

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

Available for download from [http://www.ramsar.org/ris/key\\_ris\\_index.htm](http://www.ramsar.org/ris/key_ris_index.htm).

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

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## 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:

15/9/2011

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## 3. Country:

Lebanon

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**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.

Palm Islands Nature Reserve (PINR)

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**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

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**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 information is not available

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**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.

PINR is a nature reserve and follows the shoreline of North Lebanon.

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**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.

- 34° 29' -34° 30' 30" N
- 35° 44' 30"- 35° 47' E

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**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.

PINR is a group of three islands located 5 .5 km offshore of the Mina region which is north-west of Tripoli.

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

1-12 m

**11. Area:** (in hectares)

415 ha

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**12. General overview of the site:**

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

PINR encompasses a group of three flat, rocky islands of eroded limestone pavement:

- Palm Island (also known as Rabbit Island) is the largest of the three islands. The island is made up of a rocky shoreline extending from the northwest to south, and a sandy beach extending from the north to the east . It also contains evidence of past periods of human occupation in the form of a fresh water well, old salinas and the remains of an old church that date back to the Crusader period;
- Sanani Island is mainly rocky with a partially sandy shore that resembles that of Palm Island;
- Ramkine Island is the smallest island, located northwest of Palm Island. It is mostly rocky and rises to about 12 meters above sea level.

***Geology:***

The rocky basement of the islands is mainly horizontally bedded marine limestone interpreted as Miocene deposits, this limestone could be interpreted to be more likely from the Plio-Quaternary age.

The ecological characteristics and importance of PINR:

- The islands of Palm Islands Nature Reserve are of most importance because of the natural protection afforded as islands to various species of plants and animals;
- PINR is one of the most important animal habitat values identified in the evaluation process and an important seabird breeding, transit and resting area. This is of national significance and may also have international significance because of the number of rare and threatened species utilizing the islands. The islands are the main island group in Lebanese waters and as such represent the nationally most important sea bird breeding area in Lebanon;

- At the regional (Mediterranean) level, the islands are valued for being an important area for visiting (Green Turtle and Leatherback Turtle) and summer nesting (Loggerhead Turtle);
- At the national level, the islands represent a unique opportunity for citizens to visit offshore islands and experience the island environment.

### 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 2 :** The endangered Loggerhead Turtle *Caretta caretta* is at present a regular nesting species in summer time (egg laying time : early June) and the critical endangered Green Turtle *Chelonia mydas* is rare but regularly recorded in winter and it is occasional at other times . The critically endangered Leatherback Turtle is also occurring but observed only as an occasional captured species by fishermen .

According to the Directory of Important Bird Areas in Lebanon, the vulnerable Spotted Eagle *Aquila clanga* is a vagrant in the area and Corncrake *Crex crex* (also vulnerable species) is a regular passage migrant though in small numbers .

**Criteria 4 :** The use of the reserve by many migrant birds as a suitable feeding and resting sites, including 42 species known to breed afterward on Lebanese mainland, together with the 6 species in the 2000 IUCN Red list (*Phalacrocorax pygmeus*, *Pelecanus crispus*, *Aquila clanga*, *Crex crex*, *Larus audouinii* and *Aythya nyroca*).

**Criteria 8 :** The site, which is formed from 3 islets with many caves and refuges, is well known by fishermen as an important spawning ground for fish and that the reserve is the reservoir which supply them with fish in the area surrounding the site .

### 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 “sandy” shore and dunes of two of the islands has the peculiarity of a biological origin. It is mostly represented by the skeletons of marine benthic foraminifera, resulting in a very light “sand” with an admixture of tiny gastropod shells and parts of skeletons and spines of echinoderms. The “sandy” shore differs in extent throughout the year, being reduced during bad weather and influenced by the direction of water currents.

Geo-morphologically, the limestone presents typical karstic features due to marine and emerged aerial erosion. In both cases open gutters can be seen, wide and open in the case of marine erosion, narrower in higher places. All around the islands there are bare rocky exposures as a result of marine erosion in the form of dissolution and physical action of the waves.

Marine waters are mainly represented in a lot of pools on the seaside of the rocky shore. During winter, sweet (fresh) water fills the narrow pools of the diaclasses and some larger pools within the dunes. By digging in the dunes some sweet water can be obtained even in summer.

The only significant soil on the islands is developed from aeolian and beach deposited calcareous sands. Much of the western part of Palm Island has significant depths of sandy soils. Soils elsewhere on the island range from non-existent to small-localized accumulations of sandy and organic soils.

PINR is habitat for only 8 mammal species, 5 of which are flying mammals (bats). The two terrestrial species, the rabbit and the ship rat, are both introduced species. The rabbit was deliberately introduced by man and the rat probably arrived on boats, indeed may continue to be introduced from boats. The Monk Seal is an occasional visitor to the islands and surrounding waters.

Four of the bird species recorded are classified as globally threatened species and 7 are regionally threatened or declining species. None of the bird species is restricted to the Palm Islands Nature Reserve.

Of the total of 8 species of reptiles recorded for the islands, a total of 3, all turtles, are globally threatened. A total of 4 species, snakes and lizards, are threatened within Lebanon. Two of the snake species may already be extinct in Lebanon. One (sub) species, a lizard, is a local endemic and another 1 is a rare species in Lebanon. Disappointingly, 6 of the 8 species of reptiles are known to be hunted and killed by local residents.

There is no official records held for fish and insect species.

Foraminifers are a group of marine benthic Protozoaires. They are mainly responsible for the sandy-like deposits of the islands of the reserve, and are also present in corresponding deposits in tiny islands nearer to the seashore.

PINR is habitat to 73 species of plants of which 2 are nationally threatened species, 3 are local endemic species and 2 are nationally rare species. Whilst 16 species are restricted to the Eastern Mediterranean, a total of 48 species are very widely distributed, reflecting the proximity of the islands to the mainland and probably also the long term human introduction of species from other regions.

**b) biogeographic regionalisation scheme** (include reference citation):

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## **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:***

Tripoli, Lebanon has a Mediterranean climate characterized by a long, hot, and dry summer, and cool, rainy winter. The average temperature in Tripoli is 20°C. The average maximum temperature reaches up to 30°C in August and September however, the average minimum temperature reaches 10°C in January and February.

### ***Geology and geomorphology :***

The rocky basement of the islands is marine limestone with shelves included interpreted as Miocene deposits by Rene Wetzell in the geological map of Tripoli. No tectonic features are visible on this limestones differently from Miocene of Jabal Terbol, Nahr el Kalb, or Achrafieh. So, with the lack of fossil evidence, and with its regular sedimentation, this limestone could be interpreted more likely from Plio-Quaternary age .

The "sandy" shore and hills (dunes) of two of the islands has the particularity of its biological origin with a minute rocky origin. It is mostly represented by the test of marine benthic foraminifers, very light "sand" mixed up with tiny gastropod shells and parts of tests and spines of echinoderms. The "sandy"

shore differs in extension throughout the year, being reduced during bad weather in winter, with full extension in summer.

On the geomorphological approach, the limestone presents typical karstic features due to marine and emerged area erosion. In both cases open diaclasses can be seen, widely open in case of marine erosion, narrower in higher places. All around the island on rocky places a rocky way is found, made by marine erosion : dissolution and physical action of the waves . The dunes are the higher parts of the Palm Island and the places of anthropologic evidences.

**Hydrology :**

Marine waters are mainly represented in a lot of pools on the seaside of the rocky shore. During winter, sweet water is filling the narrow pools of the diaclasses, and some larger pools at the inside bottom of the dunes. By digging the dunes some sweet water can be obtained even in summer. These sweet water pools are the reason of seasoning invasion of mosquitoes all through the island. Lithosols are mainly represented in rocky sections of the islands, plants finding very few muddy particles at the bottom of diaclasses . Some muddy deposits maintain superficial sweet waters in the larger pools where dulciaquatic plants develop in quasi swamp places in water from winter to spring . Two artificial water ducts may have reduced the areas of swamp places by draining sweet waters to the sea .

**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.

There is a well on Palm Island. It was dug at the time of crusade and its water is fresh and potable. The over-extraction of water in summer time leads to increased salinity of the ground table.

**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.

A D E B G

**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.

Palm island (Jazirat al-Nakhl or Rabbit Island) is the largest (20ha), and has a central depression where rainwater accumulates in winter. Parts of the islands are flooded with seawater during storms. There is

some stunted garrigue-type vegetation in clefts in the limestone but the islands are otherwise relatively bare, except in spring and in summer when carpeted in wildflowers. On Palm Island there are also some small ponds, boggy areas and stands of reed *Phragmites*.

The Palm island offers three types of habitats : to the West, rocky habitat similar to that one of Ramkine and Sanani, to the East, sandy beach habitat lying from the north to the east, with dominance of *Euphorbia* sp., and the earthen middle separating the sandy beach from the rocky shoreline is made from low sand dunes, with dominance of *Pancreatium maritimum*.

The two islands, Ramkine and Sanani, are almost entirely limestone rocky habitat with scattered patches of saline scrubby and or shrubby vegetation. The overall vegetal formation is degraded garrigue-type vegetation with dominance of *Halimione portulacoides* and *Capparis spinosa*.

There is a population of bat on the islands. The species is not yet identified.

The floral communities include the Benthos flora:

- 12 species of Red Algae
- 9 species of Brown Algae
- 3 species of Green Algae
- 1 species Phanerogamous

The faunal communities include:

- Fish: 27 species belonging to 15 families
- Benthic fauna: 64 species identified distributed on 9 zoological groups
- Turtles: 2 species
- Birds:
  - 5 globally threatened species
  - 4 regionally threatened or declining species
  - 2 species restricted wholly or largely to the Middle East

## 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.*

Some wildflower species are nationally endangered or extinct along the mainland coast, or otherwise unusual, e.g. *Euphorbia pithyusa* and *Cressa cretica*, The Red Algae group includes 2 endemic species to east Mediterranean area *Goniolithon byssoides* and *Tenarea tortuosa*, but they are limited in Lebanon to Palm Islands Reserve only.

### ***Benthic flora :***

For the benthos flora, it is noticed that: a total of 25 species are recorded and distributed as follows :

a- Red Algae (12 species) : *Neogoniolithon brassica lorida*, *Goniolithon byssoides*, *Tenarea tortuosa*, *Corallina elongata*, *Jania* sp ., *Peyssonnelia squamaria*, *Peyssonnelia* spp., *Lithophyllum incrustans*, *Mesophyllum lichenoides*, *Lithothamnion lenormandi*, *Pseudolithophyllum expansum*, *Lobophora variegata* ;

b- Brown Algae (9 species) : *Dictyopteris polypodioides*, *Dilophus* sp., *Cystoseira compressa*, *Cystoseira* sp., *Padina pavonica*, *Padina boergesenii*, *Sargassum vulgare*, *Stypocaulon scoparium*, *Stypopodium schimperi*;

c- Green Algae (3 species) : *Enteromorpha intestinalis*, *Enteromorpha* sp., *Valonia utricularis*;

d- Phanerogamous (1 species) : *Cymodocea nodosa*.

This floristic inventory shows that :

- The red algae are the most dominant group followed by brown algae;
- Nearly all the red algae are calcareous and perennant species;
- The presence of two endemic species to the east Mediterranean area: *Goniolithon byssoides* and *Tenarea tortuosa* . In addition, they are limited in Lebanon to the El-Nakhl Island Protected Area;
- Lessepians are represented by two species : *Padina boergesenii* and *Styopodium schimperi*;
- Absence of pollution indicator species.

## 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.*

The caves of Ramkine Island represent an important shelter for the critically endangered Mediterranean Monk Seal *Monachus monachus* .

Populations of Lizards (Lacerta, Gecko, Skink) genetically different from their relatives on the mainland.

And the sandy shores of the islands, especially that of Palm Island, represent a breeding area for the threatened Loggerhead Turtle *Caretta caretta caretta* . The recorded fish in the reserve include two species that are listed in the Red Data List of IUCN, 2000. One of which is near threatened *Epinephelus marginatus*, and one is "data deficient" *Mycteroperca rubra* species.

While the benthos fauna encompasses two nationally threatened species of gastropod *Vermetus triquetrus* and *Dendropoma petraeum*.

### **Fish community :**

A total of 27 fish species were recorded during the above period . They belong to 15 families :

- 1- Sparidae: *Oblada melanura*, *Boops boops*, *Dentex dentex*, *Diplodus cervinus*, *Diplodus sargus*, *Diplodus vulgaris*;
- 2- Labridae : *Thalassoma pavo*, *Coris julis*, *Symphodus mediterraneus*, *Symphodus tinca*;
- 3- Scaridae: *Sparisoma cretense* ;
- 4- Serranidae : *Serranus cabrilla*, *S. scribe*, *Mycteroperca rubra*, *Epinephelus marginatus* ;
- 5- Holocentridae : *Sargocentrum rubrum* ;
- 6- Siganidae: *Siganus luridus*, *S. rivulatus* ;
- 7- Pempheridae: *Pempheris vanicolensis* ;
- 8- Scorpaenidae: *Scorpaena maderensis* ;
- 9- Monacanthidae : *Stephanolepis diaspros* ;
- 10- Pomacentridae : *Chromis chromis* ;
- 11- Mugilidae : *Muges n.d.* ;
- 12- Muraenidae : *Muraena belena* ;
- 13- Gobiidae : *Gobius n .d.* ;
- 14- Balistidae : *Balistes carolinensis*;
- 15- Echeidae : *Remora sp.*

Out of which 3 families are best represented : Sparidae (6 species), Labridae (4 species) and Serranidae (4 species).

The inventory encompasses 5 lessepsian species of indopacific origin : *Siganus luridus*, *S. rivulatus*, *Sargocentrum rubrum*, *Pempheris vanicolensis* & *Stephanolepis diaspros* .

Four families are not part of the Mediterranean fauna : Holocentridae, Siganidae, Pempheridae, Monacanthidae .



One species *Epinephelus marginatus* is threatened (near threatened in the Red Data List of IUCN, 2000) and figures on the list of species to be protected in the Mediterranean.

One species *Mycteroperca rubra* is listed under the rubric "Data deficient" of the Red Data List of IUCN, 2000 .

Seven dominant and abundant species are of halieutic importance : *Siganus luridus*, *S. rivulatus*, *Sargocentrum rubrum*, *Oblada melanura*, *Diplodus sargus*, *D. vulgaris* and *Chromis chromis*. Of which 3 species are lessepians .

The two Siganidae are well known by the researcher since 35 years ago .

### **The benthic fauna :**

A total of 64 species are identified. They are distributed on 9 zoological groups:

The presence of 11 Lessipian species: *Macrorhynchia philippina*, *Pseudoneris anomala*, *Lysidice natalensis*, *Hydroides minax*, *Spirobranchus tetraceros*, *Brachidontes pharaonis*, *Pinctada radiata*, *Malleus regulus*, *Strombus decorus*, *Synaptula reciprocans*, *Phallusia nigra*.

The presence of one exotic species : *Herdmania momus*.

The presence of clean water indicator species : *Syllis prolifera*, *Perinereis cultrifera*.

The two gastropod *Vermetus triquetrus* and *Dendropoma petraeum* contribute to the formation of vermet platforms, which characterise the Lebanese coast and form part of the national natural heritage . The scientific community proposes these two species to be listed among the protected species since the platforms are destroyed by human activities.

### **Turtles :**

The only breeding species found on El-Nakhl Island Protected Area is the Loggerhead Turtle *Caretta caretta*, with 37 nests mainly on Rabbit island. The Green Turtle *Chelonia mydas* was found as winterer in the surrounding water.

### **Birds :**

#### Globally threatened species :

<i>Phalacrocorax pygmeus</i>	Rare passage migrant, very few overwinter
<i>Pelecanus crispus</i>	Rare passage migrant
<i>Aquila clanga</i>	Vagrant in the area
<i>Crex crex</i>	Regular passage migrant in small numbers
<i>Larus audouini</i>	Reappeared as passage migrant after being extirpated as a breeding species

#### Regionally threatened or declining species :

<i>Aythya nyroca</i>	Rare passage migrant
<i>Neophron percnopterus</i>	Extremely rare passage migrant in the area
<i>Falco biarmicus</i>	Rare passage migrant
<i>Gallinago media</i>	Rare passage migrant

#### Species restricted wholly or largely to the Middle East :

<i>Oenanthe cyprica</i>	Vagrant
<i>Hippolais languida</i>	Very rare passage migrant

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## **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 with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

Palm Island, the largest island of the reserve, has an archaeological site represented by the remains of a church that date back to the Crusades period (approximately 1224 AD) and a fresh water well that is hand carved in stones as well as a cultural site represented by the Salinas which is used for the extraction of virgin salt which was wide spread along the Lebanese shore and now is being diminished due to Urbanization, as well as the fisheries available on the shore.

There is an abandoned light-station and associated buildings canon-mounting sites on Ramkine island (from early this century).

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:
- 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:

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**24. Land tenure/ownership:**

a) within the Ramsar site:

PINR is a public property

b) in the surrounding area:

Regional sea water

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**25. Current land (including water) use:**

a) within the Ramsar site:

None

b) in the surroundings/catchment:

Fishing and recreation

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**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:

The Mediterranean Monk Seal is a global critically endangered species. Since long line fishing nets are not used in Lebanon, persecution by fishermen and destruction of its habitats in Lebanon were the main reason for the extirpation of the species. In Palm Islands Reserve, persecution by fishermen was the main reason of its severe decline.

Accordingly, fishermen are in agreement to not fish within the site. Despite this, some poaching still occur.

During the period 1893-1998 certain changes have occurred in the islands' ornithological scene which deserve attention : Firstly, four species (*Larus audouini* [globally near threatened : 2000 IUCN Red List], *Sterna bengalensis*, *Sterna hirundo* and *Sterna albifrons*) were breeding but stopped to do so, at least from 1956 onward .

Furthermore, one of these species (*S. bengalensis*) apparently ceased to appear in Lebanon. The extirpation of the four species of birds from the islands is not surprising knowing that insular communities are very susceptible to persecution, disturbance and development. All these factors : hunting, stealing eggs, feeding on nestling, recreational, commercial and agricultural activities, military occupation, fishing with dynamite near the islands, prevailed in the area prior to its declaration a protected area. However, the richness (10 breeding species such as *Larus cachinnans*, *Apus pallidus*, *Upupa epops* and *An thus campestris*) of the reserve remains relatively low, most probably due to effects of insularity accentuated by the alteration of the vegetation cover by rabbits (the introduction of 14 rabbits by a misguided environmentalist in 1984, which proliferate to 2000 individuals in early 1997).

b) in the surrounding area:

No information is available

## 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.

The site was listed as:

- Wetland of International Importance by Carp (1980);
- Important Bird Area by Evans (1994);
- Specially Protected area under Barcelona Convention (in Evans, 1994);
- Ramsar site No. 1079;
- Wetland of International Importance by Ramsar convention (2001);
- Specially Protected Area of Mediterranean Importance (SPAMI);

PINR has been declared a nature reserve according to the law 121 in year 1992 but it was not enforced until 1995.

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?:

The day-to-day management of the Palm Islands Nature Reserve has been contracted by the Protected Areas Project to the Environment Protection Committee, a locally based non-governmental organization, thereby involving local citizens in management of the reserve on behalf of the people of Lebanon.

The Protected Area Management Plan is to guide the management of the Palm Islands Nature Reserve. The main users of the plan will be the Environment Protection Committee and its Management Team, which are entrusted to manage the reserve on behalf of the people of Lebanon. The other main users of the plan will be the Ministry of Environment and the Government Appointed Committee.

This is the first plan for the Palm Islands Nature Reserve and is designed to apply for five years (2000-2005) by which time its performance needs to be reviewed. That review will involve further public consultation to take into consideration the views of the Ministries of Environment and Agriculture, of local groups such as Municipalities and NGOs, as well as involved and informed individuals.

**d)** Describe any other current management practices:

The Management Plan for Palm Islands Nature Reserve represents the “master plan” for management of the reserve and operation of the management team. A range of other management control and guidance plans have been or will be developed to facilitate the conservation and management of the reserves:

- Financial & Personnel Management;
- Cultural Heritage Management;
- Natural Heritage Management;
- Visitors and Users Management;
- Community Relations Management.

The intention is that all such plans will be subsidiary to and consistent with the Management Plan.

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### **28. Conservation measures proposed but not yet implemented:**

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

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### **29. Current scientific research and facilities:**

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

The National Council for Scientific Research in Lebanon has been contracted to conduct scientific research on Palm Islands Nature Reserve concerning flora, fauna, geology and hydrology .

The site would make an excellent observatory for monitoring the large, visible migration of waterbirds along the coast (egrets, ducks, waders, gulls etc .) and for observation and ringing of passerine migrants, including vagrants such as *Oceanodroma leucorhoa*, *Mergus merganser* and *Rissa tridactyla*.

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### **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.

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### **31. Current recreation and tourism:**

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

Since 1998, the tourism season to the reserve is for three month (July - September) where activities are limited to swimming and guided tours, during other times visitors to the reserve are just the management team members and the researchers .

Some of the noteworthy educational, nature study and scientific opportunities offered by the islands include:

- Bird watching: the island offers outstanding opportunities for bird watching, particularly seasonal viewing of nesting, migrating and wintering seabirds;
- Turtle: the islands provide outstanding opportunities for study of turtle breeding and behaviour;
- Salinas: the old salinas found on Palm Island provide a place to explain the traditional process of salt extraction;
- Historical: Cultural sites on both Palm and Ramkine Islands provide a reference for some historic events;
- Nature study: the reserve as a whole is a natural laboratory to study various habitats and adapted species both on land and in the sea. The diversity of fauna, flora and ecosystems and proximity to the city of Tripoli could translate into high educational value for ecological field studies.

Being 5.5 km from the shore, with only a limited sign of habitation, the islands are a largely natural marine and island landscape in contrast to the highly modified and developed landscapes of the adjacent mainland. As such, the island landscape is recognized as an attractive recreational setting for visitors to escape the crowded coastal cities. There is a long tradition of people from Tripoli visiting the islands for recreation. Proposed management of the reserve will limit the range of acceptable recreational activities but the reserve will remain significant for water based activities.

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### 32. Jurisdiction:

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

PINR under the mandate of the Ministry of Environment – Service of Natural resources – Department of Ecosystems being a nature reserve.

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### 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.

The Reserve is managed by a management team working for the Environment Protection Committee (local NGO), under the support and supervision of the Ministry of Environment.

The management team of the reserve consists of one Manager (Dr . Ghassan RAMADAN-JARADI), two assistant managers (Lina KABBARA and Mohamed GHALAYINI), and two rangers (Ramzi CHAHINE and Issam SIDAWI) .

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### 34. Bibliographical references:

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

- Palm Island Nature Reserve management plan;
- RIS of Palm Island Nature Reserve (2001);
- Personal contacts.

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