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Suitability Analysis for an Iraqi Protected Areas Network-Summary Document

TABLE OF CONTENTS

INTRODUCTION **3**

MATERIALS AND METHODS **4**

GIS Analysis 5

RESULTS 7

MAPS..... 9

INTRODUCTION

This summary document tries to delineate a methodology to establish, all over Iraq, suitable areas to create inter-connected protected areas, or Ecological Networks, in the framework of the Convention on Biological Diversity PoWPA (Programme of Work on Protected Areas). Ecological Networks can be defined as inter-connected systems of habitats where biodiversity is in need of special attention and conservation measures.

Goal 1.1 of the PoWPA address Parties to "establish and strengthen national and regional systems of protected areas integrated into a global network as a contribution to globally agreed goals", in particular, Parties should try to establish within and outside their national boundaries, "a global network of comprehensive, representative and effectively managed national and regional protected area system as a contribution to: i) the goal of the Strategic Plan of the Convention and the World Summit on Sustainable Development of achieving a significant reduction in the rate of biodiversity loss by 2010; ii) the Millennium Development Goals – particularly Goal 7 on ensuring environmental sustainability; and iii) the Global Strategy for Plant Conservation".

Very often, especially in highly populated and urbanized areas, protected areas are isolated from each other and tend to originate habitat mosaics, where wildlife suitable habitats are sparsely distributed among unsuitable 'patches' of landscape (cfr. Farina, 2001). Habitat fragmentation reduces the number and extension of suitable habitats for vertebrate species increasing therefore their risk of extinction. Considering that in isolated habitat patches the risk of extinction for a number of vertebrate species is higher than in continuous habitats, a landscape structure with the widest surface of continuous natural habitats is desirable.

In Iraq the knowledge about natural habitats and protected areas has been improved a great deal in recent years, nevertheless data collection is still sporadic in many places due to various constraints, it often lacks of standardization and analysis is not possible on a continuous fashion.

After the war the re-construction process has been obviously focused on human needs, prioritizing energy needs, water and sanitation issues. On the other hand environmental restoration is starting to play a central role, especially as concern the Mesopotamian marshes area, historically one of the most important wetland of the world. In this site the wetland habitat has provided (as partly does today in the re-flooded area) food and shelter for a huge variety of bird species and, most importantly, for local people, living in harmony with their environment since centuries.

Iraqi landscape is heterogeneous, besides marshland habitats that originate from the Tigris-Euphrates river basin, it hosts high altitude and desert habitats, a small portion of estuarine habitat and human modified agricultural landscapes. The definition, through direct survey, and possibly the cartographic representation, of main ecosystems (or biome) for each eco-

region[1] is an essential step of research that will allow an accurate representation for every ecological analysis.

Many environmental emergencies have been recorded in Iraq and many threats to biodiversity are still far from being removed, many natural areas, no matter their ecological value for the presence of rare or threatened wildlife species, are still completely unregulated and no rules or prohibition have been established yet against illegal logging, killing, trapping or dispersal of pollutants (or if they have they remain largely unknown and/or unimplemented). Potentially suitable areas for nature protection are under threat of upcoming urban and industrial developments, without taking into account any kind of mitigation or remediation of adverse effects. For this reason establishing the baseline of a network of protected areas that will cover the whole of the national territory is paramount at this very moment, though many of the available data might be considered still incomplete or insufficient.

This summary document proposes a 'wildlife manager' approach for the prioritization of sites basing on protected vertebrate species and eco-region vulnerability; further research has to be carried out to verify other information and conditions not available at the moment.

In the meantime pilot protected areas should be established to be subsequently validated as concerns their extension, zoning, boundary setting and connectivity with other ecological systems.

MATERIALS AND METHODS

The basic assumptions for the analysis presented in this summary document are derived from a set of data collected by the local NGO Nature Iraq during the Key Biodiversity Areas project. Key Biodiversity Areas are places of international importance for the conservation of biodiversity through protected areas and other governance mechanisms. They are identified nationally using simple, standard criteria, based on their importance in maintaining species populations. These sites are identified at a national level by local stakeholders using a set of transparent and globally standardized criteria, most notably building from the IUCN Red List of Threatened Species, BirdLife International's Important Bird Areas, PlantLife International's Important Plant Areas, IUCN's Important Sites for Freshwater Biodiversity, and sites identified by the Alliance for Zero Extinction. To meet the KBA criteria, a site must contain:

- One or more globally threatened species;
- One or more endemic species which are globally restricted to the site or surrounding region;
- Significant concentrations of a species (e.g. important migratory stops, nesting sites, nurseries or breeding areas); and/or
- Globally significant examples of unique habitat types and species assemblages.

[1] An ecoregion (ecological region), sometimes called a bioregion, is a geographically distinct area of land that is characterized by a distinctive climate, ecological features, and plant and animal communities.

Since 2004, the Iraqi Ministry of Environment (MOE) has been involved in a number of initiatives to begin research in the recently restored Mesopotamian Marshlands of southern Iraq. These efforts, conducted with support from the Canadian International Development Agency (CIDA), the United Nations Environmental Program (UNEP) and the Italian Ministry of Environment, Land & Sea (IMELS) and with logistical and staff support from Nature Iraq (NI), have led to a national program to survey the country's biological diversity. This program is called the Iraqi Key Biodiversity Areas (KBA) Project.

The rationale behind the KBA research in Iraq is to check on a regular basis the environmental features of a set of chosen sites in order to define the most valuable areas on an ecological point of view, to plan adequate management measures and contribute to the creation of a national network of protected areas. Tough research techniques and dedicated field staff are constantly improving in Iraq, there are still some gaps to fill in the assessment and evaluation of relevant KBA data.

GIS Analysis

Data collected at the various KBA locations (as from *Table 1*) on presence of globally threatened species, range restricted and biome restricted birds and endemic species has been evaluated and matched to a specific habitat category (according to the IUCN classification available at: http://www.iucnredlist.org/technical-documents/classification-schemes/habitats-classification-scheme-ver3) and resulting in *Table 2*.

KBA North	KBA Central	KBA South
Mosul D10	Habbaniya AN1	Jabal Senam BR1
Fishkaboor D11	Haditha wetland AN2	Kteibaan BR2
Dure D16	Anah and Rawa AN3	Teena, Northern HA1
Chamanke D18	Al Nekheab and Al Hussaniya Oases AN4	Naggaara HA16
Ser Amadia D2	Gasr Muhaiwir AN6	Shilaychiya Marsh HA17
Garagu D5	Al Qadissiya or Haditha Dam AN7	Haffar Opening 2 HA19
Haji Omran E1	Haweijat Albu Alwan and Ramadi Marshes AN8	Slein (south Rumaila) formerly Ghattar HA21
Sakran E14	Western Edge of Al Tharthar Lake AN9	Abu Hedeeda HA22
Bradost E18	Al Rahaliya and Razaza Lake AN10	Abu Ajaai HA23
Altun Kopri E3	Sabkhat Albu Garis AN11	Nuwashi HA24
Doli Valley (Smaquli) E5	Rutba and Al Massad Gazelles Reserve AN12	Al-Rashid Lake HA25
Barzan E8	Samara dam SD1	Shaafi HA26
Darbandikhan S1	Al Thathar Lake and Dheaeie fields SD2	Umm Al Tiyaar near Al Buhaira HA4
Chami Razan S10	Mahzam and Al Alam district SD3	Umm Nakhla HA6
Qara Dagh S11	Abu Dalaf and Shari Lake SD4	Kermaashiya marsh HA8
Dukan S2	Jallet Albu Ajeel SD5	Umm An Ni'aaj HZ1
De Lezha S23	Himreen Lake & Hills DY1	Udhaim HZ2
Homer Qawm and Shadala Valley S24	Attariya plains DY3	E'Jayrda HZ4
Parazan S26	Mandli DY4	Majnoon HZ8
Gmo Mountain S33	Jadriyah and Umm Al Khanazeer Island BG1	Khor Az Zubayr Canal/Kanat Khor Az Zubayr KZ3
Ahmed Awa & Awesar S4A & S4B	Huweija Marshes and Beaji KK1	Khor Al-Zubayr, west KZ5
Peramagroon S6		Ibn Najm marsh ME4
		Razzaza lake ME5
		Hindiya Barrage ME7
		Ibn Najm, north ME8
		Dalmaj marsh south ME10
		Dalmaj Marsh, East ME11
		Dalmaj Marsh, North ME12

		Teeb oasis MN1
		Zubaidaat MN2
		Sawa Lake MT1
		Salman MT3
		Wadi Al-W'eir NJ1
		Sh'eeb Abu-Talha NJ2
		Euphrates & Tigris Junction SA1
		Ras Al Beesha SA4
		Sinaaf (western) SM5
		Shuweicha Marsh SM7
		Teeb SM8
		Suwaibaat, South TQ1
		Central marshes CM1
		Central marshes CM5
		Central Marshes CM10
		Central Marshes CM16
		Jazman (Zubaidat) WT1

Table 1: Surveyed and geo-referenced KBA all over Iraq

LAND COVER MAP	**IUCN category**
Airport	Urban areas
Industrial city	Urban areas
Urban	Urban areas
Port	Urban areas
Bare rock	Rocky areas
Bare soil	Hot desert
Bare soil stony	Hot desert
Artificial water body	Water storage areas (>8 ha)
Natural water body	Permanent freshwater lakes (>8 ha)
River	Permanent rivers/streams/creeks
Natural water body and aquatic sparse herbaceous; Aquatic open herbaceous; Aquatic closed herbaceous	Bogs, marshes, swamps, fens, peatlands
Aquatic sparse herbaceous	Grassland subtropical/tropical seasonally wet flooded lowland
Rainfed herbaceous crop	Seasonally flooded agricultural land
Crops	Arable land
Tree crops	Plantations
Natural vegetation of open shrubs and herbaceous	Shrubland subtropical/tropical dry
Natural vegetation of sparse shrubs and herbaceous	Shrubland subtropical/tropical dry

Shrubland	Shrubland subtropical/tropical dry
Natural vegetation of open trees and herbaceous	Dry savanna (5-7 months dry)
Natural vegetation sparse herbaceous	Subtropical/Tropical Dry Lowland grassland
Sand Dunes	Hot desert
Shifting sand	Hot desert

Table 2: Matching between Land Cover categories and IUCN habitat types.

A greater number of species found in each of the above (IUCN) habitat categories will always qualify that habitat as more valuable and accordingly an higher value will be given to that category in performing the GIS analysis.

Globally threatened species are used as indicators to protect those habitats in which they occur at any phase of their life-cycle. Whatever the main reason of the ascertained or inferred decline of the selected species, habitat conservation and preservation plays always an essential role.

Range restricted species are defined by BirdLife as "species are confined to small areas of the world's surface and occur together in 'centres of endemism'". Their importance resides in their indicator role for assessing the quality and health of this small areas with unique biodiversity, particularly vulnerable to humans impacts. The presence of range restricted species at surveyed locations (Basra reed-Warbler and Iraq Babbler) will be combined with other endemic mammals and reptile species (Euphrates Jerboa and Euphrates Softshell Turtle).

Many Biome restricted bird species have been registered at the various KBA locations. Many species are so specialized for life in 'their' biome that they cannot survive outside it. These biome-restricted species are more sensitive or vulnerable to damage and degradation of their biome, than are more widespread species, and are thus an important focus of attention for conservation.

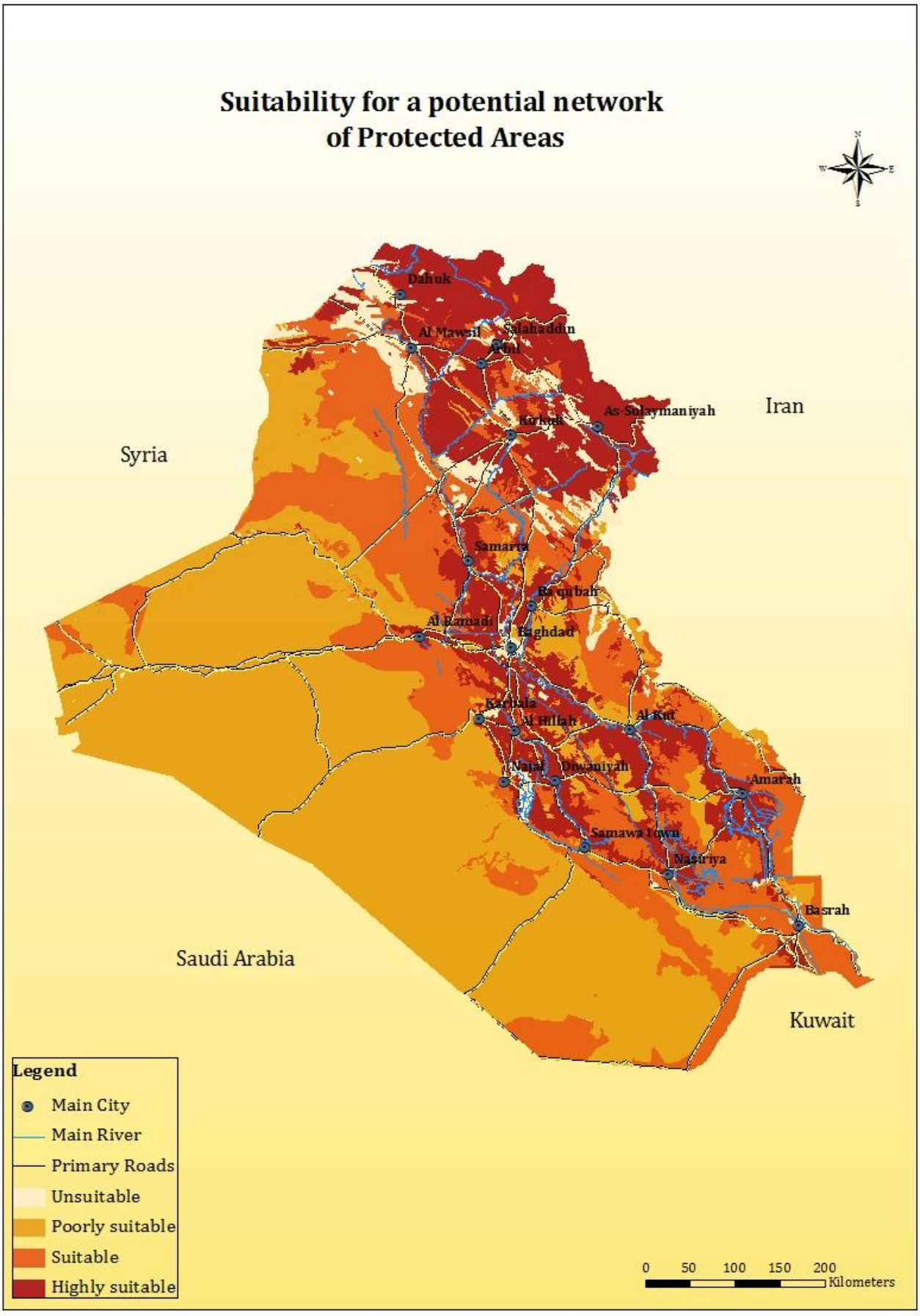
Finally another factor has been integrated in the GIS analysis referring directly to the conservation status of a particular eco-region (according to the WWF classification). Considering the status of the specific eco-region (critical, vulnerable or not assessed) an additional value has been given to the various habitat categories and integrated into the analysis process.

RESULTS

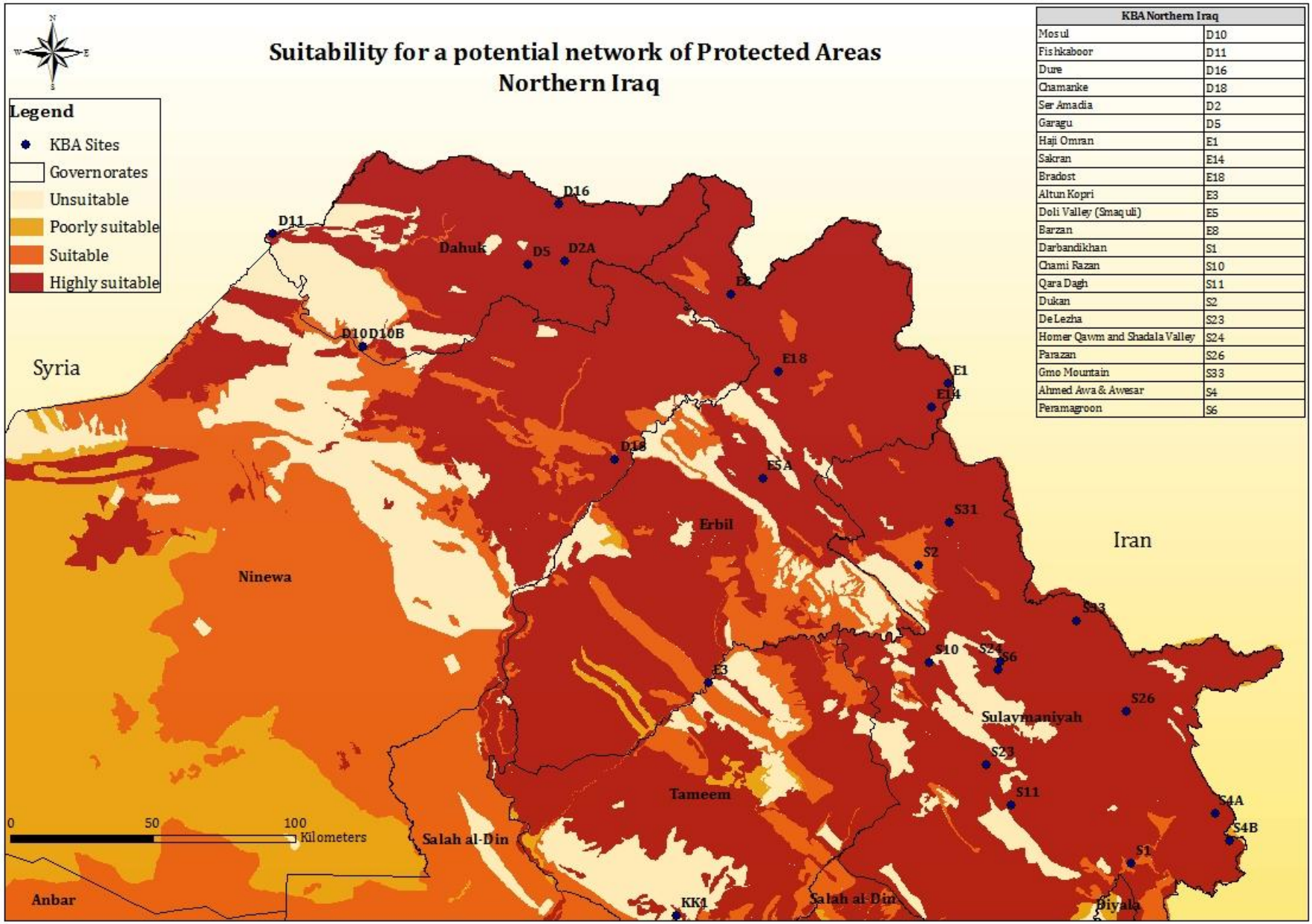
From a preliminary GIS analysis performed with the ESRI Software ArcGIS9 (ArcMap 9.3), through a weighted overlay operation with single layers representing: Globally threatened species; Range restricted birds and endemic species; Biome restricted birds; Eco-region status, where higher to lower weights have been given in the same order, the resulting final maps are shown as follows. For a better visual interpretation of the most ecologically

important areas they have been split into the three main Iraqi regions used also for KBA classification.

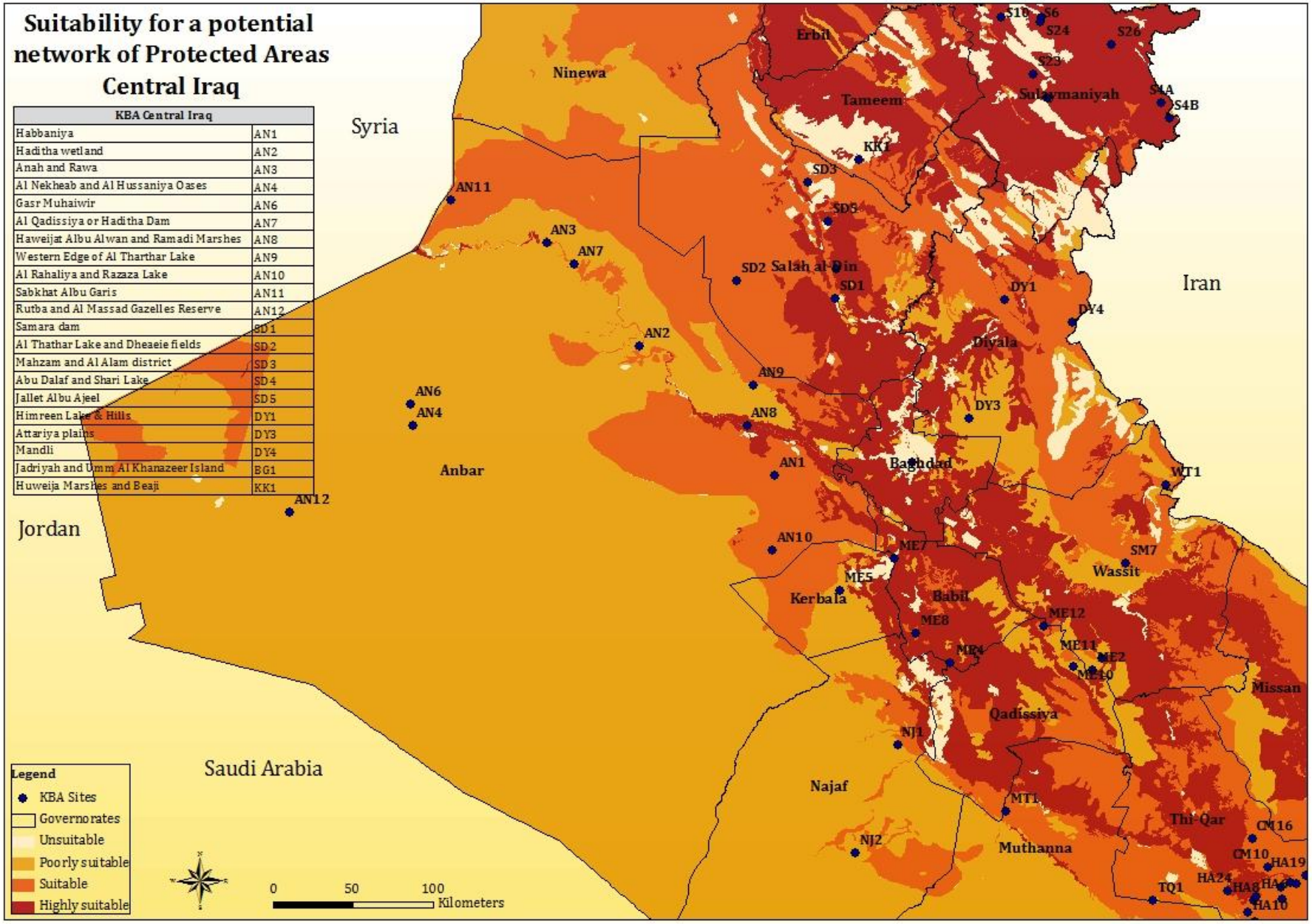
The following Maps represent suitable areas for starting planning a network of protected areas. The network approach, to be developed at a later stage and after having acquired relevant data, will ensure all national (and possibly regional) protected areas to be inter-connected, as stated by Goal 1.1 of the CBD Programme of Work on Protected Areas.



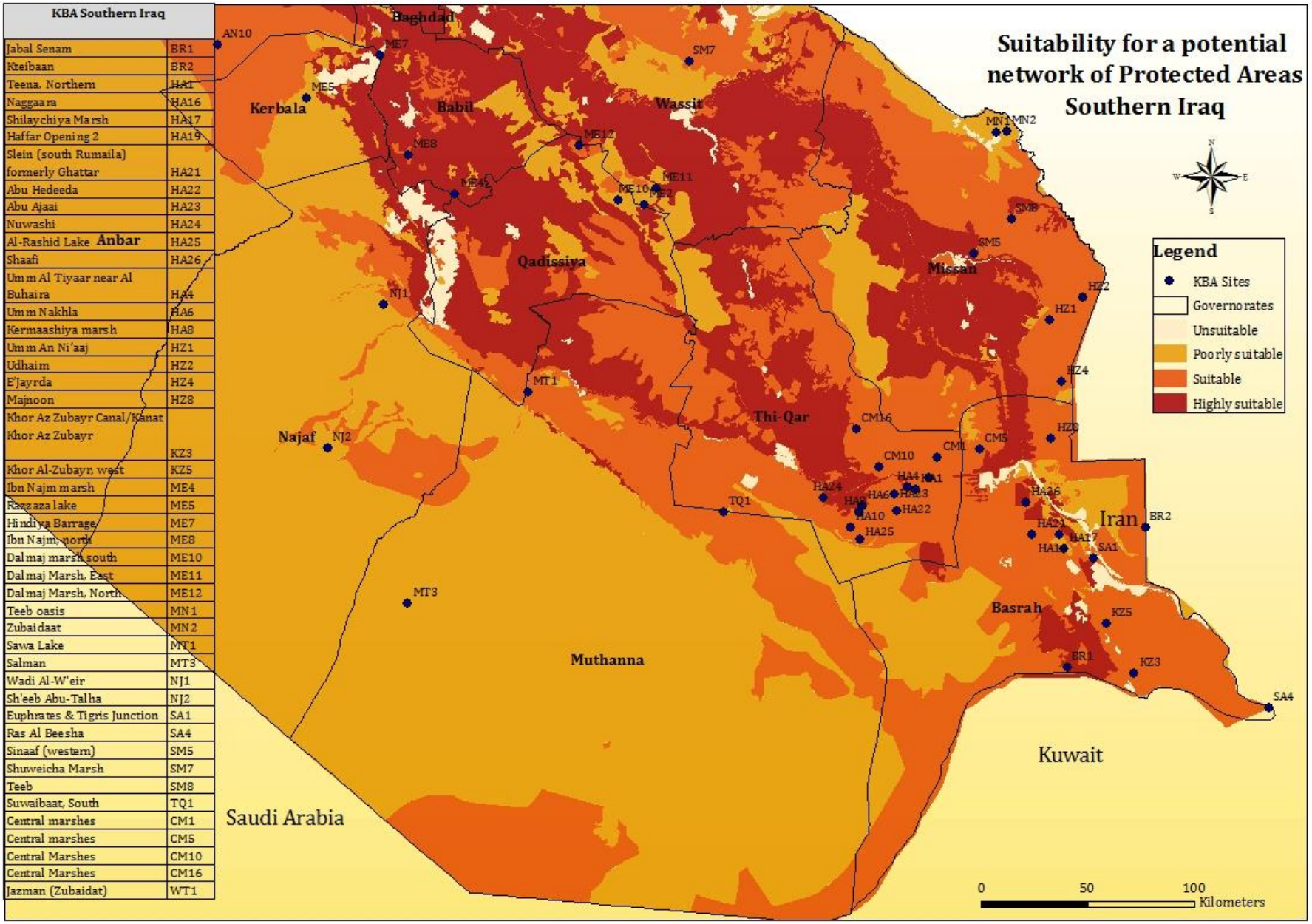
Map1: Global view



Map2: Detailed view, North



Map3: Detailed view, Central



KBA Southern Iraq	
Jabal Senam	BR1
Kteibaan	BR2
Teena, Northern	HA1
Naggaara	HA16
Shilaychiya Marsh	HA17
Haffar Opening 2	HA19
Slein (south Rumaila) formerly Ghattar	HA21
Abu Hedeeda	HA22
Abu Ajaai	HA23
Nuwashi	HA24
Al-Rashid Lake	HA25
Shaafi	HA26
Umm Al Tiyaar near Al Buhaira	HA4
Umm Nakhla	HA6
Kermaashiya marsh	HA8
Umm An Ni'aaj	HZ1
Udhaim	HZ2
E'Jayrda	HZ4
Majnoon	HZ8
Khor Az Zubayr Canal/Kanat Khor Az Zubayr	KZ3
Khor Al-Zubayr, west	KZ5
Ibn Najm marsh	ME4
Razzaza lake	ME5
Hindiya Barrage	ME7
Ibn Najm, north	ME8
Dalmaj marsh south	ME10
Dalmaj Marsh, East	ME11
Dalmaj Marsh, North	ME12
Teeb oasis	MN1
Zubaidaat	MN2
Sawa Lake	MT1
Salman	MT3
Wadi Al-W'eir	NJ1
Sh'eeb Abu-Talha	NJ2
Euphrates & Tigris Junction	SA1
Ras Al Beesha	SA4
Sinaaf (western)	SM5
Shuweicha Marsh	SM7
Teeb	SM8
Suwaibaat, South	TQ1
Central marshes	CM1
Central marshes	CM5
Central Marshes	CM10
Central Marshes	CM16
Jazman (Zubaidat)	WT1

Map4: Detailed view, South

References

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Farina A., "Ecologia del paesaggio", 2001, UTET.

M. Guccione, N. Bajo, A. Baldi. "Reti Ecologiche a scala locale: lineamenti ed indicazioni generali". APAT - Agenzia per la Protezione dell'Ambiente e per i Servizi Tecnici, 2003.

IUCN RedList website for information concerning globally threatened species and Habitat classification information: http://www.iucnredlist.org/

WWF website for information related to the Ecoregion of the world and related information on eco-regions vulnerability: http://www.worldwildlife.org/home-full.html