atra</i>) Little Crake (<i>Porzana parva</i>) White-tailed Plover (<i>Chettusia leucura</i>) Greater Sand Plover (<i>Charadrius leschenaultii</i>) Black-winged Stilt (<i>Himantopus himantopus</i>) Avocet (<i>Recurvirostra avosetta</i>) Stone Curlew (<i>Burhinus oedicephalus</i>) Black-winged Pratincole (<i>Glareola nordmanni</i>) Black Tern (<i>Chlidonias niger</i>) Migrating species All waterbird species that occurred in Armenia beyond the breeding season, total ca. 80</p>
<p>The Metsamor Wetland System (40°07'N 044°31'E, Armavir Marz) with total area of around 500 ha is a complex of Lake Aighr, River Sevjur, surrounding permanently or seasonally wet marshlands and fishponds. The surface of Lake Aighr is 7 ha, volume 0.31 million m³, maximum depth 9.4 m. The lake never freezes since it is nourished by springs with constant temperature 13-14°C. River Sevjur flows out of Lake Aighr to join River Arax km downstream forming a chain of marshlands. The flora and fauna have a unique character mainly determined by specific microclimatic conditions. Impressive is the number of recorded bird species that exceeds 200 due to mosaic of different types of habitats from open water to semi-desert.</p>	<p>Breeding species Pygmy Cormorant (<i>Phalacrocorax pygmaeus</i>) Glossy Ibis (<i>Plegadis falcinellus</i>) Little Bittern (<i>Ixobrychus minutus</i>) Mallard (<i>Anas platyrhynchos</i>) Marbled Teal (<i>Marmoronetta angustirostris</i>) Ferruginous Duck (<i>Aythya nyroca</i>) Eurasian Coot (<i>Fulica atra</i>) Migrating species White Pelican (<i>Pelecanus onocrotalus</i>) Dalmatian Pelican (<i>Pelecanus crispus</i>) Purple Heron (<i>Ardea purpurea</i>) Great Bittern (<i>Botaurus stellaris</i>) Great Snipe (<i>Gallinago media</i>) Oystercatcher (<i>Haematopus ostralegus</i>)</p>

<p>Lake Lichk (40°17'N 045°23'E, Gegharkunik Marz) currently is the most important ornithological site in the Lake Sevan basin. The total area of wetland is 30 ha. The lake itself consists of two open water areas, 7 and 11 ha each, separated by emergent vegetation. The rest are reed stands (17 ha) and meadow (5 ha). The duration of ice-cover period is from December to April but due to river and springs significant part of the lake remains open during the winter.</p>	<p>Breeding species Little Grebe (<i>Tachybaptus ruficollis</i>) Great Crested Grebe (<i>Podiceps cristatus</i>) Squacco Heron (<i>Ardeolla ralloides</i>) Purple Heron (<i>Ardea purpurea</i>) Mallard (<i>Anas platyrhynchos</i>) Gadwall (<i>Anas strepera</i>), Teal (<i>Anas crecca</i>) Garganey (<i>Anas querquedula</i>) Tufted Duck (<i>Aythya fuligula</i>) Pochard (<i>Aythya ferina</i>) Eurasian Coot (<i>Fulica atra</i>), Moorhen (<i>Gallinula chloropus</i>) Water Rail (<i>Rallus aquaticus</i>) Spotted Crake (<i>Porzana porzana</i>)</p> <p>Migrating species Purple Heron (<i>Ardea purpurea</i>) Gray Heron (<i>Ardea cinerea</i>) Whooper Swan (<i>Cygnus cygnus</i>) Ruddy Shelduck (<i>Tadorna ferruginea</i>) Northern Shoveler (<i>Anas clupeata</i>) Red-crested Pochard (<i>Netta rufina</i>) White-winged Tern (<i>Chlidonias leucopterus</i>).</p>
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J. Waterbirds of CAF Conservation Concern (WCC)

The following criteria have been used for determination of waterbird species that are of the highest priority:

- species, that are globally threatened (IUCN Red Data List, 2000);
- species, that are listed in the Red Data Book of Armenia (1987);
- vulnerable species, that are proposed for inclusion in the Red Data Book of Armenia;
- species, that are of special importance for wetland habitats (key species) or are character species for given wetland habitat
- species of socio-economic importance; traditional objects of hunt, swans and geese aren't included in the list of species of socio-economic importance since hunt is prohibited for several decades; in the list aren't mentioned also those species of *Scolopacidae* and *Charadriidae* that usually do not taken by hunters;
- species of highest priority should be typical for the country, i. e. all casual species have not been taken into account.

As it is shown in **Table 7**, of 77 species of waterbirds 51 species are nationally threatened and vulnerable species (of them 7 are globally threatened), 45 species are key or background species, and 16 game species (please note some species have more than one priority criteria).

Table 7: Waterbird species that are of the highest priority in Armenia

Key to table:

Priority categories

GT	globally threatened species (IUCN Red Data List, 2000)
NT	nationally threatened species (Red Data Book of Armenia, 1987)
NV	nationally vulnerable species, expected to be included in the second edition of Red Data Book of Armenia
KB	key species or background species, typical for representative wetland habitats in the country
SEI	species of socio-economic importance

Scientific name	English name	GT	NT	NV	KB	SEI
<i>Tachybaptus ruficollis</i>	Little Grebe				X	
<i>Podiceps grisegena</i>	Red-necked Grebe			X		
<i>Podiceps cristatus</i>	Great Crested Grebe				X	
<i>Phalacrocorax carbo</i>	Cormorant		X			
<i>Phalacrocorax pygmaeus</i>	Pygmy Cormorant		X		X	
<i>Pelecanus onocrotalus</i>	White Pelican		X		X	
<i>Pelecanus crispus</i>	Dalmatian Pelican	X	X		X	

<i>Ardea cinerea</i>	Grey Heron				X	
<i>Ardea purpurea</i>	Purple Heron				X	
<i>Ardea alba</i>	Great White Egret		X			
<i>Bubulcus ibis</i>	Cattle Egret			X	X	
<i>Egretta garzetta</i>	Little Egret			X	X	
<i>Ardeola ralloides</i>	Squacco Heron				X	
<i>Nycticorax nycticorax</i>	Night Heron				X	
<i>Ixobrychus minutus</i>	Little Bittern				X	
<i>Botaurus stellaris</i>	Bittern			X		
<i>Ciconia nigra</i>	Black Stork			X	X	
<i>Ciconia ciconia</i>	White Stork				X	
<i>Plegadis falcinellus</i>	Glossy Ibis		X		X	
<i>Platalea leucorodia</i>	Spoonbill		X			
<i>Phoenicopterus ruber</i>	Greater Flamingo		X			
<i>Cygnus olor</i>	Mute Swan		X			
<i>Cygnus cygnus</i>	Whooper Swan		X		X	
<i>Anser albifrons</i>	White-fronted Goose			X		
<i>Anser erythropus</i>	Lesser White-fronted Goose	X		X		
<i>Anser anser</i>	Greylag Goose		X		X	
<i>Tadorna ferruginea</i>	Ruddy Shelduck			X	X	X
<i>Tadorna tadorna</i>	Shelduck		X			
<i>Anas strepera</i>	Gadwall		X		X	
<i>Anas crecca</i>	Teal				X	X
<i>Anas platyrhynchos</i>	Mallard				X	X
<i>Anas querquedula</i>	Garganey				X	X
<i>Anas clypeata</i>	Shoveler		X		X	
<i>Marmoronetta angustirostris</i>	Marbled Teal	X	X			
<i>Netta rufina</i>	Red-crested Pochard					X
<i>Aythya ferina</i>	Pochard				X	X
<i>Aythya nyroca</i>	Ferruginous Duck	X		X		
<i>Melanitta fusca</i>	Velvet Scoter		X			
<i>Oxyura leucocephala</i>	White-headed Duck	X	X			
<i>Grus grus</i>	Crane		X		X	
<i>Anthropoides vigro</i>	Demoiselle Crane			X	X	
<i>Rallus aquaticus</i>	Water Rail			X	X	
<i>Porzana porzana</i>	Spotted Crane			X		
<i>Gallinula chloropus</i>	Moorhen				X	X
<i>Crex crex</i>	Corncrake	X		X	X	
<i>Fulica atra</i>	Eurasian Coot				X	X
<i>Haematopus ostralegus</i>	Oystercatcher		X			
<i>Chettusia leucura</i>	White-tailed Plover			X		
<i>Vanellus gregarius</i>	Sociable Plover	X	X			
<i>Vanellus vanellus</i>	Lapwing				X	X
<i>Glareola nordmanni</i>	Black-winged Pratincole			X		
<i>Glareola pratincola</i>	Collared Pratincole			X	X	
<i>Charadrius dubius</i>	Little Ringed Plover					X
<i>Charadrius alexandrinus</i>	Kentish Plover					X
<i>Charadrius leschenaultii</i>	Greater Sand Plover			X		
<i>Numenius arquata</i>	Curlew					X
<i>Limosa limosa</i>	Black-tailed Godwit					X
<i>Tringa totanus</i>	Redshank				X	X
<i>Tringa ochropus</i>	Green Sandpiper			X		
<i>Actitis hypoleucos</i>	Common Sandpiper			X		
<i>Gallinago media</i>	Great Snipe			X	X	
<i>Gallinago gallinago</i>	Snipe				X	
<i>Scolopax rusticola</i>	Woodcock			X	X	X
<i>Calidris minuta</i>	Little Stint				X	
<i>Philomachus pugnax</i>	Ruff				X	X
<i>Himantopus himantopus</i>	Black-winged Stilt		X		X	

<i>Recurvirostra avosetta</i>	Avocet		X			
<i>Larus armenicus</i>	Armenian Gull		X		X	
<i>Larus ichthyaetus</i>	Great Black-headed Gull			X	X	
<i>Larus ridibundus</i>	Black-headed Gull				X	
<i>Larus genei</i>	Slender-billed Gull			X		
<i>Chlidonias hybridus</i>	Whiskered Tern				X	
<i>Chlidonias leucopterus</i>	White-winged Black Tern			X	X	
<i>Chlidonias niger</i>	Black Tern			X	X	
<i>Sterna nilotica</i>	Gull-billed Tern			X		
<i>Sterna hirundo</i>	Common Tern			X		
<i>Sterna albifrons</i>	Little Tern			X		

K. Recommendations to Improve International Migratory Waterbird Conservation

Recommendations to Improve International Migratory Waterbird Conservation to be implemented within the territory of Armenia:

- Further development of environmental legislation in accordance with international standards
- Formal endorsement of National Wetland Policy separate or as part of wider document
- Enforcement of nature-conservative measures
- Establishment of new and increase of territories and protective statute of existing protected areas on Armenian IBAs, including all wetland IBAs
- Preparation and publication of second edition of Red Data Book of Armenia
- Resumption of ringing of waterbirds within the territory of Armenia
- Regular participation in waterfowl censuses

Recommendations to Improve International Migratory Waterbird Conservation to be implemented within the territory of Caucasus

- Creation of transboundary sanctuaries
- Banned spring hunt within the whole territory of South Caucasus
- Bringing in correspondence with each other and international standards environmental legislation
- Development of common list of waterfowl
- Establishment of regional waterfowl and wetland scientific-advisory committee with working groups on separate species, if needed
- Complex monitoring of migratory waterbirds

Recommendations to Improve International Migratory Waterbird Conservation to be implemented within the territory of CAF:

- Full participation of the countries of Central Asian Flyway region in the CMS/AEWA-CAF
- Regular information exchange
- Organization of various training activities on different aspects of waterfowl and wetland management

L. References (not cited in the body text due to space economy)

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