

Ramsar Information Sheet

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1. Date this sheet was completed:

1.9.1996

2. Country:

Israel

3. Name of wetland:

'En Afeq Nature Reserve

4. Geographical co-ordinates:

n32°51'45" E35°05'41"

The UTM grid (longitude) Zone 36 (central meridian 33°E);latitudinal belt 3,000-3,999 km

5. Altitude:

10 msl.

6. Area:

66 ha

7. Overview

The 'En Afequ Nature Reserve is a man made wetland. It is an attempt to restore part of the drained Na'aman (Kurdani) swamps (1,600 ha). It was created after the draining (soil rehabilitation) period (1932-1938), near the source springs of the Na'aman river. The springs has oligohaline water, about 0.8 gr/L (it was the reason why they were not diverted). The reserve has two types of water bodies:

- a. permanent water : -"the eastern swamp" - 14.0 ha; "hamezuda" - 4 ha and "the lake" - 8.2 ha; which shrinks in dry summers to at least 2.0 ha (some pools hold water even in dry summers: the central part of "the lake", "hakavarot pool", "hamashe'vot pool").
- b. intermittent water bodies: "the northern meadows" - 18 ha; "the new rainpools" (3 artificial rainpools dug in 1994, each about 0.1 ha) and "the hexagonal spring".

8. Wetland type:

S + T (Freshwater marshes/pools: permanent & intermittent)

9. Ramsar Criteria:

10. Map of site included:

attached

11. Name and address of compiler:

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12. Justification of criteria selected under point 9:

The 'En Afeq Nature Reserve wetland should be considered as internationally important site as it is :

1(a) a particularly good representative example of a near-natural wetland, typical to the Levantine region, and the largest swampy reserve of the coastal belt.

1(c) a good representative example of a wetland, which plays a substantial biological and ecological role in the natural functioning of the Israeli coastal plain.

2(a) It supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant, or animal, or an appreciable number of individuals of any one or more species.

13. General location:

Northern Israel, Galilee coastal plain, about 7.5 km south-east (155°) of the town of Akko (Acre).

14. Physical features:

The 'En Afeq Nature Reserve is located in the western Galilee coastal plain. This Holocenian coastal area, was blocked by sand dunes driven from the Nile in the historic times. This blocking caused the Na'aman river to flow northwards and confluent the Mediterranean near Akko, leaving behind a remarkable swamp as a barrier for any traffic to the city from the southern side.

Hydrology: The annual water level in the ponds is changed within 0-1.2 m.

Soil type: The reserve itself is built mainly by silty-swampy soils rich with molluscs remains, surrounded by red alluvial soils (Terra rosa) from the nearby Galilee hills.

Depth, fluctuation and permanence: There is much fluctuation in water level between winter (rainy season) and the summer, and between rainy years (40-50 mcm/year water) and drought (2-3 mcm/year). Water depth could change between 0-1.20 m.

Catchment area: the reserve is surrounded by agricultural land, mainly cotton field and fish ponds, and has no importance for flood control.

Downstream area: The reserve is too small and has no importance for flood control.

Climate: Mild eastern Mediterranean, typical to the coastal plain with high percentage of humidity and breeze every afternoon during the summer. Rainfall: about 550 mm/year.

15. Hydrological values:

The reserve is too small to serve any role in flood control.

16. Ecological features:

The 'En Afeq Nature Reserve contains some wet habitats with these plan zonation:

1. The open limnetic water (with reintroduced water lilies - *Nymphaea caerulea*);
2. The Phragmites (*Phragmites australis*) and Typha (*Typha domingensis*) areas;
3. The Rubus (*Rubus sanctus*);
4. The Tamarisk (*Tamarix jordanis*) areas;
5. The Paspalon (*Paspalum paspaloides*) wet meadows;
6. The rainpools with duckweed (*Lemna gibba*) and Chara (*Chara sp.*);
7. The running water canals with Phragmites and Oleander (*Nerium oleander*).

17. Noteworthy flora:

See attached list

18. Noteworthy fauna:

See attached list (Status: **x**=extinct; **e**=endangered; **v**=vulnerable; **r**=rare; **i**=intermediate; **k**=insufficiently unknown; **o**=out of danger).

19. Social and cultural values:

The reserve holds a very attractive Crusader water mill (4 mills), a hug dam with wires and a two floor fortress. The draining canal network (1930s) is still working with a pumping station from the same period for the neighbouring oil refineries. There are also remnants of the first four fishponds (late 1930') in Israel (Zitzer ponds). - The reserve is close to hunters and fishermen.

20. Land tenure/ownership of:

- a. site: Government land, managed by the Nature Reserves Authority (NRA).
- b. surrounding area: Agricultural, long-term rented governmental land by Qibbuz (collective settlement) farmers (Afeq, 'En haMifraz); villages (I'billin, Tamra) and the northernmost suburbs of the town Qiryat Bialik (Zur Shalom). In the south edge there is a regional graveyard.

21. Current land use/principal human activities:

- a. site: The 'En Afeq reserve is designated solely for nature conservation.
- b. surrounding area: The Na'aman catchment extends over 317 sq km, about one third is within the coastal plain, which is within the jurisdiction of one regional council - Mate Asher. The common crops are cotton fields and fish-ponds. In the Na'aman catchment there are 160,000 inhabitants in 47 settlements. The total discharge of all these settlements (domestic and industrial sewage) in the Na'aman drainage basin is about 9 mcm/year (remark : mcm = million cubic meter).

22. Factors adversely affecting the site's ecological character, including changes in land use and development projects:

a. at the site:

- The human activities at the site are very limited. The reserve is open to the public only between the hours 0800-1700, access is restricted to the recreational area and the trails which cover together about 10 ha.
- There are no settlement or inhabitants in the site area
- Hunting and fishing are prohibited
- The following exotic species have entered the reserve: Molluscs - The American snail
- Succinia (*Pseudosuccinia columella*); Ferrissia (*Ferrissia clessiana*); the mosquito fish (*Gambusia affinis*); the fish - carp (*Cyprinus carpio*); the rodent - coypu (*Myocastor coypu*); and some trees and plants: eucalyptus (*eucalyptus camaldulensis*); melia (*Melia azedarach*); jacaranda (*Jacaranda acutifolia*); morus (*morus nigra*); bougainvillea (*Bougainvillea glabra*); acacia (*Acacia cyanophylla*); conyza (*Conyza canadensis*); iris (*Iris germanica*) and others.
- The reserve is in close proximity to urban area and suffers from feral dogs and cats.

b. surrounding area:

- Shortage of water supply in dry years causes over-pumping of wells in the upper drainage basin of the Na'aman river (the freshwater fraction of the Na'aman sources). In such cases the springs became dry in summers.
- Pesticides from the nearby agricultural fields (mainly cotton fields)
- Accelerated urban development in the nearby suburb of Zur Shalom.
- Highway network construction from all sides of the reserves will cut off most of the natural corridors to the neighbouring reserves.

23. Conservation measures taken:

Water - There is a permit from the Water Commissioner for all the Na'aman spring water to flow through the reserve about 2 (dry year) to 50 (rainy year) mcm/year. A small barrage is used to elevate the water level in the main canal during the summer. During some dry summers water is pumped from nearby wells to prevent total drought.

- Since 1991 the sewage from pig raising farms from the nearby villages, instead of being discharged to the Na'aman River, has been diverted to a sewage treatment system, terminating a long-term organic pollution problems. The solution caused a remarkable natural restoration in the Na'aman River and many invertebrate species returned to the reserve (like molluscs, crustaceans & worms).
- Some artificial water bodies were dug in the reserve, maintained much more water-cover areas for aquatic biota.

Grazing - There is a grazing programme to control the wet meadows with small herd of water buffalo (7 females) throughout the year and spring and summer by cows (about 30 females and 15 calves in the dry parts to prevent fire).

Reconstruction - The Crusader water mill, the two floor fortress building and the crusader dam were reconstructed to serve as a visitor center for the reserve.

24. Conservation measures proposed but not yet implemented:

- a. to enlarge the water covered area in the norther meadows;
- b. to enlarge the built area for the ecological guiding center of 'En Afeq;
- c. declaration of Kare Na'aman and Shefekh Na'aman, other proposed nature reserves areas along the Na'aman River;

25. Current scientific and research facilities:

There are current monitoring programmes under the supervision of the NRA, northern district biologist and the science division as part of the Scientific management Programme. The monitoring programme is annually summerised and reported in the Annual scientific report of the En Afeq Nature Reserve (in Hebrew).

1. Daily and monthly visitors in the reserve;
2. The current water level in the different ponds and rainpools;
3. Water quality in 4 selected sites;
4. The water level in the main canal (the Hydrological Service measuring station);
5. Waterfowl monitoring counting (monthly);
6. Vegetation monitoring transacts (monthly);
7. Monitoring grazing impacts of water buffalo;

8. Reintroduction of endangered and vulnerable species (e.g. *Nymphaea caerulea*, *Orchis laxiflora*, *Iris grant-duffii*).

26. Current conservation education:

A guiding center has been working in the reserve for the past 15 years, the first one in the Nature Reserves Authority. There are about 30,000/year of guided pupils and students (from colleges, universities and technical universities). Last school year about 500 pupils took the unique ecological programme called biotop. The guiding center staff consists of 3 full-time guides and another 12 part-time guides. There are 15 personal computers with word processing, spreadsheet and data management software, including GIS software for pupils and students training.

27. Current recreation and tourism:

a. Less than 10 ha of the reserve developed for human use (the rest is closed to the public, except for scientific purposes and management). There is a visitor center and two classrooms in the 800 years old Crusader fortress, two m wide trails system and two open-shed classrooms. There is a two floor office building and toilets building for the public. About 60,000 visitors/year, half of them guided by the guides of the Ecological Guiding Center (with special payment). Entrance fees are about \$4 for adults and \$2 for pupils.

28. Jurisdiction:

Declared as nature reserve in the Israeli official gazette no. 3988 (June 6th, 1979) and enlargement in no. 5597 (May 18th, 1994).

29. Management authority:

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30. Bibliographical references:

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