

# IMPORTANT PLANT AREAS IN LEBANON



Nature Conservation Center | NCC  
مركز حماية الطبيعة



## IMPORTANT PLANT AREAS IN LEBANON

Priority Areas for Plant Conservation  
AUB Nature Conservation Center 2017

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## PREAMBLE

To remove the cedar tree from the Lebanese flag would mean to lose an important symbol of our history, identity, and soul. Similarly, to lose the plants of Lebanon would mean to lose our Lubnan al akhdar (green Lebanon). As the loss of nature leads to the loss of identity, this book brings light to the importance of protecting Lebanon's story.

The information about important plant areas featured in this book was compiled and reviewed by scientists and experts from different universities and institutions in Lebanon. This book is a plea from Lebanese scientists to the Lebanese people. We have defined for you the areas that are important for plants and biodiversity, help us and work with us to take care of these areas: take action, stop and reverse the destruction of our natural heritage before it is too late.

Salma N. Talhouk, Professor  
American University of Beirut  
November 2017



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# INTRODUCTION

## WHY ARE PLANTS IMPORTANT?

When we look at a plant, especially when it is small and unattractive, we may not appreciate its value, and hence do not feel concerned if we lose it. But if, and when, we understand that this small and seemingly insignificant plant is part of a larger fragile network of organisms that we call nature, maybe then, we would think twice before dismissing that small plant. Nature is beneficial to our lives and supports us in ways that would be very difficult, expensive, and sometimes impossible to recreate artificially.

The presence of nature makes our local climates milder, cleans our air, improves the composition of our soils, traps and collects rain water and purifies it, supports our agriculture by pollinating our crops, and provides us with wild edible plants and herbs. Nature is our largest natural medicinal pharmacy that we are still discovering. Nature defines our natural identity by shaping landscapes of our towns and cities. Nature supports our wellbeing; studies show that we are happier and healthier when we do physical, intellectual, social, or artistic activities in natural areas. Nature supports our economy; tourists are attracted by our natural identity, our mild weather, and our food which are all dependent on our natural heritage.

Conserving wild plants is not a luxury, it is a necessity. We do not have an alternative, for if our country was without plants it would be a desert. Researchers have shown that the Mediterranean is at high risk of desertification because of climate change and human actions.



PHOTO BY HICHAM EL ZEIN

## PLANTS OF LEBANON

Lebanon is an important area for plant diversity. Scientists estimate that there are close to 400,000 plant species in the world. These plants species are not evenly distributed, but instead are clustered across the globe.

Scientists have identified 35 hotspot regions that 1) contain a high percentage of plantlife, 2) are found nowhere else on the planet (endemic), and 3) where there is a high risk of losing these plants due to disruptive human activities. Lebanon is included in one of these 35 hotspot areas namely the Mediterranean hotspot.



PHOTO BY HICHAM EL ZEIN

## HOW DO WE DEFINE AREAS IMPORTANT TO PLANTS

Important plant areas (IPA) are places that hold an important diversity of wild plants and fungi. IPAs have been defined in 27 countries across Europe and the Mediterranean region.

Normally, national experts define IPAs in their respective countries using unified global standards. A given area is defined as an IPA when experts provide sufficient justification and scientific evidence to prove that it contains exceptional botanical richness, threatened species, and/or threatened habitats. IPAs can overlap with any type of land whether it be private or public, protected or unprotected.

Once experts define IPAs in a country, they communicate these areas to the public and decision makers. For example, decision makers may benefit from identified IPAs to assess whether there are gaps in the national protected areas network of the country. With respect to the public, informing residents who live within the geographic boundaries of IPAs may encourage them to lead community-based conservation and sustainable management actions.

Furthermore, IPAs may become target locations for citizen science monitoring and conservation research led by a partnership between universities and citizens. Although the ideal aim is to achieve conservation of important areas for plant diversity, it may not always be possible to formally protect an IPA.

## IPAS IN LEBANON

A large number of rare plant species grow in Lebanon with limited geographic distributions. This richness is due to the location of the country which is at the intersection of different continents. In addition, Lebanon's mountainous nature forms isolated areas with unique local climates.

To define IPAs in Lebanon, national experts worked in collaboration with international conservation organizations, namely, IUCN (International Union for Conservation of Nature), Plantlife, and WWF (World Wild Fund). The IPAs were identified on base of their richness in plant species and also on the presence of endemic and threatened species.

The level of endemism was detailed by mentioning the different countries in which these species occur. Areas with the highest number of species strictly endemic to Lebanon have an important biological value and effort for conservation should focus on these regions. A total of 26 IPAs were defined in Lebanon. Of these, 16 are in the Mount Lebanon range, on west facing slopes and high mountain plateaux. The remaining ten IPAs are found in the Lebanese coast, the Bekaa valley, and the Anti-Lebanon mountain range.

Threat status was assigned by local experts' opinion. Red-Listing is still in progress for the Lebanese flora.



PHOTO BY HICHAM EL ZEIN

# 01

## MOUNT MAKMEL

MOUNT MAKMEL

SOME OF THE TOWNS & CITIES  
Bcharre - Ehden - Nabha - Bkaa Safrine - Tannourine El Fauqa - Ainata - Hermel Jbab - Mrabine - Nemrine

THE MOUNT MAKMEL IPA INCLUDES QORNET ES-SAWDA, THE HIGHEST PEAK ON THE EASTERN MEDITERRANEAN COAST, AND A SERIES OF HIGH MOUNTAIN PLATEAUX, ROCKY CLIFFS, SCREES AND DOLINES (SINKHOLE).

The area is characterized by eroded and rounded summits. During winter, it is covered with snow while summers are dry and hot. This IPA hosts typical high-altitude vegetation that consists of small spiny shrubs adapted to extreme climate (wind, snow) and grazing.

This IPA includes 200 species, among which 46 species are restricted to the East Mediterranean Region, 6 endemic to Lebanon, Syria and Turkey, 36 endemic to Lebanon and Syria, and 20 endemic to Lebanon.

**THREATS:**  
Over-grazing and the construction of road networks.

The latter facilitates destructive human activities in remote highlands, such as irresponsible hunting and solid waste pollution. Climate change is a long-term threat that will have an important impact on plant species growing at these high altitudes.

	<b>200</b> species
Endemic To The East Mediterranean Region	<b>46</b> species
Endemic To Lebanon, Syria & Turkey	<b>6</b> species
Endemic To Lebanon, Syria	<b>36</b> species
Endemic To Lebanon	<b>20</b> species



PHOTO BY MOHAMMAD CHAMI

# 02

## HERMEL PLAIN

HERMEL PLAIN

SOME OF THE TOWNS & CITIES  
Hermel - Qaa Baayoun - Qaa Ouadi El Khanazir - Ras Baalabek El Gharbi - Deir Mar Maroun - Zighrine

THE HERMEL PLAIN IPA IS CROSSED BY THE ASSI (ORONTES) RIVER AND IS PART OF A LARGER SUB-ARID AGRICULTURAL AREA THAT EXTENDS SOUTHEAST TO RAS BAALBECK AND SOUTHWEST TO WADI FAARA.

This IPA includes 311 species, among which 120 species are restricted to the Eastern Mediterranean, 8 endemic to Lebanon, Syria and Palestine, 11 endemic to Lebanon, Syria and Turkey, 33 endemic to Lebanon and Syria, 6 endemic to Lebanon, and 6 threatened species.

**THREATS:**  
High risk of desertification due to inadequate land and water management practices coupled with low annual rainfall (200 mm per year). The situation is aggravated by overgrazing and heavy rains in the Anti-Lebanon Mountains that lead to destructive flash floods.

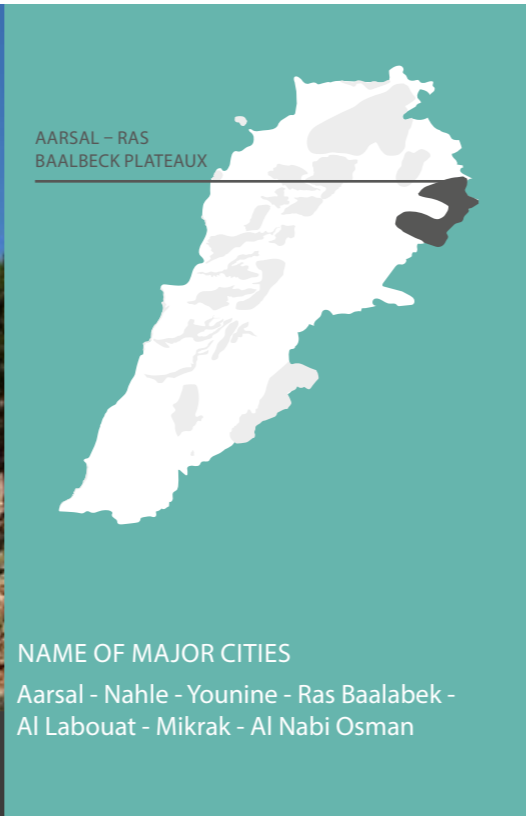
	<b>311</b> species
Endemic To The Eastern Mediterranean Region	<b>120</b> species
Endemic To Lebanon, Syria & Palestine	<b>8</b> species
Endemic To Lebanon, Syria & Turkey	<b>11</b> species
Endemic To Lebanon & Syria	<b>33</b> species
Endemic To Lebanon	<b>6</b> species



PHOTO BY  
MAGDA BOU DAGHER KHARRAT

# 03

## AARSAL – RAS BAALBECK PLATEAUX



AARSAL – RAS  
BAALBECK PLATEAUX

NAME OF MAJOR CITIES  
Aarsal - Nahle - Younine - Ras Baalabek -  
Al Labouat - Mikrak - Al Nabi Osman

THE AARSAL – RAS BAALBECK PLATEAUX IPA INCLUDES MOUNTAIN SLOPES, VALLEYS, AND ROCKY PLATEAUX STRETCHING FROM RAS BAALBECK TO THE HIGHLANDS OF AARSAL.

It is characterized by sub-arid mountains with narrow valleys planted with rainfed apricots, cherries, and pomegranates orchards.

This IPA includes at least 71 species, including wild medicinal plants and wild relatives of agricultural crops. It is home to 26 species restricted to the Eastern Mediterranean, 1 endemic to Lebanon, Syria and Palestine, 15 endemic to Lebanon and Syria, 2 endemic to Lebanon, Syria and Turkey, and 5 endemic to Lebanon.

**THREATS:**  
Quarries and over-grazing. The latter threat is particularly significant in this region because it has the largest sheep and goat flocks in the country. The IPA, which has low precipitation levels (150 - 450 mm per year), is very sensitive to climate change.

	<b>71</b> species
Endemic To The Eastern Mediterranean Region	<b>26</b> species
Endemic To Lebanon, Syria & Palestine	<b>1</b> species
Endemic To Lebanon, Syria & Turkey	<b>2</b> species
Endemic To Lebanon & Syria	<b>15</b> species
Endemic To Lebanon	<b>5</b> species



PHOTO BY  
MOUSTAPHA ITANI

# 04

## AAMMIQ



AAMMIQ

NAME OF MAJOR CITIES  
Ain Dara - Bmehray - Ain Zhalta -  
El Barouk - Ammiq - Aana - El Freidice -  
Deir Tahniche

THE AMMIQ IPA INCLUDES PARTS OF THE EASTERN SLOPES OF MOUNT BAROUK, WHICH ARE AMONGST THE MOST DENSELY WOODED AREAS IN THE BEKAA.

It also includes the wetland of Ammiq, the largest remaining freshwater marsh in Lebanon, which stretches as 253 ha strip of reed beds and open pools from the foot of the mountains to the Litani River. This IPA is an Important Bird Area, a Ramsar site, and is part of the UNESCO "Man & Biosphere" reserve of the Chouf Biosphere.

This IPA includes around 120 species among which 21 species are restricted to the Eastern Mediterranean, 4 endemic to Lebanon, Syria and Palestine, 2 endemic to Lebanon and Syria, 1 endemic to Lebanon, Syria, and Turkey, and 6 threatened species.

**THREATS:**  
Aammiq marshes are threatened by habitat reduction due to water drainage for agricultural expansion.


	<b>120</b> species
Endemic To The Eastern Mediterranean Region	<b>21</b> species
Endemic To Lebanon, Syria & Palestine	<b>4</b> species
Endemic To Lebanon, Syria & Turkey	<b>1</b> species
Endemic To Lebanon & Syria	<b>2</b> species



PHOTO BY WASSIM KAYS

# 05

## MOUNT HERMON

MOUNT HERMON

NAME OF MAJOR CITIES  
Rachaya El Wadi - Kfar Kouk - Aiha - Chebaa Farmes - Yanta - Chebaa - Deir El Achayer - Heloua - Ain Aata

THE MOUNT HERMON IPA, A CLUSTER OF HIGH MOUNTAINS WITH THREE DISTINCT SUMMITS, INCLUDES THE HIGHEST SUMMIT OF THE ANTI-LEBANON MOUNTAIN RANGE THAT RISES TO 2814 M ASL.

The IPA consists of rocky limestone slopes, screes and plateaux. Its peaks are covered by snow for most of the year, hence its name “gray-haired mountain” (Jabal esh-Sheikh). The IPA which is approximately 1,000 km<sup>2</sup> receives high precipitation in a relatively dry region. The vegetation is similar to the one observed in the highlands of Mount Lebanon. Vineyards, pines, oaks, and poplars abound below the snowline where they receive water from the melting snow.

This IPA includes 435 species among which 64 species are restricted to the Eastern Mediterranean, 7 endemic to Lebanon, Syria and Palestine, 17 endemic to Lebanon and Syria, 10 endemic to Lebanon, Syria and Turkey, 4 endemic to Lebanon and at least 1 threatened species.

THREATS:  
Over-grazing.

	<b>435</b> species
Endemic To The Eastern Mediterranean Region	<b>64</b> species
Endemic To Lebanon, Syria & Palestine	<b>7</b> species
Endemic To Lebanon, Syria & Turkey	<b>10</b> species
Endemic To Lebanon & Syria	<b>17</b> species
Endemic To Lebanon	<b>4</b> species



PHOTO BY JEAN STEPHAN

# 06

## MENJEZ

MENJEZ


NAME OF MAJOR CITIES  
Menjez - Chekh Zennad - El Kouachra - Tal Bire - Al Massoudie - Aarida - Deirine - Debbabiye - Tal Homera - Janine

THE MENJEZ IPA EXTENDS ALONG THE SOUTHERN BANKS OF NAHR EL-KABIR, THE RIVER THAT CONSTITUTES THE NORTHERN BORDER BETWEEN LEBANON AND SYRIA.

This IPA includes the most important forest in Lebanon of a regionally endemic oak species (*Quercus ithaburensis* Decne.). It is also one of two IPAs that include a wetland. The Menjez wetland consists of rocky intermittent pools that are a main habitat in Lebanon for at least three plant species (*Isoetes* spp.) belonging to a group considered to be the last remnant of an ancient fossil tree.

This IPA includes 71 species, among which 22 are restricted to the Eastern Mediterranean, 4 endemic to Lebanon, Syria and Palestine, 2 endemic to Lebanon and Syria and 2 endemic to Lebanon, Syria and Turkey.

THREATS:  
The natural pools are often drained for mosquito control and/or for agricultural expansion.

	<b>71</b> species
Endemic To The Eastern Mediterranean Region	<b>22</b> species
Endemic To Lebanon, Syria & Palestine	<b>4</b> species
Endemic To Lebanon, Syria & Turkey	<b>2</b> species
Endemic To Lebanon & Syria	<b>2</b> species



# 07

## AKKAR - DANNIYEH MOUNTAINS - HERMEL PLATEAUX

PHOTO BY HICHAM EL ZEIN

AAKAR  
- DANNIYEH MOUNTAINS  
- HERMEL PLATEAUX

NAME OF MAJOR CITIES  
Aakroum - Charbine - Michmiche - Fneidek - El Koubayat - Andeket - Aamayer - Jayroun - Rahbe - Hnaider

THE AKKAR - DANNIYEH MOUNTAINS - HERMEL PLATEAUX IPA IS CHARACTERIZED BY MOUNTAINS, VALLEYS, FORESTS, RIVERS, GORGES, AND ROCKY CLIFFS.

It has the largest continuous natural forests in Lebanon and consists of a variety of forest types including Calabrian pine, mixed cedar, fir and juniper, mixed fir and cedar, pure fir, evergreen oak, and turkey oak.

This IPA includes 320 species, of which 82 species are restricted to the East Mediterranean Region, 6 endemic to Lebanon, Syria and Palestine, 17 endemic to Lebanon and Syria, 9 endemic to Lebanon, Syria and Turkey, 10 endemic to Lebanon, and 2 threatened species.

THREATS:  
Urban expansion, quarries, illegal wood cutting, ground water pollution, and open solid waste dumps.

	<b>320</b> species
Endemic To The Eastern Mediterranean Region	<b>82</b> species
Endemic To Lebanon, Syria & Palestine	<b>6</b> species
Endemic To Lebanon, Syria & Turkey	<b>9</b> species
Endemic To Lebanon & Syria	<b>17</b> species
Endemic To Lebanon	<b>10</b> species



# 08

## PALM ISLANDS

PHOTO BY MOUSTAPHA ITANI

PALM ISLANDS

NAME OF MAJOR CITIES  
Palm Islands

THE PALM ISLANDS IPA CONSISTS OF THREE FLAT ISLANDS LOCATED 5.5 KM OFF THE COAST OF TRIPOLI.

The largest island (560 m by 460 m) has a rocky shoreline and sandy shore. The other two islands are smaller with mostly rocky shorelines. This IPA is a protected area, and a Ramsar site. It is recognized as an important resting site for rare and threatened migratory birds, and an important nesting site for threatened marine turtles.

This IPA includes 85 plant species, of which 8 are restricted to the Eastern Mediterranean, and 9 are threatened.

THREATS:  
Like many small islands in the world, Palm Islands are threatened by rising sea level due to climate change.

	<b>85</b> species
Endemic To The Eastern Mediterranean Region	<b>8</b> species





PHOTO BY MOUSTAPHA ITANI

# 09

## BCHARRE - EHDEN - QADISHA VALLEY

BCHARR - EHDEN - QADISHA VALLEY

NAME OF MAJOR CITIES  
Bechnata - Hadeth El Jebbe - Hasroune - Mizgara - Aito - Hadchite - Benache - Tourza - Bane - Serhel - Ras Kifa

THE BCHARREH – EHDEN – QADISHA VALLEY IPA INCLUDES THE CEDAR FOREST OF BCHARRE, THE EHDEN NATURE RESERVE, AND THE QADISHA VALLEY.

The Ehden nature reserve has outstanding conifer forests and deciduous and evergreen broadleaf trees. The Ehden reserve harbors more than 1000 plant species and is the southernmost limit for the Sicilian Fir (*Abies cilicica*). The reserve is in good ecological condition with minimum degradation and pollution. The Cedar forest of Bcharre includes the most famous and historical cedar tree specimens with ages estimated to exceed 1500 years. The Qadisha Valley includes Qozhaya and Qannoubine valleys which are preserved due to their steepness and spiritual significance.

This IPA includes around 1000 species, of which 135 species are restricted to the Eastern Mediterranean, 6 endemic to Lebanon, Syria and Palestine, 34 endemic to Lebanon and Syria, 20 endemic to Lebanon, Syria and Turkey, 35 endemic to Lebanon and 10 threatened species.

**THREATS:**  
Urban expansion and road infrastructure leading to habitat loss, littering, and water pollution. Forest fires also constitute a serious threat to the woodlands in the valley of Qadisha.

	<b>1000</b> species
Endemic To The Eastern Mediterranean Region	<b>135</b> species
Endemic To Lebanon, Syria & Palestine	<b>6</b> species
Endemic To Lebanon, Syria & Turkey	<b>20</b> species
Endemic To Lebanon & Syria	<b>34</b> species
Endemic To Lebanon	<b>35</b> species



PHOTO BY HICHAM EL ZEIN

# 10

## RAS CHEKKA

RAS CHEKKA

NAME OF MAJOR CITIES  
Hamat - Batroun - Ras Nahache - Kefraya - Wejh El Hajar - Selaata - Hery - Koubba - Karnaoun

THE RAS CHEKKA IPA CONSISTS OF COASTAL CLIFFS, A MOSAIC OF CAROB AND OLIVE GROVES, AND RELATIVELY UNDISTURBED AND DENSE COASTAL OAK WOODLAND.

The IPA includes a Ramsar site, consisting of a narrow coastal limestone cliff with steep unstable slopes rising to 200 m in elevation and serving as a major stopping site for migratory birds. The IPA also includes a rocky shoreline and a plateau dissected by seasonal streams.

This IPA includes 106 plant species, of which 36 species are restricted to the Eastern Mediterranean, 1 endemic to Lebanon, Syria and Palestine, 1 endemic to Lebanon, Syria and Turkey, 2 endemic to Lebanon, and 2 threatened species.

It also includes several species of economically important wild plants.

**THREATS:**  
Touristic development and industrial pollution.


	<b>106</b> species
Endemic To The Eastern Mediterranean Region	<b>36</b> species
Endemic To Lebanon, Syria & Turkey	<b>1</b> species
Endemic To Lebanon, Syria & Palestine	<b>1</b> species
Endemic To Lebanon	<b>2</b> species



PHOTO BY HICHAM EL ZEIN

# 11

## TANNOURINE - HADATH EJ-JEBBE

TANNOURINE  
- HADATH EJ-JEBBE

NAME OF MAJOR CITIES  
Douma - Tannourine - Kfour El Arabi  
- Qanat - Chatine - Niha - Wata Houb  
- Beit Chlala

THE TANNOURINE - HADATH EJ-JEBBE IPA INCLUDES THE TANNOURINE CEDARS FOREST NATURE RESERVE WHICH PROTECTS THE LARGEST CONTINUOUS CEDAR FOREST IN LEBANON WITH AN ESTIMATED 60,000 CEDAR TREES.

It also includes the upper part of Nahr el-Jaouz Valley, one of the richest and best preserved rivers in Lebanon.

This IPA includes 275 plant species, of which 42 species are restricted to the Eastern Mediterranean, 4 endemics to Lebanon, Syria and Palestine, 10 endemic to Lebanon and Syria, 8 endemic to Lebanon, Syria and Turkey, and 4 endemic to Lebanon.

THREATS:  
Quarries, urban expansion, and over-grazing. Part of this IPA is not accessible due to the presence of landmines dating from the civil war.

	<b>275</b> species
Endemic To The Eastern Mediterranean Region	<b>42</b> species
Endemic To Lebanon, Syria & Palestine	<b>4</b> species
Endemic To Lebanon, Syria & Turkey	<b>8</b> species
Endemic To Lebanon & Syria	<b>10</b> species
Endemic To Lebanon	<b>4</b> species



PHOTO BY HICHAM EL ZEIN

# 12

## JBAIL COAST

JBAIL COAST

NAME OF MAJOR CITIES  
Jbail - Aamchite

THE JBAIL COAST IPA IS A ROCKY COAST AND INCLUDES THE TOWN OF JBEIL (BYBLOS), ONE OF THE OLDEST CONTINUOUSLY INHABITED TOWNS IN THE WORLD AND AN IMPORTANT ARCHEOLOGICAL SITE.

Rocky cliffs in this IPA are habitats for the Lebanese endemic coastal species (*Matthiola crassifolia* Boiss. & Gaill).

This IPA includes 232 species, of which 1 species endemic to Lebanon and 1 endemic to Lebanon and Palestine.

THREATS:  
urban expansion and tourist resorts along the sea-shore.


	<b>232</b> species
Endemic To Lebanon	<b>1</b> species
Endemic To Lebanon & Palestine	<b>1</b> species



PHOTO BY HICHAM EL ZEIN

# 13

## NAHR IBRAHIM VALLEY

NAHR IBRAHIM VALLEY

NAME OF MAJOR CITIES  
 Kehmez - Halate - Kartaba - Mayrouba  
 - Naher El Dahab - Wata El Jaouz  
 - Lassa - Yahchouche - Achkouté

THE NAHR IBRAHIM VALLEY IPA CONSISTS OF DIFFERENT TYPES OF WOODLANDS INCLUDING DECIDUOUS OAK-PINE AND MIXED EVERGREEN-DECIDUOUS.

It includes Jabal Moussa Biosphere Reserve, designated as important bird area.

This IPA includes 295 species, of which 61 species restricted to the East Mediterranean Region, 8 endemic to Lebanon, Syria and Palestine; 2 endemic to Lebanon and Syria; 8 endemic to Lebanon, Syria and Turkey, 13 endemic to Lebanon and 10 threatened species.

THREATS:  
 The construction of a dam, road construction, urban expansion, and quarries.

	<b>295</b> species
Endemic To The Eastern Mediterranean Region	<b>61</b> species
Endemic To Lebanon, Syria & Palestine	<b>8</b> species
Endemic To Lebanon, Syria & Turkey	<b>8</b> species
Endemic To Lebanon & Syria	<b>2</b> species
Endemic To Lebanon	<b>13</b> species



PHOTO BY HICHAM EL ZEIN

# 14

## NAHR EL-KALB VALLEYS

NAHR EL-KALB VALLEYS

NAME OF MAJOR CITIES  
 Baskenta - Kfardebiane - Hrajel - Faraya  
 - Faytroun - Kleiyate - Bekaatouta - Zabbougha - Kfar Akab - Kfertai

NAHR EL-KALB VALLEYS IPA PRESENTS UNIQUE DIVERSITY OF HABITATS AND GEOLOGICAL FEATURES. NAHR EL KALB VALLEYS ARE RELATIVELY WELL PRESERVED AND SO FAR SPARED OF SIGNIFICANT URBAN EXPANSION.

The geology of the area consists of limestone formations, creating characteristic landscapes with caves, sinkholes and losing streams. Some of the most spectacular rock formations occur in the Keserwan area. The southern part of this IPA, known as the Metn area, consists of sandstone with oak and pine forests.

This IPA includes 885 plant species, of which 111 species are endemic to Lebanon, Syria and Turkey, 31 endemic to Lebanon, Syria and Palestine and 12 endemic to Lebanon.

THREATS:  
 The construction of a dam, urban expansion, road construction, forest fire, and illegal wood logging for the production of charcoal.


	<b>855</b> species
Endemic To Lebanon, Syria & Turkey	<b>111</b> species
Endemic To Lebanon, Syria & Palestine	<b>31</b> species
Endemic To Lebanon	<b>12</b> species



PHOTO BY HICHAM EL ZEIN

# 15

## SANNINE - KNAISSE

SANNINE - KNAISSE

NAME OF MAJOR CITIES  
El Mtein - Bednayel - Kfardebian - Qaa El Rim - Kfar Selouane - Slouky - Touaite - Falougha - Tarchiche - Hammana

THE SANNINE-KNAISSE IPA CONSISTS OF HIGH MOUNTAIN PLATEAUX, ROCKY CLIFFS, SCREES, AND DOLINES WITH A VEGETATION OF DWARF SPINY SHRUBS.

This IPA includes 510 species, 12 of which are endemic to Lebanon, Syria and Turkey, 6 endemic to Lebanon and Turkey, 22 endemic to Lebanon and Syria, 34 endemic to Lebanon and 3 threatened species.

**THREATS:**  
Over-grazing exacerbated by regional conflicts, which are preventing access to many areas traditionally used for grazing.

The destructive spring and summer off-roading tourism practices also constitute an important threat. Furthermore, construction of road networks into these remote highlands threaten the flora as they slice the landscape and allow human disturbances to reach isolated places.

	<b>510</b> species
Endemic To Lebanon, Syria & Turkey	<b>12</b> species
Endemic To Lebanon & Turkey	<b>6</b> species
Endemic To Lebanon, Syria	<b>22</b> species
Endemic To Lebanon	<b>34</b> species



PHOTO BY MOUSTAPHA ITANI

# 16

## MOUNT BAROUK

MOUNT BAROUK

NAME OF MAJOR CITIES  
Kherbet kanafar - Maasser El Chouf - Kfar Nabrahk - El Khreib - Batloun - Botme - Ain Ouzain - El Moukhtara

THE MOUNT BAROUK IPA INCLUDES THE CHOUF CEDAR NATURE RESERVE AND BIOSPHERE RESERVE WHICH COVERS AROUND 5% OF THE COUNTRY'S TOTAL AREA.

This IPA is the southernmost limit of the cedar of Lebanon (*Cedrus libani* A.Rich.). Cedar forests in Maasser Al-Shouf, Barouk, and Ain Zhalta – Bmahray account for a quarter of the remaining cedar forests in Lebanon.

This IPA includes 552 species of which 189 species are restricted to the Eastern Mediterranean, 18 endemic to Lebanon, Syria and Palestine, 20 endemic to Lebanon and Syria, 17 endemic to Lebanon, Syria and Turkey, 20 endemic to Lebanon and 19 threatened species.

**THREATS:**  
Forest fires and illegal hunting at the edges of the nature reserve.


	<b>552</b> species
Endemic To The Eastern Mediterranean Region	<b>189</b> species
Endemic To Lebanon, Syria & Palestine	<b>18</b> species
Endemic To Lebanon, Syria & Turkey	<b>17</b> species
Endemic To Lebanon & Syria	<b>20</b> species
Endemic To Lebanon	<b>20</b> species



PHOTO BY HICHAM EL ZEIN

# 17

## NAHR ED-DAMOUR

NAHR ED-DAMOUR

NAME OF MAJOR CITIES  
Debbiyeh - Kfar Matta - Damour - Btater - Majdel Meouche - Deir El Kamar - Rechmaya - Bayssour - Mechref

THE NAHR ED-DAMOUR IPA INCLUDES THE DAMOUR RIVER BASIN FROM ITS SOURCES TO ITS ESTUARY.

The Damour River with a total length of around 40 kilometers has two major springs, Nabaa Es-Safa and Barouk. An important part of the river basin consists of agricultural lands planted with banana and vegetables.

This IPA includes 317 of which 12 species are restricted to the Eastern Mediterranean, 1 endemic to Lebanon, Syria and Turkey and 2 endemic to Lebanon.

**THREATS:**  
Restaurants along the river edges and deterioration of quality of the Damour River water due to waste discharge (sewage and industrial wastes).

	<b>317</b> species
Endemic To The East Mediterranean Region	<b>12</b> species
Endemic To Lebanon, Syria & Turkey	<b>1</b> species
Endemic To Lebanon	<b>2</b> species



PHOTO BY HICHAM EL ZEIN

# 18

## BEIRUT - JIYYEH COAST

BEIRUT - JIYYEH COAST

NAME OF MAJOR CITIES  
Choueifat - Chiyah - Jiyeh - Naame - Beirut

THE BEIRUT - JIYYEH COAST IPA FALLS WITHIN A HIGHLY URBANIZED AREA. REMNANT PATCHES OF VEGETATION STILL RETAIN A SEMI-NATURAL PLANT COVER.

Examples of those patches occur on Dalieh, the landing area of the airport, and the churchyard of Saint Georges Church in Jiyeh, and they serve as the last refuge for some coastal native plants and are highly susceptible to being lost to development. Sandstone formations and sand dunes which are disappearing due to the construction of the airport, the coastal highway and high rise buildings and informal settlements.

This IPA includes 250 species, of which 10 species are endemic to the Eastern Mediterranean, 1 endemic to Lebanon, 3 endemic to Lebanon and Palestine, and 1 endemic to Lebanon, Syria and Palestine.

It constitutes the largest population of the coastal endemic *Matthiola crassifolia* Boiss. & Gaill.

**THREATS:**  
Housing and commercial development, and road construction

	<b>250</b> species
Endemic To The East Mediterranean Region	<b>10</b> species
Endemic To Lebanon, Syria & Palestine	<b>1</b> species
Endemic To Lebanon & Palestine	<b>3</b> species
Endemic To Lebanon	<b>1</b> species



PHOTO BY RAMZI AL MALTI

# 19

## TYRE - NAQOURA

TYRE - NAQOURA

NAME OF MAJOR CITIES  
Aalma El Chaab - Borj El Chemali - El Kleile - Naqoura - Tyre - Deir Kanoun - Hamoul - El Mansouri - Ain Baal

THE TYRE-NAQOURA COAST IS THE LARGEST AND ONE OF THE FEW REMAINING AND BEST PRESERVED SANDY COASTS IN THE COUNTRY.

The IPA is a nesting site for the vulnerable loggerhead and endangered green sea turtles, it is an important bird area, a Ramsar site, and a protected area (Tyre Cost Nature Reserve, TCNR). Part of this IPA falls in Tyre, declared a World Heritage Site. The Tyre coast also includes freshwater ponds containing reed beds and freshwater turtles.

This IPA includes 253 species and is home to 38 species restricted to the Eastern Mediterranean, 3 endemic to Lebanon, Syria and Palestine, 1 endemic to Lebanon and Syria, 1 endemic to Lebanon and 13 threatened species (10 rare and 6 regionally and nationally threatened species according to TCNR).

**THREATS:**  
Although part of this IPA is protected by law, its legal status is not alleviating threats such as irresponsible tourism and habitat fragmentation due to construction and agricultural activities.

	<b>253</b> species
Endemic To The East Mediterranean Region	<b>38</b> species
Endemic To Lebanon, Syria & Palestine	<b>3</b> species
Endemic To Lebanon, Syria	<b>1</b> species
Endemic To Lebanon	<b>1</b> species



PHOTO BY WASSIM KAYS

# 20

## JABAL RIHANE

JABAL RIHANE

NAME OF MAJOR CITIES  
Niha - Jezzine - Bkassine - Kfar houne - Kfar Remmane - Qlaiaa - Aichiye - El Rihane - Marjaayoun - Jarmak

THE JABAL RIHANE IPA EXTENDS FROM JEZZINE IN THE NORTH TO THE LITANI RIVER IN THE SOUTH AND INCLUDES SEVERAL MOUNTAIN PEAKS, CAVES, VALLEYS AND MOUNTAIN SLOPES COVERED WITH DENSE PINE FORESTS.

The IPA includes cultivated and abandoned agricultural fields, barren lands, and dense oak forests. Numerous water sources abound in this IPA resulting in wet spots characterized by dense vegetation. One interesting example is the snowdrop (*Galanthus fosteri* Baker.), recorded in this IPA after it was previously thought to be extinct in Lebanon.

This IPA includes 375 plant species, of which 86 species restricted to the Eastern Mediterranean, 17 endemic to Lebanon, Syria and Palestine, 4 endemic to Lebanon and Syria, 9 endemic to Lebanon, Syria and Turkey, 6 endemic to Lebanon and 3 threatened species.

**THREATS:**  
Rapid urban expansion following the liberation of South Lebanon. Efforts to counteract this threat have been initiated by announcing the IPA as a Biosphere Reserve.


	<b>375</b> species
Endemic To The Eastern Mediterranean Region	<b>86</b> species
Endemic To Lebanon, Syria & Palestine	<b>17</b> species
Endemic To Lebanon, Syria & Turkey	<b>9</b> species
Endemic To Lebanon & Syria	<b>4</b> species
Endemic To Lebanon	<b>6</b> species



PHOTO BY HICHAM EL ZEIN

# 21

## NAHR BEIRUT VALLEYS

NAHR BEIRUT VALLEYS

NAME OF MAJOR CITIES  
 Ras El Matn - Aabadiye - Baabada - Bet Meri - Aalay - Qornayel - Aintoura - Roumie - Bzebdine - Arsoun - Bikfaya - Aaraya

THE NAHR BEIRUT VALLEYS IPA CONSISTS OF THREE VALLEYS AND LARGE WATERSHEDS WITH AN IMPORTANT DIVERSITY OF PRESERVED WOODLANDS AND NATURAL HABITATS INCLUDING OAK AND PINE FORESTS, PERENNIAL AND INTERMITTENT RIVERS, RIPARIAN GALLERIES, ROCKY CLIFFS AND SMALL CAVES.

This IPA includes around 550 plant species, of which 58 species are endemic to Lebanon, Syria and Turkey, 33 endemic to Lebanon, Syria and Palestine and 6 endemic to Lebanon.

**THREATS:**  
 Housing and urban developments, road constructions, forest fires and wood harvesting for charcoal production. Solid waste open dumps and open sewer water discharge in the valleys.

	<b>550</b> species
Endemic To Lebanon, Syria & Turkey	<b>58</b> species
Endemic To Lebanon, Syria & Palestine	<b>33</b> species
Endemic To Lebanon	<b>6</b> species



PHOTO BY HICHAM EL ZEIN

# 22

## SARADA HILL

SARADA HILL

NAME OF MAJOR CITIES  
 Mazraet Sarada

THE SARADA IPA IS A HILL LOCATED IN A REGION INTENSELY CULTIVATED IN SOUTH LEBANON.

The rocky grasslands and shrublands constitute the only habitats where *Iris bismarckiana* Regel, a species endemic to the Golan and the Galilee, can be found in Lebanon. These sub-arid habitats are also typical of South Lebanon and their flora is understudied although they shelter many rare species endemic to Lebanon, Syria and Palestine.

This IPA includes around 208 plant species, of which 20 species are endemic to Lebanon, Syria and Turkey and 17 endemic to Lebanon, Syria and Palestine, including one endangered species.

**THREATS:**  
 Housing construction, agricultural expansion, reforestation activities focusing on species with economic value rather than native species.

	<b>208</b> species
Endemic To Lebanon, Syria & Turkey	<b>20</b> species
Endemic To Lebanon, Syria & Palestine	<b>17</b> species



# 23

## EHMEJ - JAJ

PHOTO BY HICHAM EL ZEIN

EHMEJ - JAJ


NAME OF MAJOR CITIES  
Jej - Ehmej - Tartige - Douma - Chatine

THE EHMEJ - JAJ IPA INCLUDES EVERGREEN AND DECIDUOUS OAK FORESTS AT THE LOWER ALTITUDES OF THE IPA.

It also includes rocky slopes, scattered woodlands, and shrublands in the upper parts of the IPA. This IPA is characterized with a rich plant diversity, including many endemic species.

This IPA includes around 450 plant species, of which 91 species are endemic to Lebanon, Syria and Turkey, 31 endemic to Lebanon, Syria and Palestine and 13 endemic to Lebanon.

THREATS:  
Residential and commercial development, road construction, and the establishment of new orchards and irrigation pools.

	<b>450</b> species
Endemic To Lebanon, Syria & Turkey	<b>91</b> species
Endemic To Lebanon, Syria & Palestine	<b>31</b> species
Endemic To Lebanon	<b>13</b> species



# 24

## NAHR EL-AWWALI VALLEY

PHOTO BY HICHAM EL ZEIN

NAHR EL-AWWALI VALLEY

NAME OF MAJOR CITIES  
Anane - Ktale - Bisri - Joun - Der Mkhalles - Haret Jandal - Ammatour - El Khreibe - Botme - Batloun

THE NAHR EL-AWWALI VALLEY IPA FORMS A LONG VALLEY EMERGING FROM THE CHOUF REGION.

Like other steep valleys of the country, Nahr Awwali is a shelter for many rare species and harbors preserved natural habitats, namely pine, evergreen and deciduous oak woodlands, shrublands, cliffs and riparian woodlands.

This IPA includes around 210 plant species, of which 24 species are endemic to Lebanon, Syria and Turkey, 15 endemic to Lebanon, Syria and Palestine and 2 endemic to Lebanon.

THREATS:  
Housing and road construction, forest fires, illegal wood harvesting for charcoal and the ongoing construction of a dam.

	<b>210</b> species
Endemic To Lebanon, Syria & Turkey	<b>24</b> species
Endemic To Lebanon, Syria & Palestine	<b>15</b> species
Endemic To Lebanon	<b>2</b> species





PHOTO BY HICHAM EL ZEIN

# 25

## AFQA PLATEAUX

AFQA PLATEAUX

NAME OF MAJOR CITIES  
Akoura - El Mejdal - Afqa

THE AFQA PLATEAUX IPA EXTENDS BETWEEN MOUNT SANNINE AND MOUNT MNEITRE.

It consists of a high plateau, at 1800-2000 m, hosting the most important sub-population of Greek Juniper (*Juniperus excelsa* M.Bieb) and other typical high mountain plateau vegetation.

This IPA includes around 210 plant species, of which 19 species are endemic to Lebanon, Syria and Turkey, 10 endemic to Lebanon, Syria and Palestine and 9 endemic to Lebanon.

THREATS:  
Illegal logging of junipers, expansion of orchards into wooded areas, and road construction.

	<b>210</b> species
Endemic To Lebanon, Syria & Turkey	<b>19</b> species
Endemic To Lebanon, Syria & Palestine	<b>10</b> species
Endemic To Lebanon	<b>9</b> species



PHOTO BY HICHAM EL ZEIN

# 26

## MOUNT MNEITRE

MOUNT MNEITRE


NAME OF MAJOR CITIES  
Ainata - Mchaa el Jobbe - Tannourine foka - Yamoune - Hasroun - Bazoune - Bkaakafra - Bcharre

THE MOUNT MNEITRE IPA IS UNDERSTUDIED DUE TO DIFFICULTY OF ACCESS.

The plateau of Mount Mneitre shows features similar to Mount Makmel and Mount Sannine. It hosts a significant number of endemic species and is characterized by high montane habitats types, including scree, dolines and dwarf spiny shrubs.

This IPA includes around 374 plant species, of which 54 species are endemic to Lebanon, Syria and Turkey, 22 endemic to Lebanon, Syria and Palestine and 18 endemic to Lebanon.

THREATS:  
Over-grazing.

	<b>374</b> species
Endemic To Lebanon, Syria & Turkey	<b>54</b> species
Endemic To Lebanon, Syria & Palestine	<b>22</b> species
Endemic To Lebanon	<b>18</b> species

# INFORMATION

## WHAT CAN BE DONE TO PROTECT IPAS

Some IPAs are partially or fully protected as they include areas protected by the law or as UNESCO Man and Biosphere Reserves. Other IPAs are in dire need of protection.

Municipal lands and lands that are too steep to be developed or used for agriculture may constitute nuclei for the establishment of protected areas in several IPAs. Community involvement is essential to ensure participatory sustainable management and use strategies. IPAs that are predominantly urban may still include quality remnant vegetation and may need to be incorporated through landscape designs as part of urban ecology strategy.

## DEFINITIONS

Asl: At sea level

Biosphere reserve: geographical areas that are representative of the diversity of habitats in the world, and include both land and marine ecosystems.

Citizen science: scientific research carried out by non-professional scientists (in part or in full)

Climates: The prevailing weather conditions in an area in general or over a long period.

Conifer: Non flowering, cone-bearing seed plants

Conservation: protect from harm and sustain (especially in environmental and cultural context) Deciduous: plants that shed their leaves yearly

Degradation: the deterioration,, wearing down, or breaking down (of rocks)

Dolines(sinkholes): A hollow part in the earth; holes caused by some form of collapse of the surface layer

Ecology: is the scientific study of interactions among organisms and their environment

Endemic: the quality of being native or restricted to a certain area.

Erosion: gradual wearing away by natural agents (such as sun, wind and water).

Evergreen: plant types that retains green leaves throughout the year

Gorges: a narrow valley between hills or mountains, typically with steep rocky walls and a stream running through it.

Hotspot: A significant reservoir of biodiversity that is endangered

Important bird area: using a set of criteria, areas identified by BirdLife International as important ecosystems for birds

Marsh: a low wet land, usually void of trees

Organism: a form of life; a living animal, plant, or single-celled life form.

Plateaux: an area characterized by a fairly leveled high ground.

Pollination: reproduction of plants; the process by which pollen is transferred to the female reproductive organs of a plant, thereby enabling fertilization to take place.

Quarry: a place, typically a large, deep pit, from which stone or other materials are or have been

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MOUSTAPHA ITANI

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