

Proposal of an Operational Program to Facilitate the Start-up of the Hawizeh Marsh Ramsar Site



*A Report Prepared for the
Iraq National Marshes and Wetlands Committee*

July 2010

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Compiled and Edited by Nature Iraq

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Background

Brief History

In the past five years the following main steps have been undertaken in support of the Hawizeh Marsh:

- UNEP and Nature Iraq prepared two digital maps of the status of the area in October 2005
- MoE, MoWR and Nature Iraq, cooperated and delivered in 2007 a “Ramsar Information Sheet” outlining the ecological and cultural features of the area and the rationale for its proposed designation as Ramsar site
- Nature Iraq organized a meeting in July and a workshop in September 2007, to draft the outline for the management plan
- The Ramsar Convention on Wetlands came into force for Iraq on 17 February 2008.
- Two draft versions of the management plan were presented and agreed with the Iraqi authorities on April 2008 and October 2008
- The so updated Management of the Hawizeh Marsh Site under the Ramsar Convention – Volume 1 and 2 - was delivered on December 2008.
- In April 2010 the site was included in the Montreux Record. The reasons for adverse change, or potential adverse change, cited in the report, are related to the significant decreased in water inflows to the marsh caused by external and internal factors. These topics, with the addition of other considerations, are listed in the paragraph below.

Main Events Affecting the Site

During the past two years and since the final publication of the Hawizeh Marshes Management Plan, these large wetlands have undergone significant changes mainly due to the effect of:

- two consecutive years of draughts (2008-2009);
- the completion of an embankment separating the Iranian side of Hawizeh Marshes from the Iraqi side.

At the same time, other factors might have a remarkable effect on the Marshes in the years to come. Among other, the following two could have the largest impacts:

- Development of two water control structures along the Khassara and Swaib outlets;
- The development of the Majoon oil field.

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The construction of two regulators along the main outlets of the Hawizeh Marshes was suggested by the New Eden Master Plan for Integrated Water Resources Management in the Marshlands Area (Nature Iraq, 2006). The idea behind the construction of these infrastructures was to provide water resources manager with a way to control water levels inside the wetlands for Marshlands restoration. At present, the Iraqi Ministry of Water Resources has tendered out the construction of these regulators. Construction is still undergoing.

Similarly, on January 17th 2010, the Ministry of Oil of the Republic of Iraq, Royal Dutch Shell plc (“Shell”) and Petronas Carigali (“Petronas”) signed a 20-year contract to provide technical assistance in the development of the Majnoon oilfield. The field is located close to the south part of Hawizeh Marsh and its estimated reserve is of 12,58 billion of barrels.

Shell, as lead operator, will hold a 45% share, with partner Petronas holding 30%. The Iraqi state holds 25% of the participating interests in all licences.

The consortium targets a production plateau of 1.8 million barrels of oil per day, up from a current level of approximately 45,000 barrels of oil per day. Majnoon, located in southern Iraq, is one of the world’s largest oil fields.

The types of impacts determined by the different phases of the oil and gas operations require the establishment of appropriate measures for the protection, recovery and restoration of the surrounding environment.

The Management Plan

The principles, vision, and objectives of the management plan are still valid and actual. The recommended management actions have been developed within four thematic ambits that deal with Environment, Water resources, Cultural and social issues and Economic opportunities. In this manner, all the significant matters for the future of the site are considered.

In addition, ten actions are suggested as priorities for “First Step Projects”, in order to provide a starting support for the achievement of the long term objectives.

However, the threats that currently affect the site and the surrounding areas, determined by the aforementioned factors, require the development of focused activities, in line with the management plan proposals and needed to manage the present, crucial situation.

Scope of the Present Report

The scope of the present report is to propose an Operational Program for implementing selected, short-term activities to ensure effective results at local level, to support the start-up of the proposed management plan for mitigating the main issues that currently affect the Hawizeh Marsh Ramsar site and the surrounding areas.

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All the activities will be carried out with the aim to involve in the programs the key stakeholders at national and local level.

The achieved results will represent the basis for promoting the solution of those factors that caused the inclusion of the site in the Montreux record. Accordingly, a documentation of decisions, undertaken monitoring phases, implemented environmental awareness and capacity building programs will be presented to the next 11th Meeting of the Conference of the Parties.

Part 1

Update the Description of the Site

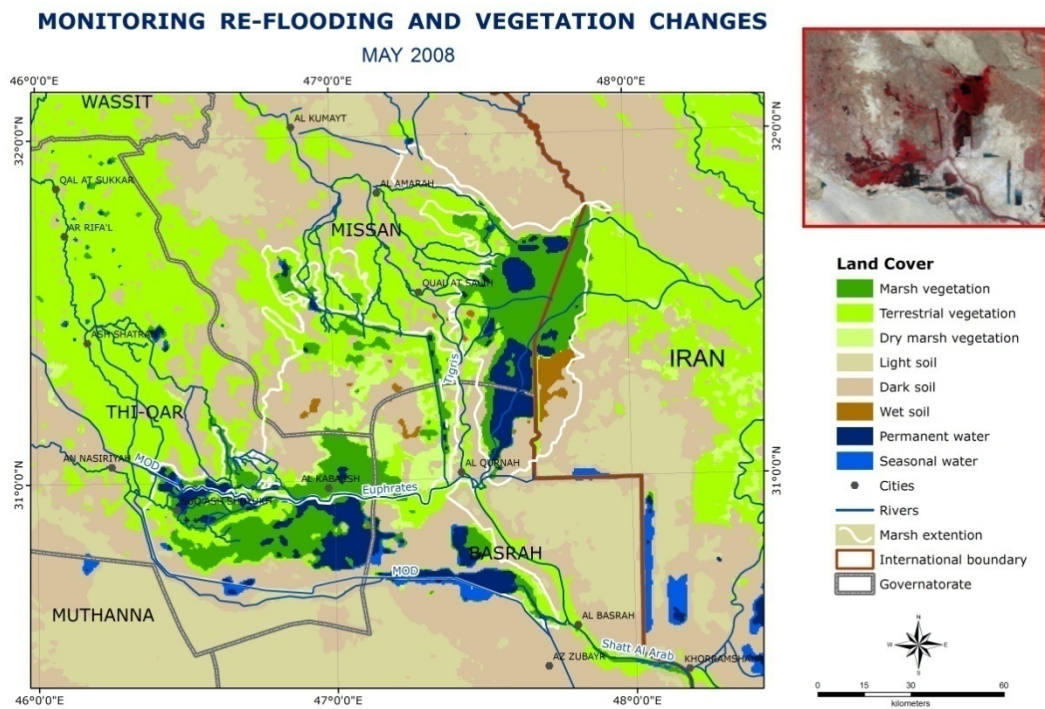


Hydrology Assessment

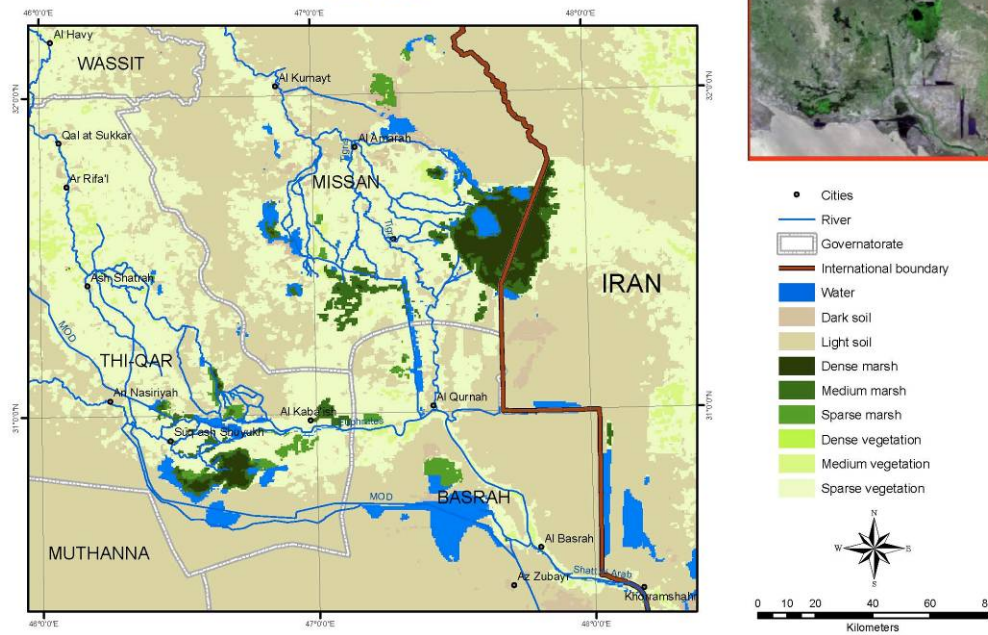
Current situation

Since the preparation of the Management Plan, Hawizeh Marshes have changed dramatically mostly due to the occurrence of two years of draughts and the completion of the dike along the Iranian-Iraqi border.

The following sequence of images shows the effects of such large water shortages. Comparison between water/marshlands extent in may 2008 and may 2010 shows that the later extent of Hawizeh Marshes reduced of nearly 50% in two years.



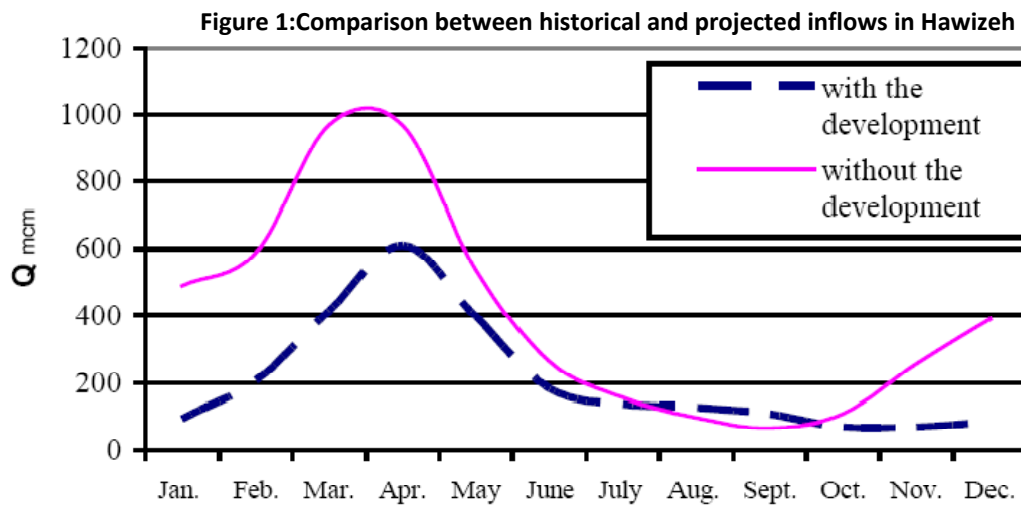
**MONITORING RE-FLOODING AND VEGETATION CHANGES
MAY 2010**



Major Threats

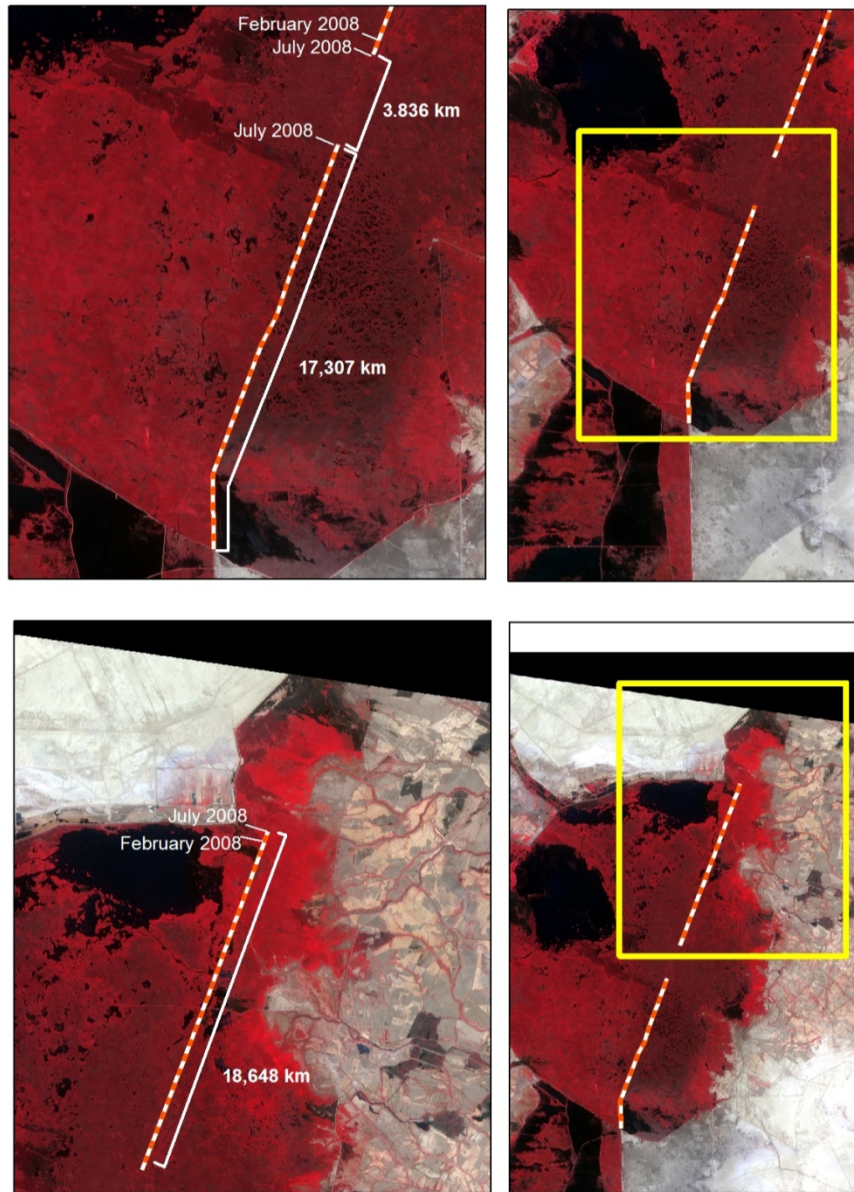
Among the major threats to the long term survival of the wetland is the completion of the dike along the Iraq-Iran border.

Hawizeh Marshes largely relies on water contribution from Iran and the Kharkeh River system. The following graph shows the monthly water contribution to Hawizeh under natural (without development) and non-natural (with the development) conditions.



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Even under the assumptions that all irrigation projects (with development) will be fully developed along the Kharkeh River system and upstream Hawizeh Marshes, these wetlands largely rely on the Iranian contributes of water.



With the completion of the security embankment located the Iraq-Iran border, Iran successfully achieved the result of cutting 100% of the Kharkeh flow contribution to these wetlands. The above image shows the state of completion of the embankment as of July 2008. Based on our most recent site visits, the dike was completed in 2009.

Best Practices in Water Resources Management

The New Eden Master Plan for Integrated Water Resources Management in the Marshlands Area (Nature Iraq, 2006) provided the framework for the design of water management strategies that the Iraqi Ministries of Water Resources should adopt for providing water to Hawizeh Marshes.

At present, Hawizeh Marshes has a lateral extent that is 25% of its original (measured in 1991) size. In 2008, when the final version of the Management Plan was approved by the Iraqi parties, these wetlands had achieved a restoration of over 60% of the original size.

Total annual and monthly inflows required to restore the 2008 conditions are provided as an annex to this short report. This action, which clearly requires the direct intervention of the Ministry of Water Resources while balancing its national water strategies, is not listed as one of the recommendation of this report which is focused on proposing a set of short-term activities to develop mainly at local level.

Environmental Assessment

Current situation

The report “Key Biodiversity Areas Survey of Hawizeh Marshes” presents field observations from the Key Biodiversity Areas (KBA) Survey conducted in winter (January/February) and Summer (May/June) 2009 & 2010 in Southern Iraq. During winter 2009, the KBA fieldwork consisted of only bird and fish observations and for summer, the focus was on birds and plants. In 2010, the focus was on bird surveys. Hereinafter the conclusions of the report are presented, while the full text is in Annex 2 to this report.

Sites in Iraq were initially selected based upon a publication called Important Bird Areas of the Middle East by M.I. Evans (1994). The following table includes the site names and site codes (along with the Evans code) with original GPS coordinates of the KBA Southern Survey sites. A map below shows these points.

Area	Site Name	Site Code #	Evans Code #	Season of survey ***		GPS Coordinates					
				W	S						
Missan	Umm An Ni'aaj	HZ1	032	X	X	31	35	35	47	34	56
Missan	Udhaim (revised coordinates)	HZ2	032	X	X	31	40	54	47	43	21
Missan	E'jayrda	HZ4	036	X	X	31	19	55	47	37	51
Basra	Majnoon	HZ8	036	X	X	31	5	41	47	34	38
Missan	Bushes Near Umm Al-Warid*	HZ9	032	X	-	31	34	5	47	30	4

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Google Earth (2010) Image showing KBA survey areas in Hawizeh Marshes

The most important bird observations for Hawizeh in 2009 were the occurrences of large populations of waterfowl in sites such as Majnoon (HZ8), Umm An-Ni'aaaj (HZ1), and Ejayrda (HZ4). In 2010, major declines in bird counts and number of species were seen at Majnoon (HZ8) and Ejayrda (HZ4).

Data regarding local fish populations were gained directly from fisherman or indirectly through interviews, depending on the circumstances. Much of the information was based on the daily catch of local fishermen at various sites where the team procured whole baskets of fish in a random fashion and categorized the fishermen's daily catch of fish according to species. Afterwards, the team calculated the ratio of each species in the sample as well as their length and weight before calculating the overall species ratio for the total catch based upon sample data. What type of fishing gear the locals used was also recorded, including net type and mesh size. Other questions for the local fishermen included the overall number of fishing boats on their body of water as well as their average yield with various types of equipment. Due to the variation in the circumstances at and between sites, the information presented in this report should be mainly considered as qualitative data with some indications of quantitative trends.

With regards to plants, the summer surveys of selected wetlands and arid regions in Southern Iraq were conducted in order to evaluate the general ecological status of these sites, estimate

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the vegetation cover by observing all the present plants in each site and insert the results in the plant database. The results showed that most of the surveyed marshes were threatened by drought because of the severe decreasing water levels in the Euphrates and Tigris Rivers, low winter rainfall, and human activities to divert water. Subsequently, many wetlands that were surveyed became completely dry such as the Majnoon marsh. Many plant species which had historically existed in these areas were no longer present, such as: *Utricularia minor*, *Utricularia gibba*, *Ceratopteris thalictroides*, *Limnophila indica*, *Marsilea capensis*, *Mentha aquatic*, and *Ottelia alismoides*.

Important Bird Areas

The table below shows the most important sites after matching them with the Important Bird Area (IBA) criteria of the Middle East by Evans (1995), which was updated later by BirdLife International. The sites of Hawizeh Marshes are arranged according to their priority of conservation status, based on the 2009 winter and summer surveys.







Table 1: Hawizeh KBA sites and their criterion, only according to winter and summer 2009 surveys

Site Name	Site Code	A Category ¹			
		A1	A2	A3	A4
Umm An Ni'aaj	HZ1	X	X	-	X
E'jayrda	HZ4	X	X	-	X
Majnoon	HZ8	X	X	-	X
Udhaim	HZ2	X	X	-	-
Bushes Near Umm Al-Warid*	HZ9	-	-	-	-
¹ A: Important Bird Areas - Global importance A1. Globally threatened species A2. Restricted-range species A3. Biome-restricted species A4. Congregations ² B: Important Bird Areas - Middle Eastern importance B1: Regionally important congregations B2: Species with an unfavourable conservation status in the Middle East B3: Species with a favourable conservation status but concentrated in the Middle East					

To know more about the Middle East IBA criteria, please visit:
http://www.birdlife.org/datazone/sites/middle_east_criteria.html

* Sites that were surveyed for the first time during winter 2009.

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Marbled Teal (GT)	African Darter (CC)	Pygmy Cormorant (CC)
		
Slender-billed Gull (CC)	Little Grebe, Iraqi endemic race	Hooded Crow, Iraqi endemic race

Some of Key Bird Species found in Hawizeh

Important Fish Areas

Some sites within the KBA survey can be considered to be important areas for fish based on the winter 2009 survey. The following sites within the Hawizeh Marshes are considered important sites for fish species.

- **Majnoon (HZ8):** This site appears to be a typical shallow marsh with stagnant but clear water. However, fish diversity was the highest of all the KBA sites (with eleven species) with approximately 100 boats fishing in the area on a daily basis with a catch of approximately 8kg/boat per day. Also, the threatened *B. sharpeyi* species can be found here, increasing the site's conservation value. Given the drying of this marsh between 2009 and 2010 due primarily to the Iranian Embankment, fish resources have been severely devastated.
- **Umm An-Ni'aaj (HZ1):** At the core of Hawizeh marsh, this site held eight fish species and approximately 10 fishing boats were employing gill nets for a daily catch of about 8kg/boat per day. But it is important to note that about 150 boat practice electrofishing techniques for a daily catch of about 26kg/boat per day. Hawizeh was considered to be a habitat for *Bunni*, but in the winter 2009 survey no *Bunni* specimens were found.

Important Plant Areas

By evaluating the sites based on their plant species richness in 2009 (strictly number of plant species), the two highest quality sites were: Umm An Ni'aaj (HZ1), Udham (HZ2), E'jayrda (HZ4).

The sites were also evaluated on their overall ecological condition in 2009 on a scale of 1-5, where 1 indicates 0% disturbance or no impact and 5 represents 100% disturbance or impact.

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Given the massive drainage campaign of the 1990s in the Southern Mesopotamian marshlands, no site can be considered to have no impact or disturbance. This scale is considered a rough estimate of ecological recovery. Umm An Ni'aaj (HZ1) and Udhaim (HZ2), were rated at 2 (25% disturbed); E'jayrda (HZ4) was rated at 3 (50% disturbed), and Majnoon (HZ8) was rated at 5 (100% disturbed).

Evaluation of sites based on their richness and habitat types is still an on-going process within the Nature Iraq KBA Project. This discussion presents only preliminary findings from the 2009 survey (2010 flora data is not yet available). A list of sites that match these criteria is not complete yet but there are some sites that might match one or two of these criteria. The Mesopotamian marshlands in particular should be considered a key, threatened habitat of regional and global importance. Sites such as Umm An Ni'aaj (HZ1), Udhaim (HZ2), E'jayrda (HZ4), Bushes Near Umm Al-Warid (HZ9) were relatively rich in plant species in 2009.

The following table attempts a preliminary evaluation of all sites based on the Important Plant Area (IPA) criteria and ecological condition of 50% disturbed or lower. Based on this assessment, those sites that meet two or more criteria are highlighted and could be considered priority sites within Hawizeh Marsh.

Table 2: Comparing all criteria for plants (based on IPA Criteria 1, 2 & 3 above)

Site Name	Site Code	1. Rare and/or Endemic Species*	2. Botanically Rich	3. Threatened Habitat	Ecological Condition of 3 or lower
Bushes Near Umm Al-Warid*	HZ9		x	x	x
E'jayrda	HZ4		x	x	x
Umm An Ni'aaj	HZ1		x	x	x
Udhaim (revised coordinates)	HZ2	x	x	x	
Majnoon	HZ8			x	

*Rare and/or endemic is not identical to threatened species in the IPA Criteria but rare and endemic species may be an indicator for the presence of such species. Note also that the endemic and rare species identified in the survey are merely preliminarily identified as such.

Major Threats

The table below is only based on an assessment of the sites visited in the winter and summer 2009 surveys. The table also includes some of the positive qualities of each site.

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Table 3: Threats and Positive qualities of KBA Survey Sites in Southern Iraq

#	Site Name	Site Code	Threat										Positive qualities		
			Dryness/lack of water/drainage	Oil pollution	Hunting	Agriculture	Removing of plant cover/Grazing	Constructions & Roads	Garbage and/or Sewage	Electro-fishing	Over fishing	Other	The site of infrastructure that helps conservation efforts	The locals willing to help in conservation efforts	Hunting/Fishing ban
1	Umm An Ni'aaj	HZ1	X	X	X	-	X	X	-	X	X	X	X	X	-
2	E'jayrda	HZ4	X	-	X	X	X	X	-	X	X	X	X	X	-
3	Majnoon	HZ8	X	-	X	-	X	X	-	X	X	X	X	X	-
7	Udhaim	HZ2	X	-	X	-	X	-	-	X	X	X	X	X	-
36	Bushes Near Umm Al-Warid*	HZ9	-	-	X	X	X	-	-	X	X	-	X	-	-

*Sites were visited for the first time during 2009 KBA surveys.

2010 Pressure-State-Response Assessment

In 2010, the sites were assessed with a more consistent methodology utilizing the Pressure-State Response Framework as defined by BirdLife International (2006, See Annex 2). In this framework, the survey team attempted to evaluate each site based on eleven Pressure (threat) categories, the overall State (or status) of the site, and the Response (or conservation actions) taking place at the site. Each Pressure, State and Response category was scored and a final status score was produced for the site.

Based on this PSR assessment, in the main “Pressures” appear to be (in order of highest to lowest severity):

- Natural systems modification (dams and changes water mgmt, filling in wetlands, drainage, dredging, canalizations, etc.);
- Human intrusions and disturbance - Effects related to non-consumption of biological resources – recreational activities, war, military;
- Over-exploitation, persecution and control (logging, hunting, over-fishing, etc.);
- Pollution (municipal and industrial waste and garbage, noise, air, light, & thermal pollution), and
- Climate change, severe weather, drought, floods.

In terms of “Response”, while conservation designation has occurred in the case of the Hawizeh Marshes (the site has been designated as a Ramsar Site by the country of Iraq) and management planning has begun (a management plan was drafted in 2008 but is not yet

approved); little on-the-ground action has been seen to date, and given the completion of the Iranian embankment, the overall status of the site has likely deteriorated.

Additional Factor Influencing the Site

Majnoon Oil Field Exploitation

In June and in December 2009 the Oil Ministry organized the first and second Licensing round for the development of the main oil and gas fields. In this occasion, brief description and maps of the oil fields have been published in the web site of the Iraqi Ministry of Oil.

Figure 2: Majnoon area overlapped to the Ramsar Area



The map of Majnoon field identifies a wide area, long more than 70 km, which overlaps part of the Hawizeh Marsh Ramsar site. (see Figure 2).

In January 2010, the Iraqi Oil Ministry signed a contract in its final form with the Consortium formed by Shell and Petronas oil companies, to rehabilitate Majnoon oil field.

Since, in 2007, the boundaries of the southern part of the Ramsar site were drawn after consultations with the Ministry of Oil, it is to be hoped that the presence of the Ramsar site has been highlighted by the Iraqi authorities and that the use of new technologies, such as lateral drilling, will be applied by the Consortium, to prevent the drainage of further areas of marsh.

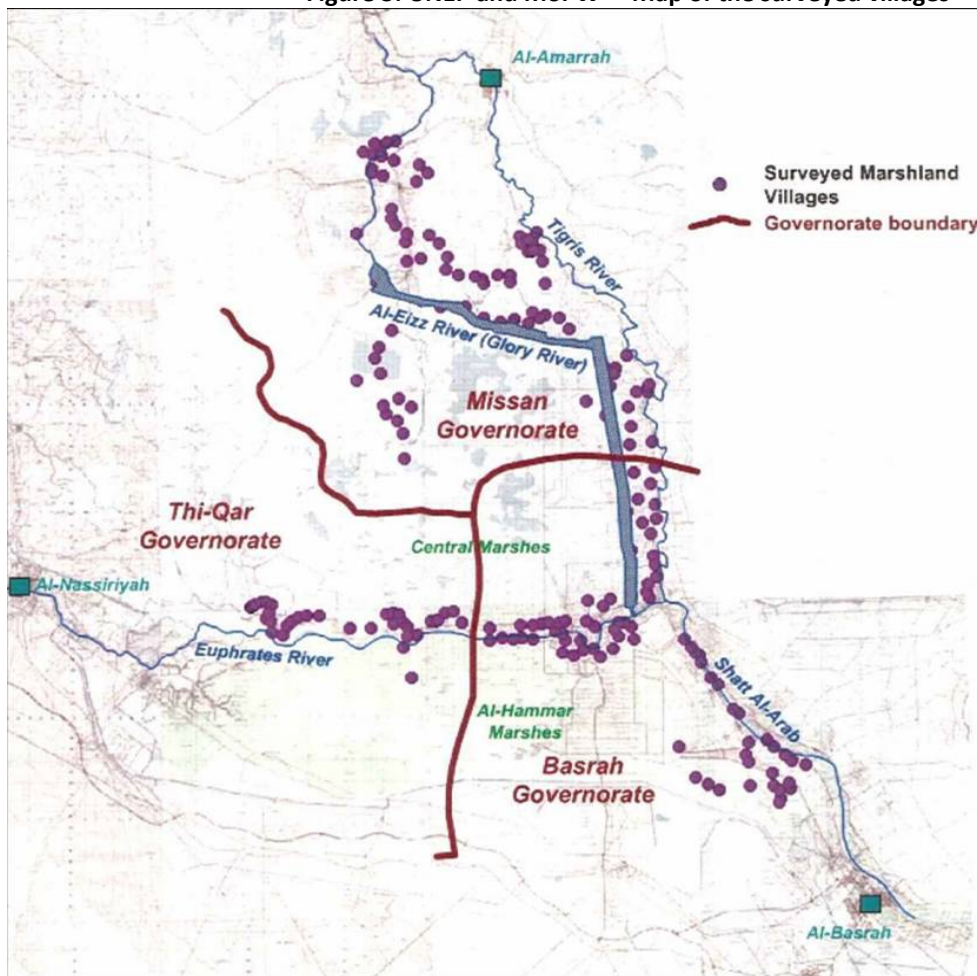
However, consultations with the Ministry of Oil are necessary to be aware of the details of the contract, so as to establish monitoring procedures and guidelines that minimize environmental impacts.

Impacts on Local Communities

Two socio-economic surveys have been held in the marshlands' area:

- In 2005, performed by Nature Iraq, as data collection for the preparation of New Eden Master Plan. The involved areas were the three governorates of Basrah, Missan and Thi-Qar
- In 2006, published in 2007, the "Survey on Demographic, Social and Economic Condition of Marshlands in the South of Iraq" - performed by UNEP and MOPW. The surveyed marshlands villages were 199 in 16 sub-districts, but, unfortunately, the visited villages in Basrah and Missan were the ones located along the right bank of Tigris River. The villages along the left bank of Tigris or close to the border of the Hawizeh Marsh were not included. (See Figure 3)

Figure 3: UNEP and MoPW - Map of the surveyed villages



Therefore, after 2005, no kind of socio-economic research was conducted in the settlements that are directly affected by the status of the Hawizeh Marsh and which mainly depend on the exploitation of its natural resources.

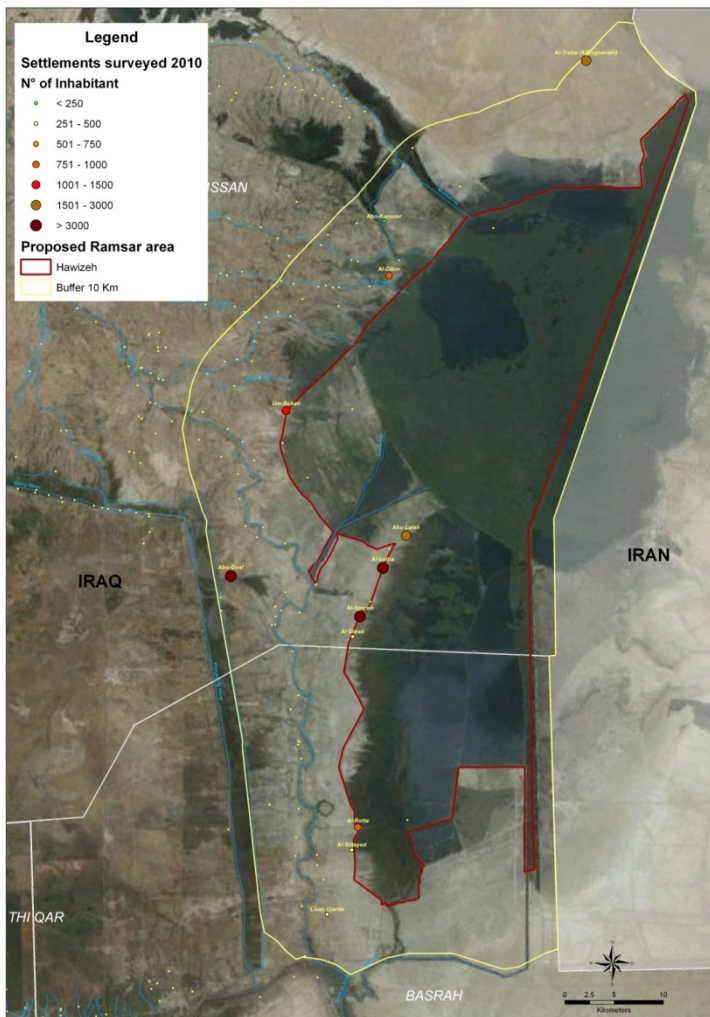
Current situation

From data collected in 2005, the villages located inside the Ramsar area are 6 with a total population of 11,000 resident. Two of them: Qaryat Umm Subaita and Qaryat Al Taraba, are densely populated. The settlements located in a ray of 10 km from the boundaries of the Ramsar site are 74 with a population of about 150,000 residents. (see Figure 4).

Of course, not all the settlements are linked in the same way to the natural resources of Hawizeh, due to their location and the activities developed by the inhabitants. Some villages base their livelihood on marsh environment more than others and the different uses of natural resources could be cause of conflicts among diverse groups of stakeholders.

Nature Iraq in June 2010 conducted a set of preliminary surveys interviewing key people from the chiefs of 12 villages (see Figure 4).

Figure 4: Map of surveyed villages in June 2010



The total population of the visited villages reaches 25,960 residents for a total amount of 3,655 households.

The settlements are provided with electricity service, although it is not working properly. The source of fresh water for daily activities comes from the neighboring channels, since all the villages are located along streams mainly from Tigris river, two from Kahla river and one from Misharsh river. Drinkable water is provided by mobile tank and the residents pay for it. Primary schools are eight while the health centers are only four. Sewage system is absent.

All the respondents declared that, in their opinion, the livelihood of their village depend for the 80% on marshland resources. Main economic activities on which the population relies upon are livestock, fishing, and agriculture. In the table below it is evident that livestock activity, based mainly on water

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buffalo for the 85% and cow for 15%, is predominant, fishing is the second one while agriculture is the third. The cultivated crops are barley and wheat. The cultivation of vegetables or fruits, also if only for domestic consumption, is not practiced at all.

Reed gathering is practiced for animal food and building material, while the waving of mat for trade, largely practiced in other marshes areas, is marginal. Hunting is declared an activity not often exerted and only for domestic consumption.

The only other cited occupation, not related to natural resources, is bricklayer in neighbouring cities.

Table 4: Data from preliminary surveys on settlements close to Hawizeh Marsh – June 2010

Name	District	Inhab.	Family	School	Hearth C	Livestock	Fishing	Agriculture	Reed	Construction
Al Traba	Al -Kahla	2100	300	Y	Y	70	20	10	0	0
Abu Kanazer	Al -Kahla	240	40	N	N	40	30	30	0	0
Al Dibin	Al –Kahla	900	130	Y	N	40	40	20	0	0
Um Subati	Al –Kahla	1200	200	Y	N	70	20	10	0	0
Abu Lalah	Al –Kahla	3000	400	Y	N	20	70	10	0	0
Al Batha	Al –Kahla	5000	630	Y	Y	30	20	10	0	40
Abu Qsaf	Al –Kahla	4500	600	Y	Y	30	60	10	0	0
Al Saqrah	Al -Kahla	7000	900	Y	N	80	10	10	0	0
Al Siwab	Al-Qurna	350	30	Y	N	50	40	10	0	0
Al Rotta	Al-Qurna	800	200	N	Y	80	0	10	0	10
Al Sidayed	Al-Qurna	370	75	Y	N	50	40	10	0	0
Lissan Ujada	Al-Qurna	500	150	N	N	10	40	20	10	10
TOTAL		25,960	3,655	9	4					

Mayor Threats

This initial information, though collected through a short questionnaire preliminarily proposed only to village leaders, demonstrates how the changes occurring in recent years past have caused the increase of those issues that already affected the site and its dwellers in the past.

Since, for centuries, the way of life of these people was based on water, the scarcity of this element is the root of the problems they are currently facing.

At the same time, as their culture and traditional knowledge was based on exploiting natural resources procured by wide extension of water rather than on managing its shortage, they lack of those skills necessary to deal with the new situation.

All the respondents have, in fact, declared that the threats that the inhabitants are currently facing are mainly caused by the shortage and bed quality of water.

Other mentioned issues are the bed quality of soil for agriculture, distance of zones suitable for fishing and absence of veterinary services.

Figure 5: Pictures from visited villages



Al Traba – farmer house



Al Traba channel – source of fresh water



Abu-Kanaze



Abu-Kanaze

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Al-Dibin



Al-Dibin



Um-Sobat



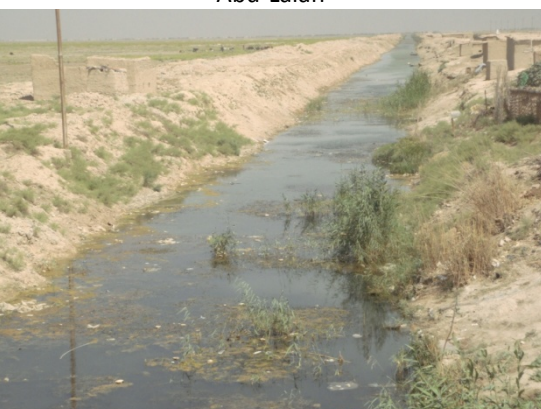
Um-Sobat



Abu-Lalah



Abu-Lalah



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Al-Batha



Al-Batha



Abu-Qsaf



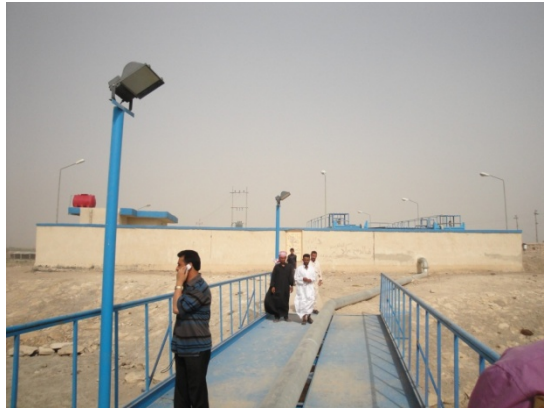
Abu-Qsaf



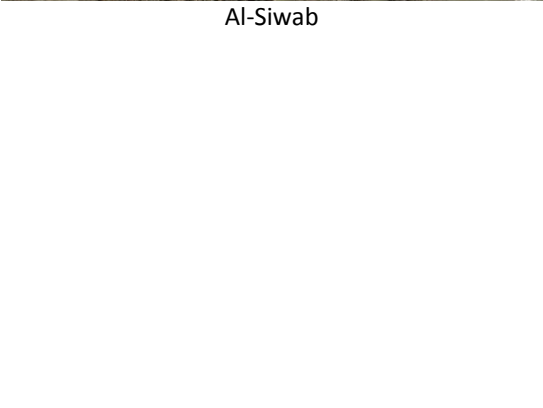
Al -Saqrh



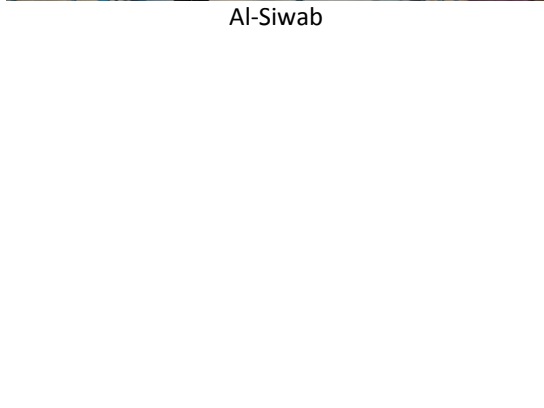
Al -Saqrh



Al-Siwab



Al-Siwab



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Al-Rotta



Al-Rotta



Al-Sidayed



Al-Sidayed



Lisan Ujarda



Lisan Ujarda

Part 2

Proposed Operational Program



Biodiversity Conservation Actions

Environmental Monitoring

Based on the results and field observations gained from the 2009 survey team, a clearer picture emerges concerning the conservation issue of most important KBA sites in Iraq given our present knowledge. Environmental monitoring is vital to the identification, planning and establishment of sound conservation measures.

Objective

The Management Objectives #2 and #3 of the draft Hawizeh Ramsar Management Plan are focused on Environmental Monitoring as a basic element for the conservation of natural heritage of the site. The start up of implementation of the Management Plan requires more focused survey efforts for the collection of more detailed information, in order to:

- create checklists of endangered species
- assess the distribution and conservation status of flag species
- evaluate the status of important sites that have suffered serious degradation
- refine the delineation of the KBA sites according to their priority
- determine the sustainable level of use of natural resources such as water, vegetation and wildlife for human needs.

Description

The proposed actions are:

- expand the scope and methodology of KBA surveys to progressively include mammals, reptiles, amphibians, insects etc.
- perform further botany surveys of the following Hawizeh sites that have the highest species richness and best ecological conditions that are also considered threatened habitats: Umm An Ni'aaj (HZ1), Udham (HZ2), E'jayrda (HZ4) and Majnoon (HZ8). There is a need for more than one survey per year in order to catalog seasonal plant life throughout its lifecycle including the flowering and fruiting periods that occur in spring and fall. Thus, it is highly recommended to have an additional field survey during the spring season for better plant identification
- develop different types of field work for determining sustainable grazing/harvesting levels in many of the diverse habitats from the reed marshlands and semi-arid and arid grasslands. This type of work is necessary to increase our understanding of how to maintain these environments and address the problem of desertification.
- develop and implement a methodology for marshlands habitats assessment, which will provide a fundamental tool for the identification of critical habitat needs and appropriate biodiversity conservation measures.

Conservation of Biodiversity

Iraq ratified the UN Convention on Biological Diversity in October 2009. Nature Iraq has supported the Ministry of Environment in developing a National Report on Biodiversity in Iraq to be presented at the upcoming CBD COP10 in October 2010. The ratification process for other important environmental conventions like the Convention on Migratory Species (CMS) and the Convention on International Trade of Endangered Species (CITES) is in progress.

Objective

The objectives of the draft Hawizeh Ramsar Management Plan can be integrated with actions related to the implementation of wider objectives of the CBD convention, in the framework of the “*Memorandum of Cooperation or Understanding*” that have been established between the Ramsar Secretariat and the CBD Secretariat.

Description

The proposed actions are:

- develop biodiversity indicators for the marshlands area
- develop action plans for the conservation of flag species and priority habitats
- organize workshops on biodiversity to promote cooperation between institutional and scientific bodies at the national and local level (Ministries, Governorate Councils, University, Museums, Research Institutes) for the mainstreaming of biodiversity conservation in Iraq.

Expand the protection status of Hawizeh Marshes

The Management Objective 3, Recommendation #35 of the draft Hawizeh Ramsar Management Plan proposes this site as an IUCN category VI *Managed Resource Area*.

Objective

The Hawizeh Marshes include many ecologically representative sites that need to be included in a legal framework of protection according to the new National Law on Protected Areas.

Description

Nature Iraq will support the Iraqi Ministry of Environment in developing a program to set up a network of protected areas throughout Iraq with the major function of safeguarding Iraq's irreplaceable biological diversity, cultural heritage and landscape richness. The Hawizeh Marshes and its adjacent lands deserve a national protection status that accounts for the needs of integrated protection and enhancement of its environmental, cultural and traditional heritage, and allows for the establishment of protection zones through regulation or planning mechanisms.

Stakeholder Involvement

The Objective 10 of the Management Plan states: To incorporate in all plans and activities the needs and requirement of local and regional stakeholders (e.g. residents, fisherman, hunters, farmers, local civil servants, military and border officials, oil developers, etc.) who live, work and/or utilize the Hawizeh Marsh and the surrounding lands.

There are three main objectives that are achieved with effective stakeholder involvements: resolving conflicts; developing a shared vision; and creating collaborative solutions to management issues.

It is important to begin stakeholder involvement early in the process before interests become entrenched. Identifying stakeholders in the Hawizeh Management process can be assisted by a community profile, but this should be driven by common sense and inclusiveness, providing all participants with equal status. In addition, extra care should be taken to include groups such as women and low-income and other disadvantaged peoples who traditionally are under-represented in planning efforts.

Stakeholders in Hawizeh Marsh management are those people that can affect change to the Marsh and, in turn, are those affected by activities in the Marsh. For example, this will include fisherman who earn an income from fishing in the Marsh but, in turn, their activities and fishing methods affect future fish stocks of the Marsh.

To promote the achievement of this fundamental object four activities are proposed and hereafter briefly described.

Socio-economic survey

Objective

The projects aims to better understand the means of livelihood, traditional use of natural resources and socio cultural practices associated with the environment in villages located in three zones surrounding the Hawizeh marsh. The zones have been identified through the study of the information from the preliminary surveys held in June.

The focus is on learning what is necessary for deciding on future actions and capacity building program for sustainable development, giving the occasion to the inhabitants to describe how they do daily activities, what they know about the surrounding environment and what they think about their future.

Description

The use of the Participatory Rural Appraisal (PRA) method will enable the team to gather information by employing international approved tools that consent to collect different kind of data with a direct participation of the local communities. Gathered information will be very important to define the matters to treat during the environmental awareness campaign and to identify the objectives for a number of targeted capacity building sessions for residents.

Therefore, several items will be investigated and, for ensuring a sufficient knowledge of the region, the number of surveyed villages will be commensurate with the complexity of the area.

After the first set of surveys and the comparison with data from other disciplines, it will be possible to verify if the number of selected zones to investigate need to be increased due to particular situation impossible to identify at present.

Local Communities Involvement Program

Objective

Provide a set of communication material to be presented to the local communities for illustrating the rationale and purpose of the establishment of the Ramsar site.

Description

Involving people mean to give them the possibility to understand, with the use of proper communication tools, information about the project and its aims:

- Why the protected areas has been established
- Potential benefits of management
- Boundaries and zoning
- Regulations and why they are needed
- Protected species
- What is being monitored, and why

The team that will develop the program will previously attend to a Facilitation Training and Capacity Building workshop to ensure a better participation and strengthening collaboration among the various stakeholders, enhancing the understanding and acceptance of the proposed concepts.

Establishment of a Hawizeh Stakeholders Advisory Group

Objective

Promote through consultation among provinces and local authorities the establishment of an advisory group able to represent the broad range of interests represented by the communities. (Management Plan – recommendation 71)

Description

The stakeholders need to be properly identified in the Hawizeh area in order to develop a group with sufficient authority to apply collaborative learning and conflict resolution techniques and formulate effective and acceptable decisions. Their direct engagement in planning and project design and implementation is critical to the successful development of the management plan.

Environmental Awareness and Educational Program for Children

Objective

Provide organizational support and tools such as leaflets, posters, animated videos and teachers' booklets to promote an environmental education programme tailored for children ages 8 through 14 years.

Description

The changes occurred in the last years have modified the environmental assets of the area. The use of traditional knowledge and practices are no longer sufficient to address the new issues that threaten the environment such as pollution, chemical additives, overexploitation of natural resources, etc.

Since the wise management of the remnant marshes requires the promotion of a shared level of environmental knowledge it is fundamental to concentrate on the implementation of education program for future generations.

Capacity Building

The objectives and contents of the capacity building program will be defined after the evaluation of the data gathered through the proposed socio economic surveys and shared with local authorities and communities' representatives.

The matters will, of course, deal with the activities principally carried out by the people. However, the focus of each training sessions need to be established after further researches. Hereafter a list of possible items to develop throughout the region:

Water Management Good Practices

Objective

Promote a more efficient use of water, by assisting farmers, watershed managers, homeowners, and community members in developing measures and intervention proposals for the integrated management and wise use of water resources, with particular attention to conservation, water efficiency, water reuse and water saving technologies

Livestock Management

Objective

To improve the milk production and processing through the adoption of sustainable techniques with specific attention to smallholders and producers.

Sustainable Fisheries Practices

Objective

To restore sustainable fish populations of marketable quality and size and create economic opportunity for fishing in the Hawizeh Marsh. (Objective 12 of the Management Plan)

Sustainable Agriculture

Objective

Training session to disseminate techniques to limit the sources of pollution avoiding the intensive use of pesticides and fertilizers.

Agricultural practices produce effluents that must be carefully managed in order to prevent the pollution of neighbouring environments. This process happens generally through the

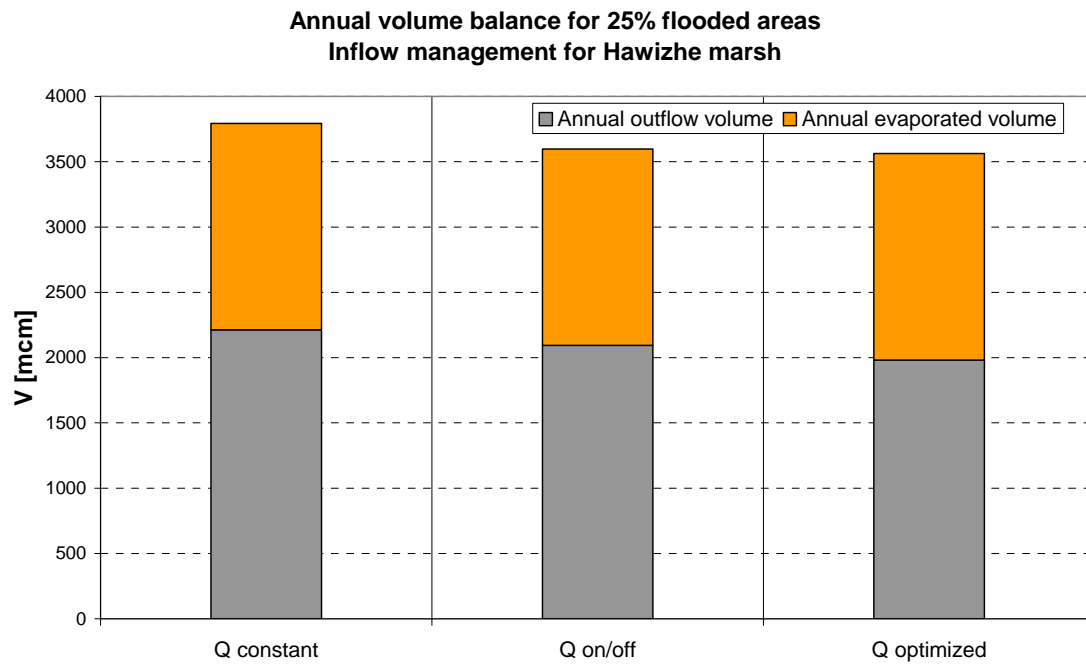
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dissemination of pollutants by the drainage of the wastewaters originating from crops and animal husbandry activities.

ANNEX 1 - Hawizeh Marshes Water Management

Flow balance

Figure 6: Annual volume balance for SI, On-Off, OI methods, for Huweizah marsh – 25%



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Figure 7: Annual volume balance for SI, On-Off, OI methods, for Huweizah marsh – 50%

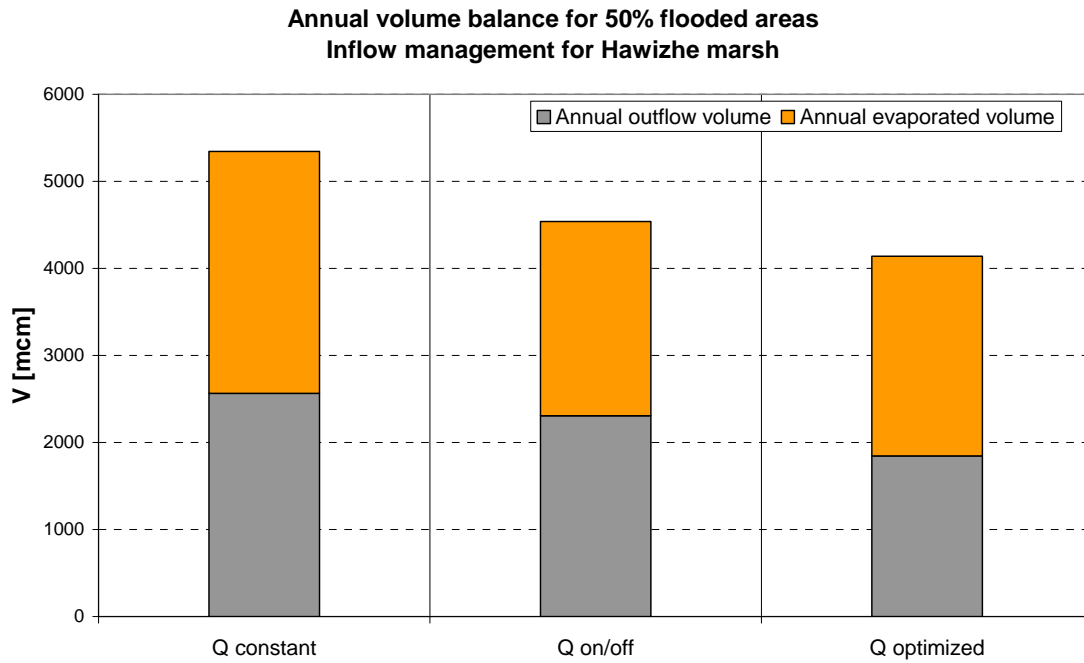
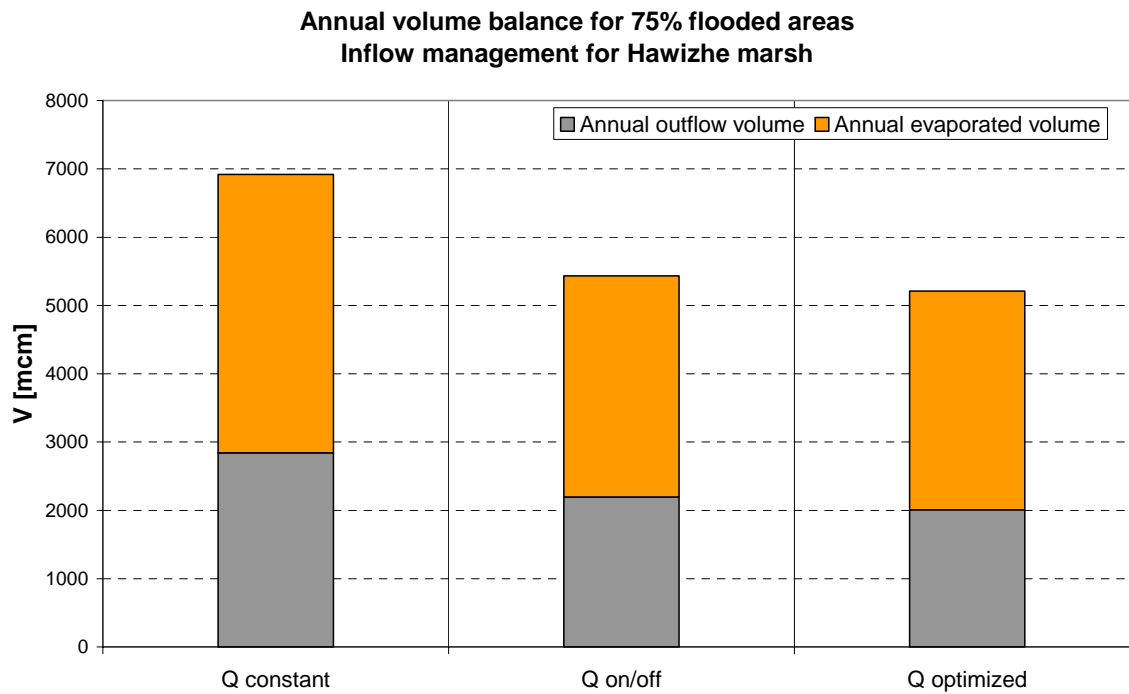


Figure 8: Annual volume balance for SI, On-Off, OI methods, for Huweizah marsh – 75%



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Figure 9: Annual volume balance for SI, On-Off, OI methods, for Huweizah marsh – 100%

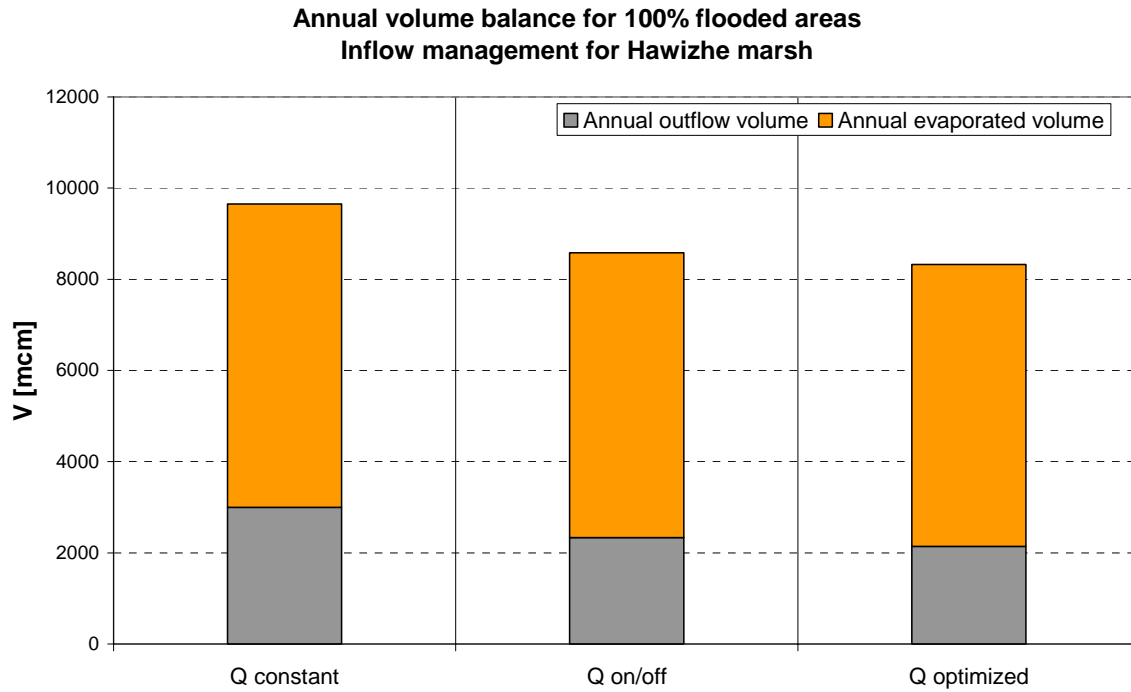
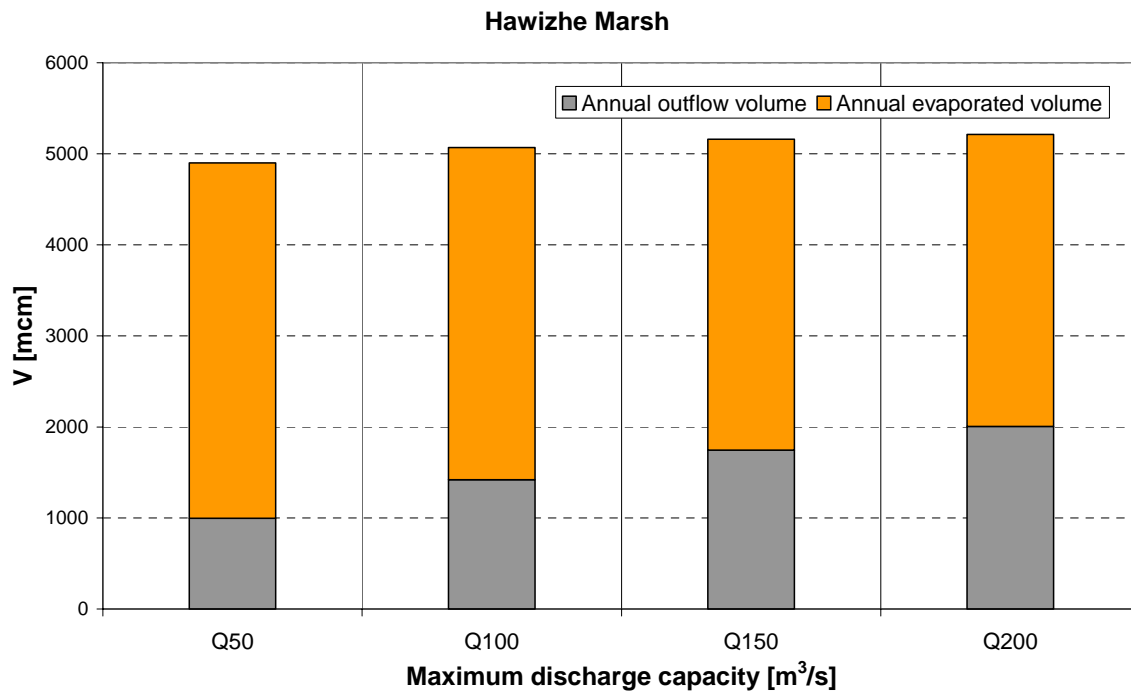


Figure 10: Annual volume balance for Huweizah Marsh with different outlet discharge capacity



Inflow Water Management

Huweizah Marsh receives Iraqi and Iranian contributes. The following plots don't illustrate the 100% re-flooding scenario. In fact for the 100% scenario the Iranian contributes is much higher

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than the other percentages and a comparison is not possible. The 100% scenario considers that a consistent Iranian inflow feeds an area that is not flooded in the other scenarios.

Figure 11: Annual water requirements for Huweizah Marsh

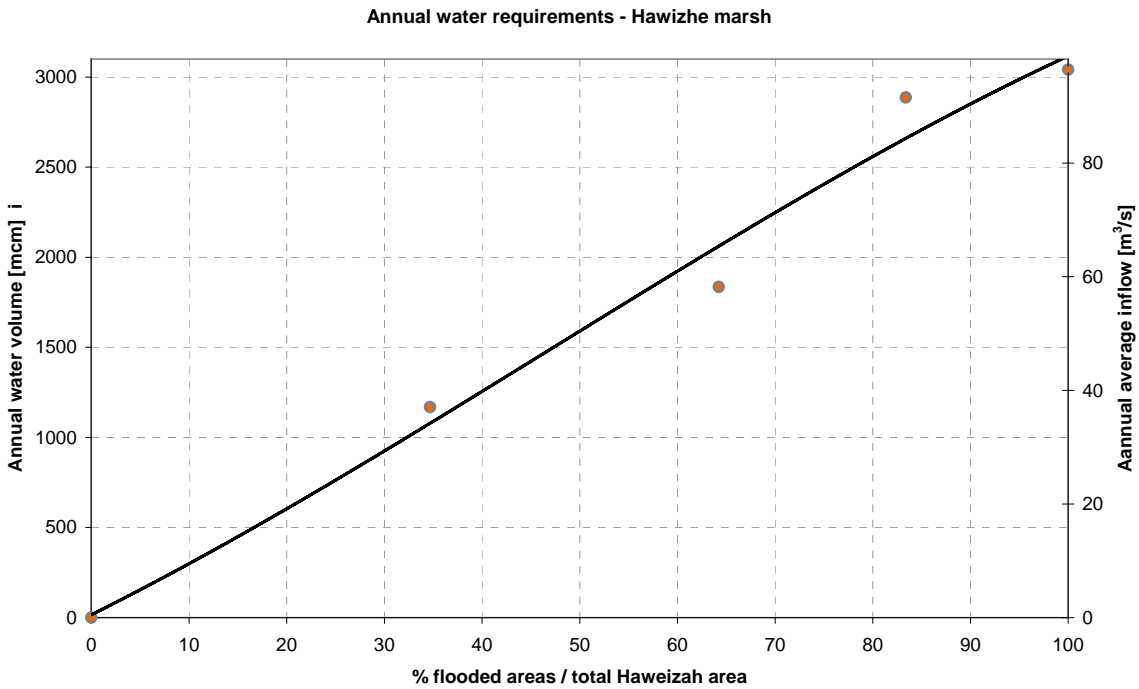
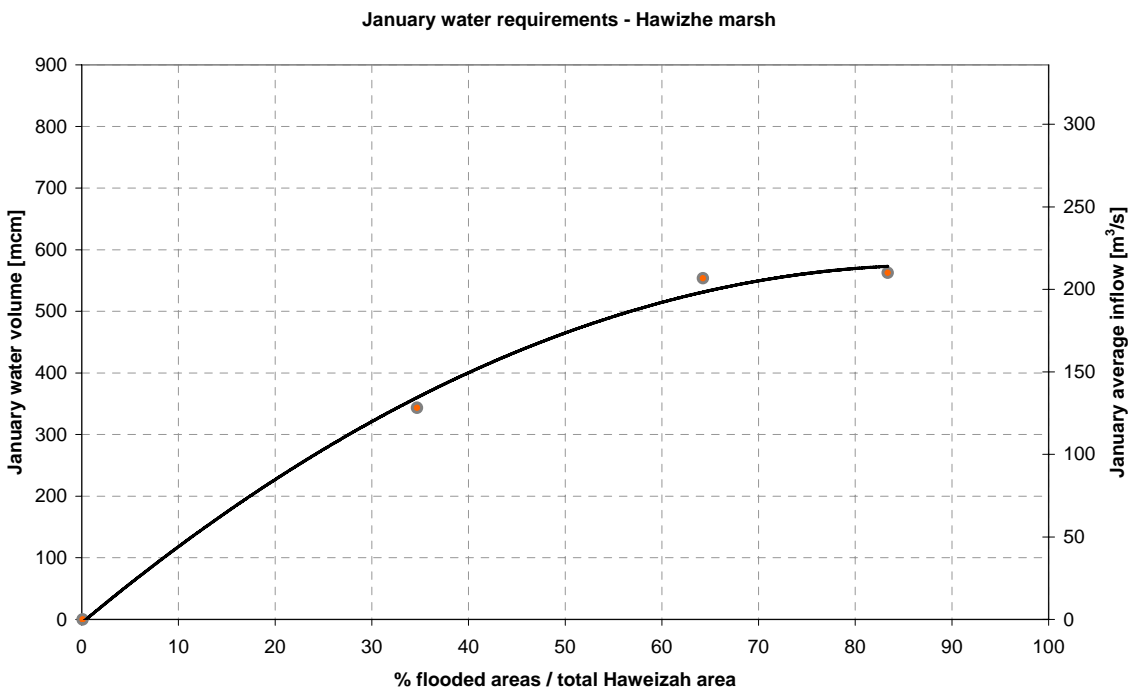


Figure 12: January water requirements for Huweizah Marsh



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Figure 13: February water requirements for Huweizah Marsh

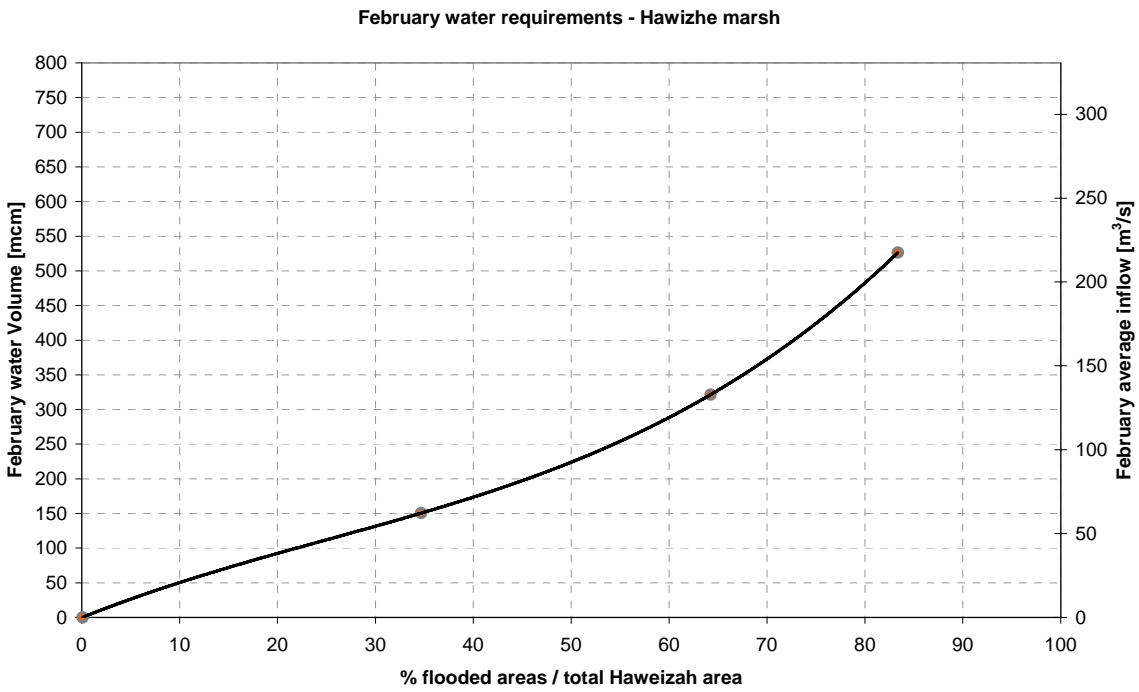
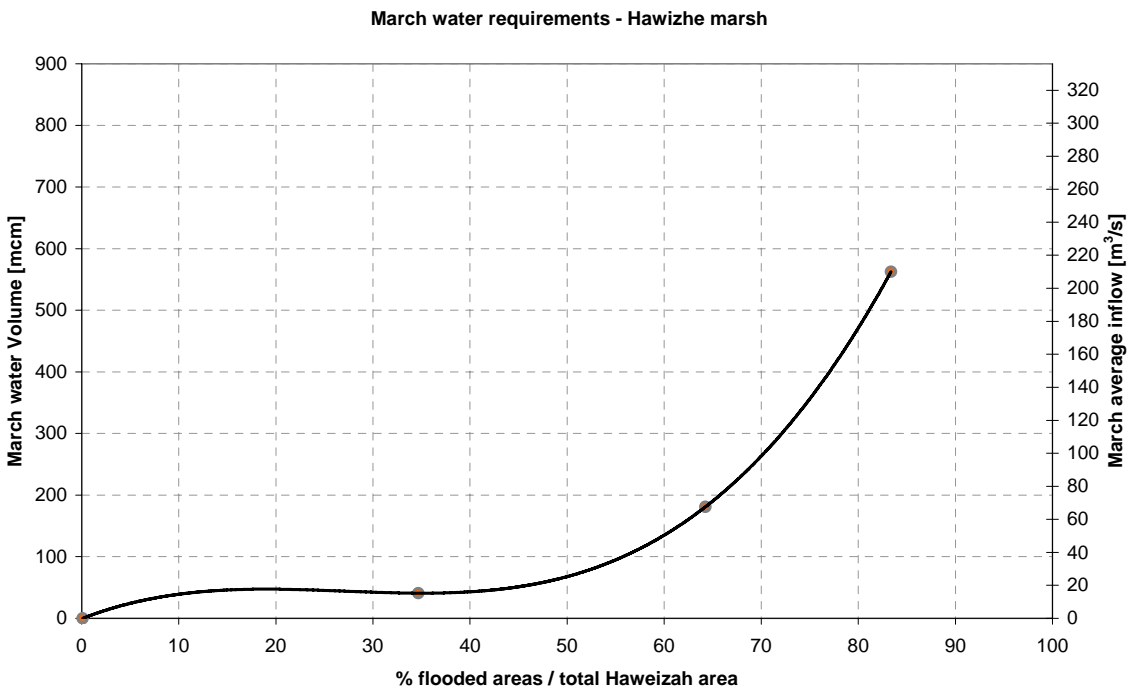


Figure 14: March water requirements for Huweizah Marsh



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Figure 15: April water requirements for Huweizah Marsh

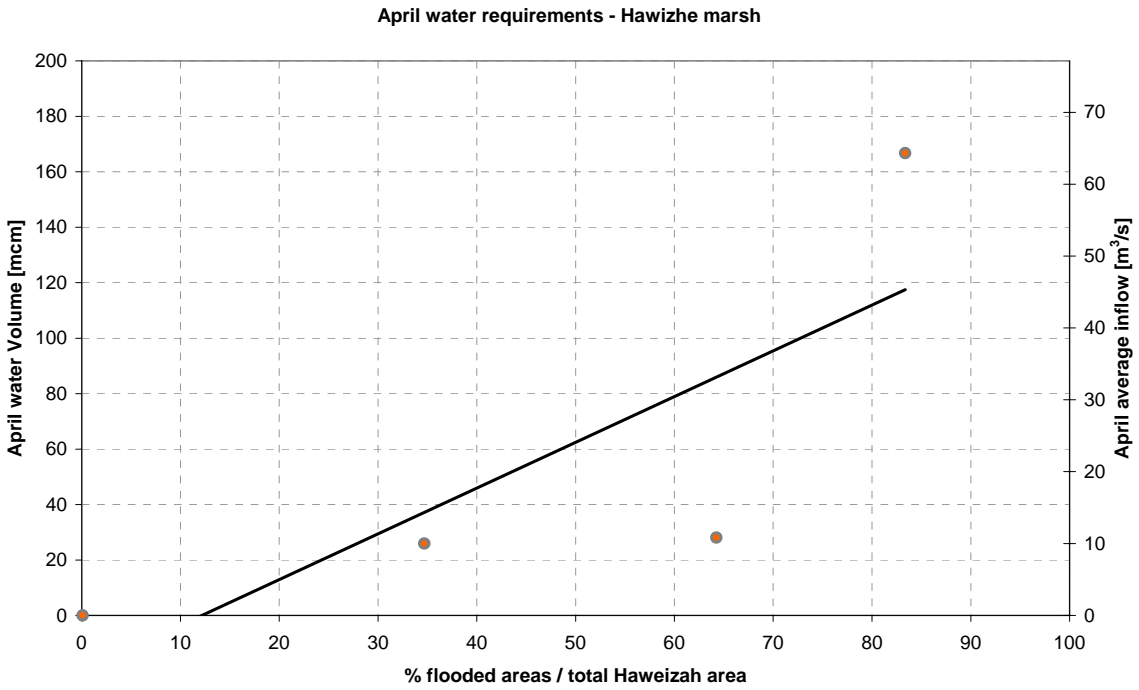
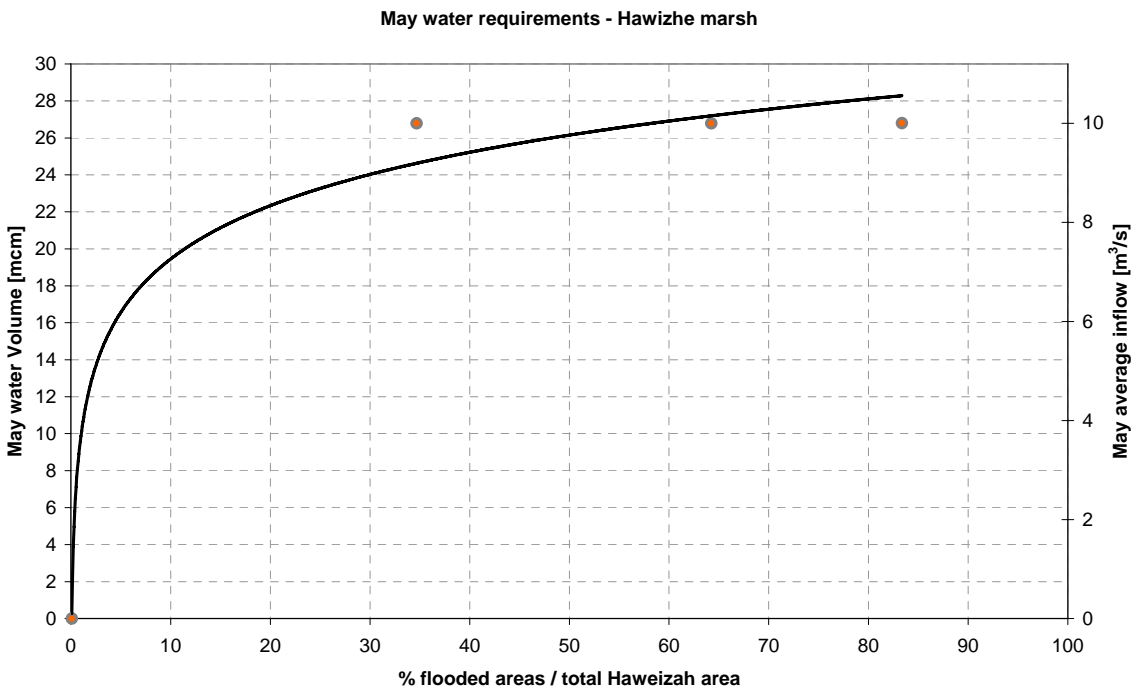


Figure 16: May water requirements for Huweizah Marsh



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Figure 17: September water requirements for Huweizah Marsh

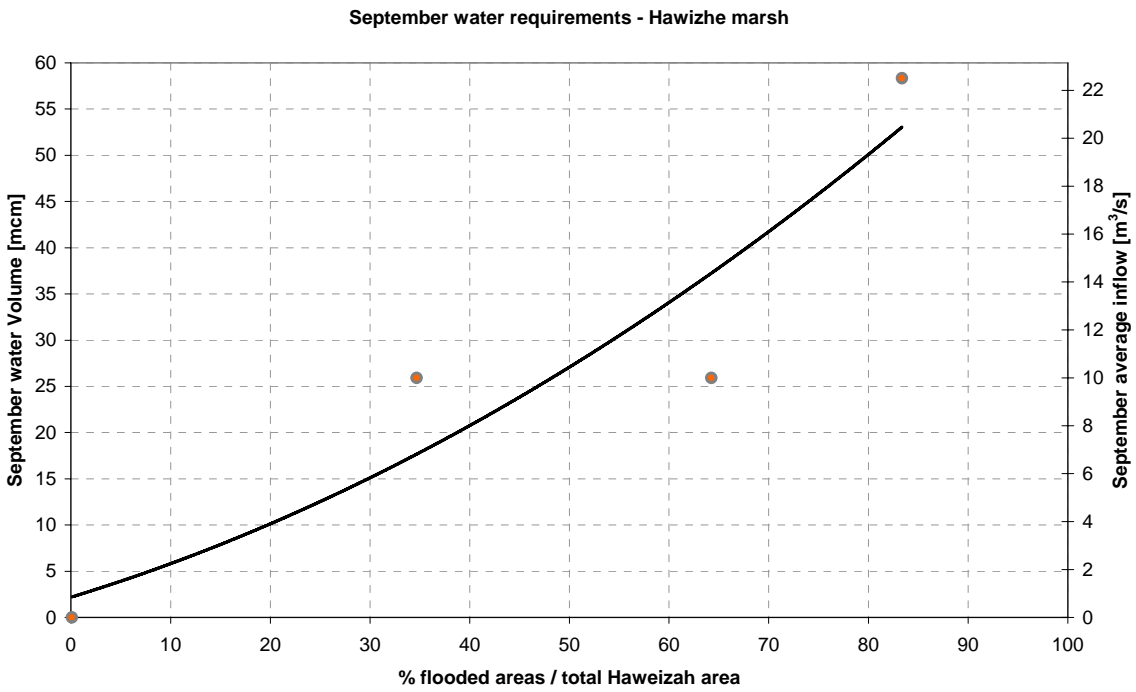
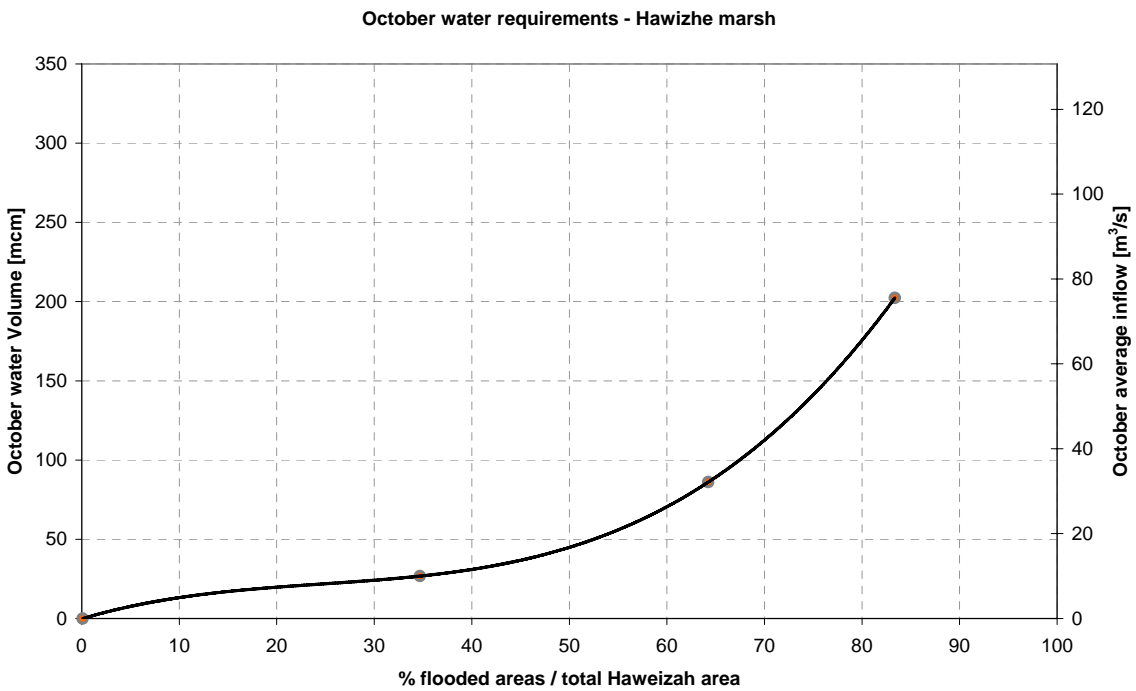


Figure 18: October water requirements for Huweizah Marsh



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Figure 19: November water requirements for Huweizah Marsh

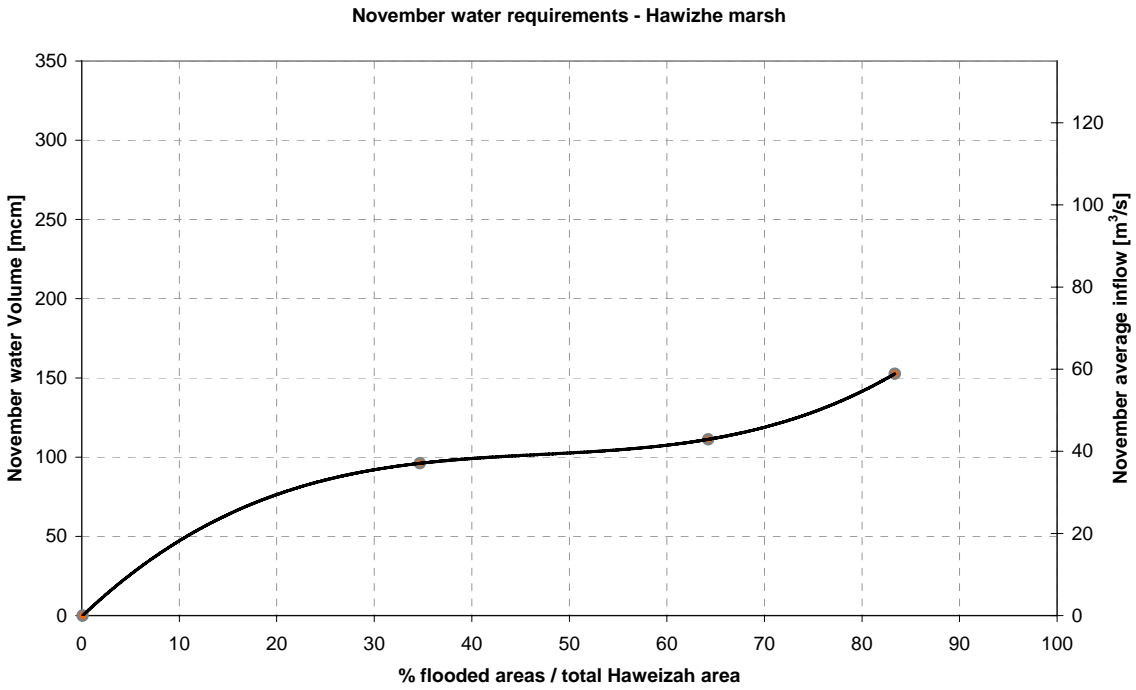
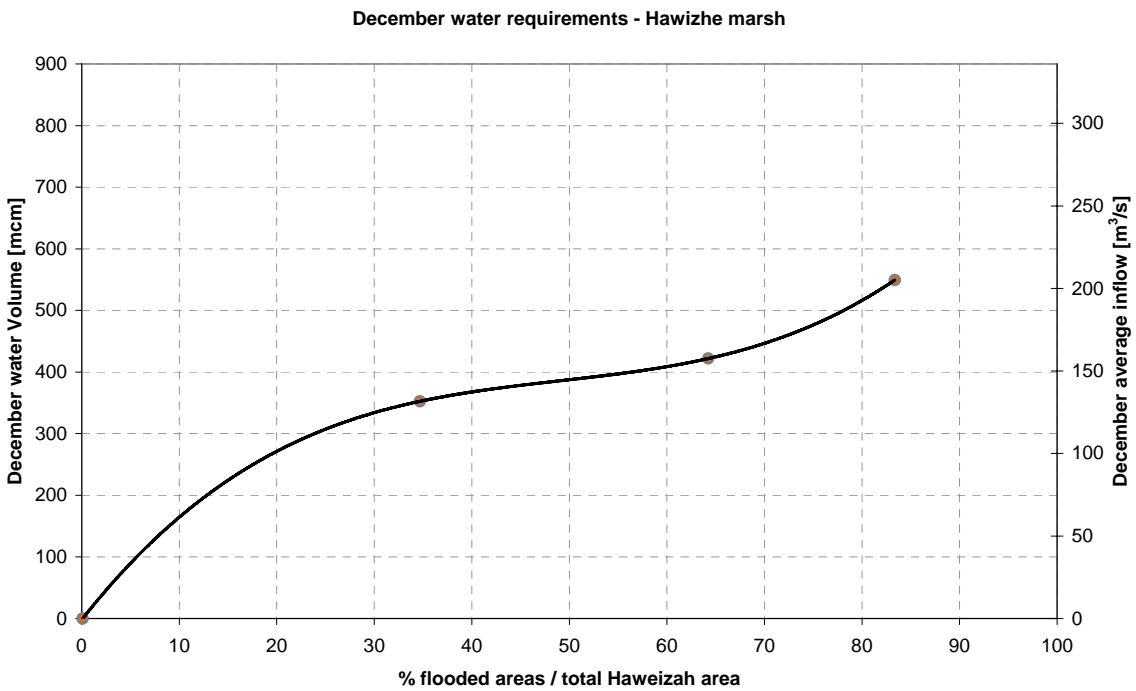


Figure 20: December water requirements for Huweizah Marsh



ANNEX 2 - Key Biodiversity Areas Survey of Hawizeh Marshes

Excerpt from the 2009-2010 Site Review



Majnoon, Winter 2009, Photo by M. Salim, Nature Iraq



Majnoon, Summer 2010, Photo by M. Salim, Nature Iraq

Introduction

This document presents field observations from the Key Biodiversity Areas (KBA) Survey conducted in Winter (January/February) and Summer (May/June) 2009 and 2010 in Southern Iraq. This report covers the findings for Hawizeh Marshes in the governorates of Basrah and Missan only and is excerpted from the larger report for all southern KBA sites. This survey is a joint effort between Nature Iraq (NI) and the Iraqi Ministry of Environment (MoE). The 2009 & 2010 surveys represent the eighth, ninth, tenth and eleventh full winter and summer survey, respectively, conducted in Iraq since the start of the project in February 2005. One new area within the Hawizeh Marshes was visited in the winter of 2009 (HZ9). The fieldwork focused on surveying the regional bird and fish populations in the winter (fish were only surveyed in winter of 2009) and bird and plant observations in the summer. This site review provides the principal findings from the Hawizeh sites of the species surveys in order to determine whether these sites meet KBA criteria and their relative conservation status.

KBAs are sites that are large enough or sufficiently interconnected to support viable populations of the species to which they are an important habitat. Originally based upon the criteria of Important Bird Areas (IBA) developed by BirdLife International, the KBA criteria has been expanded to address a wide range of species. The KBA selection process uses four criteria based upon the presence of four categories of species for which site-scale conservation is appropriate:

1. Globally or regionally threatened species;
2. Assemblage of restricted-range species;
3. Congregations of species that concentrate in large numbers at particular sites during some stage in their life cycle;
4. Assemblages of biome-restricted species.

As the KBA process is predominantly fauna-focused an additional set of criteria identified by PlantLife International was used to evaluate priority sites based on the flora. Plantlife states that the identification of Important Plant Areas (IPAs) is based on the three broad criteria listed below. A site qualifies as an IPA if it fulfills one or more of these criteria:

1. Threatened species (sites that hold significant populations of species of global or regional concern);
2. Botanical richness (sites with exceptionally rich flora in a regional context in relation to its biogeographic zone);
3. Threatened habitats (sites that are outstanding examples of a habitat type of global or regional importance)

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While it is unlikely that the Hawizeh Marshes contain many threatened species or is particularly rich botanically, the area during the period of marshland desiccation of 1990s acted as a refugia for Iraqi marshland flora and fauna and thus represents a threatened habitat in Iraq that clearly meets the third criteria.

The KBA process is part of a large international effort to help in the establishment and prioritization of sites that are of global, regional and/or national importance. All sites are worthy of protection but conservation funds are limited and it is important to identify unique sites in Iraq that are at risk of being lost or irreversibly damaged. The environment in Iraq has, after decades of war and civil strife, faced massive changes and degradation. Few places exemplify these problems more than the Mesopotamian Marshlands of Southern Iraq. In a recent publication by the World Conservation Union (Langhammer et al., 2007), the two key variables that determine how sites should be prioritized are “Irreplaceability” and “Vulnerability”. A site is irreplaceable if it contains species that occur nowhere else or where an important segment of a species population utilizes the site consistently during part of the year (e.g. for migration or breeding). Vulnerability relates to sites where species can be found that are vulnerable or threatened by extinction either locally or globally. After over three years of surveys conducted by the KBA Program, it is clear that large areas within the Mesopotamian Marshlands of Southern Iraq embody the principles of irreplaceability and vulnerability and this unique Middle Eastern habitat requires urgent conservation action.

Survey Area

Sites in Iraq were initially selected based upon a publication called Important Bird Areas of the Middle East by M.I. Evans (1994). The following table includes the site names and site codes (along with the Evans code) with original GPS coordinates of the KBA Southern Survey sites. A Google Earth (2010) map follows.

Area	Site Name	Site Code #	Evans Code #	Season of survey ***		GPS Coordinates					
				W	S						
Missan	Umm An Ni'aaaj	HZ1	032	X	X	31	35	35	47	34	56
Missan	Udhaim (<i>revised coordinates</i>)	HZ2	032	X	X	31	40	54	47	43	21
Missan	E'jayrda	HZ4	036	X	X	31	19	55	47	37	51
Basra	Majnoon	HZ8	036	X	X	31	5	41	47	34	38
Missan	Bushes Near Umm Al-Warid*	HZ9	032	X	-	31	34	5	47	30	4



Plate 1: Google Earth (2010) Image showing KBA survey areas in Hawizeh Marshes

Please note that information for 2010 is still under review and data presented here is more complete for the 2009 survey.

KBA HZ1-8 - Hawizeh Marshes (IBA 032 & 036)

General Description: The Hawizeh marshes described in Evans (1994) as IBA Site 36 was identified as “Haur Al Hawizeh”. Although Evans (1994) separates Umm An Nia’j Marsh (site 032) from Hawizeh Marsh (Site 036), the KBA Surveys considered these all part of one major marsh system with northern sites (HZ1, HZ2 & HZ3) already discussed above and southern sites (HZ4, HZ5, HZ6, HZ7 & HZ8). These marshes extend into Iran (called in Iran “Hor Al Azim”). Evans described this system of marshes on the east side of the Tigris River as covering an area of 220,000 hectares between Amarah & Basrah. Though never completely drained, large parts of these marshes were dried or partially dried by the former regime’s drainage programs (E’jayrda was dried completely). They were also impacted by the war with Iran (1980-88) with major battles often using chemical weapons being conducted on the border and southern regions of the marsh. Evans provides a lengthy description of these marshes which are fed by the Tigris and Karkheh Rivers and extend into Iran (the marsh here is called Hor Al Azim). Evans lists many globally and regionally threatened bird species that use the site, such as *Anser erythropus* and *Anhinga rufa*. He also listed restricted range species at the site (*Hypocolius ampelinus* and *Acrocephalus griseldis*). Other threatened and endemic wildlife listed for the site included *Canus lupus*, *Lutra perspicillata* and the endemic subspecies, *L. p. maxwelli*, and *Gerbillus mesopotamiae*. It should be noted that mammal records in the

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KBA Program have always been incidental and opportunistic. The following sites were visited in 2009.

KBA HZ1-Umm An Ni'aaj - (IBA 032) – Surveyed in Winter and Summer 09

Site Description: Originally listed in Evans as IBA site 32 “Haur Om Am Nyaj” and described as a large wetland (15,000 ha) about 20 km Southeast of Amarah “comprised of extensive reedbeds with many areas of open water and fast-running creeks, and is partly permanent and partly seasonal.” Today this site consists of a large lake on the northern side of Hawizeh with water coming from the Tigris, and has a depth ranging from 2 to 3.5 meters with low turbidity. There is good plant diversity with most of the plant communities found on the margins of the lake, except submerged plants, which are found in many areas. The *Phragmites australis* communities form aggregations floating on the lake which move from place to place according to wind direction and speed. This phenomenon is called “Tahala” in Arabic. In the recent visit the water quality was poor, the flow had decreased and there were decayed submerged plants (*Ceratophyllum*). The dominant submerged plant was *Ceratophyllum demersum*.

Umm An Ni'aaj is the biggest freshwater lake in Huwaiza. This body of water is known for its large expanse of open freshwater. It harbors many bird species, some of them in large numbers. The lake has very clear with beds of submerged plants that make it a very suitable habitat for the fish-consumers that catch their fish from the deeper water. This site is one of three unique sites in Hawizeh that always harbors the African Darter, Sacred Ibis and other important and endemic birds. This lake/marsh suffers greatly from overfishing (by electricity and nets) and hunting (by shotgun). In addition, as Iran has constructed a soil embankment that runs from Majnoon (South Hawizeh) northward to reach northeastern Udham (North Hawizeh), which entirely cuts off the water resources from the Iranian side (Hor Al-Azim or Ezim), the water level in Umm An Ni'aaj is directly affected and subsequently, the wildlife and bird life over the whole area suffer.

In 2009 the area was full of water but was beginning to suffer from a water shortage. This observation was based on local reports in addition to the old line marking the water level. Heavy electro-fishing was also observed contributing to the general overfishing in the ecosystem. In the winter of 2010 the water level was still good but when compared to the original water levels seen in previous surveys at this time the difference was noticeable. No electro-fishing and net fishing was allowed in the area until the end of the spawning season due to enforcement by the border guards and no electro-fishing was allowed in the area at all at this time. During summer 2010 survey, the area appeared natural and the main water source from the Abu-Walad River was flowing well. But in general, as stated before, when comparing with previous surveys, the water-level tends to be lower than in the past.

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Plate 2: Site Photo of Um Al-Ni'aaj in summer 2009 (left) & 2010 (right), Photo by M. Salim, NI.

Observations for 2009 in winter were made on 25/1/2009; in summer on 3/6/2009:

Winter -Birds: 35 species, 8054 individuals. Summer -Birds: 21 Species, 3077 individuals.

Summer - Plants: This site had only one waypoint (Waypoint 58 -N: 31 35 33.2 E: 47 34 58.7) because there was only one primary habitat within which 8 plant species observed.

The ecological scale was “3” (moderately disturbed) and there are three types of threats recorded: decreasing water levels, fishing and hunting. The dominate plants were reeds (*Phragmites australis*) which surrounded the marsh itself and were randomly distributed throughout the body of water. Also, along the edges of the marsh were semi-aquatic species such as *Bacopa monniera* which grew on the old aggregate root of the reed and benefited from the shelter they provide. In the same habitat, there are other similar species including *Samolus valerandi* and *Cynodon dactylon*. The submerged plants covered the marsh's open waters where no reeds grew. This submerged vegetation includes *Ceratophyllum demersum*, and the floating plant species *Lemna sp.* which grows in the spaces between the reed communities to avoid strong wind currents. *Capparis spinosa* was also present on the way to the site.

Summer - Other Fauna: Buffalo

Winter - Fish: Fishing with floating gill nets is practiced at the site by about 20 boats using nets with mesh sizes 0.5, 2, 3 and 4 cm. The daily catch was estimated to be approximately 8 kg/boat each day for gill nets, but extensive electro-fishing was practiced at the site with about 150 boats using this method in an estimated daily catch of about 26 kg/boat-day. No poisons were used.

Eight fish species were recorded: *Acanthobrama marmaid* (3% of the total catch), *Alburnus mossulensis* (3%), *Aspius vorax* (15%), *Barbus luteus* (25%), *Heteropneustes fossilis* (10%), *Silurus triostegus* (24%), *Liza abu* (20%) and *Mastacembelus mastacembelus* (no sample). There were no summer fish observations.

Conservation Significance:

2009 Birds: The following conservation concern (CC) species utilize the site in winter: Darter *Anhinga [rufa] melanogaster* (CC), Hooded Crow *Corvus [corone] cornix* (CC), Armenian/Yellow-legged Gull *Larus armenicus/michabellis* (CC), Slender-billed Gull *Larus genei* (CC). Also, other species with various conservation statuses were found like: Pygmy Cormorant *Phalacrocorax pygmaeus*, Little Grebe *Tachybaptus ruficollis*, Iraq Babbler *Turdoides altirostris* (CC), White-tailed Lapwing *Vanellus leucurus* (CC). And in summer: Hooded Crow *Corvus corone cornix* (CC), Pygmy Cormorant *Phalacrocorax pygmaeus* (CC), Purple Swamphen *Prophyrio prophyrio*, Little Grebe *Tachybaptus ruficollis*, and Slender-billed Gull *Larus genei* (CC).

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2010 Birds: Twenty-seven bird species were noted in winter of 2010 and the following conservation concern (CC) species utilize the site in summer: Darter *Anhinga [rufa] melanogaster* (CC), Hooded Crow *Corvus [corone] cornix* (CC), Slender-billed Gull *Larus genei* (CC). Also, other species with various conservation statuses were found like: Pygmy Cormorant *Phalacrocorax pygmaeus*, Little Grebe *Tachybaptus ruficollis*, Iraq Babble *Turdoides altirostris* (CC), White-tailed Lapwing *Vanellus leucurus* (CC), and Purple Swamphen *Prophyrio prophyrio*.

Fish: This site has historically been an important spawning ground for Bunni, *Barbus sharpeyi*, which was not found in the winter survey, so it may be considered a threatened species locally.

Plants: All the identified plants were common in Iraq and there are four species of *Lemna* in Iraq. Three of them are rare and only one is commonly found, but we could identify only to the genus *Lemna* level.

Conservation Issues & Recommendations for the Site: This is one of the most important bodies of water in Iraq and it harbors a number of very important species that breed in the region's dense reed beds. Several unique bird species such as the African Darter, Pygmy Cormorant and Sacred Ibis breed regularly at this site. Also, the site shows decreasing water levels due to the embankment built by Iran on the border and this will require active engagement and negotiations with Iran to remedy. This site must also be protected from human activities which are stressing the species inhabiting the site.

The good news that the team observed during summer 2010 (and even 2009 to some extent) is the control of electro-fishing generally and fishing during spawning season. This noticeably increased the fish content in quality (fish size) and quantity. The border police station controls the situation very tightly over Umm Al-Ni'aaj and this control could be informed by providing more technical information in a training program for the staff of the station.

Additional survey work should be done on the local fish population to determine the sustainable catch for the area and a community involvement process is needed to regulate the fisheries to achieve true sustainability. This site can be considered as an IPA (Important Plant Area) in Iraq because it is a threatened habitat and contains many important aquatic plants.

KBA HZ2- Udham - (IBA 032) – Surveyed in Winter and Summer 09

Site Description: The northern part of Hawizeh Marsh near the Iraq-Iran border, Evans provides a lengthy description of these marshes which are fed by the Tigris and Karkheh Rivers and extend into Iran (the marsh here is called Hor Al Azim). Evans lists many globally and regionally threatened bird species that use the site, such as *Anser erythropus* and *Anhinga rufa*. He also listed restricted range species at the site (*Hypocolius ampelinus* and *Acrocephalus griseldis*). Other threatened and endemic wildlife listed for the site included *Canis lupus*, *Lutra perspicillata* and the endemic subspecies, *L. p. maxwelli*, and *Gerbillus mesopotamiae*. It should be noted that mammal records in the KBA Program have always been incidental and opportunistic. Now, this site is open water (Lake) bounded on the north by reeds. There are reed groups (*Tabala*) inside the lake and the bottom is covered by submerged vegetation. There is a border guard station close to the lake. During this winter survey, the team could not reach the lake from the northern side as usual. It was only possible when taking a motor-boat from Umm Al-Ni'aaj Lake northward via very narrow waterways within very dense reedbeds to reach Al-Udham lake and search for birds and fish.

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The new KBA point in Udham is near the coordinates (N31 40 54.9, E47 43 21.0). No changes were noted to this wetland despite the low water levels conjectured based upon the original water line in the reed beds. A new Border Station was founded here as a floating police station.



Plate 3: Site Photo of Al Udham in summer 2009 (left) & 2010 (right), Photo by M. Salim, NI.
Observations in winter were made on 25/1/2009 and in summer were on 3/6/2009

Winter - Birds: Sixteen (16) bird species found in this, with a total of 1747 individuals.

Summer - Birds: 31 species, 311 individuals.

Winter-Fish: Border police did not allow the team to visit the site to conduct a fish survey due to security concerns.

Summer -Plants: There were two waypoints at this site. The 1st Waypoint 59, N: 31 39 21.7 E 47 39 29.5 was open water or lake (locally called Burga) surrounded by reeds. The 2nd was Waypoint 60, N: 31 40 54.9 E: 47 43 21.0 and it was also open water or lake (Burga) surrounded by reeds, these two waypoints had the same habitat type but waypoint 59 was taken because there was one rare species (*Utricularia australis*) observed there.

Waypoint 59: The ecological status of the site was rated at “2”, indicating that the site was only slightly disturbed because of only slightly decreased water levels. This waypoint is located on the waterway between the first site (HZ1) and the second (HZ2) due to the presence of several interesting plant species including the submerged species *Utricularia australis*, which had disappeared from the marshes approximately eight years ago. A specimen was observed in 2007 in the site adjacent to this waypoint during the KBA survey by NI’s botany team. This survey observed roughly 5-8 individuals with their yellow flowers that indicate the return of this plant species in the marshes. This plant was identified with a book of aquatic plant of Iraq (Saadi, 1983). Additionally, there are reedbeds (*Phragmites australis*) surrounding a 0.5 km² area of open water where the species *Utricularia australis* can be found.

Waypoint 60: This waypoint is very similar to the one above (The ecological status of the site was rated at “2”, indicating that the site was only slightly disturbed because of a slightly decreased water level). Eight plant species were observed at this site. *Phragmites australis* is the dominant species and is present in dense communities along the edge of the marsh. Also present are small, isolated communities within the body of water growing on the roots of the reedbeds including the climbing plant *Cynanchum acutum*, *Trachomitum venetum*, *Samolus valerandi*, *Cladium mariscus* and two additional unidentified species from the *Compositae* family. The only submerged plan present at the site is *Ceratophyllum demersum*.

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Conservation Significance:

2009 Birds: Conservation concern species in winter were: Darter *Anbinga [rufa] melanogaster* (CC), Hooded Crow *Corvus[corone]cornix* (CC), Armenian/Yellow-legged Gull *Larus armenicus/michabellis* (CC), Slender-billed Gull *Larus genei* (CC), Pygmy Cormorant *Phalacrocorax pygmaeus* (CC), Little Grebe *Tachybaptus ruficollis* (EndR, CC). And for summer were: Darter *Anbinga rufa melanogaster* (CC), Pygmy Cormorant *Phalacrocorax pygmaeus* (CC), Hooded Crow *Corvus corone cornix* (CC), Little Grebe *Tachybaptus ruficollis* (EndR, CC), and Basra Reed Warbler *Acrocephalus griseldis* (GT, End & CC).

2010 Birds: Twenty bird species were noted in winter of 2010 and the conservation concern species in summer were: Darter *Anbinga [rufa] melanogaster* (CC), Hooded Crow *Corvus[corone]cornix* (CC), Slender-billed Gull *Larus genei* (CC), Pygmy Cormorant *Phalacrocorax pygmaeus* (CC), Little Grebe *Tachybaptus ruficollis* (CC), and Basra Reed Warbler *Acrocephalus griseldis* (GT, EN & CC).

Fish: This part of the Hawizeh Marsh was never drained and may be considered a refugia for many native fish species especially Bunni *Barbus sharpeyi*. Due to its fresh water, shallowness and thick vegetation it is considered an important nursery ground for many fish species.

Plants: *Cladium mariscus*, a rare species in Iraq only found in two (or possibly three) districts (Townsend, 1985), *Utricularia australis* is a rare species according to the NI surveys but there are no detailed records of the species because this species is only present in the unpublished volumes of the Flora of Iraq.

Conservation Issues & Recommendations for the Site: Like the former site, this site is a very important breeding, nursery and rearing area for birds and fish as well as plants. It shares common threats with the previous site, and thus long-term planning is necessary to protect the region. This site is considered to be a threatened habitat and contains many aquatic plants, and thus qualifies as an Important Plant Area (IPA).

KBA HZ4- E'Jayrda - (IBA 036) – Surveyed in Winter and Summer 09

Site Description: HZ4 is characterized by the presence of some vegetation and floating algae. Submerged plants are prevalent in this site, although there is also some open water amid areas of reeds and typha with “*Talabas*”. It is located towards the southern end of Hawizeh marshes and is itself a wide marsh divided by soil embankments into several areas. It was noted in summer that the reed community had increased very fast since the last survey in winter 2008 and this is due to the decrease in water depth to a level that is appropriate for the growth of reeds.

E'Jayrda area forms the central part of Huweiza, and it extends to the east to join the Azem part of the Hor in Iran. It is an open marsh that naturally extends across the border to the Iranian Ezaim. This part of the marsh contains vast, continuous bodies of water with scattered reedbeds and other emergent plants, creating continuous areas of open water which is ideal habitat for many kinds of Waterfowl. During the winter 2009 survey, it was observed that this marsh suffers from a serious lack of water that followed a continuous decrease in water-level. The main problem is the construction of the embankment that separated the Iranian marshland from Iraqi territory and completely blocked the water flow from these areas. Large amounts of hunting were observed at this site including bird hunting and electro-fishing. Nature Iraq has been informed that many Goliath Herons and Marbled Duck were hunted the previous month before the survey.

The biggest problem for the E'Jayrda area is the severe shortage of water. Vast areas that were formerly fully covered with water were seen dried out during the 2009 survey. In 2010, the area

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appeared to be worse and the entire wetlands of E'jayrda has become dry except for very few patches of spoiled, reddish water. The entire aquatic plant cover has disappeared and the reedbeds dried. Subsequently, instead of the considerable richness in bird species diversity, only a few individual birds were observed.

Not only have the fish and birds abandoned the area, the Lsan 'E'jayrda was empty of people who were fishing and cutting reed intensively in the area at the past. The pictures below compare the general situation in 'E'jayrda between summer 2009 and summer 2010.



Plate 4: Site Photo of E'Jayrda in summer in 2009 (left) and 2010 (right), Photo by M. Salim, NI.

Observations in winter were made on 26/1/2009 and in summer were on 1/6/2009:

Winter -Birds: 42 species, 8956 individuals.

Summer –Birds: 32 species, 2057 individuals.

Winter -Fish: Approximately 100 fishing boats are working in the area with a daily catch of about 13kg/boat each day. They utilize fixed and floating gill nets with mesh sizes of approximately 0.5, 2 and 3 cm. Electro-fishing was also noted in the area.

Seven fish species were recorded: *Acanthobrama marmaid* (5% of the total catch), *Aspius vorax* (18%), *Barbus luteus* (11%), *Carassius auratus* (22%), *Mastacembelus mastacembelus* (3%), *Liza abu* (41%) and *Silurus triostegus* (no sample).

Summer -Plants: Only one waypoint was selected at this site. Waypoint 49, (N: 31 21 23.5 E: 47 38 57.3) because there is just one dominant habitat type of open marsh dominated by *schoenoplectus litoralis* and reeds.

Waypoint 49: The ecological status of the site was rated at “4,” indicating a more disturbed site because of the sharp decrease in water level and the decomposition of aquatic plants. Also, large parts of this marsh were dry during the summer survey. Ten plant species were observed in the area. The dominant herb was *Schoenoplectus litoralis* and the dominant shrub species were *Tamarix* sp., *Aeluropus lagapoides*, *Polygon monspeliensis*, *Cressa cretica* and *Suaeda* sp. Each of these terrestrial species grew along the edge of the marsh on the soil embankment which was made during the Iraq-Iran War during the 1980s. There are two emergent plant species, including the abundant reed *Phragmites australis* and also *Typha domingensis*. In addition, the submerged species *Ceratophyllum demersum* persists despite the arid conditions as well as an unidentified plant specimen from the *Compositae* family.

Summer -Other Fauna: Indian Mongoose (1).

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Conservation Significance:

2009 Birds: The following conservation concern species were noted at the site during the winter: Darter *Anhinga [rufa] melanogaster*, Hooded Crow *Corvus [corone] cornix*, Armenian/Yellow-legged Gull *Larus armenicus/michabellis*, Slender-billed Gull *Larus genei*, Marbled Duck *Marmaronetta angustirostris*, Pygmy Cormorant *Phalacrocorax pygmaeus*, Little Grebe *Tachybaptus ruficollis*, and White-tailed Lapwing *Vanellus leucurus*.

And in summer the conservation concern species were: Pygmy Cormorant *Phalacrocorax pygmaeus*, Marbled Duck *Marmaronetta angustirostris*, Little Grebe *Tachybaptus ruficollis*, Iraq Babbler *Turdoides altirostris*, Basra Reed Warbler *Acrocephalus griseldis*, Purple Swampphen *Prophyrio prophyrio*, Black-tailed Godwit *Limosa limosa*, Eurasian Spoonbill *Platalea leucorodia*.

2010 Birds: In winter 28 bird species were noted and conservation concern species (CC) for summer included on White-tailed Lapwing *Vanellus leucurus*.

Fish: No important fish were seen in winter.

Plants: *Cressa critica* is a native to Iraq (Al-Ani *et al*, 1971; Habib *et al*, 1971), and *Aeluropus lagopoides* is also native in Iraq (Flora of Iraq, Vol. 9, p420). The remaining plants were common in Iraq and/or in the unpublished volumes of the Flora of Iraq.

Conservation Issues & Recommendations for the Site: The site is severely lacking in water, which was very obvious when comparing conditions with the survey from the previous year as many areas at this site had gone completely dry. This has produced a negative effect on the plants, fish and bird life throughout the area. Urgent case-studies should be carried out to solve, even partially, the problem of the lack of water, as well as the issues of hunting and overfishing.

Our urgent recommendation for the Iranian government is to either remove the large embankment (which disfigures the region's natural landscape), or to put some pipes under the embankment to allow the natural movement of the water westward (though both would likely defeat the purpose of the embankment, which appears to be to stop water from entering into the Iraqi portion of the marsh). The solution to this problem is likely a political one.

KBA HZ8 - Majnoon - (IBA 036) – Surveyed in Winter and Summer 09

Site Description: This site is located at the southern end of the Hawizeh marshes. It is a wide marsh divided by soil embankments into several areas, each with open water areas and with groups of reeds and typha. Reed beds have increased in number since the last survey during winter 2008. Here, water depth has decreased to a level that is appropriate for the growth of reeds.

This area forms the southern part of Hawizeh. During the winter survey we found huge numbers of waterfowl in addition to Waders. The transect and area methods were used to count birds. The transect count started at N 31 08 41.5, E 47 35 46.3 ended at N 31 10 48.1, E 47 35 52.9 but was used only during winter survey to count the large numbers of Waterfowl that were dispersed through this area. We noted that there was considerable pressure on local bird life due to hunting as well as fishing by electricity. Compared to Nature Iraq's winter 2008 survey, the site's water levels had noticeably decreased, but the plant cover (reed and typha) was still well developed forming scattered reedbeds with plenty of open water. The depth of water might range between 1-0.75m.

But it appeared that in summer an environmental disaster was taking place. It was observed during our summer survey that this important area which held thousands of key bird species had been

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entirely dried up. All the remaining water that once covered the entire area west of the road was reduced to a small patch of shallow water, which would not remain for long. All of the waterbirds that were recorded during this survey at Majnoon were concentrated in this tiny patch of water.

In 2010, the area was entirely dry and the plant cover turned brownish and dead. It appeared that in summer an environmental disaster was taking place. Only patches of water were seen in the winter of 2010 and during the summer 2010 survey this important area, which held thousands of key bird species had been entirely dried up. All the remaining water that once covered the entire area west of the road was reduced to a small patch of shallow water, which would not remain for long. All of the waterbirds that were recorded during this survey at Majnoon were concentrated in these tiny patches of water.



Plate 5: Site Photos of Majnoon in Winter (left) and Summer (right) of 2009, Photo by M. Salim, NI.



Plate 6: Site Photos of Majnoon in Summer of 2010, Photo by M. Salim, NI.

Observations in winter were made on 13/1/2009 and in summer were on 27/5/2009:

Winter Birds: 49 Species, 25,324 individuals.

Summer- Birds: 15 Species, 269 individuals.

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Winter- Fish: Fishing practices were good, with no improper techniques. The fishermen used fixed gill nets with fine mesh sizes of 1 to 2 cm, though pressure on the fish population is immense with about 100 boats working in the area and catches of approximately 8 kg/boat each day. Total price per catch per boat was about \$10 and no unsustainable fishing practices were noted.

Ten fish species were recorded: *Acanthobrama marmaid* (4%), *Alburnus mossulensis* (5%), *Aspius vorax* (20%), *Barbus luteus* (9%), *Heteropneustes fossilis* (2%), *Silurus triostegus* (3%), *Mastacembelus mastacembelus* (2%), *Liza abu* (38%), *Cyprinus carpio* (5%), *Barbus sharpeyi* (4%) and *Carassius auratus* (8%).

Summer -Plants: Only one waypoint was chosen at this site in summer (Waypoint 38, N: 31 10 48.0 E: 47 35 55.7) because there is just one dominant habitat type of dry marsh with green vegetation (recently dried).

Waypoint 38: The site was dry during the summer 2009 survey. The ecological status of the site was rated at "5" because the site has become a dry marsh and there is no aquatic plant cover except the reed *Phragmites australis* with some of terrestrial plants present near the soil embankment including *Tamarix* sp., *Lactuca serriola* and *Hordeum glaucum* occasional spreading (at a low density of vegetation cover), but the total number of species observed was only four.

The area is flat with slope of 0° in all directions and the percentage of non-vegetated terrain was 70%. The geology and soil type at this waypoint were sedimentary and clay respectively.

Summer -Other Fauna: Buffalo, cows and Indian mongoose.

Conservation Significance:

2009 Birds: The following conservation concern species were noted at the site in winter: Greater Spotted Eagle *Aquila clanga* (GT), Slender-billed Gull *Larus genei*, Slender-billed Gull *Larus genei*, Black-tailed Godwit *Limosa limosa* (GT), Marbled Duck *Marmaronetta angustirostris* (CC), Great White Pelican *Pelecanus onocrotalus* (CC), Pygmy Cormorant *Phalacrocorax pygmaeus* (CC), Eurasian Spoonbill *Platalea leucorodia* (CC), Little Grebe *Tachybaptus ruficollis* (EndR, CC), Iraq Babbler *Turdoides altirostris* (End, CC), and White-tailed Lapwing *Vanellus leucurus* (CC). And in summer: Black Francolin *Francolinus francolinus* (CC), Slender-billed Gull *Larus genei* (CC), and Iraq Babbler *Turdoides altirostris* (End & CC).

2010 Birds: Only 14 bird species were found in the winter and in summer no conservation concern (CC) species were noted.

Fish: Bunni, *Barbus sharpeyi*, which is declining throughout the Hawizeh Marsh, was recorded in this site so care should be taken to conserve this fish species. This site contains high fish diversity and requires greater protection.

Plants: All the observed plants are common in Iraq or their status is unknown (in the unpublished volumes of *Flora of Iraq*).

Conservation Issues & Recommendations for the Site: This area is very important for a number of bird species as an essential breeding and stop-over area. It suffers from an extreme lack of water and was almost entirely dry during the summer survey. This is directly reflected by the plant, fish and bird life in the southern part of Hawizeh. Also, this site should be included in a thorough study to search for solutions to the water supply issues.

During observation of KBA summer survey 2010, the survey team found that Majnoon area had turned into entirely dry marshlands. The area previously had held large numbers of waterfowl and

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other plant and animal species, but it apparently no longer has such biodiversity. Also, the oil development and intensification might destroy much of the area.

KBA HZ9 – Bushes near Umm Al-Warid - (IBA 036) – Surveyed in Winter 09

Site Description: The Bushes near Umm Al-Warid are an area west of Umm An Ni'aaj (HZ1) that might be subject for flooding occasionally due to the extra water from the surrounding fields, in addition to the water that comes from the nearby canal. It lies to the west of Umm Al-Warid border station and only one unpaved road (on an embankment) leads to the site that runs parallel to Al Adel River which feeds Umm Al-Warid Marsh with water from the Tigris. It is a dense, bushy area with *Acacia* bushes and some small groups of *Phragmites* along the wet areas. It is obvious that this area is important to Passerines for breeding purposes, particularly the restrict-range Dead Seas Sparrow (summer visitor) in addition to some other birds that prefer to have this type of habitat. Also, it might be important for medium-sized mammals such as the Golden Jackal, Jungle Cat, Rupelli Fox, and others.



Plate 7: Site Photo of the Bushes near Umm Al-Warid in winter of 2009, Photo by M. Salim, NI.

Observations in winter were made on 25/1/2009 (the site was not visited in summer):

Winter -Birds: 31 species, 341 individuals.

Winter - Fish: near to a completely dry site, no fish were observed.

Conservation Significance:

Bird: The following conservation concern species were noted at the site in winter:

Darter *Anhinga [rufa] melanogaster* (CC), Eurasian Bittern *Botaurus stellaris* (GT), Slender-billed Gull *Larus genei* (CC), Pygmy Cormorant *Phalacrocorax pygmaeus* (CC), White-cheeked Bulbul *Pycnonotus leucogenys* (CC), Sacred Ibis *Threskiornis aethiopicus* (CC), and White-tailed Lapwing *Vanellus leucurus* (CC).

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Conservation Issues & Recommendations for the Site: This was the first NI KBA visit to this site, so the bird team cannot accurately evaluate the importance of the site as yet. More surveys are required in the summer but access in summer was denied because border officials with the Ministry of Defense required additional letters and would not accept letters from the Ministry of Environment.

Concluding remarks

During winter 2009, the KBA fieldwork consisted of only bird and fish observations and for summer, the focus was on birds and plants. In winter 2010, the focus was on birds and in summer 2010, birds and botany.

The most important bird observation for Hawizeh was the occurrences of large populations of waterfowl in sites such as Majnoon (HZ8), Umm An-Ni'aaj (HZ1), and Ejayrda (HZ4). Data regarding local fish populations were gained directly from fisherman or indirectly through interviews, depending on the circumstances. Much of the information was based on the daily catch of local fishermen at various sites where the team procured whole baskets of fish in a random fashion and categorized the fishermen's daily catch of fish according to species. Afterwards, the team calculated the ratio of each species in the sample as well as their length and weight before calculating the overall species ratio for the total catch based upon sample data.

What type of fishing gear the locals used was also recorded, including net type and mesh size. Other Questions for the local fishermen included the overall number of fishing boats on their body of water as well as their average yield with various types of equipment. Due to the variation in the circumstances at and between sites, the information presented in this report should be mainly considered as qualitative data with some indications of quantitative trends.

With regards to plants, the summer surveys of selected wetlands and arid regions in Southern Iraq were conducted in order to evaluate the general ecological status of these sites, estimate the vegetation cover by observing all the present plants in each site and insert the results in the plant database. The results showed that most of the surveyed marshes were threatened by drought because of the severe decreasing water levels in the Euphrates and Tigris Rivers, low winter rainfall, and human activities to divert water. Subsequently, many wetlands that were surveyed became completely dry such as the Majnoon marsh. Many plant species which had historically existed in these areas were no longer present, such as: *Utricularia minor*, *Utricularia gibba*, *Ceratopteris thalictroides*, *Limnophila indica*, *Marsilea capensis*, *Mentha aquatic*, and *Ottelia alismoides*.

Important Bird Areas

The table below shows the most important sites after matching them with the Important Bird Area (IBA) criteria of the Middle East by Evans (1995), which was updated later by BirdLife International. The sites are arranged according to their priority of conservation status, based on the 2009 winter and summer surveys.

Hawizeh KBA sites and their criterion, only according to winter and summer 2009 surveys

Site Name	Site Code	A Category ¹			
		A1	A2	A3	A4
Umm An Ni'aaj	HZ1	X	X	-	X
E'jayrda	HZ4	X	X	-	X
Majnoon	HZ8	X	X	-	X
Udhaim	HZ2	X	X	-	-
Bushes Near Umm Al-Warid (Suveyed only winter 09)	HZ9	-	-	-	-

¹A: Important Bird Areas - Global importance

- A1. Globally threatened species
- A2. Restricted-range species
- A3. Biome-restricted species
- A4. Congregations

²B: Important Bird Areas - Middle Eastern importance

- B1: Regionally important congregations
- B2: Species with an unfavourable conservation status in the Middle East
- B3: Species with a favourable conservation status but concentrated in the Middle East

To know more about the Middle East IBA criteria, please visit:

http://www.birdlife.org/datazone/sites/middle_east_criteria.html

Some of Key Bird Species found in Huwizeh:



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Marbled Teal (GT)	African Darter (CC)	Pygmy Cormorant (CC)
		
Slender-billed Gull (CC)	Little Grebe, Iraqi endemic race	Hooded Crow, Iraqi endemic race

Important Fish Areas

Some sites within the KBA survey can be considered to be important areas for fish based on the winter 2009 survey. The following sites within the Hawizeh Marshes are considered important sites for fish species.

- Majnoon (HZ8): This site appeared, in 2009, to be a typical shallow marsh with stagnant but clear water. However, fish diversity here was the highest of all the KBA sites (with eleven species) with approximately 100 boats fishing in the area on a daily basis with a catch of approximately 8kg/boat per day. Also, the threatened *B. sharpeyi* species could be found here, increasing the site’s conservation value. Given the drying of this marsh between 2009 and 2010 due primarily to the Iranian Embankment, fish resources have been severely devastated at this site.
- Umm An-Ni’aaj (HZ1): At the core of Hawizeh marsh, this site held eight fish species and approximately 10 fishing boats were employing gill nets for a daily catch of about 8kg/boat per day. But it is important to note that about 150 boat practice electro-fishing techniques for a daily catch of about 26kg/boat per day. Hawizeh was considered to be a habitat for Bunni, but in the winter 2009 survey no Bunni specimens were found.

Important Plant Areas

By evaluating the sites based on their plant species richness (strictly number of plant species), the two highest quality sites in 2009 were: Umm An Ni’aaj (HZ1), Udhaim (HZ2), E’jayrda (HZ4). Also in 2009, the sites were also evaluated on their overall ecological condition on a scale of 1-5, where 1 indicates 0% disturbance or no impact and 5 represents 100% disturbance or impact. Given the massive drainage campaign of the 1990s in the Southern Mesopotamian marshlands,

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no site can be considered to have no impact or disturbance. This scale is considered a rough estimate of ecological recovery. Umm An Ni'aaj (HZ1) and Udham (HZ2), were rated at 2 (25% disturbed); E'jayrda (HZ4) was rated at 3 (50% disturbed), and Majnoon (HZ8) was rated at 5 (100% disturbed).

Evaluation of sites based on their richness and habitat types is still an on-going process within the Nature Iraq KBA Project. This discussion presents only preliminary findings from the 2009 survey (2010 flora data is still being evaluated). As stated in the beginning of this document the Hawizeh Marshes, and the Mesopotamian marshlands in general, should be considered a key, threatened habitat of regional and global importance. In addition, sites such as Umm An Ni'aaj (HZ1), Udham (HZ2), and E'jayrda (HZ4) were relatively rich in plant species, especially considering that these areas were never completely desiccated in the 1990s.

The following table attempts a preliminary evaluation of all sites based on the IPA criteria discussed in the introduction. Based on this assessment, those sites that meet two or more criteria are highlighted and could be considered priority sites.

Comparing all criteria for plants (based on IPA Criteria 1, 2 & 3 above)

Site Name	Site Code	1. Rare and/or Endemic Species*	2. Botanically Rich	3. Threatened Habitat	Ecological Condition of 3 or lower
Bushes Near Umm Al-Warid*	HZ9		x	x	x
E'jayrda	HZ4		x	x	x
Umm An Ni'aaj	HZ1		x	x	x
Udham (<i>revised coordinates</i>)	HZ2	x	x	x	
Majnoon	HZ8			x	

**Rare and/or endemic is not identical to threatened species in the IPA Criteria but rare and endemic species may be an indicator for the presence of such species. Note also that the endemic and rare species identified in the survey are merely preliminarily identified as such.*

Conservation Issues for Hawizeh Sites

The table below is only based on an assessment of the sites visited in the winter and summer 2009 surveys. The table also includes some of the positive qualities of each site.

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2009 Threats and Positive qualities of KBA Survey Sites in Southern Iraq

#	Site Name	Site Code	Threat										Positive qualities		
			Dryness/lack of water/drainage	Oil pollution	Hunting	Agriculture	Removing of plant cover/Grazing	Constructions & Roads	Garbage and/or Sewage	Electro-fishing	Over fishing	Other	The site of infrastructure that helps conservation efforts	The locals willing to help in conservation efforts	Hunting/Fishing ban
1	Umm An Ni'aaj	HZ1	X	X	X	-	X	X	-	X	X	X	X	X	-
2	E'jayrda	HZ4	X	-	X	X	X	X	-	X	X	X	X	X	-
3	Majnoon	HZ8	X	-	X	-	X	X	-	X	X	X	X	X	-
7	Udhaim	HZ2	X	-	X	-	X	-	-	X	X	X	X	X	-
36	Bushes Near Umm Al-Warid*	HZ9	-	-	X	X	X	-	-	X	X	-	X	-	-

*Sites were visited for the first time during 2009 KBA surveys.

2010 Pressure-State-Response Assessment

In 2010, the sites were assessed with a more consistent methodology utilizing the Pressure-State Response Framework as defined by BirdLife International (2006). In this framework, the survey team attempted to evaluate each site based on eleven Pressure (threat) categories, the overall State (or status) of the site, and the Response (or conservation actions) taking place at the site. Each Pressure, State and Response category is scored and a final status score is produced for the site.

Pressures (Threats) to the sites:

Each pressure (threat) score is based on a scale from 0 (Low Threat) to -3 (Very High Threat). Scores for each site were averaged to obtain the Average Threat Status Score as follows:

Pressure	HZ1	HZ2	HZ4	HZ9	Average Threat Status Score
1. Agricultural Expansion and Intensification	0 Low	0 Low	0 Low	0 Low	0 Low
2. Residential and commercial development	0 Low	0 Low	0 Low	0 Low	0 Low
3. Energy Production and mining (gravel mining, oil development, electrical towers, etc.)	0 Low	0 Low	-1 Medium	-2 High	0 Low
4. Transportation & service corridors (development of roads and shipping corridors)	0-Low	0-Low	0-Low	-1 Medium	0-Low
5. Over-exploitation, persecution and control (logging, hunting, over-fishing, etc.)	-3 Very High	-2 High	0 Low	-3 Very High	-2 Medium
6. Human intrusions and disturbance - Effects related to non-consumption of biological resources – recreational activities, war, military	-2 High	-1 Medium	-1 Medium	-2 High	-2 High
7. Natural systems modification (dams and changes water mgmt, filling in wetlands, drainage, dredging, canalizations, etc.)	-3 Very High	-3 Very High	-3 Very High	-3 Very High	-3 Very High
8. Invasive or other problematic species	unknown	unknown	unknown	unknown	unknown
9. Pollution (municipal and industrial waste and garbage, noise, air, light, & thermal pollution)	-1 Medium	-1 Medium	-1 Medium	-2 High	-1 Medium
10. Geological events (threats from catastrophic geological	unknown	unknown	unknown	unknown	unknown

Pressure	HZ1	HZ2	HZ4	HZ9	Average Threat Status Score
events)					
11. Climate change, severe weather, drought, floods	0-Low	0-Low	-3 Very High	-2 High	-1 Medium

State (Status) to the sites:

During the 2010 survey, it was possible to provide scores only for Pressure and Response but more information is needed to properly score the sites for their State. Additional information is needed on the extent of the historical habitat and/or species populations to fully evaluate the current status of the sites.

Response (Conservation Actions) at the sites:

Three response categories were scored on a scale from 0 (Negligible action) to 3 (High Action) for each site and an Average Action Score was obtained as follows:

Response Category		Average Action Score for all sites
Conservation Designation	Whole area of KBA covered by appropriate conservation designation (>90%) (Score = 3)	2- Medium
	Most of KBA covered (including the most critical parts for the trigger species) (50-90%)(Score = 2)	
	Some of KBA covered (10-50%) (Score = 1)	
	Little/none of the KBA Covered (<10%) (Score = 0)	
Management Planning	A comprehensive & appropriate mgmt plan exists that aims to maintain or improve the population of qualifying species (Score = 3)	1-Low
	A management plan exists but is out of date or not comprehensive (Score = 2)	
	No management plan exists but the management planning process has begun (Score = 1)	
	No mgmt planning has taken place (Score = 0)	
Conservation Action	Conservation measures needed for the site are being comprehensively and effectively implemented (Score = 3)	0-Negligible
	Substantive conservation measures are being implemented but these are not comprehensive and are limited by resources and capacity (Score = 2)	
	Some limited conservation initiatives are in place (Score = 1)	
	Very little to no conservation action is taking place (Score = 0)	

Response Category		Average Action Score for all sites
Summed Average Action Score		1-Low

Thus overall, Hawizeh Marshes main “Pressures” appear to be (in order of highest to lowest severity): Natural systems modification (dams and changes water mgmt, filling in wetlands, drainage, dredging, canalizations, etc.); Human intrusions and disturbance - Effects related to non-consumption of biological resources – recreational activities, war, military; Over-exploitation, persecution and control (logging, hunting, over-fishing, etc.); Pollution (municipal and industrial waste and garbage, noise, air, light, & thermal pollution), and Climate change, severe weather, drought, floods. In terms of “Response”, while some conservation designation has occurred in the case of the Hawizeh Marshes (the site has been designated as a Ramsar Site by the country of Iraq) and management planning has begun (a management plan has been drafted in 2008 but is not yet approved); little on-the-ground action has been seen to date, and given the completion of the Iranian embankment, the overall status of the site has likely deteriorated.

Recommendations for Hawizeh Sites

Based on the results and field observations gained from the 2009 and 2010 surveys, a clearer picture emerges concerning one of the most important KBA sites in Iraq given our present knowledge. Overall, the main recommendation is that the draft Hawizeh Ramsar Management Plan be formally adopted and implements. For the important sites that have suffered serious degradation the KBA bird team has come up with the following recommendations:

- As stated in the section on “Conservation Issues and Recommendations” for the Sites an urgent recommendation is for some action to remove the large embankment (which disfigures the region’s natural landscape and restricts water movement from east to west) or in some way re-establish the natural movement of the water westward. Though acknowledging that this solution will require some sort of political action, this is required to save large portions of the marshlands that have been desiccated by the embankment.
- More coordination with the government sector including the related Ministries and Universities needs to occur when planning for conservation activities such as education and awareness-raising programs or taking action that may result in impacts to the biological diversity of a site, for example building and designing new roads. In many cases, an environmental impact assessment should be done for new development projects to ensure that adverse effects are mitigated.

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- Coordination with the local police around the important or “key” sites to control hunting and fishing especially during the breeding and migration periods. During the team’s surveys, we found that there was a high level of control and willingness to protect the wildlife of the area. Coordination and planning to strengthen the links with these local forces will ensure better and more secure implementation for any conservation programs in the area.
 - Doing more in terms of education and publishing informational materials that target various the communities, children, hunters, fishermen and other stakeholders. During the summer 2010 survey, some posters (with a conservation message) were distributed and mounted at various locations in Hawizeh.
 - Designing special activities that might be implemented by local children, and communicating with local Education Departments to implement these activities focusing on those who reside near the important KBA sites.
 - Establishment of Local Conservation Groups (LCG) around the important KBAs, and involve them in training and conservation efforts.
 - Communicating and coordinating with the national hunting associations, and keeping in contact with key, well-known hunters around each important KBA. This might include training and educating them in modern sustainable hunting techniques and making them aware of the status of threatened species and how to protect them by conserving their habitat.
 - Comprehensive surveys for other species including mammals, reptiles, amphibians, and insects are needed throughout Iraq but many of these types of survey require different survey methodology, training, and equipment as well as additional funding.
 - Collect more detailed information to refine the delineation of the KBA sites according to their priority.
 - Begin an advocacy program to set up a network of protected area sites throughout Iraq with the major function of safeguarding Iraq’s irreplaceable biological diversity.

Regards fish species there are some general recommendations that can be made:

- Comprehensive water management practices, rules, regulations and enforcement to conserve water quality and quantity in Iraq’s wetlands and inland waterways are urgently needed throughout the country. As stated above, some political solutions are needed immediately with Iraq’s neighboring countries to ensure that Iraq is supplied with adequate waters to meet both human and wildlife needs even in drought conditions.

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- Improper fishing, specifically electro-fishing, has been noticed in many sites without any precautions or legal liability, though improvements were noted in 2010 in some areas of Hawizeh. This is an extremely damaging and unsustainable practice that decreases future fish harvests for the very people who practice this method. Thus, it is necessary to frame legal codes to stop improper fishing at once, but this should be done in a way that does not unduly penalize people who feel they have been forced into using this method out of economic necessity.
 - Also, the size of nets employed by local fishermen needs to be regulated to avoid fishing smaller fish.
 - Some key fish species suffer from overfishing due to their market price, such as Kattan and Bunni. Consequently, the fish stock and fish sizes/weights have significantly decreased throughout Iraq so special laws should be adopted to protect threatened species. These laws need to go hand in hand with comprehensive, scientific fisheries surveys to assess the stock and determine the sustainable harvest level of wild fish. Prior to the summer survey, the Twin Rivers Institute for Scientific Research conducted training on Aquaculture and Fisheries surveys. Some of the methodologies taught in that course were followed during the summer survey, which included doing a Fish Frame survey in the proposed National Park area and in East Hammar (this was not done in Hawizeh). This survey was not completely successful because the drought had essentially halted fishing in many of the survey areas, but some important information was obtained.. More of such research activities are needed to understand the complexities of the Iraqi fisheries.
 - Overfishing threatens many sites, especially those with good stock such as Majnoon (formerly, as now this area is dry due to the Iranian embankment) and Umm Al-Ni'aaj. Teaching sustainable fishing practices and regulating local water levels will help sustain fish stocks in Iraq.

From the standpoint of the botany survey, the KBA team recommends the following:

- Further surveys are needed of the following Hawizeh sites that have the highest species richness and best ecological conditions that are also considered threatened habitats: Umm An Ni'aaj (HZ1), Udham (HZ2), E'jayrda (HZ4) and Majnoon (HZ8).
- There is a need for more than one survey per year in order to catalog seasonal plant life throughout its lifecycle including the flowering and fruiting periods that

occur in spring and fall. Thus, it is highly recommended to have an additional field survey during the spring season for better plant identification.

- Different types of field work are needed for determining sustainable grazing/harvesting levels in many of the diverse habitats from the reed marshlands and semi-arid and arid grasslands. This type of work is necessary to increase our understanding of how to maintain these environments and address the problem of desertification.

Overall many of these recommendations made in this document require more focused survey efforts and dedicated funding for scientific field work, capacity building and public/stakeholder education. At this time, limited work is done through academic and ministerial programs but Nature Iraq recommends a larger commitment that brings a host of different players to the table including non-governmental organizations, fisheries associations, hunting clubs, school children, and the general public. All of whom are vested in the protection of Hawizeh Marsh and Iraq's biological diversity.

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