



Fifth State of Conservation Report Addressed by the  
Republic of Iraq  
to the World Heritage Committee on

The Ahwar of Southern Iraq:  
Refuge of Biodiversity and Relict Landscape of the  
Mesopotamian Cities

World Heritage Property n. 1481

February 2022



United Nations  
Educational, Scientific and  
Cultural Organization



World Heritage  
Convention

Contents:

1. Executive summary.
2. Requests by the World Heritage Committee.
3. Cultural world heritage.
4. Natural world heritage.
5. Signature of the authority.
6. Annexes.

## **1. Executive Summary:**

After our sincere greetings from Iraq,

This report, the fifth State of Conservation (SOC) report, comes in response to the World Heritage Committee's Decision 44 COM 7B.73, adopted in the Extended forty-fourth session in Fuzhou, China (16-31 July, 2021), recalling 42 COM 7B.66 and 43 COM 7B.35, adopted at its 42nd (Manama, 2018), 43rd (Baku, 2019) sessions respectively. And hereby, The State Party, the Republic of Iraq, represented by the Ministries and other institutions that are in-charged on the management of the World Heritage property (*The Ahwar of Southern Iraq: Refuge of Biodiversity and the Relict Landscape of the Mesopotamian Cities* - Ref. 1481) acknowledges the valuable points and comments mentioned in these two decisions that addressed key issues regarding the Outstanding Universal Values (OUV) of the Ahwar WH property. The points mentioned in the above decisions have included both sides: Cultural, and Natural; covering all of its seven components (*Eridu, Ur, Uruk, Huwaiza, West Hammar, Central Marshes, and East Hammar*).

The key issues, that were highlighted in the last World Heritage Committee Decision, have been dealt with and addressed in the current report based on the sequence listed in the Decision mentioned above, as follows:

- The development in the conservation actions in the cultural components to prevent irreversible erosion and collapse and resuming the maintenance works has been described and illustrated with recent images from the new conservation campaigns;
- More details and updated situation has been given to the required minimum water-flow that maintain the attributes of the natural OUV in the four natural components, and the current and future plans that ensure adequate, long-term flows that were set up with the partners have been described as well;
- Further actions were taken as regards coordinating the regional work on ensuring long-term sustainable transboundary water management measures and to enlarge the scale of the regional scope to include Turkey and Iran that share Tigris and Euphrates river basin;
- The issues with the current and planned dams inside and outside Iraq have been illustrated and detailed in the current report taken into consideration the minimum flow required to sustain the natural OUV in the natural four components;
- The development of the actions towards completion of the designation of the four natural components as protected areas in addition to their being Ramsar sites;

- The further actions that were taken to reduce the illegal actions and overfishing in Ahwar have been detailed, in addition to developing the new regulations for hunting and fishing inside the four components of the Ahwar property;
- More advanced steps were taken towards developing the Integrated Management Plan of the entire property with the key stakeholders were described in the report;
- The recent actions towards developing comprehensive tourism management plan have been described where further actions were made with the Ministry of Culture, Tourism, and Antiquities and other key stakeholders were made, in addition, more detailed tourism-routes maps were developed and other still under development;
- More actions and coordination were taken regarding coordination with the Ministry of Oil regarding the oil and gas development projects to ensure that oil and gas exploration and exploitation are compatible with the requirements of the protection of the OUV in the four natural components in the Ahwar and the surrounding landscapes including the recent endeavours for establishing permanent commitment for this regard;
- During taken most of the actions regarding Ahwar property, the local community represents one of the key elements that should be considered when taking actions, and this includes small-scale to large-scale especially regarding the issues that touch their daily livelihood resources, and the traditional knowledge and construction were present when constructing the new management stations in the Ahwar;
- The report also tackled the development with the joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission to the Ahwar property and the readiness of the Iraqi State Party to provide any assistance in this regard taken into consideration the current global health conditions;
- The current report has been enriched by further details and information at the Annexes section, where one of the annexes of the report, the abstracts of the recent research works on the Ahwar property have been inserted as useful references for the interested bodies;

## 2. REQUESTS BY THE WORLD HERITAGE COMMITTEE

*This report addresses the following requests expressed by World Heritage Committee in its Decision 44 COM 7B.73 :*

1. *Having examined Document WHC/21/44.COM/7B.Add,*
2. *Recalling Decisions 42 COM 7B.66 and 43 COM 7B.35, adopted at its 42nd (Manama, 2018) and 43rd (Baku, 2019) sessions respectively.*
3. *Reiterates its concern over the continued high vulnerability of the three cultural component sites and the need for their conservation to prevent further irreversible erosion and collapse, and urges the State Party to resume maintenance work as soon as possible, give priority to completing site surveys, and develop conservation plans for each component as a basis for urgent conservation work, before further excavations are undertaken and before tourism is encouraged;*
4. *Acknowledges that the 5.8 billion cubic metres (BCM) minimum flow level required for the natural components of the property was met in 2019 due to abundant flooding and rainfall, however notes with concern that flooding and rainfall events remain highly variable and the minimum level was again not met in 2020, and recalls that significant fluctuations in water flows may pose a major threat to the property and non-fulfilment of minimum water requirements could represent a potential danger to the Outstanding Universal Value (OUV) of the property, in accordance with Paragraph 180 of the Operational Guidelines;*
5. *Requests the State Party to urgently implement management measures that demonstrate adequate flows to the property are ensured in the short and long-term as a matter of utmost priority;*
6. *Also requests the States Parties of Iraq, of the Islamic Republic of Iran and of Turkey to strengthen and expedite their cooperation towards long-term sustainable transboundary water management measures, which are informed by science and can guarantee the provision of the minimum water supply required to sustain the OUV of the property, and encourages the States Parties to prepare a basin-wide Strategic Environmental Assessment in line with the IUCN World Heritage*

- Advice Note on Environmental Assessments, to assess cumulative and future impact on flows to the property;*
7. *Noting with concern that different dam projects are planned or underway in Iraq, as well as in Turkey and the Islamic Republic of Iran, which could further exacerbate water scarcity and therefore negatively impact on the OUV of the property, further requests the States Parties of Iraq, of the Islamic Republic of Iran and of Turkey to:*
    - a) *Provide full information on all existing and planned dam developments upstream of the property, including a clear and complete assessment of the potential for these developments to create impacts on the OUV of the property, both individually or cumulatively,*
    - b) *Ensure that any potential developments that may impact the OUV of the property are fully assessed in line with the IUCN Advice Note on Environmental Assessments and the ICOMOS Guidance on Heritage Impact Assessment, and to submit the assessments to the World Heritage Centre for review by the Advisory Bodies, before any decision is taken to proceed further with planning or implementation,*
    - c) *Not proceed with developments that would impact negatively on the OUV of the property;*
  8. *Reiterates its request to the State Party to complete the designation of all of the natural components of the property as protected areas, in order to provide effective protection under national legislative and management systems, as required in the Operational Guidelines;*
  9. *Requests furthermore the State Party, as part of an integrated management approach, to further strengthen its monitoring, legal protection, enforcement and management capacity to control illegal activities such as bird hunting and overfishing, and to submit to the World Heritage Centre data on these activities;*
  10. *Also reiterates its request to the State Party to finalise the preparation of an updated Integrated Management Plan for the entire property, as a matter of priority, together with the development of updated Management Plans for each of the component sites of the property, and to submit drafts of these to the World Heritage Centre for review by the Advisory Bodies;*

11. Acknowledging the planned development of a comprehensive tourism management plan in 2020, further reiterates its request to the State Party to develop and implement an overall tourism plan for the whole property to regulate visitation, and to ensure visitor safety and sustainable tourism practices, infrastructure and facilities, and noting the development of tourism projects, including a proposed hotel and ecotourism complex within the marshes, requests moreover the State Party to assess the potential impacts of any infrastructure development on the OUV of the property through Environmental Impact Assessment processes in line with IUCN and ICOMOS guidance, prior to taking any decision to proceed, and to submit plans to the World Heritage Centre for review by the Advisory Bodies before any irreversible decisions are taken.
12. Recalling its significant concern over the continued vulnerability of the natural components of the property to oil and gas developments and its established position that oil and gas exploration and exploitation are incompatible with World Heritage status, notes with appreciation the confirmation by the Higher Committee in 2020 that oil companies are required to not carry out oil exploration activities within the boundaries of the property, and that any oil activities outside the property should not cause harm to the property; strongly urges again the State Party to make a permanent commitment to not explore or exploit oil and gas within the property, and to ensure that any such activities outside the property do not cause a negative impact on its OUV, and requests moreover the State Party to clarify the status of any oil and gas developments within or in the vicinity of the property, including the assessment of potential impacts on the OUV of the property in line with the IUCN and ICOMOS guidance;
13. Requests moreover the State Party to continue to meaningfully engage with the local communities on a range of management issues, including matters concerning hunting and fishing, water usage, rights- based approaches to management and for the application of traditional ecological knowledge to any planned new constructions;
14. Regrets that the joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission to the property could not yet be undertaken as a result of the prevailing security and global health situation, and reiterates furthermore its request that the mission takes place as soon as possible;
15. Finally requests the State Party to submit to the World Heritage Centre, by 1 February 2022, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 45th session in 2022.

### 3. Cultural World Heritage:

*3- Reiterates its concern over the continued high vulnerability of the three cultural component sites and the need for their conservation to prevent further irreversible erosion and collapse, and urges the State Party to resume maintenance work as soon as possible, give priority to completing site surveys, and develop conservation plans for each component as a basis for urgent conservation work, before further excavations are undertaken and before tourism is encouraged;*

During the past two years, maintenance work for the sites of the cultural components (Ur, Uruk and Eridu) was affected by the Covid-19 pandemic conditions, like other activities in the world, but soon coordination was made with the specialized archaeological missions in this field to resume the implementation of the plans set in the rehabilitation of sites and to complete the survey work after easing the ban and movement procedures in the middle of 2021, which has already been started in the Ur and Uruk sites, and work is continuing to prepare the requirements for conducting maintenance and survey work at the Eridu site during 2022, knowing that the cleaning work was carried out in a scientific way so as not to lose any historical evidence during the work and the maintenance was done in a scientific manner, based on the principle of minimal intervention, so that the Outstanding Universal Value (OUV) of the site are not affected, and we also envisaged the conditions of safety and authenticity so that the maintenance would be integrated. The maintenance, management and visitor management plan is a simple plan, and other long-term plans will be prepared.

**Ur site:** The maintenance work for the ancient city of Ur was initiated by overcoming the difficulties of movement, monitoring and follow-up resulting from the Covid-19 pandemic conditions, and coordinating with government departments, local institutions, authorities and concerned parties to enhance the necessary protection for the city.

#### **Maintenance work:**

A- During the period between June and July, the site of the dakdka, adjacent to the city from the northeastern side, was fenced off. With this fencing, we added an area for the buffer zone, as the dimensions of the fence reached 3500 m in length and 2 m in height to prevent any attempts that might threaten the safety

of the building.

- B- The arch of the temple of E-dub-lal-mah the entrance located in the north-eastern side was strengthened with a block of wood. The entrance is topped with a semi-circular arch made of the brick. After the city management team conducted an assessment of the condition of the arch, it was noticed that there were some damages that threaten the building's occupants. Therefore, work was done in proper ways to strengthen the arch. The work was carried out by the Pennsylvania Museum and supervised by the city administration of Ur.
- C- Conducting a study of the prominent and damaged archaeological monuments in the city, including the (Al-Zaqqura), the temple of E-dub-lal-mah and the royal tombs, assessing the damages, and allocating sufficient funds for the maintenance of these buildings in stages within an integrated maintenance plan.

### **Survey work:**

Among the important and distinguished activities carried out by the city of Ur's archaeological city administration are aerial photography of Ur using a drone, in order to document the city's landmarks, see the variables, and follow up on the factors that affected those monuments, whether natural or human. Also to promote the city through these images locally and internationally in the next year, for the purpose of attracting tourists, visitors and adventurers to the ancient city of Ur. In addition to using those images to raise community awareness about their heritage and history through field visits, presentations and seminars, and making them available to all.

**Uruk site:** Archaeological maintenance was carried out in the ancient city of Uruk in the White Temple and the southwestern section of the Anu Ziqqurat. Work began on November 30, 2021, and the maintenance work was in joint cooperation between representatives of the Iraqi state board of antiquities and heritage (CBAH) of the German mission team.

### **Maintenance work:**

Work on the production of mud brick began before the arrival of the German mission, where the materials used in the manufacture of the mud brick were prepared. The materials consisted of hay (straw) and soil free of salt, in addition to washed sand and water. The mud brick is made according to the same standards as the temple mud brick and the Anu Ziqqurat, and a mark is placed to distinguish the new made mud brick from the old, and the mark is small pieces of palm fiber

placed on the surface of the new made mud brick. Emergency maintenance work was carried out in two areas, and the division of work was as follows:



Picture No. (1): The works carried out on Ur site (more pictures in Annex no.(1))

#### A- First area: Maintenance in the White Temple

At the beginning of the work, the archaeological area was prepared for the purpose of protecting it from damage by spreading a layer of dirt, then a layer of geotextile, and then spreading it again with dirt within the paths specified for the purpose of the movement of vehicles and workers working in the archaeological area and placing tapes and signs dedicated to that. The work was divided between the Iraqi and German team members in order to smoothly complete the work. Work began on the foundations of the White Temple first, where the steadfast and strong foundations were demonstrated for the purpose of implementing emergency maintenance measures. The demonstration of the foundations and maintenance was under the direct supervision of the German expert in archaeological conservation, Mr. (christoph). During the archaeological cleaning process, a white layer was found in part of the foundations and walls of the white temple columns. The foundation work was carried out in exactly the same way as was used in the old building, and the archaeological cleaning process continued for the purpose of demonstration the strong foundations for a whole week, and then emergency maintenance work began after that. The entire archaeological work was carefully documented, as (15 m<sup>3</sup>) of mud brick produced was used in the maintenance of the White Temple.

B- Second area: emergency maintenance in the southwestern section of the Anu Ziqqurat.



Picture No. (2) of the works carried out at the Uruk site - the first area  
(more pictures are included in Appendix No. (1))

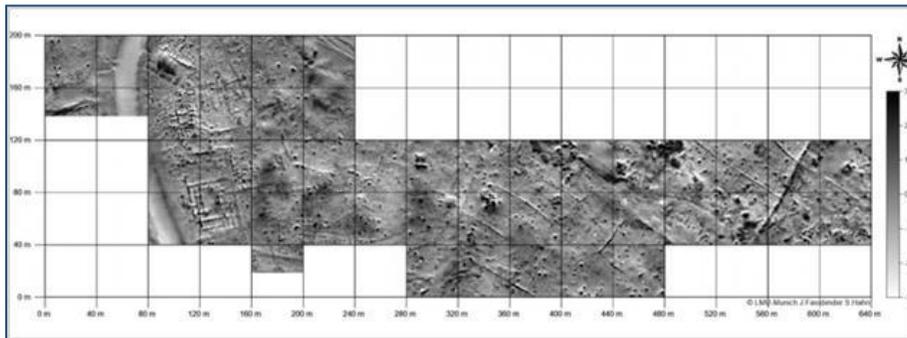
Maintenance work began in the (Al-Zaqqura) with archaeological cleaning work in the area of the canyons caused by erosion factors, especially the rain that caused a lot of damage in the southwestern section. After the proper part of the wall of the section was demonstrated, emergency maintenance work began using the mud brick designated for the Anu Ziqqurat, and (136 m<sup>3</sup>) of pre-made mud brick was used in addition to the burial soil used to bury the canyons with the mud brick. After the burial and construction of the canyons were completed, work was done to redirect the rainwater stream over the canyons area, on which the archaeological maintenance was carried out. The water stream was directed diagonally for the purpose of draining the water quickly and safely so that it would move away from the (Al-Zaqqura) area and the stone temple and direct it to the ancient river area. In addition to emergency maintenance work, work has been done on preparing a special area for special logistical work to produce mud brick used for maintenance purposes, which will be implemented in the future in the ancient city, in addition to preparing warehouses whose walls are built of mud brick and roofed with reeds and wood, which are the same materials used in the archaeological area.



Picture No. (3): The works carried out at the Al-Uruk site - the second region (more pictures are included in Appendix No. (1))

### **Survey work:**

On 6/11/2021, the geophysical survey team, which consists of (Dr. York Fassbinder) and (Sandra Han), began surveying within the first area in the northern part of the ancient city of Uruk to reveal the ancient rivers and water channels in the city. The work was in the square (Urk21b with dimensions (280 x 320) meters, and the second area in the square (Urk21a) with dimensions of (640 x 200) meters. The data in this area revealed accurate floor plans for residential houses, walls and corridors, as shown in the figure below.



Picture No. (4): Works carried out at Uruk site - floor plans (more pictures are included in Annex (1))

The results of the survey were very important this season, as plans for buildings built with bricks and mud bricks and old water channels were identified. In addition, a structure was found on both sides of the old river's edge in the area (Urk21), which is a unique and important discovery for the ancient city of Uruk. There will be lengthy studies for the purpose of Ascertain the nature of this building, which may be a bridge or a water gate of the ancient city, according to

the experts' speculative opinions, and this opinion was not confirmed, as the experts specialized in geophysical surveys were unable to determine the nature or history of the building due to the diversity of archaeological buildings and historical periods in the area, and they need to process the data accurately in laboratories for this purpose.

In addition, a third area was chosen in the northwest of the ancient city of Uruk, with dimensions of (80 x 40) meters, for the purpose of exploring the remains of a wooden boat in one of the ancient water channels of the ancient city of Uruk, The survey work ended on 17/11/2021.

Work was also carried out in the area of the Temple of Nabuid, which was excavated in previous seasons, where the bricks of various shapes and sizes containing different prints and inscriptions were collected during the excavations in the temple. It was re-documented and then arranged according to shapes and sizes and paved in a special area for the purpose of protecting it from Erosion factors and rising salts from the soil by placing them on a layer of salt-free soil, topped with a layer of geotextile, then a second layer of soil, and then stones were placed on it. This area was called (the garden of bricks).

While working on maintenance in the ancient city of Uruk, trainees from various governorates of Iraq came to the city for the purpose of completing their training program with the German Archaeological Institute and they were briefed on the maintenance work that is taking place in the White Temple and Anu (Al-Zaqqura) area, and their training lasted for a period of (7) days, which was concluded in the presence of the Director General of the Investigations and Excavations Department for the purpose of honoring them and distributing the certificates of appreciation to them.

**Eridu site:** No maintenance or survey has been carried out and the Italian mission will start excavations, headed by Franco D'Agestino, this year.

#### **4. Natural World Heritage:**

***4- Acknowledges that the 5.8 billion cubic metres (BCM) minimum flow level required for the natural components of the property was met in 2019 due to abundant flooding and rainfall, however notes with concern that flooding and rainfall events remain highly variable and the minimum level was again not met in 2020, and recalls that significant fluctuations in water flows may pose a***

***major threat to the property and non-fulfilment of minimum water requirements could represent a potential danger to the Outstanding Universal Value (OUV) of the property, in accordance with Paragraph 180 of the Operational Guidelines;***

The changes that occur in submerged areas of the natural components of the property are considered the main feature of it since its inception, and through it the formation of the existing ecosystem. And as indicated in the Consolidated Management Plan of for the Ahwar property, The areas covered by the water fluctuate annually and seasonally, however, the water level is higher after winter floods and spring snowmelt on the slopes of the mountainsides ranges in the north. Total flooded areas are lowest during dry summer. This rather continuous and wide variation in the water level and the covered water bodies contributes to the creation of a highly heterogeneous physical environment, which is organically reflected on the water resources and composition, which leads to more diversity in terms of ecosystems. This is of great importance when comparing the marshes with less dynamic water systems. Despite the increased dry years compared to wet years during close periods of time, as well as the increasing state of extremism in the levels of drought and rain in time and place as a result of the impact of climate change and the continuation of upstream states in constructing dams and facilities to control the main water sources, which greatly affected the natural components of the property in terms of the possibility of Securing sufficient levels of water to inundate large areas of it, but the hydrological system maintained its nature and dynamics in terms of expanding the submerged area during the wet seasons and reducing it during the relatively dry seasons.

In order to overcome these crises, the water quotas required for the sustainability of the ecosystem for these components were allocated to different seasons, whether wet, moderate or dry, within a comprehensive study Strategy for Water & Land Resources in Iraq, which distributed water quotas to various sectors, including the natural components, as mentioned in the reports submitted of previous years. The year 2019 witnessed a significant increase in water resources that were stored within reservoir dams and lakes, and to make the most of them in the flooding of the marshes, where the rates of flooding within the limits of the natural components of the property reached their highest levels. During 2020 and 2021, Iraq suffered a decrease in water resources and storage levels in strategic dams, and as a result, water distribution plans were dealt with on the basis of providing the

minimum requirements for different sectors, including the natural components of the property, especially in 2021. Iraq succeeded in securing the minimum levels of water quotas which preserved the ecosystem of the property's natural components, sustaining and supporting the OUV, and improving its conservation status. Where no negative effects were recorded on the ecological habitats of animals or plants, and large areas of them preserved their nature in terms of diversity and permanence of types and varieties found in them such as mammals, birds, fish, reptiles and amphibians and formed a protection for them from the effects of drought, where the presence of these types endemic or migratory, was monitored Including the endangered species within the deep-water and areas with dense vegetation cover of the four natural components by the field teams working within the property and the registration of their types and preparation, the last of which was the monitoring work carried out by a specialized field team in cooperation with The Arab Regional Centre for World Heritage (ARC-WH), which also witnessed the training of field cadres on Technical Capacity Building Program for the Preservation of Outstanding Universal Value (OUV) of the world heritage in the Marshes of Southern Iraq, which was established during the month of January 2022, The objective of the training workshop and field surveys was to collect updated data for the foundation of drawing the threshold limit (threshold) to draw the basic indicators that must provide the minimum water limit that ensures the natural ecological flow of the OUV in the natural components of the World Heritage Marshes property. Note that this program was considered as one of the basic programs for the long-term environmental monitoring process in the marshes by the Center for restoration of Iraqi marshes & wetlands (CRIMW), which will be developed with the inclusion of experts and specialists in the environmental field of the national team, as shown in Annex No. (2).

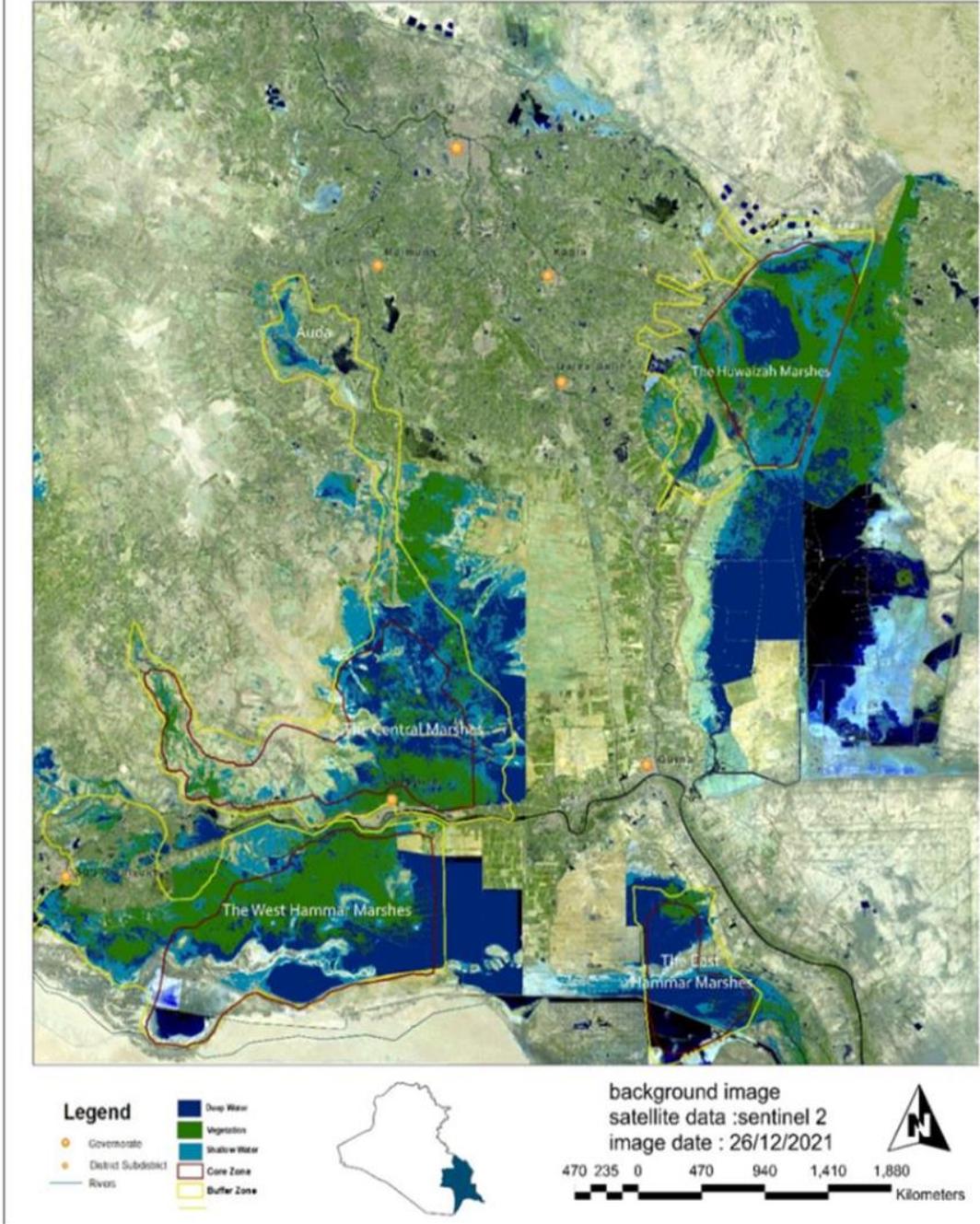
The hydrological management of the marshes in general, including the four natural components of the property, depends on flooding the largest possible area of it during the winter season and reducing the submerged area to the borders of the vital areas, including those rich in biological diversity during the summer season to reduce the effects of evapotranspiration and reduce the deterioration of water quality as shown in Table No. 1, which included the achievement of re- flooded area ratio, such as the ratios found in the Consolidated Management Plan of map No. (1), which represents the annual rate of land cover classification. We find this clear by following the change in the submerged area of the four natural

components of the property during the four seasons of the flow year 2021, where we observe the changes that occurred in the submerged area of each component and the area of land covers during the four seasons of 2021 as shown in the table below and the classified satellite images shown in the Annex No.(2), The success of the authorities responsible for managing the property through Higher Committee for the Implementation of the Management Plan headed by the Ministry of Water Resources in Iraq in securing water to flood these areas within the minimum water requirements to ensure the sustainability of the natural system of the four components was not easy during 2021 because it is a dry year and the matter will become more difficult if the water situation continues on What it is during 2022, when we began to witness the frequency of dry years for two consecutive years as a result of climate changes, however, the Iraqi government is working to intensify efforts to communicate with upstream states for the purpose of ensuring the flow of sufficient water resources to meet Iraq's need for water, and there is a positive response from the Turkish and Syrian sides in this field, a training course was also held in cooperation with the ARC-WH on inventory and analysis of threats to the safety of natural values in the Ahwar of Southern Iraq in three governorates (Maysan, Basra and Thi-Qar) targeting workers at the site, The training workshop (which is the second episode of the capacity-building series) included raising the technical capacities of the staff concerned with the periodic environmental monitoring of the natural components in the marshes, by training them on an inventory of the threats and other factors that affect the OUV of the ninth and tenth criteria and the sanitary environmental conditions, and then Carrying out the process of analyzing them in order to arrange them among the priorities that are reflected on the executive plan within the management plan (Annex No. 3).

Table No. (1): Flooded areas and vegetation cover within the natural components for the flow year 2021

<b>Component</b>	<b>Date</b>	<b>Vegetation area into the Component / KM<sup>2</sup></b>	<b>Flood area into the Component / KM<sup>2</sup></b>	<b>The Component area KM<sup>2</sup></b>	<b>Ratio of Flood area to total area of component (%)</b>
<b>The Huwaizah Marshes</b>	<b>Oct/2020</b>	<b>277</b>	<b>433</b>	<b>481.31</b>	<b>90</b>
	<b>Jan/2021</b>	<b>233</b>	<b>443</b>		<b>92</b>
	<b>Apr/2021</b>	<b>263</b>	<b>462</b>		<b>96</b>
	<b>Jul/2021</b>	<b>250</b>	<b>452</b>		<b>94</b>
<b>The Central Marshes</b>	<b>Oct/2020</b>	<b>141</b>	<b>468</b>	<b>624.35</b>	<b>75</b>
	<b>Jan/2021</b>	<b>62</b>	<b>474</b>		<b>76</b>
	<b>Apr/2021</b>	<b>117</b>	<b>493</b>		<b>79</b>
	<b>Jul/2021</b>	<b>91</b>	<b>468</b>		<b>75</b>
<b>The West Hammar Marshes</b>	<b>Oct/2020</b>	<b>277</b>	<b>647</b>	<b>799.91</b>	<b>81</b>
	<b>Jan/2021</b>	<b>140</b>	<b>663</b>		<b>83</b>
	<b>Apr/2021</b>	<b>248</b>	<b>703</b>		<b>88</b>
	<b>Jul/2021</b>	<b>256</b>	<b>687</b>		<b>86</b>
<b>The East Hammar Marshes</b>	<b>Oct/2020</b>	<b>2</b>	<b>187</b>	<b>203.42</b>	<b>92</b>
	<b>Jan/2021</b>	<b>11</b>	<b>181</b>		<b>89</b>
	<b>Apr/2021</b>	<b>3</b>	<b>179</b>		<b>88</b>
	<b>Jul/2021</b>	<b>9</b>	<b>175</b>		<b>86</b>

**The Ahwar of Southern Iraq:  
Refuge of Biodiversity and Relict Landscape  
of the Mesopotamian Cities**



Map No. (1) A classified satellite image showing the land cover classification within components as an annual average for the year 2021

***5-Requests the State Party to urgently implement management measures that demonstrate adequate flows to the property are ensured in the short and long-term as a matter of utmost priority;***

Based on the study of Strategy for Water & Land Resources in Iraq prepared by the Ministry of Water Resources in Iraq, the mechanisms and means by which flood and drought cases are dealt with until 2035 have been determined, including determining the amount allocated to the marshes in general, including the four natural components of the flow year, and the amount of reduction for this quotas during dry seasons based on what was achieved from storage in dams and reservoir lakes at the beginning of each month of the year in a way that ensures the sustainability and support of the OUV of the property and not negatively affect it, and considering this specific a basic requirement within the requirements of water consumption along with the rest of the basic sectors consuming water such as agriculture, industry and local uses. The continuation of the irrigation system development projects and the reclamation of agricultural lands will contribute to enhancing the available storage and using it to support the sustainability of the natural components of the property in the long term, as agriculture constitutes the largest consumer of water by up to 70% of the total consumption. In the short term, the available hydraulics management and control facilities capable of providing the required amount of water to bypass the dry seasons according to the current data. practical and effective measures are also taken in the field of reaching understandings with neighboring upstream states to determine Iraq's water quotas and to work according to the principle of sharing damage in cases of drought. Good and encouraging results have been reached in this area, as will be clarified in the next paragraph.

The Ministry of Water Resources is currently working on updating study of strategy for Water & Land Resources in Iraq, as stated in its recommendations that it be reviewed every five years, including the part on the marshes, where preparations are underway to implement a comprehensive hydrological environmental study of the marshes that includes its results within the outputs of updating the strategic study. The study will include determining the minimum water flow to the four natural components to preserve the OUV of the property, according to the recent years of increased droughts as a result of the impact of climate changes. Until the completion of the study update, the results of the

Original study, which were clarified in the previous reports, will be relied upon.

***6- Also requests the States Parties of Iraq, of the Islamic Republic of Iran and of Turkey to strengthen and expedite their cooperation towards long-term sustainable transboundary water management measures, which are informed by science and can guarantee the provision of the minimum water supply required to sustain the OUV of the property, and encourages the States Parties to prepare a basin-wide Strategic Environmental Assessment in line with the IUCN World Heritage Advice Note on Environmental Assessments, to assess cumulative and future impact on flows to the property;***

The Iraqi government continues to communicate with the upstream states on issues of joint technical cooperation in terms of water and water management. It seeks to reach solutions for water sharing based on reasonable and equitable water allocation during flood and drought seasons, achieving a scientifically joint water management program. Besides, Iraq's objective is to provide a minimum flow of water, which is necessary to preserve the OUV of the Property. As an exceptional natural phenomenon, the marshes require preservation and sustainability to ensure their ecological services to the region as a whole. Among other important measures that Iraq has taken are:

**The measures have been taken with the Turkish side:**

- A- In the second half of 2021, the Minister of Water Resources, Mahdi Rashid Al-Hamdani, has been designated as an Iraqi envoy to all water forums, conferences, and international organizations.
- B- The Turkish ambassador, accompanied by a number of members of the Turkish embassy in Baghdad, visited the suggested site for the establishment a joint research center for of water, the center is proposed to be established on 25/01/2021, and it aims to enhance cooperation between the two states in the water field, as we some Turkish experts have lately visited the site to observe the measures that have been taken to prepare it.



Picture No. (5): Negotiations with the Turkish side

C- A technical delegation from the Ministry of Water Resources and other Iraqi concerned ministries visited Turkey in June 2021 to have a glimpse at the Turkish Ilisu Dam project on the Tigris River. They also saw the operational plan for the dam. Furthermore, technical meetings have also been held between the two sides to discuss the common water issues.

D-The Minister of Water Resources, Engineer Mahdi Rashid Al-Hamdani, headed a delegation from his ministry to visit Ankara, Turkey in (3-6/9/2021). He discussed with the Turkish President's envoy for water affairs the following topics:

- Ratification of the Memorandum of Understanding (MoU), which was signed in 2009 and amended in 2014. As a result of the visit the Turkish Embassy in Baghdad informed the MOWR about issuing the Turkish Presidency's decision to ratify the MOU and the amendments indexed to it on 9/10/2021. Thus, the MOU will supposedly enter into force from the date of notification of the two parties with the approval of their governments.
- The two sides discussed the issue of establishing the joint Iraqi-Turkish research center to be based in Baghdad and a branch in Basra for exchanging information and experiences, The meeting also covered a number of important projects that were proposed to be implemented by the Turkish specialized companies, the current water situation, and the importance of exchanging technical and hydrological information. In addition, they discussed operating plans for projects within the Tigris and Euphrates River basins and activating the work of the monitoring and measurement stations team.
- They discussed Iraq's concerns and objections to the construction of the Cizre Dam on the Tigris River, and the irrigation project attached to it. The dam's function is to regulate the volume of water releasing from the Ilisu Dam then to entering Iraqi border. The latter is concerned that the dam will have an impact on the quantity and quality of the water that entering its border in future , due to sewage and the agricultural waste return-flow.

- In addition, they discussed the Protocol of the Tigris River, which is an implementation mechanism of the MoU. The special Turkish water envoy promised to send notes regarding the Protocol as soon as possible to the Iraqi side. He confirmed his follow-up and attempts to sign the Protocol before the end of 2021.

E- On 13/9/2021, the Turkish side, during virtual and in-person meetings with the Iraqi side, stated that a draft of the MOU of establishing aforementioned institute has been prepared to be signed between the two parties. The MoU will set out the institute's working mechanism, financing, the experts who would be employed to work in it, and the institutions and bodies associated with it. The Turkish Ministry of Foreign Affairs said it would deliver the MOU to the Iraqi side to start inaugurating the institute as soon as possible. Despite that, the Iraqi side is still waiting for the draft of MOU to hold a bilateral meeting for the purpose of discussing its provisions.

F-The MOWR approached the Turkish Ministry of Foreign Affairs on several occasions, the last of which was on 6/12/2021. Iraq attempted to find out the reasons for the decrease in the amount of water coming to the Mosul Dam on the Tigris River, especially after the start of filling a reservoir and operating the Turkish Ilisu Dam. Also, the MOWR requested the Turkish side to provide it with technical data regarding the water flow at the Turkish-Syrian border periodically. This data is important for MOWR to prepare the operational plans for its hydrological projects. Moreover, to address the problem of water scarcity in Iraq, MOWR asked the Turkish side to increase releases from Turkish dams built on the Euphrates River.

### **The Measures have been taken with the Syrian side:**

A- The Minister of Water Resources, Engineer Mahdi Rashid Al-Hamdani, held ministerial meetings with his Syrian counterpart, Dr. Raad Tammam, in Damascus, Syria (14-17/7/2021). The minutes of a joint meeting was signed on (17/7/2021) and included instructions on how to cooperate between the two parties in the field of sharing water and activating the joint technical committees between the two countries. They also agreed to hold periodic meetings at the ministerial level, and Syria would provide the Iraqi side with the rate of monthly water release from the Euphrates River at the Turkish-Syrian border.

B- Several virtual meetings were held between the joint focal points of the Iraqi and Syrian sides on 21/8/2021, 10/21/2021 and 10/11/2021. During these meetings, the two sides exchanged information and the MOWR provided a list of several training courses (virtual and presence) that their specialists can set up for the Syrian side in the areas of water. Iraq proposed the possibility of the Syrian side's participation in the suggested Iraq-Turkish joint research center for water.



Picture No. (6) Negotiations with the Syrian side

C- The MOWR requested by a number of correspondences through the Ministry of Foreign Affairs to know the reasons for the decrease in the Euphrates River's flow since February 2021.

**The Measures have been taken with the Iranian side:**

A- The Iraqi government is making exceptional efforts through the Ministry of Water Resources and the Ministry of Foreign Affairs for the purpose of cooperating with neighboring Iran to solve outstanding problems regarding the shared rivers based on the principle of good neighborliness and to reduce harm between the two countries, especially in the current scarcity stage. Iraq will resort to internationalizing the issue in the event of failure to respond to its legitimate and legal demands, where the MOWR addressed the Iraqi Ministry of Foreign Affairs on 4/8/2021 for the purpose of studying the issue and deciding on it.

B- The deputy ambassador of the Islamic Republic of Iran in Baghdad visited the MOWR on 1/1/2021. He met with the technical advisor, Engineer Jamal Mohsen Ali, in the presence of specialists from the ministry. The two sides discussed the topic of sharing water in order to confront the drought that the region suffers from and to share the damage. The Iranian side indicated its willingness to coordinate to hold joint technical meetings and find mechanisms

for cooperation for the benefit of the two countries. The deputy ambassador stated that Iran is fully prepared to hold a meeting with the ministry and to negotiate bilaterally to solve all problems without the mediation of any court or international organization.



Picture No. (7) Negotiations with the Turkish side

- C-On 31 October 2021 the Iraqi Ministry of Foreign Affairs informed the MOWR of the Iranian side's readiness to host Iraqi specialists from the MOWR. The aim of the meeting is to implement the protocol concluded between Iraq and Iran on 26 December 1975 related to the utilization of border river waters. And Iraq has to provide the Iranian side the proposed agenda. The Iranian side was provided with the topics proposed to be discussed during the meeting, and a date was set by the Iraqi side and awaiting a response from the Iranian side.
- D- Through diplomatic means, MOWR endeavored to achieve a technical meeting with Iraq to discuss and solve the problem of water and the border. But cooperation between the two countries is still weak. In fact, the Iranian side has not responded to most of Iraq's demands. Many of the shared rivers and valleys that feed the Tigris River and the Iraqi marshes suffer from water scarcity and interruptions. That is because, Iran diverted them inside its territory by constructing dams and irrigation projects to exploit their waters for its own purposes only.

## Cooperation with Regional and International Organizations:

- During meetings with the World Bank in November 2021, the World Bank's contribution to providing support for the establishment of the Iraq-Turkish Joint Research Center for Water was discussed. The representatives of the World Bank expressed the possibility of providing financial and technical support and finding a mechanism of understanding between the World Bank and the MOWR. That includes the support details and commitments between the two parties and items related to coordination with international organizations and international institutes specializing in water. All these organizations might provide technical assistance and expertise for the work of the center. The World Bank has prepared a MOU, though the procedures and coordination are still underway to reach a final version of the MOU.
- The MOWR, with other government sectors and in cooperation with several international organizations, held the first Baghdad International Water Conference in (13-14/3/2021). The theme of the conference was to achieve water stability for the countries of the region. It aimed to achieve sustainable development of water resources in them in light of the challenges and the need to intensify all efforts to achieve water security for the region.



Picture No. (8): The First Baghdad International Conference

- In order to obtain cooperation and support at all levels, the (CRIMW) has written a draft cooperation agreement with the Arab Regional Center for World Heritage (based in Bahrain) ARC-WH in order to draw up cooperation frameworks between the two institutions and to obtain support and technical advice specialized in managing natural World Heritage sites, especially in the topic of the OUV management of the marshes property for the World

Heritage. Legal and technical reviews of the memorandum are now taking place, as it will be signed by both parties once the legal requirements are completed.

- Minister of Water Resources, Engineer Mahdi Rashid Al-Hamdani, accompanied by a delegation from his ministry, participated in the ninth session of the Meeting of the Parties of the Water Convention. This meeting has been organized by the Secretariat of the Water Convention of the United Nations of Economic Commission for Europe. The minister contributed to the high-level session on water and peace entitled (Cooperation in the field of trans boundary waters: a catalyst for peace) and the activities for the period (29 /9-1/10/2021).



Picture No. (9) of the ninth session of the Conference of the Parties

- Iraq's instrument to access the Convention on the Protection and Use of Trans boundary Water and International Lakes 1992 was signed by His Excellency the President of the Republic of Iraq on 7/10/2021. Then the Iraqi Ministry of Foreign Affairs would deposit it with the Secretary-General of the United Nations through the Iraqi permanent representation to the United Nations in New York/USA, The conclusion of such an agreement would provide additional guarantees regarding water and thus with regard to guaranteeing for the marshes.
- The Minister of Water Resources, Engineer Mahdi Rashid Al-Hamdani, participated in the 13th session of the Arab Ministerial Council for Water in(14-18/11/2021). Several decisions were issued in favor of Iraq. The most important of which was to support Iraq's efforts to preserve water resources in the Tigris and Euphrates basins, as well as providing assistance to Iraq and contributing to the re-development of the Iraqi Marshes.



Picture No. (10): The thirteenth session of the Arab Ministerial Council for Water

As for the preparation of a strategic environmental assessment at the basin level, Iraq will seek to implement this requirement as part of the cooperation mechanism between the aforementioned parties, and the establishment of a joint Iraqi-Turkish research center to be based in Baghdad and a branch thereof in Basra may help, for the purpose of exchanging information and experiences while seeking to include Syria to it in preparing this assessment in the near future.

***7- Noting with concern that different dam projects are planned or underway in Iraq, as well as in Turkey and the Islamic Republic of Iran, which could further exacerbate water scarcity and therefore negatively impact on the OUV of the property, further requests the States Parties of Iraq, of the Islamic Republic of Iran and of Turkey to:***

- a) Provide full information on all existing and planned dam developments upstream of the property, including a clear and complete assessment of the potential for these developments to create impacts on the OUV of the property, both individually or cumulatively,***
- b) Ensure that any potential developments that may impact the OUV of the property are fully assessed in line with the IUCN Advice Note on Environmental Assessments and the ICOMOS Guidance on Heritage Impact Assessment, and to submit the assessments to the World Heritage Centre for review by the Advisory Bodies, before any decision is taken to proceed further with planning or implementation,***
- c) Not proceed with developments that would impact negatively on the OUV of the property;***

Iraq affirms its commitment to the perpetuation of securing water imports to flood the natural components of property in quality and quantity, and this affirmation stems from its keenness to include these sites on the World Heritage List and other international agreements such as the RAMSAR Convention on Wetlands of International Importance, with the aim of preserving the ecosystem of these components and the sustainability of environmental, social and economic services which presents. From this point of view, the implementation of projects that aim to increase the efficiency of the water management system in Iraq will contribute significantly to achieving the environmental sustainability of the natural components of the Ahwar property through the development of means of controlling the water imports of the Tigris and Euphrates rivers and their tributaries inside Iraq to secure the minimum water flow for the marshes during the seasons Scarcity is in addition to warding off the dangers of exceptional flood waves, especially with the increasing effects of climate changes that have imposed an environmental and hydrological reality different from what in the past requires dealing with it by finding immediate and future solutions to reduce its negative effects. It is the main factor in the sustainability of the property's ecosystem. Iraq's position as a downstream country of the Tigris and Euphrates rivers makes it seek to exploit the verified water incomes from the upstream countries in order to achieve water and food security for its population, in addition to preserving ecosystems due to the multiple services it provides that directly contribute to achieving sustainable development. Therefore, Iraq is not the country concerned with causing damage as a result of its policy in managing its water resources, and we have reservations about what is stated in this paragraph with regard to Iraq only, since the implemented or future projects that the upstream countries seek to implement have a direct impact on water imports, especially during drought years and on For example, the dams built on the Karkheh River basin affected the expenditures coming to the Al-Hawizeh Marsh, and consequently led to the decline of the submerged areas in the lagoon, in addition to the need for the aforementioned countries to provide complete information on all current and planned dam development processes, including a clear and complete assessment of the possibility of creating work This development has no effect on the exceptional global value of the property in accordance with international laws and norms, and not to proceed with its implementation in the event that it is proven to have a negative impact on this value. A detailed report will be submitted on the above-

mentioned issue with regard to Iraq later.

***8- Reiterates its request to the State Party to complete the designation of all of the natural components of the property as protected areas, in order to provide effective protection under national legislative and management systems, as required in the Operational Guidelines;***

Iraq is serious about securing legal protection for the natural components within the national framework, The inclusion of the natural components of the marshes property within the World Heritage Convention secures legal protection to them as protected areas within the national framework, in addition to being included in the RAMSAR Convention on Wetlands, as it provides a set of effective laws related to the protection of the property to enable the executive authorities to take legal measures against violators, and work is underway through the National Committee for the Management of Marshes as a World Heritage property to make amendments, On the Wildlife Protection Law and submit it to the House of Representatives for legislation to ensure a broader protection of the property, UNESCO will be informed of developments on this paragraph when the aforementioned requirements are completed.

***9- Requests furthermore the State Party, as part of an integrated management approach, to further strengthen its monitoring, legal protection, enforcement and management capacity to control illegal activities such as bird hunting and overfishing, and to submit to the World Heritage Centre data on these activities;***

Government agencies continue their relentless efforts to reduce the illegal activities, as they make great efforts to monitor fishing activities and raise environmental awareness for fishermen in particular and the local population in general about the risks of these practices on biodiversity in the region, as they are classified as one of the most severe practices that affect biodiversity. As a result of these efforts, this phenomenon has largely receded, through:

- A. The (CRIMW) is coordinating with a natural heritage expert in the Arab Regional Center for World Heritage ARC-WH to prepare instructions for hunting in the marshes and determine the quantitative and qualitative definition of the term (overfishing) by preparing lists of species worthy of protection and the numbers allowed to be hunted in the marshes of birds and fish, Preparing a draft list of species by the ARC-WH to discuss it

technically within the CRIMW.

- B. The ministry of Water Resources, through its formations, and in coordination with the Ministry of Interior, carried out field tours to remove the abuses on the main and subsidiary rivers that feed the natural components of the property in terms of water quotas and control illegal activities.
- C. Initiating a number of lawsuits against violators of anti-poaching laws at the Environmental Protection Police Station of the Ministry of Interior in Nasiriyah district, where this type of legal violations is concentrated among those who use illegal methods to catch birds and fish by electrocution, and the accused were referred to Thi-Qar criminal court to issue a judgment decision in accordance with the laws in force.



Picture No. (11): Confiscation of illegal fishing equipment

- D. The Department of Thi-Qar Marshes Projects / Department of the Resident Engineer in Al-Chibayish, in partnership with the Directorate of Thi-qar Agriculture, releases fingerlings in the Al-Chibayish marshes, as shown in the table listed below, in order to enhance the fish resources in the marshes areas, which are the largest water bodies in the Middle East.
- E. Implementation of awareness campaigns targeting the local population regarding illegal activities, in addition to setting up awareness panels about illegal activities, as shown in the pictures and map listed below:



Picture No. (12): Awareness-indication panels about illegal activities within the sites of natural components



Thi-Qar governorate and (2) cases in Al- Chibayish district against trespassers who use illegal fishing methods

In order to enhance the presence of fish types registered in the Ahwar, including the four natural components of the property and reduce the effects of illegal activities, the competent authorities in the Ministries of Water Resources and Agriculture in Thi-Qar Governorate released various types of fish fingerlings in the natural components of the property to ensure the balance and sustainability of the ecosystem, as shown in the pictures and the table below:



Picture No.(13): Release of fingerling fish in natural components, for more pictures see Annex No. (4)

Table No. (2): numbers and types of fingerling fish that were released to the natural components of the property

No.	Number of released nekton	Type	Date of release	Place of release(Natural component
1	11,200,000	Common Carp	26/4/2021	Dhi Qar/ Chyibaish/Central Marshes
2	10,000,000	Common Carp	3/5/2021	Dhi QarSuq Al-Shuyukh/West Hammar Maeshes
3	12,800,000	Common Carp	4/5/2021	Dhi Qar/ Al- Tar District / West Hammar Maeshes
4	10,000	Bunney	28/5/2021	Dhi Qar/bani sa'id/ west hammar
5	5,900,000	Common Carp	6/4/2021	Maysan/Al-kahla district/ Huwaizah Marshes
6	6.100,000	Common Carp	11/4/2021	Maysan/Al-kahla district/ Huwaizah Marshes

7	6,500,000	Common Carp	26/4/2021	Dhi Qar/ Chyibaish/Central Marshes
8	6,350,000	Common Carp	29/4/2021	Basra/ East hammar
9	6,900,000	Common Carp	2/5/2021	Dhi Qar/Islah/central marshes
10	2,800,000	Common Carp	6/4/2021	Maysan/Al-kahla district/ Huwaizah Marshes

***10-Also reiterates its request to the State Party to finalize the preparation of an updated Integrated Management Plan for the entire property, as a matter of priority, together with the development of updated Management Plans for each of the component sites of the property, and to submit drafts of these to the World Heritage Centre for review by the Advisory Bodies;***

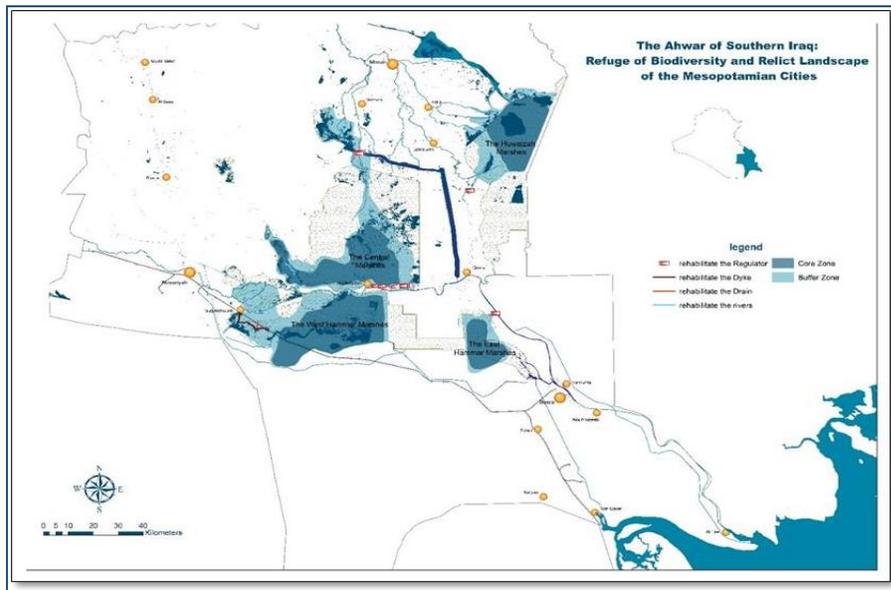
For the purpose of accelerating the completion of the modernization work of the management plans, whether comprehensive for the property or components, which witnessed some delays due to the conditions of the Covid-19 pandemic during the last two years and the difficulty of communication between the authorities responsible for the modernization work, the Higher Committee for the Implementation of the Management Plan for the Marshes of southern Iraq as a world Heritage property has begun to take the necessary measures to complete the plans by considering the formation of a sub-committee From the Ministries of Water Resources, Environment and Culture to complete the review and update of plans under the Operational Guidelines for the Implementation of the World Heritage Convention. For the purpose of obtaining technical support and advice in this field, several meetings were held with the ARC-WH and preparations for the signing of a cooperation agreement in this regard, in addition to a number of other topics as will be explained later. A timetable has been set for the completion of the modernization work, In conjunction with seeking to modernize management plans, Iraq is still in the process of taking the necessary measures to maintain and sustain the natural components of the Ahwar property and implement the current management plans to preserve the OUV of the property. These measures included:

A- Continuing the work of the Higher Committee for the Implementation of the Management Plan for the Marshes of southern Iraq as a world Heritage property, with the participation of representatives from the ministries as members of the committee, to discuss issues related to preserving the natural components of the ahwar property, the most important proposals and views of the members were discussed to develop the work and take all necessary measures to support the preservation of the OUV of the property.



Picture No.(14): the National Committee for the Management of the Marshes as a World Heritage property,

B- Continuing the purification work of feeding rivers, maintenance of dams and removal of invasive plants, such as the Nile flower, taking into account not to prejudice the traits carrying the normal values of the ninth and tenth criteria as shown in map below to ensure the delivery of water to the natural components.



Map No. (3): Sites of maintenance and sustainability projects and works to improve water quality for the natural components of the marshes property



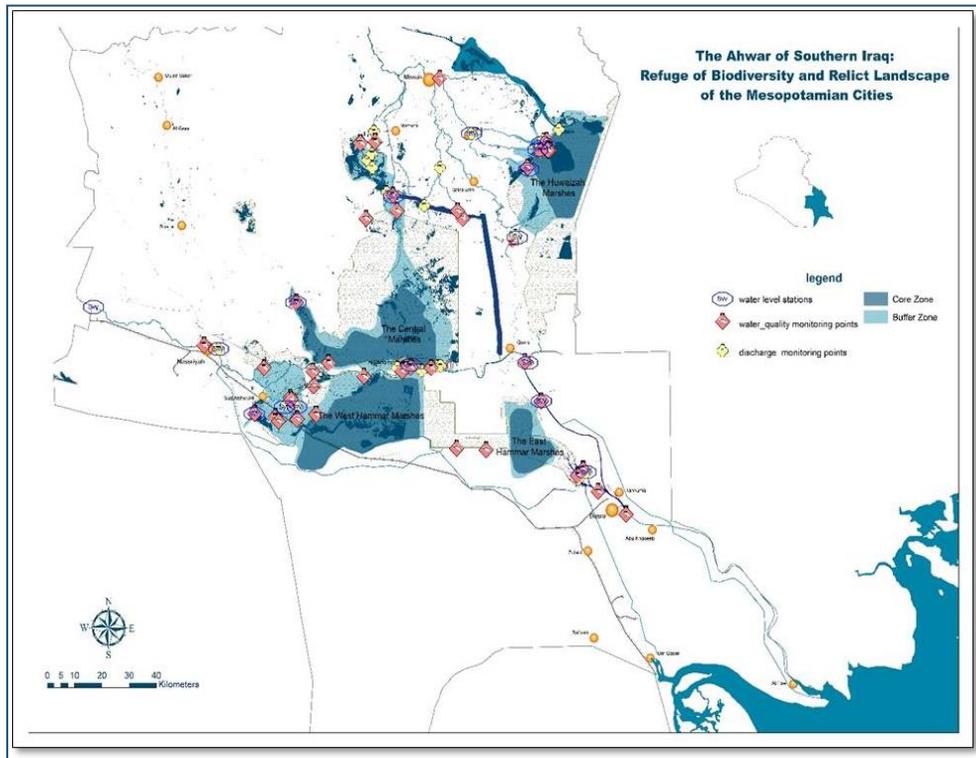
Removal of invasive plants by local residents under the supervision of the Ministry



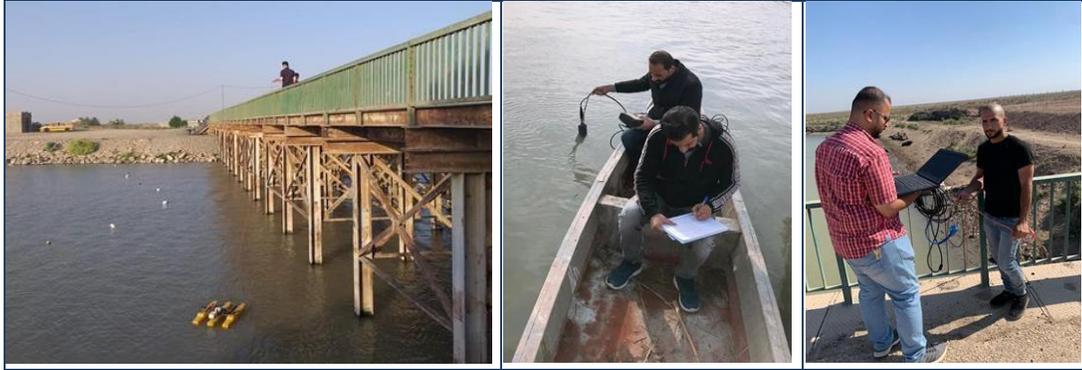
Cleaning the rivers

Picture No. (15): Maintaining and works of the natural components of the property (more pictures in Annex No. (5))

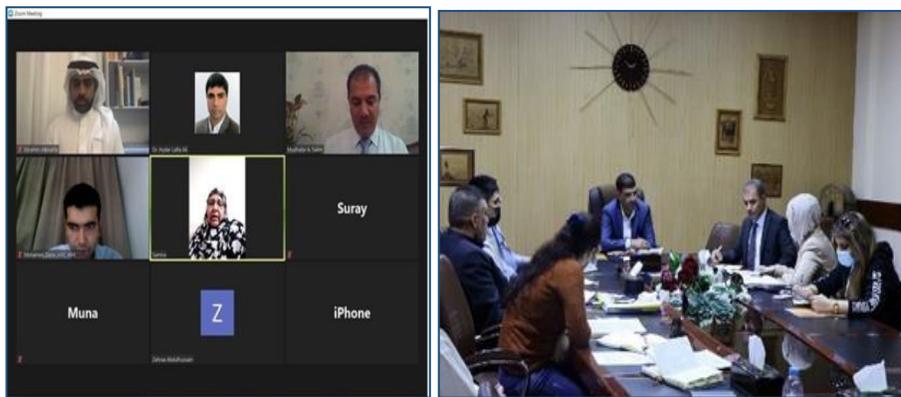
C- Continuous monitoring of water inflows and outflows from the natural components of the property, water quality and their impact on biodiversity on a bi-monthly basis, in addition to monitoring the submerged areas and the density and health of vegetation cover using spectral indicators of natural components through satellite images and field visits on a monthly basis.



Map No. (4): the locations of the levels monitoring stations and the sites for measuring the water and water quality



Picture No. (16): Field teams to monitor incoming and outgoing discharge and water quality for the components



Picture No. (17): Part of the continuous meetings with the Arab Regional Center for World Heritage - Bahrain.

D- Several meetings were also held with the ARC-WH to activate the mechanisms of cooperation between the CRIMW and the ARC-WH. The most important issues that the World Heritage Committee and the regional center seek to achieve were discussed, and the center's readiness to provide advice and support to update the Consolidated Management plan for the property in accordance with the Operational Guidelines for the Implementation of the World Heritage Convention, and training the workers on the application of mechanisms and measures that ensure the preservation of the OUV of the property.

Among the most prominent results of the meetings is the preparation for signing a cooperation agreement with the ARC-WH for the Protection of the natural components, in addition to holding two workshops:

- A training workshop on the World Heritage Convention and the demonstration of the OUV of the natural components of the Ahwar World Heritage property.



Picture No. (18): Training workshop on the World Heritage Convention and the OUV

- Training course on inventory and analysis of threats to the safety of natural values in the Ahwar of southern Iraq for the World Heritage property in three governorates (Maysan, Basra and Thi-Qar) targeting workers at the site (Annex No. 3).
- E- Establishing a management site for the natural component of (The Huwaizah Marshes) within the buffer zone for Huwaizah Marshes in Maysan Governorate. The project consists of a meeting room, health groups, mooring and green spaces. The project's designs were characterized by their imitation of the cultural heritage of the marsh environment and the Sumerian civilization, and the use of environmentally friendly building materials with the help of a group of traditional professionals who have experience in constructing this type of buildings of a folkloric nature, in order to ensure the preservation of the historical value of the area. It was established to enhance the importance of the marshes as a world heritage property by supporting scientific and tourism activities, providing reception places for scientific and official delegations coming to the marsh areas, holding meetings and conferences, in addition to being an administrative site.





Picture No. (19): The administration site for the natural component of the Al-Huwaizah marshes

I- In the field of research, studies and scientific activities, many researches have been published that dealt with the biodiversity of the marshes in general, including the natural components of the property. To view these researches, see Annex No. (5).

*11-Acknowledging the planned development of a comprehensive tourism management plan in 2020, further reiterates its request to the State Party to develop and implement an overall tourism plan for the whole property to regulate visitation, and to ensure visitor safety and sustainable tourism practices, infrastructure and facilities, and noting the development of tourism projects, including a proposed hotel and ecotourism complex within the marshes, requests moreover the State Party to assess the potential impacts of any infrastructure development on the OUV of the property through Environmental Impact Assessment processes in line with IUCN and ICOMOS guidance, prior to taking any decision to proceed, and to submit plans to the World Heritage Centre for review by the Advisory Bodies before any irreversible decisions are taken.*

**With regard to tourism within the cultural components:**

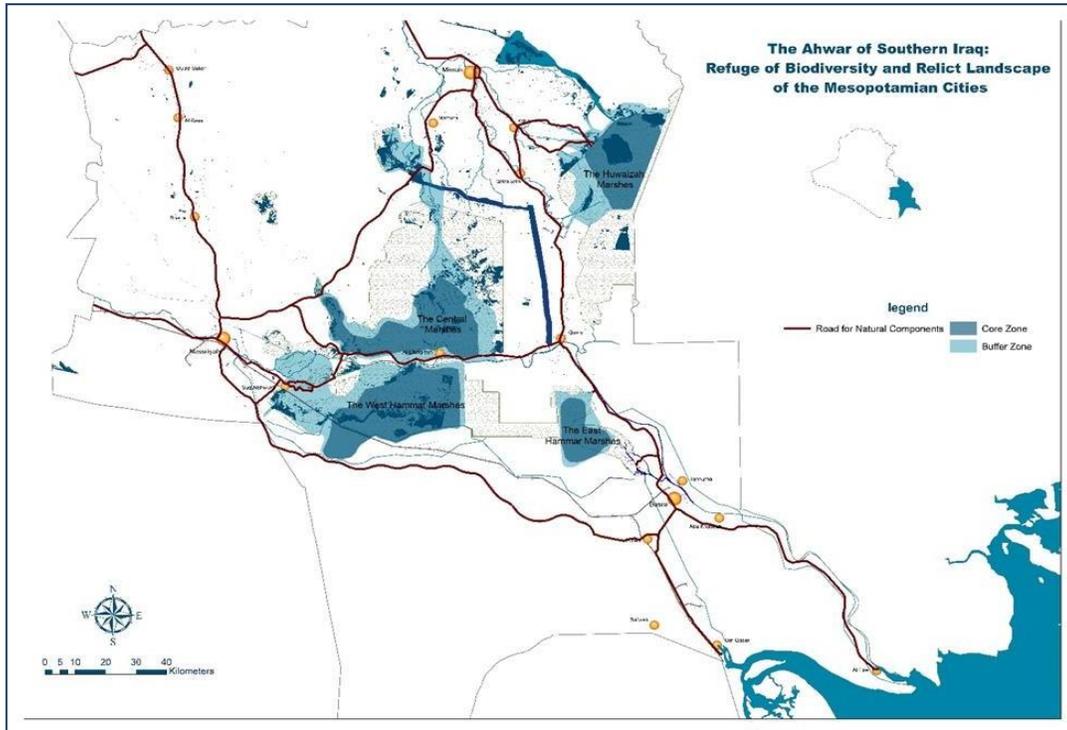
- A- Organizing the entry of visitors, expatriates and tourists to the Ur cultural component in a smooth manner that differs from what we were witnessing in previous years, in addition to hosting delegations and influential figures in the world such as the visit of Pope Francis and government delegations to the site.
- B- In August of 2021, a new electric car was purchased to transport visitors and tourists. The car was provided by the United Nations Development Program and the European Union and implemented by the Italian organization UPP. This work was within the vision of protecting and preserving the authenticity of the Ur site in accordance with the international standards enacted by UNESCO and required in the management of sites listed on the UNESCO list.
- C- Among the things that were provided during the second half of 2021 was the purchase of a folkloric carriage with a horse, as well as a bicycle that accommodates six people, which was not known or existed previously, as well as the preparation and installation of surveillance cameras in different areas with a recording capacity of not less than 300 m, so that all areas of Ur city are controlled by monitoring everything that is happening in the city if any violations occurred or it was exposed to challenges and problems due to the large area of the city,

which exceeded 60 acres. And also the preparation and installation of headphones to direct visitors in different areas and along the wooden path, provided by the United Nations Development Program UNDP and the European Union and implemented by the Italian organization UPP.

- D- Rehabilitation of the visitors' resting place by paying attention to all the details of that place (such as health facilities and seating). In addition to erecting 2 mobile booths to meet the needs of tourists, taking into account the rules and provisions for not distorting the ancient historical city, as these works were outside the archaeological area.
- E- Raising the railway track and constructing a new weather-resistant wooden walkway with a width of 1.5 m with galvanized iron corners fixed to the sides and raised from the ground at a distance of no less than 10 cm. Provided by the United Nations Development Program UNDB and the European Union and implemented by the Italian organization UPP.
- F- Supplying and installing high quality lighting lamps in different areas.
- G- Architectural stereoscopic work (moquette) representing the main features of the ancient city.
- H- Establishing a wooden rest station at point B, which represents the end of the wooden path, according to the architectural and construction plans, using treated wood that can withstand weather conditions with a seating bench, according to the special conditions in the management of the archaeological site. Provided by the United Nations Development Program UNDP and the European Union and implemented by the Italian organization UPP.
- I- In August of 2021, three electric cars were maintained, which included replacing batteries and tires, and rehabilitation of the cars.
- II- It was approved to print identifying, indicative and warning signs for the archaeological Ur site.

**With regard to tourism within the natural components:**

The Ministry of Water Resources, represented by the CRIMW- Ecotourism Department, has prepared a map of paths for tourist delegations within the natural components of the property, which regulates the movement of tourists in a way that ensures that the OUV of the property is not harmed.



Map No. (6) paths of the tourist delegations

Guidance panels have also been erected near the natural components (the Central Marshes and the Western Hammar Marshes) for the marshes property to show the measures to be taken by the tourists, The installation of other Guidance panels will continue in other qualified sites within the natural components of Al-Hawizeh and East Hammar marshes.



Picture No. (20): guiding panels

### **Regarding the completion of a comprehensive tourism plan within the Ahwar property:**

In seeking to achieve a comprehensive plan for the management of tourism in the marshes property through the steps led by Higher Committee for the Implementation of the Management Plan for the Marshes of southern Iraq as a world Heritage property and in coordination between the ministries of culture, tourism, antiquities, environment and water resources. The Ministry of Environment has completed the preparation of instructions for regulating ecotourism in the property, which were formulated by a national committee to prepare instructions for ecotourism in world heritage properties and reserves and submitted to the State Council for approval. The Ministry of Culture, Tourism and Antiquities, through the Tourism Authority, had a major role in preparing these instructions, which are the nucleus for preparing a comprehensive tourism plan. The instructions included:

- A- The tourism Authority shall prepare semi-annual reports within its plan for tourism companies officially registered with the Authority
- B- Determining the travel and tourism companies specialized in ecotourism, which are committed to providing the Tourism Authority with tourism programs and preparing the tourists coming to the component.

### **With regard to education and awareness raising in the development of tourism within the Ahwar property:**

- Launching a project to support the residents of Al- Huwaizah Marshlands, which will be implemented in Maysan Governorate by the United Nations Development Program on December 17, 2020, with the aim of diversifying livelihoods through the development of eco-tourism.
- The Ministry of Youth and Sports held a natural sports festival in the marshes of Al- Chibayish district in Thi-Qar governorate in cooperation with Thi-Qar Governorate and the Ministry of Water Resources - CRIMW. The festival lasted for five days, and included many sports, artistic and cultural events aimed at highlighting the Marshlands region in terms of tourism, culture and society, in addition to presenting purposeful events of heritage and poetry with a social and tourist dimension. The activities also included organizing boat races, fishing and poetry nights, as well as an exhibition and a bazaar for

handicrafts, to encourage the practice of natural sports and shed light on the environmental reality of the Iraqi marshlands.

- Al-Kafeel University held a scientific symposium entitled Requirements for the development of water tourism in the Ahwar of southern Iraq on 19/6/2021, which dealt with a historical overview of the emergence of the marshes and the opinions of researchers on how it formed. It also emphasized the importance of those areas in serving the population by providing them with job opportunities, in addition to their importance in improving climate conditions on the one hand, and being important areas for storing the waters of the Tigris and Euphrates rivers, especially during the flood season.



Picture No. (21): A scientific symposium

***12-Recalling its significant concern over the continued vulnerability of the natural components of the property to oil and gas developments and its established position that oil and gas exploration and exploitation are incompatible with World Heritage status, notes with appreciation the confirmation by the Higher Committee in 2020 that oil companies are required to not carry out oil exploration activities within the boundaries of the property, and that any oil activities outside the property should not cause harm to the property; strongly urges again the State Party to make a permanent commitment to not explore or exploit oil and gas within the property, and to ensure that any such activities outside the property do not cause a negative impact on its OUV, and requests moreover the State Party to clarify the status of any oil and gas developments within or in the vicinity of the property, including the assessment of potential impacts on the OUV of the property in line with the IUCN and ICOMOS guidance;***

Iraq confirms its commitment to ensure that no oil activity or exploration is carried out in the areas adjacent to the natural components of the Ahwar property except after obtaining the approval of the National Committee for the Management of the Marshes as a World Heritage property, and following up on the implementation of the recommendation approved by the fifteenth meeting of the National Committee for the Management of the Marshes as a World Heritage property, which states To (oblige the oil companies not to carry out any development process for the oil industries or any investments without coordination with the National Committee and not to prejudice the boundaries of the property with the possibility of carrying out these works outside the boundaries of the property in a way that does not cause damage to the property itself) and this was circulated in an official letter to all oil companies With constant assurance of adherence to it.

The monitoring work is also continuing on the activities of the oil companies in the areas surrounding the property, and the Basra Oil Company has been obligated to provide the property's administrations with complete information on the water sources used in a way that does not affect the shares of the water marshes in the oil extraction operations and environmental impact reports that have been approved by the Ministry of environment, in addition to continuous coordination regarding future plans for the oil fields with the Ministry of Oil in a way that does not affect the OUV, especially the Majnoon oil field. In conjunction with the monitoring

procedures, the work of the Committee to Ensure Good and Implement of the Ecosystem for the Marshes Property, emanating from Higher Committee for the Implementation of the Management Plan for the Marshes of southern Iraq as a world Heritage property, continues to follow up the works and oil explorations adjacent to the borders of the natural components of the Ahwar property, While a number of measures were taken by the oil companies that contributed to enhancing the protection of the environmental and cultural heritage of the property, such as the establishment of an integrated treatment program by the Rumaila Oil Field Operating Authority for the purpose of treating associated water, where the treatment rate reached 95%. And Treating oil leaks in West Qurna 1 field and replacing damaged pipes with new ones, knowing that all oil ponds in the field are lined and there is no groundwater pollution, in addition to placing a BRC fence around the ponds in the oil field to prevent entry of animals, Noting that all the oil activities that were mentioned are outside the natural components of the Ahwar property.

The investment oil companies operating in the oil fields near the two natural components of the east Hammar marshes and the West Hammar Marshes of the marshes property are obliged to treat the pollutants resulting from extractive and exploratory operations by adopting modern techniques in treating the oil pollution resulting from these operations in order to reduce the level of pollution. The Ministry of Oil, and specifically the Basra Oil Company, is committed to treating and reducing pollution resulting from its work, and it seeks to implement the national plan set by the Ministry to address the negative effects that oil production operations leave on the environment, for the purpose of eliminating waste associated with production, such as oil ponds and their waste and burning gas accompanying extractive operations

Treating oil ponds and their waste and burning gas requires treating them on two levels, the first of which is to stop the waste in production, and the second is to create a healthy environment far from the risks of pollution, Where the Iraqi Ministry of Oil has developed a joint strategy with international companies operating in Iraq on addressing the environmental impacts resulting from oil extraction and production, as well as Investing associated gas as an essential step to reduce the pollution resulting from it, To view the measures taken by the oil companies in this field, see Annex No. (6)

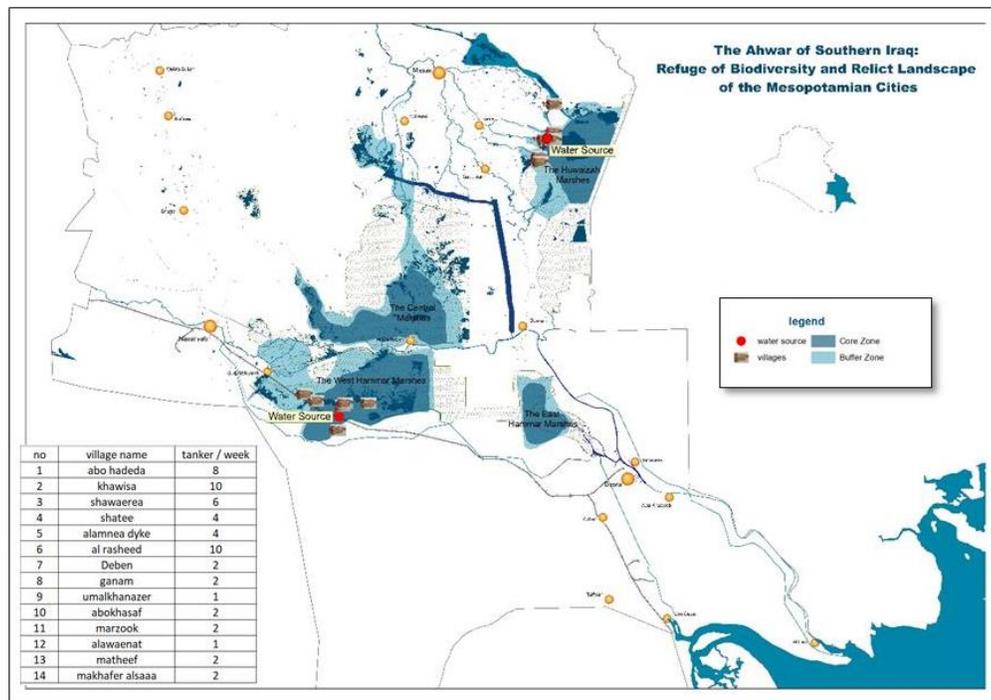
***13-Requests moreover the State Party to continue to meaningfully engage with the local communities on a range of management issues, including matters concerning hunting and fishing, water usage, rights-based approaches to management and for the application of traditional ecological knowledge to any planned new constructions;***

Activities aimed at involving the local population in the management of the Ahwar property are still continuing, in a serious and effective manner, by the supervisors of the implementation of the management plans. This is reflected in the constant keenness to attend the representatives of the local population in the periodic meetings of the National Committee for the Management of the Marshes as a World Heritage property and to contribute to the work of the sub-committees formed by the committee. Many activities were also organized during 2021 that support interaction between decision makers, researchers and beneficiaries, whether at the level of the local population or the governorates within whose borders the components of the property lie, in addition to spreading awareness and education of the importance of protecting and preserving the natural and cultural values of the marshes of southern Iraq, Regulating the use of resources for natural components in a manner that ensures a balance between ecological restoration, livelihood preservation and marshland-based culture, within permissible frameworks and practices in accordance with guidelines and management plans, and in accordance with the guidelines of the International Union for Conservation of Nature. These events included:

- A- The Ministry of Youth and Sports - Department of Youth Culture and Arts - Department of Psychosocial Rehabilitation to Combat Extremism held a festival (Exploration Trips of Archeology and Marshes) in Basra Governorate in cooperation with the College of Fine Arts at the University of Basra and the Directorates of Youth and Sports of Basra and Salah al-Din, during the period from 5 to 9 of The month of December 2021, young men from the governorates of Salah al-Din, Anbar and Baghdad were accompanied, as well as young people from Basra governorate
- B- Organizing the first international scientific conference on the environment of the marshes and water bodies during the period from 17-18 November 2021 by the Center for Marsh Research at the University of Thi-Qar, under the slogan

- Conserving water bodies from the impact of environmental changes and human interventions, with the participation of researchers from the United States, Russia, Iran, Bahrain, Syria and Egypt, as well as researchers and specialists from various Iraqi universities. At the conclusion of the conference sessions, several important and diverse research and studies were presented, through which they shed light on the reality of the marshes and the challenges it faces, as they included a number of scientific themes and in various fields, including biodiversity, preserving the environment of the marshes, water treatment, industrial waste, sustainable environment, water resource management and others

In order to maintain communication with the local population and interact with their living conditions and to secure the requirements and means of decent livelihood for them to ensure social and economic stability in the marshlands in general, including the natural components of the property, drinking water is provided to citizens and livestock by transporting water in water trucks to the villages adjacent to the natural components of the marshes property , and the map below shows the locations of these villages.



Map No. (7): Villages adjacent sites for the natural components of the Ahwar property

***14-Regrets that the joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission to the property could not yet be undertaken as a result of the prevailing security and global health situation, and reiterates furthermore its request that the mission takes place as soon as possible;***

UNESCO was approached via e-mail on 10/27/2021, to inquire about the date of the mission's completion of its visit, and we were answered by the organization on 10/28/2021, that an attempt will be made to organize the visit with IUCN and ICOMOS after discussing the matter with the relevant authorities, we were not informed of the date of the visit, as shown in Annex No. (9)

## 5. SIGNATURE OF THE CONCERNED AUTHORITY

A handwritten signature in red ink, consisting of a large, loopy oval shape at the top, followed by a horizontal line, and a small, stylized mark at the bottom.

Mahdi Rasheed Al-Hamdani

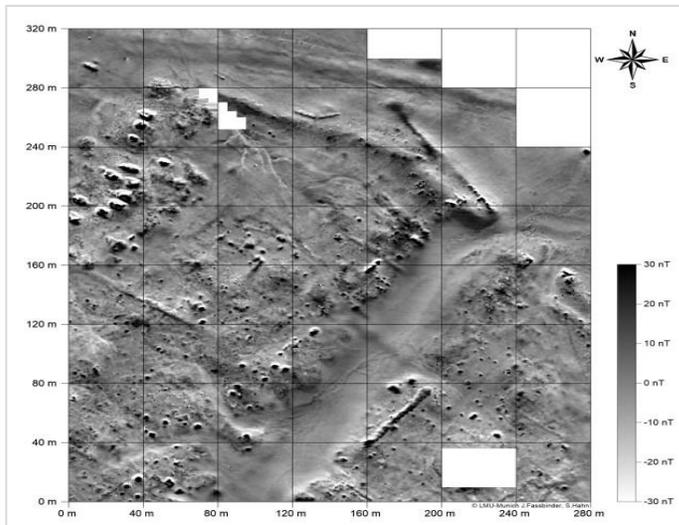
Head of the Higher Committee for the Implementation of the  
Management Plan for the Ahwar of southern Iraq as a world  
Heritage property

Minister of Water Resources of the Republic of Iraq

Annex No.(1)  
Maintenance and development work at the archaeological site of Ur

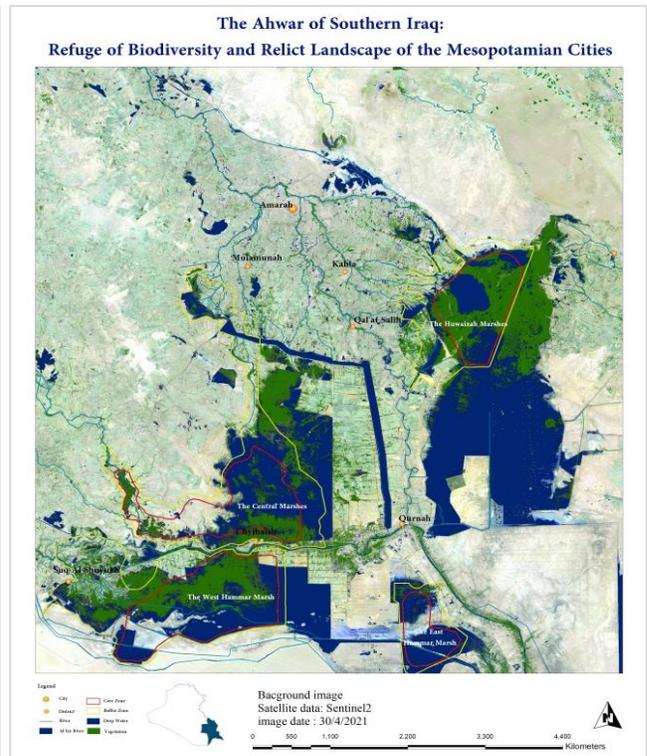
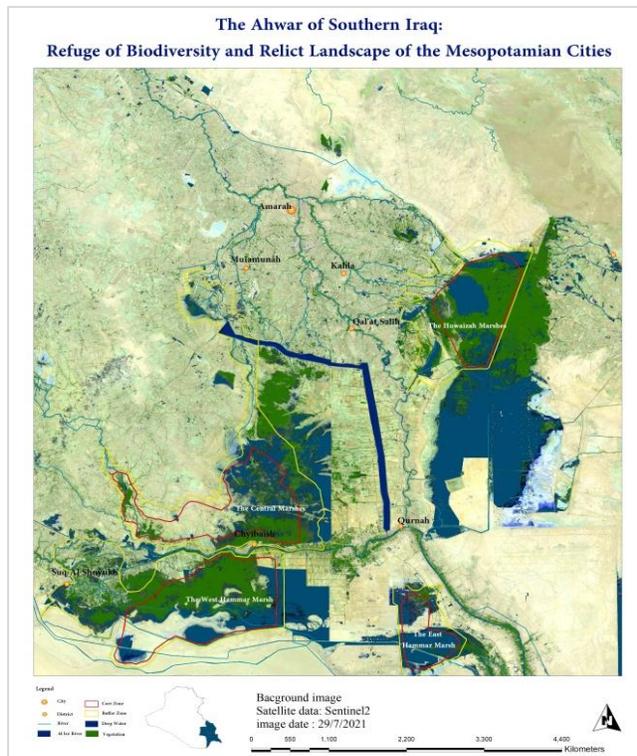
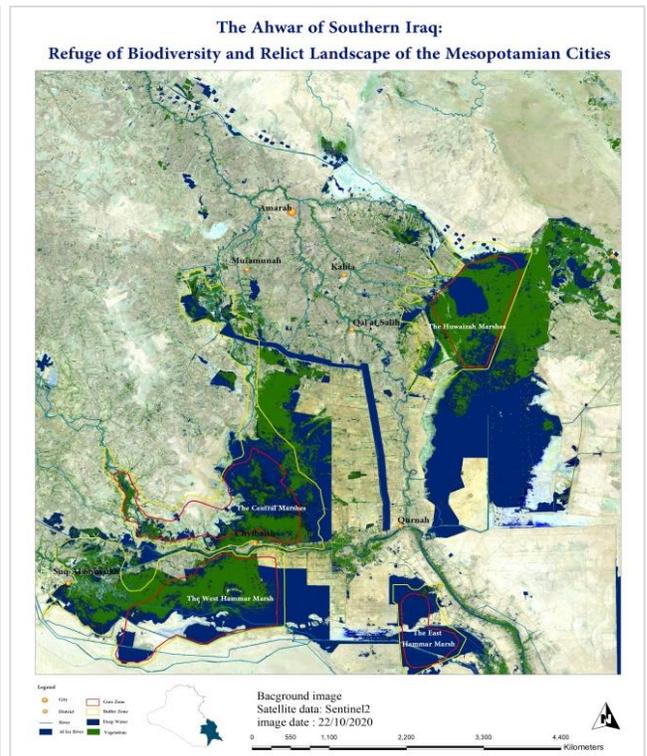
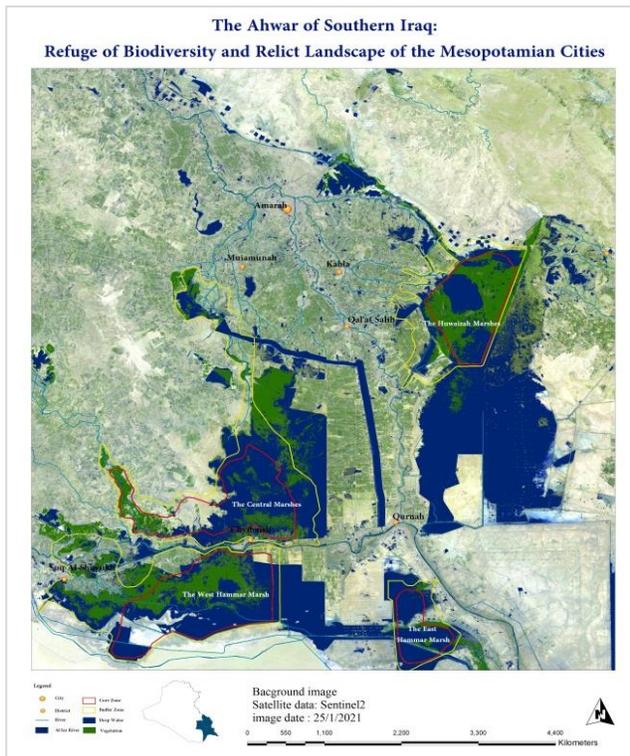


# Maintenance and development work at the archaeological site of Uruk



Annex No.(2)

Satellite image shows samples of the periodic monitoring of the flood areas & vegetation area into the natural components for the water year 2021



Annex No.(3)

Technical Capacity Building Program for the Preservation of Outstanding Universal Value (OUV)  
in the Ahwar of Southern Iraq for World Heritage with the Arab regional Center for World

Implementation framework for the training workshop on inventory and analysis of threats to the safety of the natural values of the Ahwar of Southern Iraq's world heritage property.

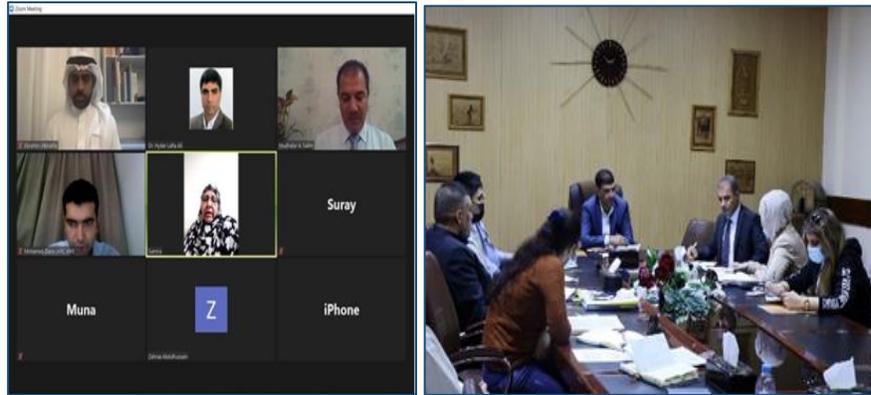
after the meetings at the headquarters of (CRIMW) and agreement on the recommendations of the training workshop that was held on 4-9 January - January 2022, and after preparing the project proposal document on threats submitted by ARC-WH, the details and the mechanism for implementing the applied training during the above workshop were agreed upon with the concerned team in the center and as follows:

- the training period will be six days (4-9 - January 2022), knowing that the trainer will continue to follow up the implementation of inventory and evaluation surveys in the center until they are completed and forms are filled out.
- The place of training will be in the governorates: Basra, Thi-Qar, and Maysan.
- The training includes two parts: a theoretical part and an applied field part.
- The period of the theoretical part is one day, implemented in each governorate.
- The period of the field part is one day, implemented in each governorate.
- The category participating in the training includes cadres representing the following entities: The Ministry of Water Resources (Center for the Revitalization of the Marshes / Baghdad) (2 participants)

The center for the Revitalization of the marshes in the southern governorates (Basra, Maysan, Thi-qar) (28 participants)

participants from local universities (10 participants)

total of trainees (40 trainees) for the three governorates



Meetings with the Arab Regional Center for World Heritage

### Implementation Mechanism:

- The center coordinates training, prepares and directs invitations through official correspondence with the concerned authorities.
- The training material and the training procedure is being prepared by the expert, Mr. Mudhfar Abdel-Baqi from the ARC-WH.
- The presence of participants and the training hall settings are organized by the departments of CRIMW in the three southern governorates.
- Everything related to the topic of inventory and analysis of threats will be presented during the two days of theoretical training and the details will be enriched through the interactive participant by the participants.
- The theoretical sessions are followed by a field application in a suitable location in one of the four components of the marshes property in each governorate, through which the participants fill in the threats forms, and the logistical preparations for the field trip are carried out by the departments of the Marsh Revitalization Center in the three southern governorates.
- For the purpose of covering the four natural components as required, the participants will continue to carry out the process of inventory and analysis of threats after training in areas to be determined later during the training.
- The trainer will follow up the implementation of threat surveys with the field teams in the three governorates until the end of the surveys and prepare all required forms.

- The trainer collects and analyzes data to prepare the updated threat tables (an additional output from the training) which will update the old threat tables in the plan prepared by the Ministry of Environment for the management of natural components.
- The trainer will prepare the training technical report containing the results of the surveys and the updated threat tables.
- The trainer will assist the field team in preparing a future periodic monitoring plan for inventorying and evaluating the threats to the natural components of the property.

### **The 14 primary threats/factors**

The standard list of threats/factors affecting the Outstanding Universal Value of World Heritage properties consists of a series of 14 primary factors, encompassing each a number of secondary factors.

	Factor	Sub-Factor
1.	Buildings and Development	Housing
		Commercial development
		Industrial areas
		Major visitor accommodation and associated infrastructure
		Interpretative and visitation facilities
2.	Transportation Infrastructure	Ground transport infrastructure
		Air transport infrastructure
		Marine transport infrastructure
		Effects arising from use of transportation infrastructure
		Underground transport infrastructure
3.	Utilities or Service Infrastructure Developments in relation to infrastructure for energy utilities (i.e. gas, electricity and water) and other service requirements	Water infrastructure
		Renewable energy facilities
		Non-renewable energy facilities
		Localized utilities
		Major linear utilities
4.	Pollution All types of pollution (residential or commercial) as well as garbage, solid waste.	Pollution of marine waters
		Ground water pollution
		Surface water pollution
		Air pollution
		Solid waste
		Input of excess energy

5.	Biological resource use/modification The collecting/harvesting of wild plants and animals (forestry, fishing, hunting and gathering) and harvesting domesticated species (silviculture, agriculture and aquaculture)	Fishing/collecting aquatic resources
		Aquaculture
		Land conversion
		Livestock farming/grazing of domesticated animals
		Crop production
		Commercial wild plant collection
		Subsistence wild plant collection Use this question for Indigenous subsistence hunting, gathering and collecting, i.e. not for economic benefit, for example:
		Commercial hunting
		Subsistence hunting
6.	Physical resource extraction	Forestry /wood production
		Physical resource extraction If illegal see "Other human activities"
		Mining
		Quarrying
		Oil and gas
7.	Local conditions affecting physical fabric Environmental or biological factors that promote or contribute to deterioration processes of the fabric of heritage sites.	Water extraction
		Wind
		Relative humidity
		Temperature
		Radiation/light
		Dust
		Water (Rain/Water table)
		Pests
Micro-organisms		
8.	Social/cultural uses of heritage Social factors that contribute to deterioration processes of the fabric of heritage sites.	Ritual/spiritual/religious and associative uses
		Society's valuing of heritage
		Indigenous hunting, gathering and collecting
		Changes in traditional ways of life and knowledge system
		Identity, social cohesion, changes in local population and community
		Impacts of tourism/visitor/recreation
9.	Other human activities Note Use "Social/cultural uses of heritage" for impacts on local communities	Illegal activities
		Deliberate destruction of heritage
		Military training
		War
		Terrorism

		Civil unrest
10.	Climate change and severe weather events	Storms
		Flooding
		Drought
		Desertification
		Changes to oceanic waters
		Temperature change
		Other climate change impacts
11.	Sudden ecological or geological events	Volcanic eruption
		Earthquake
		Tsunami/tidal wave
		Avalanche / landslide
		Erosion and siltation/deposition
		Fire (wildfires)
12.	Invasive/alien species or hyper-abundant species	Translocated species
		Invasive/alien terrestrial species
		Invasive / alien freshwater species
		Invasive/alien marine species
		Hyper-abundant species
		Modified genetic material
13.	Management and institutional factors	Management System/Management Plan
		Low impact research/monitoring activities
		Governance
		High impact research/monitoring activities
		Management activities
		Financial resources
		Human resources
14.	Other factor(s)	



Workshop in Basrah

Workshop in Maysan



Workshop in Thi-Qar

Annex No. (4): releasing fingerlings of fish and erecting signifiers



Awareness panels about poaching within the sites of the natural components of the property

Annex (5):  
Maintenance work for the natural components of the property



Lifting jams



river conditioning



Removing Invasive Plants (Nile Flower)



Maintenance work for regulators at the entrances and exits of natural components



River rehabilitation

## **Studying the Diversity of Freshwater Ecosystems in Iraq. Do We Need Different Approaches?**

**Ahmed Sabah Al-Jasimee<sup>1</sup>, Salwan Ali Abed<sup>2</sup>, Mudhafar A. Salim<sup>3</sup>, Qusay Jabbar Harjan<sup>4</sup>**

<sup>1,2,4</sup> College of Science, University of Al-Qadisiyah, P.O.Box.1895, Iraq

<sup>3</sup> Arab Regional Center for World Heritage –Manama, Bahrain  
ahmed.sabah@qu.edu.iq, Salwan.abed@qu.edu.iq

### **Abstract**

Freshwater ecosystems have been studied across the world as an effective tool for better understanding of the relationship between biotic and abiotic factors; however, no much attention to ecological studies has been given to reveal biodiversity of Iraqi freshwaters. All of which is due to relying on classical methods of assessment of freshwaters, such as water pollution assessment, toxicity studies, and few and other studies on the freshwater microbiology, hence, these kinds of studies are still crucial. Other new approaches should be given into consideration when studying the biodiversity of the freshwater ecosystems and taxa in Iraq. Studies such as food webs, as well as stream hydrological studies, functional biodiversity, and other approaches are still necessary to be tackled as different prospective. Such new approaches can help to understand various conditions threaten aquatic biota and their habitat, and to mitigate the effect of the climate change, and then to contribute in paving the way toward better management of water resources and human services.

**Kyewords:**biodiversity, climate change, ecosystem services, food webs, freshwater, Iraq.

## **The Immediate and Subsequent Effects of Climate Change on the Threatened Bird Species in the Marshes of Southern Iraq (Ahwar)1**

**Mudhafar A. Salim1, Salwan A. Abed2**

<sup>1</sup>The Arab Regional Center for World Heritage, Manama, Kingdom of Bahrain.

<sup>2</sup> College of Science, University of Al-Qadisiyah, P.O.Box.1895, Iraq.  
[Salwan.abed@qu.edu.iq](mailto:Salwan.abed@qu.edu.iq)

### **Abstract**

The marshes of southern Iraq (Ahwar) represent one of the key freshwater inland marshes ecosystems on the global level. It was inscribed as World Heritage property on the UNESCO list at 2016 as mixed (cultural and natural), serial property, demonstrating four out of the ten World Heritage criteria due to the presence of the cultural and natural Outstanding Universal Values. The attributes that are holding the values of this vulnerable marshlands complex are facing list of serious threats that affected, and still doing, the integrity of this fragile ecosystem of which the shortage of the water resulted by the climate change has affected the entire watershed that feeds Tigris and Euphrates Rivers - the only sources that nourish these marshes with the fresh waters.

As an attempt to understanding the pressures of the climate change on the threatened breeding and non-breeding bird species in the Ahwar, the team has conducted sessions of fieldwork and deskwork represented by literature revision and recent and historical satellite images in order to analyze the direct

and indirect effects of the climate change on the habitats that harbor the threatened bird species in the Ahwar.

The study has concluded that the climate change affects directly and indirectly the ecosystem of the Ahwar area significantly; subsequently it also affects the birds in general and the threatened birds in particular either through the habitat loss or disappearing of the foraging areas. The paper has also demonstrated an outlook for the future status of the threatened bird species in the Ahwar.

**Keywords:** Climate Change, Marshes of Southern Iraq, Ahwar, Threatened Birds.

### **The Current Status and Population Estimation of the Threatened Bird Species in the Ahwar of Southern Iraq - Conservation and Management Approach**

Mudhafar A. Salim, Arab Regional Centre for World Heritage. Manama, the Kingdom of Bahrain.

#### **Abstract**

The marshes of Southern Iraq, or 'Ahwar', are vast freshwater wetlands that extend over an area of more than 2000 km<sup>2</sup> in southern Iraq. These wetlands consist of four major components of which each component has its own environmental features and importance. The Ahwar has been inscribed as a World Heritage property in 2016 for the outstanding universal cultural and natural values (OUV) that it possesses. One of the key attributes for this exceptional environmental value was because it provides a unique spot of well-diverse freshwater wetlands habitats for considerable numbers of birds of which some of them are quite important or threatened on the global level. The current study has shed the light on the current status of the fourteen globally-threatened bird species (both, breeding or non-breeding) found in the Ahwar, and described their habitats and their current conservation status of which nine of them are waterbirds, and five of them are water-related bird species or those who can be found frequently around and within the Ahwar. The latter group of birds mainly use the buffer zone in addition to some dry extensions within the natural components of the Ahwar. In addition, the current research demonstrated, for the first time in Iraq, a recent population estimation of these migrant and resident bird species in the Ahwar area in order to establish a baseline for their monitoring future programs. The latest version of the IUCN Red List (Version 3.1) has been adopted in categorizing the conservation status of the birds in this paper. This study also briefly described the current status of the fourteen bird species that has been assessed on regional level (Regional Assessment) that live inside and around the Ahwar. The key threats and factors to the threatened birds and their habitats in the Ahwar were (but not restricted to): habitats destruction, shortage of water, poaching, and disturbance. Some more types of threats have been observed as well, however, on less effect. By tackling this key aspect of biodiversity (the birds) of the Ahwar for the first time, highlighting the major threats to the threatened birds of this important area, and by estimating their numbers and describing their spatial distribution, this paper contributes in prioritizing the conservation efforts of the birds in the unique freshwater ecosystem of the Ahwar.

**Keywords:** Ahwar, Iraqi Marshes, Threatened birds, World Heritage property.

## **Classification of The Key Functional Diversity of the Marshes of Southern Iraq Marshes** **Kadhim J L Al-Zaidy, Giuliana Parisi, Salwan Ali Abed andMudhafar A Salim**

IOP Conf. Series: Journal of Physics: Conf. Series **1294** (2019) 072021

**Abstract:** The term "marshes" refers to the wetlands that are almost of shallow water with relatively dense plant cover, mainly of prominent plants (such as *Phragmites* and *Typha*), or other submerged plants. The marshes of Southern Iraq (Ahwar) are of unique environmental and cultural features that rarely meet in similar habitats worldwide.. They are the most distinctive wetlands in Southwest Asia and worldwide as well. In some times in the past, these wetlands used to cover more than 15,000 km<sup>2</sup>, however, now it consists of less than this area. Functional diversity is fundamentally considered as a guide to comprehend the nature of ecosystem work. Despite the possession of the marshes of Southern Iraq for many major and minor functions, no study to determine the function diversity of this area was conducted. The present study aims to classify the major functions of the Iraqi marshlands, and then to develop a general framework to determine the extent of the decrease or increase in those functions as a result of the different influences. Also, the current study provides the criteria in preparing estimates for Iraqi marshes rehabilitation programs.

**Keywords:** Iraq, marsh, Functional diversity, Cultural and Natural Heritage.

### **Marsh and Swamp Conservation: Global evidence for the effects of interventions**

**Nigel G. Taylor, Patrick Grillas, Rebecca K. Smith & William J. Sutherland**

**CONSERVATION EVIDENCE SERIES SYNOPSES.** University of Cambridge, Cambridge, UK.

#### **12.4.2 Raise water level to restore/create brackish/salt marshes from other land uses**

Two studies evaluated the effects, on vegetation, of raising the water level to restore/create brackish/salt marshes from other land uses or habitat types. Both studies were in the same area of Iraq, but used different study sites.

##### **VEGETATION COMMUNITY**

Community types (1 study): One before-and-after study of a slightly brackish marsh in Iraq<sup>2</sup> reported that fewer plant community types were present three years after reflooding than before drainage.

Overall richness/diversity (2 studies): Two before-and-after studies of brackish marshes in Iraq<sup>1,2</sup> reported that fewer plant species were present three years after reflooding than before drainage. One of these studies<sup>2</sup> also reported that individual plant communities typically had lower diversity after reflooding than before drainage.

##### **VEGETATION ABUNDANCE**

Overall abundance (1 study): One before-and-after study of a slightly brackish marsh in Iraq<sup>2</sup> reported that six of seven studied plant communities had lower spring and/or summer biomass three years after reflooding than before drainage.

### **Phytoplankton and Primary Production in Iraqi Marshes**

Bahram K. Maulood and Fikrat M. Hassan

Chapter 12, Springer Nature Switzerland AG 2021, Southern Iraq's Marshes, Coastal Research Library 36,

[https://doi.org/10.1007/978-3-030-66238-7\\_12](https://doi.org/10.1007/978-3-030-66238-7_12),

**Abstract** L Mesopotamian marshes were once quite famous by their biodiversity and cultural richness. In fact, the area is an important stopover along the flyway of millions of migratory birds between Europe and Africa. However southern Iraqi marshes had faced a deliberate drainage by previous regime in Iraq, and there are several efforts to restore it again. These marshes consist of eastern, central, and southern part that is fed with different sources of water from Tigris, Euphrates, and Shatt al-Arab Rivers. The most obvious feature of algal vegetation in this area is the dominance of filamentous epiphytes with other free floating filamentous algae. Algal habitats include reed stems, lime-encrusted algal felt, and submerged parts of wood and boats. In such habitats, *Chaetophora incrassata*, *Lyngbya*, *Calothrix*, *Aphanocapsa*, *Tolypothrix*, and *Schizothrix* are found, besides heterocystous blue-green algae which are common epiphytic flora. On the other hand, diatoms are dominant followed by Cyanophyta,

Chlorophyta, Cryptophyceae, Pyrrophyceae, and Euglenophyceae. Generally, there are two peaks of phytoplankton bloom that have been recorded: one in autumn and the other in June–July. Chlorophyll a concentration had shown different values at different stations; generally it ranges between 0.15 and 21.2 µg/l. The Iraqi marshes are oligotrophic-mesotrophic before 2004, while these marshes are being toward eutrophic according to chlorophyll a concentration. Almost all primary productions within marshes are originated from the role of algae and macrophytes, with slight role played by phytoplankton. Primary productivity in Mesopotamian marshes had been estimated to be between 132 and 407 mg/carbon/m<sup>3</sup>/day estimated by light and dark bottle method. It seems that there are a lot of research to be done in the future regarding the Mesopotamian marshes particularly after the re-flooding process, which the job of the scientists in the near future.

Keywords Diatoms · South of Iraq · Basrah City · Wetlands · Phytoplankton.

### **Impact of Environmental Factors on Annelida: Oligochaeta in the Euphrates River, Al-Nassiriyah City - Southern Iraq**

Ghassan Adnan Ali

Indian Journal of Ecology (2021) 48 Special Issue (15): 1-10

**Abstract:** The present study aimed to investigate Annelida: Oligochaeta and diagnose species, as well as revealing the relationship between their population density and some environmental factors in three different stations of Euphrates river during July 2018 to June 2019. The water samples and sediments were collected monthly from the river. The results show two species of (Oligochaeta: Branchiura sowerbyi, Limnodrilus hoffmeisteri) along with new species of (Polychaeta; Namalycastis indica) that appeared at the southeast of the city Al-Nassiriyah (Ur sub district) in December 2018 only. The population densities of worms varied significantly, the total population density of Oligochaeta was maximum at second station (454 individual m<sup>-3</sup>) and minimum in third station (7 individual m<sup>-3</sup>) with no significant differences in three stations. The results of the present study showed that there was a significant difference in density population between second station and both first station and third station.

Keywords: Annelida, Population density, Euphrates river, Environmental factors, Oligochaeta

### **Molecular study to the fungus *Neosetophomasamarorum* was isolated from Al Chabaish marsh, South of Iraq**

Israa Ahmed Ali\*1, FaizaKadhimEmran\*1, Dunya Fareed Salloom

Annals of R.S.C.B., ISSN: 1583-6258, Vol. 25, Issue 5, 2021, Pages. 5702 - 5717

**ABSTRACT:** *Neosetophomasamarorum* is one of the phoma fungi put up with Ascomycota isolated from sea phoma. In this study, *N. samarorum* was isolated from Al Chabaish marsh, south of Iraq. This research aimed to the fungus *Neosetophomasamarorum*'s molecular characterization using ITS gene and phylogenetic structuring tree. From 35 samples of water collected from a different marsh area, eight samples were positive to *Neosetophomasamarorum* when cultured on PDA medium at 28°C, and 27 samples were negative fungus. Genetic diagnosis results for the fungus used specific primers for the ITS gene; this design, especially for this project, showed that 8 (22.8%) were positive. The fungus was diagnosis depending on the cultural feature and microscopic examination, and then PCR technology was used to ensure the diagnosis of this fungus. Primers (ITS) and phylogenetic structuring tree analysis were done by sequences and confirmation of microorganism's homogenous data using the database (NCBI) after amplifying Fungi's ribosomal RNA. The result showed the genetic affinity percentage of *N.*

*samarorum* between Germany and Canada is 99%, then among Poland, Canada and Germany are 99%, while between Netherland and Netherland is 96%, between Iran and China is 98%, and between Iran and China and Netherland are 96%.

**Keywords** *Neosetophomasamarorum*, Molecular study, DNA isolation, ITS, Al Chabaish Marsh, fungi.

## **ASIAN OTTER CONSERVATION NETWORK REPORT 2021**

Prof. PADMA DE SILVA

Asian Otter Conservation Network Report/ OTTER, Journal of the International Otter Survival Fund 2021, 1-5

2020 has been a very strange year across the world and many otter projects have had to be put on hold because of Covid-19 restrictions. This obviously effected World Otter Day events, and social media was an important tool in spreading information on otters worldwide. Many Asian countries still took part including Cambodia, Hong Kong, India, Iraq, Japan, Laos, Malaysia, Nepal, Pakistan, Singapore, Sri Lanka and Taiwan. Information about some of the activities is given below. IOSF has various educational resources available for workers in Asia on the website

(www.otter.org), including the IOSF video in Arabic, Chinese, Japanese, Nepalese, Khmer, Sinhalese, and Lao, as well as resources specifically for children, The IOSF education programme, Team Otter network is growing in Asia and there are now Team Otter clubs in Bangladesh, Laos, and Nepal with more planned for Malaysia and Nepal once restrictions allow.

**Iraq:** In February 2021 the first video footage of a Eurasian otter was taken in northern Iraq (Kurdistan). This footage was taken by Emily Garthwaite in the Rawandoz valley of Erbil province. This is the only documented video footage of this species in northern Iraq but Emily has seen otters in this region a number of times, and local communities report regular sightings. Emily is keen to work with IOSF to bring more attention to the plight of otters in Iraq and the Kurdistan Region. In 2021, Emily will be following the River Tigris from source to sea for three months, and will be investigating life along the Tigris.

IOSF's co-ordinator for the Middle East, Omar Al-Sheikhly is working on a project entitled "Art for Conservation" supported by Guan Eden. The aim of the project is to encourage young wildlife photographers to record the biodiversity of the area, including both the Eurasian and Maxwell's otter, a sub-species of smooth-coated otter, found only in Iraq and Iran. Photographers can obtain so much important data, as in the case of the photo taken at Mosul Dam by Bruce McLennan and Bob Zook in 2017. This was the first photographic record of the Eurasian otter in northern Iraq ever! (OTTER Journal Issue 3). Omar invited IOSF's Grace Yoxon to give a presentation on "Tools for Otter Conservation" in a Zoom meeting on 15 September 2020. With over 40 attendees it was great to see so many people who are passionate about otters and the Iraqi marshes and we are excited to work with the group moving forward. A report on the project by Omar is included in this issue of the *OTTER Journal*.

### **ART AS A CONSERVATION TOOL IN THE MESOPOTAMIAN MARSHES, SOUTHERN IRAQ, USING MAXWELL'S OTTER (*Lutrogale perspicillata maxwelli*) AS AN EXAMPLE**

AL-SHEIKHLY O.F and ABDULRAHMAN M. (2021): OTTER, Journal of the International Otter Survival Fund 2021, 21-25.

The current status of many of its indigenous species is enigmatic. Besides governmental contributions, efforts from independent researchers, environmental activists, and NGOs to conserve the native biota of the marshes were made since its inundation in early 2003. Since then, there has not been enough public awareness to conserve its key/flagship species of fauna and flora. According to Nature Iraq (2017), one of the impacts contributing to the decline of the native biodiversity in the Mesopotamian marshes has been

attributed to the lack of knowledge among local communities with only a few recent awareness campaigns. Furthermore, artwork and crafts made of reed and clay which represent the native biota of the region (e.g. otters, waterfowl, water buffalo, etc.) were considered as ancient traditional knowledge of the Marsh Arabs (indigenous inhabitants of the Mesopotamian marshes); Raising awareness to mitigate the loss of native biodiversity was one of the important issues highlighted by the International Union for conservation of Nature (IUCN) and the Biodiversity Conference of Parties COP 14. This was further emphasized by the Iraqi Ministry of Health and Environment (IMoHE) in its Sixth National Report to the Convention of Biodiversity as a Sustainable Development Goal (SDG-15), an issue which warrants further attention and urgent actions. Furthermore, the use of art as an effective tool to conserve one of Iraq's endemic species, Maxwell's otter, (*Lutrogale perspicillata maxwelli*) was recently highlighted, by Al-Sheikhly (2020).

### **SURVEY OF INSECTS IN SOME SOUTHERN IRAQI MARSHES**

Hanaa H. Al-Saffar and Razzaq Shalan Augul (2021): Iraq Natural History Research Center and Museum, University of Baghdad, Baghdad, Iraq. *Bull. Iraq nat. Hist. Mus.* (2021) 16 (4): 571- 621.

**ABSTRACT :** This study included a survey and review of the scientific names of the marsh insects (aquatic and surrounding it) for the purpose of unifying and updating the database. The survey reveals 109 species under 77 genera that belong to 32 families and 7 orders as follow: Coleoptera (44 species), Diptera (7 species) Ephemeroptera (2 species), Hemiptera (14 species), Hymenoptera (11 species), Lepidoptera (2 species) and Odonata with 29 species. Information of specimens' collection for each species, synonyms and geographical distribution were provided.

**Key words:** Insects, Iraq, Marshes, Survey, Synonyms.

### **Study of haemoflagellates *Trypanosoma* sp. infection in some fish of Iraq marshes and relationship of leukocytes with inflammatory response**

Jarallah, H M (2021): IOP Conf. Series: Earth and Environmental Science 877 , 012011.

**Abstract:** Fresh water fishes infected with different species of genus *Trypanosoma* parasite that is similar to that same genus in blood of mammals. Trypanosomiasis or sleeping sickness disease that causes by protozoa flagellate parasites which live inside cell called *Trypanosoma*. Fish parasites play an important role in regulating the population of their hosts. This study was implemented to verify the infection with *Trypanosoma* sp. report the cellular intervening through inflammatory response in blood smears of infected fishes. A total of 190 fishes of three species *Carasobarbus luteus*, *Aspius vorax* and *Liza abu* were collected from Al- Hamare and Al-Chibayish marsh south of Iraq. The flagellate parasite *Trypanosoma* sp. observed in blood of *Carasobarbus luteus* 41.42% and *Aspius vorax* 12.28% fishes, while no infection was recorded with *Trypanosoma* sp. in *Liza abu* fishes. Prevalence and mean intensity of infection were calculated. The different counts and various types of inflammatory cells were monitored, there are increased in lymphocytes in the infected fishes. Statistically, there are significant differences ( $p < 0.05$ ) among species of infected fish with *Trypanosoma* sp.

**Keywords** Fish, Parasites, *Trypanosoma* sp., Iraq marshes.

## **Ecosystem of Iraqi Marshlands**

### **Temporal and Spatial Changes of Some Chemical Properties of Waters at the Northern Part of Shatt al-Arab**

**Maha M. Al-Jawad, Dakhil R. Nedawi and Faiq Y. Al-Mansory**  
Indian Journal of Ecology (2021) 48 Special Issue (15): 1-10

**Abstract:** This study was conducted to determine some chemical properties of the water at the northern part of the Shatt al-Arab, and knowing the factors that affect the water quality at the study stations, dissolved oxygen and nitrate ion concentration has been studied in water. Water samples were taken from six stations ( Al-Ezz, Mezaira, Al-Swaib, Al-Shafi, Karmat Ali and Sinbad). Samples were collected seasonally at 2018. The study showed an increase in DO values at stations of the northern part of the study area, at Mezaira, Al-Ezz, Al-Swaib and Al-Shafi stations. Low values of DO towards the south of the study area (Karmat Ali and Sinbad Island). All values were within the normal limits for WHO, 2006. DO values increased during the winter compared to the values of spring, summer, and autumn seasons. DO values increased in the middle of the river compared to the left and right banks. DO values for surface depth (d1) increased compared to depths d2, d3. The study showed that the NO values decreased in stations of the northern part of the study area. It is noted that the values of the winter season increase 3 compared to the values of the spring, summer and autumn seasons. Height of the right bank of values compared to the values of the middle of the river and the left bank. Values rise in d1 compared to the values of d2, d3, where there was no difference between them.

Keywords: Temporal changes, Spatial Changes, Watr, Chemical properties, Shatt al-Arab

### **Invertebrates Associated with Snail *Radix auricularia* (Linnaeus, 1758) from Water Sites in Basrah Governorate, Iraq<sup>[8]</sup>**

**Noor Al-Huda Walled Abdel-Redha and Mortatha Yousif Al-Abbad**  
Indian Journal of Ecology (2021) 48 Special Issue (15): 131-134

**Abstract:** Samples of snails *Radix auricularia* (Linnaeus, 1758) were collected monthly from two water sites in Basrah Governorate (Al-Assafiyah and Al-Suwayb rivers) for a period of six months from October 2017 to March 2018. Four species of Oligochaeta: *Pristina proboscidea*, *P. aquiseta*, *P. longiseta*, *P. macrochaeta* were associated externally with the snails which collected from the Al-Assafiyah river. In Al-Suwayb River, four species of Oligochaeta were recorded: *P. proboscidea*, *P. aquiseta*, *P. longiseta*, *Aeolosoma leidy* and infestation snails with *Chaetogaster limnaei*. The aquatic insect larvae of Chironomidae were associated externally with snails collected from the Al-Assafiyah river while were not isolated from Al-Suwayb snails. Al-Suwayb snails were internally infected with three types of larvae belonging to *Ornithobilharzia turkestanicum*, *Monostome cercariae* and *Cecariaeum*. In Al- Assafiyah River, the infection was limited to two kinds belonging to *O. turkestanicum* and *Monostome*.

### **Southern Iraq's Marshes/ Their Environment and Conservation**

**Laith A. Jawad**

School of Environmental and Animal Sciences Unitec Institute of Technology Mt Albert New Zealand.

<https://link.springer.com/book/10.1007/978-3-030-66238-7>

The Mesopotamian marshes are important for economic, social, and biodiversity values and have been home to indigenous human communities for millennia. They are regarded as a legendary site. This multi-authored book contains chapters written by world-renowned experts in their field. Both basic and applied information are made available, making the book a must-have for a wide spectrum of users. For example, an understanding of the natural and the social aspects of the marshes, as described here, is an obvious prerequisite for a pest management plan in this area. Scholars interested in wetlands can use this book as a guide to compare different wetlands areas in Asia. The bibliography section contains valuable references to the marsh areas and research in the field. This book serves as an up-to-date comprehensive source of information on different aspects of the southern marshes of Iraq and is aimed at academic scholars, environmentalists, and decision makers.

## **The Water Shortage Crisis in Iraq**

Jaafar B. (2021): The Water Shortage Crisis in Iraq. BESA Center Perspectives Paper No. 2,140, August 31.

**EXECUTIVE SUMMARY:** The Middle East and North Africa are dry, with higher temperatures, fewer rivers, and less rain and snowfall than the rest of the world. Thanks to the Tigris and Euphrates rivers, Iraq is one of the richest countries in the region in terms of water resources—but millions of Iraqis nevertheless suffer from a lack of clean water as temperatures rise and desertification overtakes large parts of the country. This problem is badly mismanaged by the Iraqi government, as it is by other governments across the region, and is worsened by the malign actions of neighboring countries. If the water problem is not solved, Iraqi civilization could disappear completely.

## **The Aquatic Environment and Its Protection From Pollution (Marshes of Southern Iraq as a Model)**

Karim I Y, Makki M M, Salman A H, Al-Jassani A A (2021): IOP Conf. Series: Earth and Environmental Science , 012014.

**Abstract:** The decrease of the marshes of southern Iraq represents a major problem as result of climatic changes and human conditions, especially the decrease in the water revenue of the Tigris and Euphrates rivers, which has resulted in the expansion of soil problems from waterlogging, desertification and salinity in the soil of the governorates of Basra, Maysan and Dhi Qar. Al-Hawizeh [11 billion m<sup>3</sup> annually], and the decline of the marshes contributed to reducing the work of the Basra Paper Mill, which was previously working with about 168 tons of reed material, which had economic and social effects from 2002 to 2010 and now the marshes are fed with surface water, provided that this return The region with a wealth of fish and tourism represents the beating heart of Iraq.

## **Socioeconomic system**

### **The reality of investment tourism in the marshes of southern Iraq and its impact on the employment of manpower**

Naj Sari Faris

University of Basrah – Center of Arabian Gulf and Basrah Studies

#### **Abstract**

The investment of tourism in the marshes of southern Iraq is an attractive factor for tourists and satisfaction of their desires in terms of visiting the various natural places, and identify the topography and vegetation and wildlife, as well as identify communities living deep in the marshes in order to identify their customs and traditions. The marshes are one of the world's largest wetlands and rich in biodiversity, stretching across the banks of the Tigris and the Euphrates, and the inhabitants of the Marshlands live in reed-built houses that have long been built on islands in deep marshes. These islands have developed into cities and villages, including in Maysan (Upper Hungary and Al-Kahla), and in Dhi Qar (Chabaish, Fohud, Hamar) and other cities. In the province of Basra, these islands have developed and become economically important (Al-Madina, Hawair). The Marshlands of Iraq have significant economic resources. They are rich in plant, animal, waterfowl and fish resources that the Marshlands depend on for their livelihoods as well as their archaeological sites. Therefore, the importance of investing natural resources in the marshes for tourism purposes, especially that one of the most negative in Iraq is not to exploit nature reserves in the country for tourism purposes. Therefore, the reality of the marshes is

characterized by attracting tourism from all over the world in order to obtain the economic return and the operation of many manpower and in various fields that serve the tourism sector, as well as interest in the tourism sector, especially in the southern areas (marshes) will reduce poverty through Reduce the phenomenon of unemployment spread in the marshes, and this leads to the recovery of the marshes through the mixing of tourist culture with the culture of ancient Iraq in the southern marshes, and increase cultural awareness among residents of the southern marshlands. Therefore, the investment of the tourism sector is one of the main sectors that are no less important than other economic sectors because of the characteristic of this sector in the operation of large numbers of residents of tourist areas.

Annex No.(7): Actions taken by oil companies, in addition to researches and workshops about the



Work team surveys in oil field sites



Works of the chemical and biological materials treatment and destruction department in the North Rumaila field



Biological treatment works for oil ponds / West Qurna field 1



Mixing and soil leveling works/ West Qurna field 1



Site after treatment/ West Qurna 1. field

## Aerobic degradation of oil-based mud drilling fluid by in situ bacteria in the Hawizeh Marshes

[Arash Rasti](#), [Adel Ameri](#) & [Mohammad Ali Riahi](#)

[Journal of Petroleum Exploration and Production Technology](#) volume 11, pages3775–3783  
(2021)

**Abstract:** The increasing global demand for hydrocarbon has brought new challenges in the petroleum reservoir's drilling process. Non-biodegradable chemical additives are used in drilling fluid and it leads to endangering the environment and personnel safety. Thus, there is a great need for new biodegradable drilling fluid additives that can protect the environment and personal safety while drilling is done well. This study with help of microbial analysis investigates the effects of in situ bacteria to degenerate the gasoline inside the oil-based mud, in the returned lubricant from one of the oil wells next to the Hawizeh Marshes. Four types of bacteria inside the oil-based mud were observed. According to the high growth and degradation of crude oil, one strain was selected. Determination of the coagulase and clumping test shows that the isolated strain belongs to staphylococcus. We investigate the performance of the staphylococcus bacterium on the lubricant from biological degradation aspects, using a gas chromatography technique. It was observed that the exposure of a small amount of the bacteria against 10 mL of lubricant indicates a considerable degree of degeneration, only in a few days. The residual crude oil in the culture medium was analyzed by gas chromatography (GC) and SARA. The results confirmed that the strain can degrade crude oil and produce lighter hydrocarbon. The saturate fraction increased about 23%, while the Resin and Asphaltene fractions decreased about 11% and 12%, respectively. This research is the first report on the characterization of crude oil-degrading bacteria from in situ bacteria at Hawizeh Marsh and by using this bacterium in the field the effect of oil pollution can be reduced on this marsh environment in a few days.

ندوة التعليم العالي والبحث العلمي  
جامعة الأنبار - كلية الزراعة  
قسم التربة والموارد المائية

ورشة عمل  
برعاية الأستاذ الدكتور أدهام علي عميد كلية الزراعة المحترم  
يقيم قسم التربة والموارد المائية في كلية الزراعة ورشة عمل بعنوان  
**الميكروبات تمنح الأمل في إزالة مخلفات التلوث  
النفطي في العراق**  
بمخاض فيها / أ.د. جمال صالح حمود الكيميسي

في يوم الأحد الموافق 09 / 01 / 2022 في تمام الساعة الثامنة مساءً على منصة  
Google meet وعبر الرابط التالي :-  
<https://meet.google.com/ixv-sbr-jf7hs-122&authuser=0>

تقديم دائرة البيئة والمياه وبالتعاون مع دائرة معالجة  
واتلاف المخلفات الكيماوية والبيولوجية والحربية الخطرة  
في وزارة العلوم والتكنولوجيا - ندوة إلكترونية بعنوان  
"معالجة الملوثات النفطية"

تتضمن المحاضرتين التاليين  
- العدد الحيوي الثاني  
لمعالجة الملوثات النفطية-  
تلقيا: د. مروة ثامر عبد الستار  
دائرة البيئة والمياه

وذلك في يوم الاثنين 2021-6-21  
الساعة الثامنة مساءً  
من خلال منصة برنامج zoom  
Online meeting ID: 9088583715 Passcode: 1234

Email: rtewdg@mohesr.gov.iq سيتم منح شهادة مشاركة من قبل الدائرة للمشاركين الكرام

وزارة التعليم العالي والبحث العلمي  
جامعة القادسية  
كلية الهندسة  
قسم هندسة البترول والغاز  
بالتعاون مع مركز التعليم المستمر

ورشة عمل إلكترونية بعنوان  
**Bioremediation of Crude Oil Contaminated Soil  
المعالجة البيولوجية للتربة الملوثة بالنفط**

إعداد وتقديم  
أ.م.د. صابرين لطيف كريم

ستقام الورشة يوم الأربعاء  
الموافق 23-10-2021  
الساعة 9 مساءً  
Free Conference Call (CC) Link: <https://meet.google.com/abw-ndk-ayy9>  
Meeting ID: abw-ndk-ayy9

يحصل الحاضرين على شهادة مشاركة

Ministry of Oil  
Under the auspices of his Excellency the  
Minister of Oil  
**Mr. Ihsan Abdul Jabbar Ismael**  
Ministry of Oil holds  
Sixth Iraq Oil & Gas Conference (I'OGC)  
 Baghdad  
November 2021  
Under the Motto  
**(Development of Petroleum Refining and  
Gas Industry to Achieve Self-Sufficiency)**

Scientific conferences are an event gathering  
researchers, scientists and those interested in  
different disciplines to highlight the scientific  
researches that contribute to the realisation  
and progress of society. Ministry of Oil (Petroleum  
Research and Development Centre (PRDC) will  
host the sixth Iraq Oil and Gas conference (I'OGC).  
PRDC is pleased to invite you to participate in the  
conference through presenting researches and  
studies based on the announced conference topics.  
Conference targets:  
Expanding the scientific research results to have  
an update on the options and alternatives for  
addressing the technical problems in process of  
gas industry and taking the advantage of all gas  
quantities produced in the Iraq trade.  
Opening prospects for cooperation between  
creative thinkers and specialised researchers  
and build bridges for applying the research outputs  
that promote the development of oil industry  
particularly improving the petroleum products  
quality.  
To keep an update on the latest researches in the  
field of fossil and renewable energies.

Topics  
Investment of associated gas and  
gas industry technologies;  
Petroleum refining operations and  
products improvements;  
Crude oil productions and reservoirs;  
Renewable energies and their applications;  
Exploration and well-drilling technologies;  
Corrosion in oil facilities;  
Environment and safety in the oil industry;  
Transport and storage of oil and gas;  
The role of investment in developing the oil industry;  
Supportive disciplines in the oil and gas sector  
(Economy, Legislation, Administration and Finance)

07700183183  
@iogc2021@gmail.com

- The College of Engineering at Al-Qasim Green University organized an electronic workshop on the biological treatment of soil contaminated with oil. The lecture given by Dr. Asia Fadel Abdullah, a lecturer in the Department of Ecology, included introducing the various sources of pollution and appropriate treatment methods according to the type of pollutant and the amount of pollution. The lecture dealt with the physical treatment methods used to treat polluted water. The lecture dealt with the definition of bacterial biological treatment and its effective role in treating water and soil contaminated with petroleum hydrocarbons and other pollutants..

برعاية السيد رئيس جامعة البصرة الأستاذ الدكتور سعد شاهين المحترم  
بإشراف السيد عميد كلية العلوم الأستاذ المساعد الدكتور موفيق فاضل الشهبان المحترم  
ويتسابق السيدة رئيسة قسم البيئة الأستاذة الدكتور دنيا علي حسين المحترمة  
وبالتعاون مع وحدة التعليم المستمر / كلية العلوم

يقيم قسم البيئة في كلية العلوم - جامعة البصرة محاضرة إلكترونية  
ضمن دورة التدريب الصيفي بعنوان  
**"التقانات البيئية المستخدمة لمعالجة تلوث المياه والتربة"**

أ.د. آسيا فاضل عبدالله  
كلية العلوم / جامعة البصرة

التاريخ  
2020/8/25

الساعة التاسعة صباحاً  
بتوقيت العراق

بإستخدام تطبيق Google meet  
<https://meet.google.com/wky-acah-ihh>

الدعوة عامة للجميع

