



SYRIA

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01 Jisr al-Shoghur

Regional KBA (IPA)

Situated on the left bank of Orontes River, Jisr al-Shoghur KBA is the wooded hinterland of the Baer–Bassit massif. It is a slightly elevated area, its elevation ranging from 150 to 850 m above sea level. Humid Mediterranean bioclimatic conditions prevail in this regional KBA. the Amanus and Antioch endemics.

02 Fronloq–Kasab

B1 *Allium calypttratum* Boiss., *Petrorhagia syriaca* (Boiss.) Mouterde & Greuter, *Cytisus cassius* Boiss., *Ferulago amani* Post

Fronloq–Kasab KBA is a mountainous region in the Baer region of Northwest Syria. Humid Mediterranean climate predominates this area, which receives an annual precipitation exceeding 1,100 mm. This KBA constitutes the southern limit of many Euro-Siberian plant species. It also includes a large number of endemics of the coastal mountains and Amanus. Many nationally threatened species find refuge in Fronloq–Kasab, most notably *Quercus infectoria* subsp. *veneris* (A. Kern.) Meikle and *Quercus cerris* L.

03 Umm al-Tuyur–Bassit

B1 *Allium bassitense* J. Thiébaud

Umm-al-Tuyur Bassit KBA extends along the Syrian coast from Wadi Qandil River to Ras al-Bassit headland. It is characterized by green metamorphic rocks that do not occur anywhere else in the country. It is dominated by *Pinus brutia* Ten. woods extending all the way to the sea. A sheer rocky coast (ca. 22 km), woodland hinterland towards the main Latakia–Antioch highway and a sandy beach (ca. 2 km) comprise this KBA, which includes many of the endemics of Amanus and the coastal mountains, as well as many nationally rare and/or threatened species. This KBA includes one of the last remaining patches of wild olive trees (*Olea europaea* L.). Two marine protected areas exist within this KBA.

04 Salma–Haffeh

Regional KBA (IPA)

Salma–Haffeh KBA falls in the Euromediterranean altitudinal zone of the coastal mountains, and extends ca. 15 km between the two towns Salma and Haffeh. The KBA is intercepted by many permanent watercourses and contains exemplars of vegetation types typical of the western



slopes of the coastal mountains. Wooded areas are dominated by *Pinus brutia* Ten. And *Quercus coccifera* L. forests, associated with *Pistacia terebinthus* subsp. *palaestina* (Boiss.) Engl. This is the only site where the nationally threatened fern, *Pteris vittata* L., may be found.

05 Slenfeh–Jaubet al-Berghal
B1 *Cedrus libani* A. Rich., *Iris nusairiensis* Mouterde, *Saponaria bargylia* Gomb., *Origanum bargyli* Mouterde,

Slenfeh-Jaubet al-Berghal KBA extends ca. 25 km in the north-south direction along both sides of the crest line of the Syrian coastal mountains. In fact, this KBA covers most of the northern part of these mountains and includes their highest peak (Nabi Matta, 1,562 m above sea level). Its eastern slopes are very steep, descending to the Ghab depression, while its western slopes are less steep but intercepted by deep valleys. Around 40% of the area of this KBA is protected. This KBA is one of the best forested mountainous area in the country, its forests dominated by *Abies cilicica* (Antoine & Kotschy) Carrière and *Cedrus libani* A. Rich. It receives the highest amount of rainfall in the country because of its direct exposure to the wet western winds. Based on its altitude, it falls between the Supramediterranean and the Oromediterranean zones.

06 Ghab
Regional KBA (IPA)

The Ghab depression is a flat plain in northwestern Syria that used to be transformed into a large swampy area when flooded by the Orontes River. The depression was transformed into an area of intensive agriculture through a large draining

project. This KBA is therefore comprised of remnant patches that house some of the original vegetation of this swampy plain.

07 Abu Qbeis
Regional KBA (IPA)

Abou Qbeis KBA extends ca. 20 km east-west and 8 km north-south on both sides of the crest line, in the central part of the Syrian coastal mountains. Lying in the humid Mediterranean bioclimatic zone, this KBA is located in the Eumediterranean, Supramediterranean and Oromediterranean zones of the mountain. This KBA was designated an Important Plant Area (IPA) based on the number of rare and threatened plant species it includes. It is also the best national site for threatened orchids. 60% of the area of this KBA is protected.

08 Kanfo
Regional KBA (IPA)

Kanfo KBA is basically the best remaining *Quercus ithaburensis* Decne. woodland in the country. Extending over an area of ca. 3 km², this KBA lies at the southern end of the Ghab valley towards the northern fringes of Tar al-Ula hills. Sub-humid Mediterranean bioclimatic conditions predominate this KBA, which occurs at an average altitude of 220 m above sea level.

09 Massiaf–Qadmous
Regional KBA (IPA)

Massiaf-Qadmous KBA is located in the southern section of the Syrian coastal mountains. On its western side, it is intercepted by deep valleys with seasonal and permanent water courses. Dominated by humid and sub-humid Mediterranean bioclimatic conditions, this regional KBA contains nationally threatened



Pistacia atlantica open woodland, Syria
 © Hayan Himidan

Pinus halepensis Mill. and *Cupressus sempervirens* L. coniferous woodlands, in addition to several coastal mountain endemics, as well as nationally threatened and rare plant species. Only about 5% of this KBA is protected.

10 Daher al-Qseir
B1 *Iris basaltica* Dinsm., *Lathyrus basalticus* Rech.f.

Located at the southeastern edge of the Syrian coastal mountains, Dahr al-Qseir is characterized by volcanic soil and humid Mediterranean bioclimatic conditions, a combination not found anywhere else in the country. It constitutes the southernmost limit for such species as *Castanea sativa* Mill. and *Corylus avellana* L. It also houses some of the stenoendemics of the western Homs plateau, as well as as endemics of the coastal mountains.

11 Al-Kabir al-Jonubi
B1 *Isoetes libanotica* Musselman, Bolin & R.D.Bray, *Isoetes olympica* A. Braun, *Iris basaltica* Dinsm., *Lathyrus basalticus* Rech.f., *Arum polyphyllum* Link, *Pulicaria aurantica* Mouterde, *Cota samuelssonii* (Rech. f.) Oberpr. & Greuter, *Centaurea reducta* Wagenitz, *Vicia kalakhensis* Khattab, Macted & Bisby

Al-Kabir al-Janoubi river, the main coastal river of Syria, originates at the southern limits of the Syrian coastal mountains and runs through the Homs gap, demarking the Syrian-Lebanese border. Important riparian and marsh habitats located approximately 45 km along the Syrian

banks of this river, comprise this KBA in Syria. Similar habitats along the Lebanese banks of this river comprise the Menjez KBA in Lebanon. This KBA includes many threatened and/or rare species. It also includes many West Homs Plateau endemics at its eastern part and Levantine coast endemics along its western part.

12 Akkoum

Regional KBA (IPA)

Akkoum KBA is comprised of a 10 km x 4 km strip of low to medium elevation hills and mountains that extends into the Lebanese territories to include the extreme northeastern part of Mount Lebanon. It is dominated by Mediterranean woodlands and shrublands and include an evergreen Mediterranean forest dominated by *Cupressus sempervirens* L. and *Juniperus excelsa* M. Bieb. Its highest point is Marmaz (1,430 m).

13 Anti-Lebanon

B1 *Tulipa lownei* Baker, *Iris antilibanotica* Dinsm., *Minuartia parvulorum* Rech. f., *Silene schlumbergeri* Boiss., *Draba oxycarpa* Boiss., *Odontarrhena subspinos*a (T. R. Dudley) Španiel & al., *Astragalus antilibani* Bunge, *Astragalus exiguus* Post, *Euphorbia antilibanotica* Mouterde, *Euphorbia promecocarpa* Davis, *Teucrium antilibanoticum* Mouterde, *Nepeta pabotii* Mouterde, *Thymus alfredae* Post, *Verbascum antilibanoticum* Hub.-Mor., *Verbascum porteri* Post, *Valerianella antilibanotica* Rech. f., *Campanula antilibanotica* (P. H. Davis) Greuter & Burdet, *Phagnalon linifolium* Post, *Helichrysum pygmaeum* Post

Anti-Lebanon KBA is comprised of a high mountain range that extends north-east to south-west, forming the Syrian–Lebanese border. It consists mostly of an extensive highland area (ca. 2000 m above sea level), and includes the second highest peak in Syria (Tal'at Musa, 2,616 m). The numerous mountain peaks, steep slopes, vertical cliffs, and deep valleys provide diverse habitats for plants. The area is very rich in grasses, range species and crop wild relatives of many legumes and cereals (*Triticum*, *Vicia*, *Lens*, *Cicer*, *Lathyrus*). Low temperatures coupled with a long period of snow and frost allow the survival of alpine and subalpine vegetation. Being in the rainshadow of Mount Lebanon, this KBA

receives modest precipitation; therefore, semiarid Mediterranean bioclimatic conditions prevail. This KBA is the most important center of endemism in Syria, with a large number of stenoendemics and three centers of endemism: Bloudan, Al Zebedani and Maloula. Around 60% of this KBA is protected.

14 Qalamoun

B1 *Allium pseudophaneranthrum* Rech. f., *Iris yebrudii* Dinsm. ex Chaudhary, *Verbascum glanduliferum* (Host) Hub.-Mor., *Verbascum tropidocarpum* Murb.

Qalamoun is a mountain range extending about 65 km from north-east to south-west, parallel to the more westerly Anti-Lebanon range. Being in the rainshadow of both Mount Lebanon and Anti Lebanon, it receives very low precipitation. Arid-Mediterranean bioclimatic conditions prevail in this KBA, which harbours a large number of national and subnational endemics and stenoendemics. Around 5% of this KBA is protected.

15 Qassioun

B1 *Bellevalia douinii* Pabot & Mouterde, *Iris damascena* Mouterde, *Sedum louisii* (J. Thiébaud & Gomb.) Fröd., *Onobrychis gaillardoti* Boiss., *Scandix damascena* Bornm.

Qassioun is an elongated mountain, running at the foothills of Anti-Lebanon above Damascus from north-east to south-west. Arid Mediterranean bioclimatic conditions prevail in this KBA, which derives its importance from the relatively high number of rare, localized restricted range endemics. Some, such as the trigger species *Iris damascena*, may be extinct as they have not been observed for a long period of time. This may be attributed to increasing urbanization.

16 Rakhleh–Wadi al-Qarn

B1 *Prunus boissieri* nom. nov., *Ferula hermonis* Boiss., *Valerianella soyeri* Boiss.

Rakhleh–Wadi al-Qarn is an upland area located at an elevation of 1,000–2,000 m on the north-eastern slopes of Mount Hermon, adjacent to the Lebanese border. Its unique position between Mount Hermon and the Anti-Lebanon Mountains contributes to the richness of its flora. Sub-humid Mediterranean bioclimatic conditions prevail in this KBA, which includes the nationally threatened oak species *Quercus brantii* Lindl.

17 Hermon

B1 *Rosularia parvifolia* Rech. f., *Ferula hermonis* Boiss., *Astracantha gaillardotii* (Boiss.) Podl., *Linum toxicum* Boiss., *Euphorbia caudiculosa* Boiss.

Mount Hermon, the highest mountain in Syria (ca. 2814 m), constitutes the southernmost section of the Anti-Lebanon Mountains, its crestline forming the border between Syria and Lebanon. It receives abundant rainfall due to its proximity to the Galilee-Golan gap, which allows humid Mediterranean air to enter inland. Sub-alpine to alpine vegetation types prevail at high altitudes. Relicts of the nationally threatened oak, *Quercus ithaburensis* Decne. subsp. *ithaburensis* (=Quercus look) may be found at lower elevations.

18 North Golan

B1 *Allium damascenum* Feinbrun, *Silene physalodes* Boiss., *Stachys paneiana* Mouterde

A volcanic plateau in the northern parts of the Golan Heights in south-western Syria comprise this KBA, whose northern limits reach the foothills of Mount Hermon. Sub-humid Mediterranean bioclimatic conditions prevail in this KBA, which includes relict woodlands of the nationally threatened oak, *Quercus ithaburensis* Decne. Many narrow endemics of the Galilee and northern Palestine reach the northern limit of their distribution in this KBA. Around 6% of the area of this KBA is protected.

19 Jabal al-Arab

B1 *Isoetes olympica* A. Braun, *Allium drusorum* Feinbrun, *Iris bostrensis* Mouterde, *Iris auranitica* Dinsm., *Consolida gombaultii* (Thiébaud) Munz, *Trifolium bonnevilliei* Mouterde, *Trifolium salmoneum* Mouterde, *Vicia dionysiensis* Mouterde, *Prangos hermonis* Boiss., *Ferula armandii* Mouterde, *Ferulago auranitica* Post, *Salvia drusica* Mouterde, *Crataegus × sinaica* Boiss.,

Jabal al-Arab, also known as Jabal al-Druze or Jabal Hauran, is an elevated convex volcanic massif extending over southern Syria. No permanent watercourses are found at this site, although many valleys (wadis), deep and short in the east and long and shallow in the west, drain the mountain. Its exposure to Mediterranean winds through the Golan Galilee gap, coupled with altitudinal factors contribute to the existence of two bioclimatic



◀
Juniperus, Anti-Lebanon KBA, Lebanon
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subdivisions at this IPA, the subhumid and the semiarid Mediterranean zones. A unique site for basalt habitats, this KBA includes such nationally threatened habitats as pools and basaltic rocks. The unique volcanic soil and exposure to the Mediterranean Sea are factors that make this KBA the second most important Syrian site for national and subnational endemics and stenoendemics. The area is also very rich in grasses, range species and crop wild relatives of many legumes and cereals (*Triticum*, *Vicia*, *Lens*, *Cicer*, *Lathyrus*). Only 2% of the area of this KBA is protected.

20 Yarmuk valley Regional KBA (IPA)

Located in the southwestern corner of Syria, the Yarmuk valley is a deep canyon with sheer fringes. The valley is formed by the Yarmuk river, which traverses the Hauran plateau, demarking the Syrian-Jordanian border. Other water courses join the valley from the northern side. The lowest part of the Yarmuk valley, where the canyon joins the Jordan valley, is below sea level. Many tropical and Saharo-Arabian plant species reach the northern limit of their distribution at this site.

21 Hass-Jabbul Regional KBA (IPA)

Located in Northern Syria in the arid Mediterranean bioclimatic zone, Jabal Hass KBA is an elevated plateau surrounding Jabbul Lake from the western and southern sides and housing some endemics of the Aleppo region. The lake, occupying a closed depression (40 km x 10 km), is shallow (60 to 160 cm in depth) and saline to brackish. Declared a protected wetland, Lake Jabbul is an important RAMSAR site in the Middle East. Industrial waste water

and irrigation drainage has rendered the water of this lake rather fresh.

22 Jabal Abdul Aziz B1 *Michauxia nuda* A. DC., *Linum chaborasicum* Mouterde

Lying between the arid and semiarid Mediterranean bioclimatic zones, Jabal Abdul Aziz KBA is an elongated mountain range in the Jezira steppes with some localized endemics along with other endemics to Upper Jezira. The predominant vegetation type is the open shrubby woodland dominated by *Pistacia atlantica* Desf. and *Pistacia khinjuk* Stocks.

23 Jabal al Wastani

B1 *Iris alcarea* Dinsm., *Astracantha griseosericea* (Eig) Greuter, *Teucrium haradjanii* Briq. ex Rech. f.

Jabal al Wastani KBA is an elongated north-south mountainous chain extending over a distance of 45 km, with an average width of 5 km, and culminating at Hanash (847 m above sea level). This mountain is characterized by sheer and steep eastern slopes, descending towards Rouj plain, and gentler slopes descending towards Orontes River. The semi-arid Mediterranean bioclimatic zone predominates in this area. Euromediterranean woodlands dominated by *Quercus coccifera* L. prevail. The area is rich in grasses, range species and crop wild relatives of many legumes and cereals (endemics belonging to the genera *Triticum*, *Vicia*, *Lens*, *Cicer*, *Lathyrus*). Noteworthy wild relatives of *Lathyrus* are *Lathyrus digitatus* (M. Bieb.) Fiori and *Lathyrus ciliolatus* Sam. ex Rech.f.

24 Karatchok-Tigris

B1 *Senecio delbesianus* Arènes and *Echinops descendens* Hand.-Mazz.

This KBA, located in an area that has been subjected to intensive agriculture since the 1960s, represents the last remaining natural land in Upper Jezira. It is comprised of a 16 km long northwest to southeast mountain of low elevation, touching the Iraqi border at its southern end. Tigris River, with its unique habitats at the national level, is part of this KBA. Its flora has strong Irano-Taurinan affinity, with a number of Upper Jezira, Mesopotamian, and south Turkey endemics located within its limits. The area is very rich in grasses, range species, and crop wild relatives of many legumes and cereals (endemics belonging to the genera *Triticum*, *Vicia*, *Lens*, *Cicer*, *Lathyrus*). Crop wild relatives found in this KBA include *Vicia tigridis* Mouterde and *Triticum monococcum* L. ssp. *aegilopoides* (Link) Thell.

25 Kurd Dağ

B1 *Astracantha darmikii* (Mouterde) Podl., *Cicer bijugum* Rech. f., *Vicia qatmensis* Gomb., *Iris calcarea* Dinsm.

Kurd Dağ is a moderately elevated calcareous mountain massif occupying the north-western corner of Syria. Extending 50 km from northeast to southwest, this mountainous area, with well preserved vegetation, stretches more or less as a parallel ridge to Amanus Mountains in Hatay Province, Turkey, and constitutes the southernmost continuation of Taurus Mountains. Its highest point is Kutchuk Darmik at 1230 m. Sub-humid to semi-arid Mediterranean bioclimatic conditions prevail at this site. Botanically, it is a center of endemism for the Northern Levant (along with adjacent Gaziantep province, Turkey), with a relatively large number of Southern Turkish/ Northern Syrian plant endemics. It is very rich in grasses, range species and crop wild relatives of many legumes and cereals (endemics belonging to the genera *Triticum*, *Vicia*, *Lens*, *Cicer* and *Lathyrus*). There are ongoing concerns about extraction of minerals and the potential construction of a dam at this site. The site has no legal protection and no management plan.



Description of the Syrian KBA network

The identification of IPAs in Syria dates back to 2010 (Radford et al., 2011), when a national coordinating organization, Syrian Society for the Conservation of Wild Life (SSCW), prepared the first report on IPAs based on a rapid assessment. In that report, 33 IPAs were identified at the national level, 25 of which fall within the boundaries of the Mediterranean Biodiversity Hotspot. Since then, there has been no effort to update this report given the situation of the country. During the update of the CEPF Mediterranean Biodiversity Hotspot ecosystem profile in 2016, the boundaries of some existing IPAs, all of which are regional KBAs, were revisited (updated boundaries in map), but no new KBAs were identified based on plant species.

More recently, we assessed all these regional KBAs based on existing data and expert opinion. Of the 25 regional KBAs, 16 qualified as global KBAs. More than 70 trigger species, all restricted range endemics, and many of which are stenoendemics were used to designate these global KBAs. Many of the global KBAs are located in the humid Mediterranean (Umm al-Tuyur–Bassit and Slenfeh–Jaubet al-Berghal for example), sub-humid Mediterranean (Karatchok-Tigris for example) and semi-arid (Anti-Lebanon, Akkoum and Hermon for example) bioclimatic zones. The predominant

ecosystems in these identified global KBAs include coastal mountains (Fronloq–Kasab for example), riparian habitats (Al-Kabir al-Jonubi and Ghab for example) and Eumediterranean shrubs on calcareous rocks (Daher al-Qseir for example). Protected areas partly cover more than 10 KBAs. The most urbanized of the KBAs is Salma–Haffeh, while the most agricultural is Ghab and Al-Kabir Al-Janoubi.

The number of plant species endemic to Syria is 243 (ca. 9% of the Syrian flora) according to Mouterde (1966–1983). The Fourth National Report on Biodiversity in the Syrian Arab Republic (2009) refers to 207 endemic plant species. The plant families with the largest number of endemic species include Fabaceae, Asteraceae, Lamiaceae, Liliaceae *sensu lato*, and Iridaceae. The genera with the highest percentage of endemism include *Iris* (Iridaceae), *Astragalus* (Fabaceae), *Centaurea* (Asteraceae), *Allium* (Alliaceae), and *Verbascum* (Scrophulariaceae). A revision of the flora of Syria is necessary for determining the exact number of endemic plant species in the country.



Jabal Al Arab KBA, centre of endemism for Syria
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Main threats to the Syrian KBA network

Given the current situation in Syria, ongoing war and conflict constitute a major threat to the KBA network. Prior to this conflict, the KBA network was highly threatened by

- Unsustainable collection of herbs and medicinal plants,
- Deforestation, including collection of wood for fuel
- Extraction of minerals, including quarries
- Overgrazing, agricultural intensification, fires, and water extraction and drainage.

When the conflict subsides, it would be essential to collect new field data with the ultimate aim reevaluating all identified KBAs and the threats affecting them.

Main conservation actions recommended for the Syrian KBA network

Immediate intervention would be needed at the level of all identified KBAs as soon as the ongoing conflict subsides. Rehabilitation of degraded or destroyed habitats, particularly those falling within identified KBAs, should be undertaken. A national network of KBAs should be set up and new protected areas should be delineated and declared particularly in global KBAs. Management plans for currently designated protected areas that lack such plans should be developed and implemented, with emphasis on those protected areas that fall within the boundaries of identified KBAs.

The government should support and fund scientific research in the area of biodiversity conservation, with emphasis on trigger species, and ecosystems that fall within global KBAs. The government should also support regional collaboration in the area of biodiversity conservation and hold bilateral meetings with stakeholders (local communities, non-governmental organizations, etc.)

Deepening and strengthening environmental education, and increasing public awareness regarding biodiversity and its sustainable use and conservation would also be essential.