

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

“The integrated waste management in Baalbek Caza – AID 9350: ”Italian Corporation/Ministry of Environment
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2. Date this sheet was completed/updated:

15/09/2011

3. Country:

Lebanon

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Ammiq Wetland

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or
b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
ii) the boundary has been extended ; or
iii) the boundary has been restricted**

and/or

If the site area has changed:

- i) the area has been measured more accurately ; or
ii) the area has been extended ; or
iii) the area has been reduced**

** **Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

The major changes in the ecological character are :

- The presence of the “excavated marsh” which has evolved. into an individual ecosystem. It is a resting site for birds during migrating season;
- The emergence of the fresh water otter (since 2007);
- The fires in 2009 and 2010, which have been ignited most probably by hunters and sheep owners from the neighboring properties, has destroyed around 70% of the reed bed. Fortunately in time, the reeds are slowly getting back, but this would take time;
- In 2009, the Skaff Estate has built an earth barrage at the eastern end on the mash to limit the drainage of water going to the Litani River which lengthened the life of the pools during summer.

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a hard copy (required for inclusion of site in the Ramsar List): ;

ii) an electronic format (e.g. a JPEG or ArcView image) ;

iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The boundaries of Ammiq Wetland have not been officially delineated. However, the Saghbin to Qab Elias road marks the boundary of the wetland at its extreme western and the Hafir River at its extreme extremity. With the exception of the river and the road there are few recognizable features defining the boundaries of the site.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

33° 46" N, 35° 46" E

9. General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

Ammiq Wetland lies in the Bekaa Valley in Lebanon, 53 km from the capital.

10. Elevation: (in metres: average and/or maximum & minimum)

865 m

11. Area: (in hectares)

Ammiq Wetland covers an area of 280 ha, with 250 ha of water.

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Ammiq is characterized by a Mediterranean-type climate, with cold wet winter, dry summer and short spring and autumn season.

The geology of Ammiq Wetland is characterized by two major units : the pale Jurassic limestone of the Barouk Mountain slopes, and the thick, soft Quaternary sediments of the Bekaa plain with their rich moist soils.

Ammiq Wetland is an inland freshwater ecosystem, showing a wide variety of ecological factors that is reflected through high floristic diversity and vegetation associations.

According to CORINE classification (1999), the reserve belongs to the "Meso-Mediterranean Level" category which encompasses Mediterranean habitats between 500-1000 m altitudes and classifies the wetland with two main habitats.

- The first is represented by the marsh itself which is interpreted as "Mediterranean Temporary Ponds" habitat and characterized by very shallow water and exists in winter and late spring with a flora mainly composed of *Agrotis*, *Juncus*, *Ranunculus*, *Anthemis*, *Scirpus*, *Cyperus michelianus*, *Mentha pulegiu*, etc;

- The second habitat is represented by the rivers that are interpreted as “Rivers with muddy banks with *Chenopodium rubri p.p.* and *Bidenthion p.p.* vegetation” habitat. It is characterized by the fact that during the spring and at the beginning of the summer, the site looks like muddy banks without any vegetation which develops later in the year. The characteristic plants found are *Chenopodium rubrum*, *Polygonum lapathifolium*, *Xanthium sp.* and *Bidens frondosa*.

Importance of Ammiq Wetland:

- Ammiq Wetland is one of the last remaining inland freshwater ecosystems of significant size in Lebanon;
- The wetland has a very positive ecological status, in terms of habitat diversity and rich biodiversity and thereby has great potential for further improvement;
- The wetland has been declared an Important Bird Area (IBA) in 1994 : hundreds of thousands of migrating birds use the marsh as a stopover site as they travel to and from Eastern Europe and Africa;
- Ammiq Wetland is characterized by a unique convergence of ecosystems (rivers, forests, springs, marsh...etc) which makes it perhaps the most biodiverse area in all over Lebanon.

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criteria 1 : Ammiq Wetland is one of the last remaining inland freshwater ecosystems of significant size, of much more extensive marshes in the Bekaa Valley.

Criteria 2 : Ammiq Wetland consists of a wide range of endangered/threatened species:

- Flora: 10 nationally threatened species and 1 regionally threatened species;
- Birds: 4 vulnerable species, 2 near threatened and 7 regionally threatened species;
- Mammals: 2 locally threatened species;
- Amphibians and reptiles: 10 regionally threatened species;
- Invertebrates: 1 threatened specie.

Criteria 3: Ammiq Wetland is at the heart of a mosaic of inter-linked ecosystems including rivers, forests, two mountain chains, springs and farmland. Because of this unique convergence of ecosystems, its geographical location, and the uniqueness of the marsh itself, the Ammiq Wetland is perhaps the most bio-diverse area in all of Lebanon. Hundreds of thousands of migrating birds use the marsh as a stopover site as they travel to and from Eastern Europe and Africa. Large mammals from the hills and mountains descend to the wetland for shelter, food, and water. Dispersed populations of amphibians from the hillsides and farmland converge on the wetland in spring to breed. Apart from the residential fish, other species from the Litani river inhabit the marsh in spring presumably to breed. The marsh is also home to vast numbers of aquatic invertebrates, mollusks, and crustaceans.

Criteria 4: Ammiq Wetland supports a wide range of plant/animal species at a critical stage in their life cycles:

- **Birds:**
 - The wetland serves as an important area for breeding migrants including Little Greebe, Little Bittern, Gargeny...etc;

- The flooded rough grazing provide shelter and feeding grounds for large numbers of migrant waders including Ruff, Jack Snipe, Common Snipe...etc;
- **Mammals:** Survival of the Jungle/Swamp Cat is largely dependent on the protection of the Ammiq marshes. It relies on the tall reed beds for shelter and breeding and feeds on a variety of animals including reptiles, amphibians and birds;
- **Amphibians and Reptiles:** the Ammiq Wetland is one of the largest breeding grounds for amphibians in all of Lebanon. The terrestrial Fire Salamander uses the wet areas of the marsh for laying eggs;
- **Fish:** many species from the Litani use the wetland especially in the spring to breed;
- **Invertebrates:** the marsh is an important breeding area for butterflies as well as aquatic insects (damsel flies, caddisfly, diving beetles and water boatman).

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

The climate of Ammiq Wetland is basically a Mediterranean-type climate, with cold wet winter due to the presence of the Lebanon Mountain Range, hot dry summer due to the continental winds. The average daytime temperatures in winter are 10-13°C, and in summer are 32-34°C.

The local geology of the area is characterized by two major units: the pale Jurassic limestone of the Barouk Mountain slopes and the thick, soft Quaternary sediments of the Bekaa plain.

The local soils of Ammiq Wetland are very deep, but young and not well developed.

The water of Ammiq marsh is supplied by the area's springs as well as from the groundwater inflow (Barouk Mountain), while the major source of surface water outflow is the Hafir River which connects to the Litani River.

Ammiq Wetland is an inland freshwater ecosystem which belongs to the "Meso-Mediterranean Level". It encompasses 131 floral species distributed over 41 families, with 10 nationally threatened species, 2 endemic and 5 rare species. According to the water requirements, 3 categories of flora formations characterize Ammiq Wetland: formation of water plants, formation of near-water plants, and formation of dryland plants.

The number of bird species recorded in Ammiq Wetland is 245 species, including 13 globally important species (according to the IUCN 2004 red list), 4 migrant species, 2 near threatened species and 7 regionally threatened species.

Furthermore, the number of mammal species recorded is 20 species, including 4 globally important species (according to the IUCN 2004 red list), and 2 locally threatened species.

The number of amphibian species recorded is 7 species and the number of reptiles recorded is 16 species. 10 out of these Herpetofauna species are regionally threatened.

Seven fish species exist in Ammiq Wetland including the Lebanese endemic *Phoxiellus libani*.

Moving on to invertebrates, 171 species have been found in Ammiq Wetland, including only 1 threatened, 3 rare, 7 purely Mediterranean and 17 endemic to the Levant species.

b) biogeographic regionalisation scheme (include reference citation):

Ecoregion: 436 Coastal Levant (Freshwater eco regions of the world).

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Climate:

The climate of Lebanon is basically a Mediterranean-type climate, with cold wet winters, dry summers, and short spring and autumn seasons. Because of its altitude, Ammiq experiences colder winters than the coastal areas, and because it is separated from the coast by the Lebanon Range, in summer it receives hot dry continental winds from the north west, rather than the milder, humid sea breezes. Average daytime temperatures in winter are 10-13°C, and in summer are 32-34°C (UNDP/FAO).

Total precipitation at Ammiq is in the range of 700-880 mm/yr and typically occurs during a period of only 80-90 days, between November and April; from June to August rainfall is rare. This is reflected in the flow volume of the Litani River, in which January, February and March flows each represent 20-25% of the total flow volume, whereas flow in each of the summer months represents less than 2% of the annual flow volume. There is not only high seasonal variation in precipitation, but also high year-to-year variation; annual precipitation can vary from less than 30% of the average to more than 200%. Furthermore, since the mid-1970s there has been a steady decline in annual rainfall. This may be due to human-induced climate change, or it may be part of a natural cycle (Sene et al., 1999).

Geology and geomorphology :

On the surface, the geology of the marsh and surroundings appears simple. There are two major units – the pale Jurassic limestone of the Barouk Mountain slopes, and the thick, soft Quaternary sediments of the Bekaa plain with their rich moist soils. Beneath these units, though, the situation is much more complex. The Barouk Mountains are created by the Yammouneh Fault, which follows the line of these mountains in a NE/SW direction. In the vicinity of Ammiq, this fault system actually consists of three parallel fault lines, the lowest running along the base of the slope, and the highest about 1 km further up the Barouk slopes. The limestone of the Barouk slopes is fractured and folded by the movement of these faults, and is karstified (i.e. the fractures are enlarged by the dissolving action of water), creating channels that direct the flow of groundwater. Because of the extensive folding, these channels are extremely complex, and it is thus very difficult to determine the flow direction of subsurface water, or the boundaries of the catchment for the marsh. Furthermore, the fault lines appear to be impermeable to the flow of subsurface water, giving rise to the line of springs (Ain el Salouk, Ain el Abed and Ain el Tine) above the valley. The lower fault line at the foot of the Barouk slopes represents the junction of the permeable Jurassic limestone with an impermeable unit of Cretaceous rock, and this gives rise to the main springs at the western end of the marsh.

The soft sediments within the marsh are not well understood. They may be a single unit up to a kilometre or more deep, but there may be places where the Cretaceous rock that is seen outcropping at the springs occurs shallowly beneath the surface elsewhere in the marsh. Sandstone boulders on the surface midway along the marsh maybe derived from a shallow subsurface sandstone unit. Such features would strongly affect subsurface water flow through the marsh, possibly isolating some areas from the main system.

Soil:

The soils of the marsh have not been described in any publication, to our knowledge. The soils of the surrounding land are described in “Enquete Pedologique et Programmes d’Irrigation Connexes: Liban” UNDP/FAO, and it is assumed that the marsh soils bear some resemblance to these. However, the marsh soils will have a greater proportion of peat in layers near the surface, and casual observations suggest that there might be considerable variation in soil type over quite small distances in the region of the marsh. In the UNDP/FAO report, the soils of the Ammiq area belong to the J2.a unit in the 1:20 000 map of the South Bekaa. The soils are very deep, but young and not well developed. They are brown (10YR4/3), non-calcareous (despite the adjacent limestone mountains), have a pH of 7.7-8.2, and show little change in composition with depth. Cation exchange capacity is about 21.5-24 meq/100 g. On the surface, the soils are clayey to silty (occasionally sandy), and below 50-60 cm, are clayey. This means that below 50-60 cm, the permeability to water movement is low, and rainwater (or excess irrigation water) will sit on the ground surface or in the top 40-50 cm of soil without being able to penetrate the deeper soils. The soils to 60+ cm depth are very hard when dry, firm when moist, and sticky and soft when saturated.

Casual observations near the marsh, however, suggest that there may be considerable variation in soil type, with some more sandy, permeable soils in places.

Hydrology :

There are two sources of water coming to the marsh: ground water and surface water.

Ground water: The main source of water to the marsh (from March or April) is the line of springs at the base of Qalat el Madiq at the western end of the marsh, water from these springs is derived from precipitation on the east facing slopes of the Barouk Mountains. The springs respond rapidly to a rainfall event, indicating very rapid groundwater flow from the slopes to the marsh, and thus signifying considerable storage capacity within the aquifer.

Surface water: while surface water is a minor factor in water inflow to the marsh it represents the majority of water outflow from the marsh. Ammiq wetland is a true marsh in that it is characterized by a thorough flow of surface water with steady west-to-east flow of water through the marsh, with the flow rate gradually becoming more rapid and river-like in character as the marsh narrows towards the eastern end.

Water quality :

Studies revealed microbiological contamination (E.coli, intestinal enterococci and fecal and total coliform) indicating contamination by farm runoff, human sewage and high presence of livestock in the area. There are also high concentrations of nitrate, phosphorus and sulphate coming from the springs in the Riachi river.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

18. Hydrological values: Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Ammiq is a true marsh in that it is characterised by a thorough flow of surface water. The main source of water over an annual cycle is almost certainly the line of springs at the foot of the Barouk Mountains, at the western end of the marsh. During the wet season there is also significant inflow from the fields adjacent to the marsh, especially those to the south, but this is also mostly channelled, via the Riachi River, to the western end of the marsh. The main surface outflow is via a natural channel at the eastern end of the marsh, which joins the Litani River. Therefore there is a steady west-to-east flow of water

through the marsh, with the flow rate gradually becoming more rapid and river-like in character as the marsh narrows towards the eastern end.

Surface inflows to the marsh probably do not persist beyond March or April, and direct precipitation is rare after this time. Therefore from March or April, the springs are the sole source of water to the marsh. These springs persist until June, after which the entire marsh enters a drying period which may result in a complete lack of surface water.

Evapotranspiration from the marsh and ditches is likely to be very high towards the end of the flood period, given the high temperatures, little cloud cover and moderate to strong winds during late spring and summer.

During the summer months, the water from all three springs are directed to the nearby villages and to agriculture land, therefore, the marsh is denied access to the springs water supply. On their estate, the Skaff family have halted pumping directly from the marsh except for short periods in specific locations in the summer.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

Tp – 2 – 9

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

Habitat description of Ammiq Wetland :

- 1- Open water: the depth of open water is highly variable from just a few centimeters to nearly 3m at its deepest.
- 2- Reed bed: the reed bed covers some 87 hectares. The Phragmites – Typha reed bed varies in width along the west to east alignment of the wetland, the most extensive are being in the middle section of the marsh.
- 3- Open wood: at the extreme south western end of the marsh, close to where the short and long avenue of trees meet, there is a limited area of willow and other trees in the wetland itself.
- 4- The avenue of trees: running parallel to the length of the marsh and at the western end bordered on both sides by the wetland is an avenue of deciduous trees, mostly composed of mature manna ash *Fraxinus ornus*.

- 5- Riverine: a riverine habitat exists at the extreme eastern end of the wetland as the out flowing water from the marsh is canalized before entering the Hafir river. In addition, the Riachi stream flowing alongside the marsh, parallel to the avenue of trees, presents a similar habitat, although during the summer is at places dammed to form pools for irrigation purposes.
- 6- Rough grazing (Meadow habitat) : during the period of inundation, the majority of this habitat is under several cm of water. As the flood recedes more and more of the pasture lands are exposed revealing a complex sward of grasses and flowering plants.

The identified vegetal associations at Ammiq Wetland are mainly at the pioneer stages of the ecological succession. Apparently, only the Ash trees have reached the climax phase. The main high ligneous formations of the Ammiq Wetland are essentially based on Phragmites, Typha and Ash trees.

The flora formations at Ammiq Wetland can be divided into three categories according to their habitat requirement for water:

- Formation of water plants
- Formation of near-water plants
- Formation of dry land plants

Ammiq Wetland includes 131 floral species distributed over 41 families (algae excluded). In addition, the reserve is home to ten nationally threatened species, 2 endemic and 5 rare species.

The animal communities are :

- Birds : Ammiq is designated as an IBA site with 245 species, including 13 globally important species, 4 migrant species, 2 near threatened species and 7 regionally threatened species.
- Mammals : 20 species including 4 globally important species, and 2 locally threatened species.
- Amphibians and reptiles : 7 species of amphibians and 16 species of reptiles. 10 out of these Herpetofauna species are regionally threatened.
- Fish : Seven fish species including the Lebanese endemic *Phoxiellus libani*.
- Invertebrates : 171 species, including only 1 threatened, 3 rare, 7 purely Mediterranean and 17 endemic to the Levant species.

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Ammiq Wetland is floristically rich with some 600 species likely to be present, including over 80 species of Monocotyledons. Currently, 131 species have been identified and distributed over 41 families (algae excluded), with 10 nationally threatened species, 2 endemic and 5 rare species.

The reedbeds of Ammiq Wetland are the most characteristic feature of a marsh wetland representing a rare habitat in Lebanon.

The flora formations at Ammiq Wetland can be divided into three categories according to their habitat water requirements.

- Formation of water plants (submerged or partly submerged): it is mainly characterized by *Alisma plantago-aquatica*, *Iris pseudacorus*, *Lemna minor*, *Myriophyllum spicatum*, *Potamogeton nodosus*, *Ranunculus sphaerospermus*, *Typha australis*, *Typha latifolia*.
- Formation of near-water plants: the main species of this formation are represented by *Arum hygrophilum*, *Epilobium hirsutum*, *Lycopus europaeus*, *Lythrum salicaria*, *Mentha aquatica*, *Mentha pelagium*, *Salix alba*, *Veronica anagallis-aquatica*.

- Formation of dryland plants (appears in dry seasons or lives in dry lands): the main species of this formation are represented by *Ammi majus*, *Cirsium phyllocephalum*, *Merendera sobolifera*, *Xanthium echinatum*, *Xanthium spinosum*.

Key flora species in Ammiq Wetland Area :

SCIENTIFIC NAME	ENGLISH NAME	CONSERVATION STATUS
<i>Typha australis</i>	Southern reed-mace	Nationally threatened
<i>Typha laxmannii</i>	Laxmann's reed-mace	Nationally threatened, Nationally rare
<i>Potamogeton densus</i>	Close-leaved pondweed	Nationally threatened
<i>Potamogeton panormitanus</i>	Palermo pondweed	Nationally threatened
<i>Alisma plantago-aquatica</i>	Great water-plantain	Nationally threatened
<i>Cyperus michelianus</i>	Mecheli's cyperus	Nationally threatened, Nationally rare
<i>Merendera sobolifera</i>	Bulbous merendera	Nationally rare, Endemic to East Mediterranean
<i>Iris pseudacorus</i>	Water iris	Nationally threatened, Nationally rare
<i>Ranunculus sphaerospermus</i>	Round-seeded buttercup	Nationally threatened
<i>Hydrocotyle ranunculoides</i>	Water pennywort	Nationally threatened, Rare, Endemic to East Mediterranean
<i>Myosotis caespitosa</i>	Tufted forget-me-not	Nationally rare
<i>Sideretis remota</i>	Scattered ironwort	Regionally threatened, Rare, Endemic to East Mediterranean Restricted to Ammiq
<i>Mentha pulegium</i>	Penny-royal	
<i>Exoacantha heterophylla</i>	Various-leaved exoacantha	Endemic to East Mediterranean, Restricted to Ammiq
<i>Nasturium officinale</i>	Common water-cress	
<i>Scirpus lacustris</i>	Common club-rush/ Bulrush	

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds :

The Ammiq Wetland lies on one of the most important bird migration routes in the world with hundreds of thousands of migrating birds using the marsh as a stopover site as they travel to and from Eurasia and Africa. The number of bird species so far recorded in Ammiq Wetland is 245 species, including 13 globally important species.

Four migrant species recorded at the marsh, Great Spotted Eagle *Aquila clanga*, Imperial Eagle *A. heliaca*, Lesser Kestrel *Falco naumanni*, and Corncrake *Crex Crex* have been listed as vulnerable. Two species, Pallid Harrier *Circus macrourus* and Great Snipe *Gallinago media* have been listed as Near Threatened.

Apart from these key species, the wetland provides a key stopover site for many other migrants. Most obvious are the thousands of White Storks *Ciconia ciconia* which use the wetland each spring to rest and feed. Also, roosts of 6000-7000 Swallows *Hirundo rustica* in the reedbeds are not uncommon. The flooded rough grazing area provides shelter and feeding grounds for large numbers of migrant waders including Ruff *Phimachus pugnax*, Jack Snipe *Lymnocyptes minimus*, Common Snipe *Gallinago gallinago*, Marsh Sandpiper *Tringa stagnatilis*, Greenshank *T. nebularia* Green Sandpiper *T. ochropus*, Wood Sandpiper *T. glareola*, and Common Sandpiper *Actitis hypoleucos*. The reedbeds also provide shelter and food for large numbers of migrant reed dwelling warblers such as Sedge Warbler *Acrocephalus schoenobaenus*, and Marsh Warbler *A. palustris*.

The wetland also serves as an important area for breeding migrants including Little Greebe *Tachybaptus ruficollis*, Little Bittern *Lxobrychus minutus*, Gargeny *Anus querquedula*, Spur-winged Plover *Vanellus spinosus*, Short-toed Lark, *Calandrella brachydactyla*, Savis Warbler *Locustella luscinioides*, Moustached Warbler *Acrocephalus melanopogon*, Reed Warbler *A. scirpaceus*, Wood-chat Shrike *Lanius senator*, and Black-headed Bunting *Emberizidae melanocephala*.

Migration aside, the wetland support a large number of residential species such as Steppe Buzzard *Buteo buteo*, Long-legged Buzzard *Buteo rufinus*, Calandra Lark *Melanocorypha calandra*, Cettis Warbler *Cettia cetti*, and Graceful Prinia *Prinia gracilis*.

Common winter visitors include, Hen Harrier *Circus cyaneus*, Lapwing *Vanellus vanellus*, Skylark *Alauda arvensis*, Bluethroat *Luscinia svecica*, Stonechat *Saxicola torquata* (including the Siberian race *maura*), Penduline Tit *Remiz pendulinus*, Starling *Sturnus vulgaris*, Chaffinch *Fringilla coelebs*, and Reed Bunting *Emberiza schoeniclus*.

Key bird species in Ammiq Wetland Area:

SCIENTIFIC NAME	ENGLISH NAME	CONSERVATION STATUS
<i>Aquila clanga</i>	Greater spotted eagle	
<i>Aquila heliaca</i>	Imperial eagle	Regionally threatened
<i>Circus macrourus</i>	Palid harrier	
<i>Crex Crex</i>	Corncrake	
<i>Falco naumanni</i>	Lesser kestrel	
<i>Gallinago media</i>	Great snipe	Regionally threatened
<i>Serinus syriacus</i>	Syrian serin	
<i>Botaurus stellaris</i>	Bittern	Regionally threatened
<i>Ciconia ciconia</i>	White Stork	Regionally threatened
<i>Pernis apivorus</i>	Honey Buzzard	Regionally threatened
<i>Accipiter brevipes</i>	Levant Sparrowhawk	Regionally threatened
<i>Aquila pomarina</i>	Lesser Spotted Eagle	Regionally threatened

Mammals :

The number of mammal species so far recorded in Ammiq Wetland is about 20 species, including 4 globally important species.

Two mammals in particular, the Levant Vole *Microtus guentheri* and the Wetland Cat *Felis chaus* are extremely valuable to the ecology of the wetland. The abundant (some years extremely abundant) Levant Vole is a major food source for predating mammals such as the Red Fox *Vulpes vulpes* and Jackal *Canis aureus*. They are also a major food source for the birds of prey that use the marsh. The Jungle/Swamp Cat has only been recorded in two other areas in all of Lebanon, and the survival of this species in Lebanon is largely dependent on the protection of the Ammiq marshes. It relies on the tall reedbeds for shelter and breeding and feeds on a variety of animals including reptiles, amphibians and birds. The major threat to these key species is loss of reedbed habitat for the Jungle/Swamp Cat, and rough grazing habitat for the Levant Vole.

Key mammal species in Ammiq Wetland Area :

SCIENTIFIC NAME	ENGLISH NAME	CONSERVATION STATUS
<i>Lutra lutra seistanica</i>	Common Otter	
<i>Hyaena hyaena</i>	Striped Hyaena	
<i>Sciurus anomalus</i>	Persian Squirrel	
<i>Myotis myotis macrocephalus</i>	Greater Mouse-Eared Bat	
♂ <i>Canis lupus pallipes</i>	Wolf	Locally threatened
<i>Felis silvestris tristrami</i>	Wild Cat	Locally threatened
<i>Microtus guentheri</i>	Levant Vole	Valuable to ecology of wetland

Amphibians and reptiles :

The Ammiq Wetland is one of the largest breeding grounds for amphibians in all of Lebanon. The number of amphibian species so far recorded in Ammiq Wetland is 7 species and the number of reptile species so far recorded is 16 species.

Very large numbers of Stripe-necked Terrapins *Mauremys caspica* can be found throughout the spring and summer months. In addition, dozens of Dice Snake *Natrix tessellata* can be seen on a given day feeding in the open water and pool fringes. Large Whip Snakes *Coluber jugularis* live in the less wet habitats of the marsh and in smaller numbers. Ocellated Skinks *Chalcides ocellatus* are common in the dry areas of unimproved pasture and rough grazing. The otherwise terrestrial Fire Salamander *Salamandra salamandra* likely uses the wet areas of the marsh for laying eggs. Tree Frog *Hyla savignyi* and Marsh Frog *Rana ribibunda* are among the most common species seen and the marsh holds very large populations of each.

Key Herpetofauna species in Ammiq Wetland area :

SCIENTIFIC NAME	ENGLISH NAME	CONSERVATION STATUS
<i>Bufo viridis</i>	Green Toad	Regionally threatened
<i>Rana levantina</i> (= <i>R. bedriagae</i>)	Marsh frog	Regionally threatened
<i>Hyla savignyi</i>	Tree frog	Regionally threatened
<i>Mauremys caspica</i>	Caspian mauremys	Regionally threatened
<i>Chamaeleo chamaeleon</i>	Common chameleon	Regionally threatened
<i>Lacerta laevis laevis</i>	Wall lizard	Regionally threatened
<i>Coluber jugularis asiannus</i>		Regionally threatened
<i>Malpolon monspessulana</i>	Montpellier snake	Regionally threatened
<i>Natrix tessellata tessellata</i>	Dice snake	Regionally threatened
<i>Chamaeleo chamaeleon</i>	Chameleon	Regionally threatened

Fish:

Seven species are believed to exist in Ammiq Wetland including the Lebanese endemic *Phoxinellus libani*. Because the marsh is linked with the Litani, it is likely that many species from the Litani also use the wetland, especially in the spring to breed.

Name and Status of Fish species found in Ammiq :

SCIENTIFIC NAME	STATUS
<i>Phoxinellus libani</i> (CYPRINIDAE)	Endemic to Lebanon
<i>Capoeta damascina</i> (CYPRINIDAE)	
<i>Cyprinus carpio</i> (CYPRINIDAE)	Introduced
<i>Oncorhynchus mykiss</i> (SALMONIDAE)	Introduced
<i>Aphanius mento</i> (Cyprinodontidae)	
<i>Gambusia affinis</i> (Poeciliidae)	Introduced

Invertebrates:

Up to date, 171 species have been found in Ammiq Wetland including only 1 threatened, 3 rare, 7 purely Mediterranean and 17 endemic to the Levant species.

One of the most common butterflies is the Small White *Artogeia rapae* which can be seen from February to November. Another common species, the Painted Lady *Vanessa cardui* is an eruptive migrant and is occasionally found in extremely large numbers. Rarer species such as Small Desert Blue *Chilades galba* and Plain Tiger *Danaus chrysippus* are also present.

Some of the more notable butterflies are the Swallowtail *Papilio machaon*, one of the very few species that can actually be found inhabiting the reedbeds, and the Salmon Caper *Colotis fausta* which is exclusively an autumn migrant. Dozens of other species are found throughout the year.

Apart from butterflies, the marsh is an important breeding area for aquatic insects such as damselflies, caddisfly, diving beetles and water boatman. Dragonfly larvae are also found in large numbers and many species of dragonfly inhabit the marsh during the spring and summer. There are large populations of a variety of snails. Crustaceans such as fresh water shrimp and fresh water crab are present.

Conservation status of key invertebrate species in Ammiq Wetland area :

SCIENTIFIC NAME	CONSERVATION STATUS
<i>Spongilla lacustris</i>	Rare
<i>Oligochaeta</i>	
<i>Tubifex acuticularis</i>	
<i>Psammoryctides longicapillatus</i>	
<i>Epirodrilus monbayedi</i>	
<i>T. tubifex</i>	
<i>Hirudinea</i>	
<i>Trocheta bykowskii</i>	
<i>Valvata saulcyi</i>	
<i>V. gaillardotii</i> = <i>Neoborotia gaillardotii</i>	
<i>Bithynia pbiakensis</i>	
<i>Semisalsa contempta</i>	
<i>Galba (Limnaea) truncatula</i>	Rare
<i>Stagnicola palustris</i>	Threatened
<i>P. planorbis antiochanus</i>	
<i>Gyraulus piscinarum</i>	Rare

SCIENTIFIC NAME	CONSERVATION STATUS
<i>Physella (Physa) acuta</i>	
<i>Amphipodes</i>	
<i>Niphargus nadarini</i>	
<i>Baetidae</i>	
<i>B. samochai</i>	
<i>Baetis rhodani</i>	
<i>Coenagrionidae</i>	
<i>Ischnura elegans ebneri</i>	
<i>Thaumalea libanica</i> Edw. (Diptère)	
<i>Hydrobiida</i>	
<i>Laccobius levantinus</i>	
<i>Orthocladinae</i>	
<i>Hydrobaenus dentistylus</i>	
<i>Polypedilum (Pentapedilum) longisetum</i>	
<i>Polypedilum longisetum</i> Moubayed	
<i>Epirodrilus moubayedii</i>	
<i>Corynoneura scutellata</i>	
<i>Cricotopus bicinctus</i>	
<i>C. sylvestris</i>	
<i>Paratrichocladius rufiventris</i>	
<i>Rheocricotopus effuses</i>	
<i>Thaumelea libanica</i>	
<i>Simulium (Odagnia) ornatum</i>	

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations within the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

Agriculture:

The significant reliance of the local community on agriculture creates a delicate issue when managing the Wetland. Therefore, it is of pertinent importance to apply the most suitable management strategies for Ammiq Wetland that will not create any further stress on the livelihoods of the local community. On the Skaff Estate, the land owners are applying agricultural practices based on integrated management that will conserve the surrounding ecosystem.

1. In the field located on the southern side of the wetland, the Skaff Estate started in 2010 a plantation program of walnut which will extend for 4 years. A 20 hectares per year to end field crops activities which should reduce water consumption, reduce perturbation (machinery and human) and increase the green cover.
2. In 2011, the Skaf Estate installed a pipeline of 1500 m along the avenue of trees which will be used to irrigate the walnut fields and supply water during fires. This will stop the water pumping from the wetland during spring.

Socio economic values:

The village of Ammiq has experienced a considerable transformation over the past years, from a society with little regard or appreciation of environmental issues to a society that has adopted the new trend in environmental protection and natural resource conservation.

Efforts by the landowners and *A Rocha*-Lebanon have gradually enhanced the awareness level of the local community on a variety of environmental issues. Furthermore, there has been a decrease in selected behaviours that had been destructive to the environment such as hunting and tree logging due to voluntarily decisions by the locals as well as patrolling efforts of the Skaff Estate guards.

In addition, the local communities have come to realize the link between nature conservation related issues and enhanced economic situation for the village as a whole. Furthermore, the village has developed a better understanding of eco-tourism, eco-guiding and organic farming principles, and has had the opportunity to experience first-hand, the positive implications of conservation activities through eco-tourism initiatives.

Tourism & leisure activities:

Eco-touristic activities are now taking place such as the Eco lodge (restaurant & chalets) which is under construction (to be finalized in 2012). This gives visitors the proper accommodation with the pleasure of undergoing activities and sightseeing within the wetland.

The educational programmes taking place on the wetland are designed to be an enjoyable, positive, informative and essentially practical experience of Lebanon's most important protected wetland. A typical programme would consist of a lecture and slide presentation in the Hawsh schoolroom emphasizing the importance of the Ammiq marsh as well as local environmental issues followed by a guided visit to the marsh itself where they have practical activities in pond dipping, invertebrates, bird watching and identification, insect observation and identification and the opportunity for nature trekking.

Moreover, the scout groups have been involved with the management team in several activities such as clean-up events in the wetland as well as developing hiking tracks in the hillside.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

Ammiq Wetland, which is located in the Bekaa valley, is an inland freshwater ecosystem which is one of the last remaining marshes.

In addition, conservation efforts have primarily focused on the Skaff Estate in collaboration with the International NGO *A Rocha* through the use of an integrated management plan for the wise use of the land. Despite the fact that a legal national designation for the site does not yet exist, the majority of people in the nearby local communities acknowledges the conservation efforts and refers to the site as a nature reserve.

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

- a) within the Ramsar site:

The wetland as well as the farmland and hillside within the entire Ammiq Estate is privately owned by four families Skaff, Hajj Chahine, Rizk and Saba.

Approximately 2/3 of the wetland is collectively owned by four members of the Skaff family with each family member having different ownership percentage of each parcel of land.

The remaining 1/3 of the wetland is collectively owned by around 37 individuals of the families Hajj Chahine, Rizk and Saba families from Zahle with each member of the latter four families having the same ownership percentage of each parcel of land.

- b) in the surrounding area:

25. Current land (including water) use:

The land around the water is being used by the Skaff family for a new method of agriculture which is environmental friendly. New theories and planting technologies for saving water are being implemented. Some other fields are switching to organic farming with the hope that these new technologies will spread to the neighbouring farmers. The grazing has been controlled more firmly which results into much more greener areas. The water area has been widened slightly, and the water loss during summer is being stabilized for a few years now.

- a) within the Ramsar site:

Conservation: Conservation efforts have primarily focused on the Skaff Estate in collaboration with the International NGO *A Rocha*. Despite the fact that a legal national designation for the site does not yet exist, the majority of people in the nearby local communities acknowledges the conservation efforts and refers to the site as a nature reserve.

Tourism & leisure activities: Eco-touristic activities are now taking place such as the Eco-lodge (restaurant & chalets) which is under construction (to be finalized in 2012). This gives visitors the proper accommodation with the pleasure of undergoing activities and sightseeing within the wetland.

Water use: In the past, the pumping of water directly from the marsh was very common as it was easier and cheaper than getting water from boreholes. Recently, the Skaff Estate in accordance to the request by *A Rocha* have halted pumping directly from the marsh except for short periods in specific locations in the summer. The other widely used mean for getting water for irrigation is the drilling of boreholes which extract water from the aquifer.

Education & demonstration: All educational visits have been coordinated through the *A Rocha* Lebanon education programme. The program provides organized groups, particularly from schools and universities, the opportunity to take part in structured activities in the wetland itself.

The educational programme is designed to be an enjoyable, positive, informative and essentially practical experience of Lebanon's most important protected wetland. A typical programme would consist of a lecture and slide presentation in the Hawsh schoolroom emphasizing the importance of the Ammiq marsh as well as local environmental issues followed by a guided visit to the marsh itself where they have practical activities in pond dipping, invertebrates, bird watching and identification, insect observation and identification and the opportunity for nature trekking.

On average number of schools visiting Ammiq through the program are as follows: winter (20 schools), spring (25 schools), and autumn (25 schools) accounting for approximately 2800 school students from the local area and several schools from Beirut.

Furthermore, the scout groups have been involved with the management team in several activities such as clean-up events in the wetland as well as developing hiking tracks in the hillside.

Other uses: Apiculture is practiced on a small scale with three locations being used each year with on average thirty hives at each location. On an occasional basis two individuals catch frogs using a hook and line for frog leg meat which is sold in the nearby town of Zahle. At a small scale dry reeds are collected for the construction of shelters and temporary accommodation by Beduin and temporary traders who frequent the area in the summer months.

b) in the surroundings/catchment:

Conservation: The Eddé Estate in nearby Aana Village have a gentlemen's agreement with the Skaff Estate to collaborate on several conservation issues including ban in hunting, sustainable agriculture and halting trespassers.

Water use:

The three springs along the Barouk Mountainside (Ain el Salough , Ain el Abed , Ain el Tiene) provide water for the nearby villages (Aammiq, Anna and Dier Tahniche), agriculture needs and any left over water is channeled to the wetland.

- Ain El Salouk: The entire water is currently utilized by the nearby villages of Aana and Ammiq;
- Ain Abed. It is a year round spring but the majority of water is diverted to the Aana and Ammiq Villages. An intricate piping system that allows for daily changes in the direction of water to either enter the marsh or directly flow to the agriculture land;
- Ain Tine: Re-diverted to Aana and Ammiq Villages, agriculture land through an intricate piping system that allows for daily changes in the direction of water to either enter the marsh or directly flow to the agriculture land.

Education & demonstration: Promoting Ammiq Wetland off-site has focused on two main axes; (i) promoting the site among both eco-tour and traditional tour operators and (ii) introducing Ammiq Wetland as an important place for conservation and eco-tourism in all relevant workshops, seminar and exhibitions. On the first axis, the management team has facilitated an agreement between eco-tour operators and the Skaff family to encourage tourism groups to Ammiq. In regards to traditional tourism sector, connections were established with the major tour operators to promote traditional tourism to the site. In regards to the second axis, Ammiq Wetland has been promoted in several exhibitions pertaining to nature reserves, water resources.

Other uses: Apiculture is practiced on a small scale with three locations being used each year with on average thirty hives at each.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) within the Ramsar site:

- Destruction by fires;
- High levels of hunting.

b) in the surrounding area:

- Extensive grazing;
- Destruction of habitat;
- Destruction by fires;
- Excessive utilization of pesticides;
- Uncontrolled visitor access to sensitive areas (activities such as picnics);
- High levels of hunting.

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

National Policies:

There is a number of relevant decrees and initiatives that impact Ammiq Wetland:

- The Forest Code (Law 85 of 12/9/1991), amended by Parliament in 1996 (Law 558 of 24/7/96), stipulates that all cedar, fir, cypress, juniper forests and “other forests” in Lebanon are protected de facto;
- Law No. 320 (1926) relates to the conservation and use of public water;
- The law pertaining to hunting has changed tracks several times over recent years; the latest decision is “controlled” hunting in terms of season, amount and type along with a permit system based on regular testing.

International Legal Designation:

Ammiq Wetland is influenced by the international conventions and agreements that have either been signed or ratified by Lebanon including:

- The Convention on Biological Diversity (CBD) : Signed in 1992 and ratified in 1994 (Law No. 360/94);
- The African Eurasian Water Bird Agreement (AEWA) : Ratified in June 2002;
- River Basin Initiative.

Ramsar Convention :

Lebanon ratified the Ramsar Convention in 1999 and has designated four sites including Ammiq Wetland (Ramsar site No.: 978) as Wetland of International Importance.

Important Bird Area :

Ammiq Wetland was declared an Important Bird Area (IBA) in 1994.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

Yes, a management plan for the years 2005-2010 existed as a result of the MedWetCoast Project.

However, a new integrated management plan is being prepared by the Skaff family and *A Rocha* and will be implemented starting 2012.

d) Describe any other current management practices:

Ammiq Wetland is currently under the management plan (2005-2010) prepared by the MedWetCoast Project team

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

There is an integrated management plan in preparation by the Skaff family and *A Rocha* to be finalized in 2012.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

A small research center, run by *A Rocha*-Lebanon, carries out on-going hydrological and biodiversity monitoring (particularly birds) together with "one off" studies on specific taxa e.g. *Testudinidae*. Logistical support provided for national and international researchers and data for the Mediterranean Wetland Observatory.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

- All CEPA activities are coordinated through the A Rocha Lebanon education programme: educational programs consist of a lecture and slide presentation in the Hawsh schoolroom emphasizing the importance of the Ammiq marsh as well as local environmental issues followed by a guided visit to the marsh itself where they have practical activities in pond dipping, invertebrates, bird watching and identification, insect observation and identification and the opportunity for nature trekking. As well as clean-up events in the wetland.
- A visitors' centre under the jurisdiction of the Municipality of Ammiq is to be finalized in 2012.
- An Eco Lodge (visitor centre and restaurant) funded by the SDC (Swiss Development Corporation) and managed by the Skaff family will be finalized by the end of 2011.

31. Current recreation and tourism: State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

At present, an Ecolodge is being erected which will serve as a resort for all those who are interested in ecotourism, and would like to explore the area either for recreation or for scientific purposes. Hopefully, this facility will be available for the public at the end of October 2011.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Ammiq Wetland is geographically located in Ammiq village, Bekaa valley, Lebanon.

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

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For scientific or educational information please contact *A Rocha*-Lebanon, Tel. 76/751410, e-mail : michel.khairallah@arocha.org

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

- Ammiq management plan (2005-2010);
- Business plan for Ammiq Wetland (2005);
- Personal communication and field visit to the site.

Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
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