



LAJAHT BIOSPHERE RESERVE

UNESCO MAB



NOMINATION FILE

SUBMITTED

BY

SYRIAN MAB COMMITTEE

TO

**SECRETARIAT MAB UNESCO
DIVISION OF ECOLOGICAL SCIENCES**

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PART I: SUMMARY

1. PROPOSED NAME OF THE BIOSPHERE RESERVE:

[It is advisable to use a locally accepted geographic, descriptive or symbolic name which allows people to identify themselves with the site concerned (e.g. Rio Platano Biosphere Reserve). Except in unusual circumstances, Biosphere Reserves should not be named after existing national parks or similar administrative areas]

Al-Lajaht Biosphere Reserve

2. COUNTRY:

SYRIA



3. FULFILLMENT OF THE THREE FUNCTIONS OF BIOSPHERE RESERVES

(Article 3 of the Statutory Framework presents the three functions of conservation, development and logistic support. Explain in general terms how the area fulfils these functions.)

3.1 "Conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation" (Stress the importance of the site for conservation at the regional or global scales)

The Lajaht Biosphere Reserve is located on the Lajaht Plateau of Suweida Governorate that occupies the southernmost corner of Syria at the border with Jordan. It is extended over an area of 12038 ha at an altitude ranging from 600 to 1800 metres asl.

The Lajaht Biosphere Reserve is home to valuable wild relatives of almonds *Amygdalus communis* and *Amygdalus korschinskii*, pears *Pyrus syriaca*, and emmer *Triticum dicoccoides*. The latter is a wild relative used to improve disease resistance and protein content of the grain in cultivated tetraploid wheat. Lajaht is known as the richest place in Syria with endemic plant species. However, it also hosts mammals like the rare and nationally threatened Wolf *Canis lupus lupus*, the Near Threatened Striped Hyaena *Hyaena hyaena*, the Least concern Porcupine *Hystrix indica*, the Endangered Egyptian Vulture *Percnopterus egyptiacus* and the Vulnerable Imperial Eagle *Aquila heliaca*, to name a few. The site is a

place for an extremely diverse biological wealth, and encompasses some of the most interesting landscapes of the Suweida Province in southern Syria. The basaltic hills that are interspersed with pumice high cones are unparalleled in the country, and are a stark contrast to the varied semi-arid landscapes elsewhere in the Reserve. These basaltic habitats support large open woods of Mt. Atlas Mastic tree *Pistacia atlantica*, Bitter almond *Amygdalus communis* & *Amygdalus korschinskii*, Roman (dating back to Roman times) Olive trees *Olea europaea*, Sumac *Rhus coraria* and Common hawthorn



Pumice cone at Lajhat



Houses and backyard fences are made from basaltic stones



Crataegus azarolus that are underlined with *capparis spinosus*, *Ononis sp.*, *Atraphaxis sp.*, and the endemic *Iris aurantiaca*. All of them are highly appreciated and demanded by locals for different domestic and commercial uses. The Lajaht land is among the most productive agriculturally in the country and Suweida Governorate, with significant water retention and high soil quality and fertility. Further, the semi arid gravel and stony plain ecosystems interspersed with top quality earthen lands offers the construction material for most of the houses and walls of backyards in the region. What remarkable at the Lajaht Biosphere Reserve is that people from the local community use to fence large pieces of lands with several kilometres of stone wall to allow rangelands protection and grazing on rotation basis, offering as such a good traditional solution for sustainable grazing, new landscapes with plenty of habitats to birds and reptiles, mainly snakes. Moreover, the Lajaht has its unique style of agricultural historic terraces that are in use until today, old Roman olive oil presses, old pistacia presses and vast areas of ruins that were built up by the Romans and destroyed by the Ottoman troops in early twentieth century.



Historic terraces



3.2 "Development - foster economic and human development which is socio-culturally and ecologically sustainable". (Indicate the potential of the proposed biosphere reserve in fulfilling this objective).

The Lajaht Biosphere Reserve will certainly offer significant opportunities for the development of ecologically sustainable inter-relations between man and the environment, through the maintenance of the existing rotation grazing schemes, landscape restoration and possible reintroduction of disappeared native species like *Gazella gazella*, excavations and development of the Lajaht archaeological ruins. In addition, extensive educational opportunities would be to highlight the way houses, agricultural activities and other land utilisation used to be in the past, and to reveal to students and other stakeholders the importance of the fauna and flora in their life and economy as well as the value of the interdependence cultural-biological diversity. These initiatives would be complemented by improving current traditional activities through promotion of best practice standards and through the recognition of the value of at least helping species to adapt to climate change when the local communities of the Lajaht have little role to contribute to the reduction of carbon use. In order to secure long-term gains for both environment and communities, the Lajaht Biosphere Reserve shall develop eco-tourism infrastructure, including information centres, hiking and riding trails, interpretation panels, bird hides, eco-lodges; and develop a visitation programme to the archaeological sites, old monasteries and shrines, old pistachio oil presses, Roman olive oil presses, Ariqa cave, bird flyways and hotspots (bird-watching), open woods, old agricultural terraces, naturally sculptured rocks (scenic viewing), old road of pilgrimage which crossed Lajaht at a time in which only horses and camels were used as

means of transportation, etc. The reserve would provide naturalist guides with training courses and improve their skills in an attempt to provide the local communities with new job opportunities. Moreover, the genetic wealth contained within the flora of Lajaht has the potential to address poverty and contribute to famine eradication though much of the arid-climate world, given its proven capacity to grow in marginal, water-poor environments. The development of suitable and sustainable farming practices, including organic farming, using native flora and benefiting from the highly fertile soil, is also expected to contribute to health improvement programmes and poverty alleviation.

3.3 "Logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development".

(Indicate current or planned facilities).

Since more than one decade, the buffer and transition zones of the Lajaht Biosphere Reserve are offering experimental stations for research conducted by the International Centre for Agricultural Research in Dry Areas (ICARDA) on landrace populations, rangelands restoration, livestock improvement, plant breeds, agro-biodiversity and agro-climate education tool and training on farm management and best practices. Most of the agro-biodiversity activities at the Lajaht that was identified a centre of agricultural innovation and crop diversity are supported by a regional project to which Jordan, Lebanon and Palestine also participated and exchanged experience, training, capacity building, education, awareness and lessons learned.

Lajaht proved to be a site for demonstration of projects enabling poor farmers to improve their incomes, food security and living standards. In fact the International Fund for Agricultural Development (IFAD) implemented a project at Lajaht and its surrounding, in 1983-1987, focusing on literacy courses and training in marketing skills for rural women. This initiative resulted in the reversal of a trend towards migration from rural to urban areas.

Lajaht also benefits from several study-projects on in-situ conservation and monitoring that are conducted by professors and students from Al-Suweida Research Centre, General Commission for Scientific Agricultural Research, neighbouring universities such as the International University for Science and Technology and the Syrian International University for Science and Technology, and from other universities with interest in Lajaht habitats, chiefly the public Damascus University. Since at least 2003, experts from the Ministry of Agriculture and Ministry of Environment conduct research studies on the biodiversity components of the Lajaht BR, identify threats to species and ecosystems and recommend solutions to losses of biodiversity. They produced brochures, leaflets and posters aiming at educating students and sensitising public with regards to the importance of sustainable development. Laboratories of several foreign universities regularly engage researchers of different domains (ecology, biology, eco-toxicology, geomorphology, geography, economy, history and sociology ...) in the study of the Lajaht. The latter is also theatre for archaeological researches, surveys, expeditions and excavations since many years. About 30 archaeological research projects are known to have occurred in the Lajaht and its surroundings. The most interesting of these are the studies of long-term relationship of ecological and social change (American Journal of Archaeology, V95, No.4, 1991). Subsequently, the proposed biosphere reserve will benefit from such projects not only for promoting eco-tourism through combination of natural and culture tourism but also to educate people on the impact of climatic and cultural changes on the social life and land use through the history, e.g. diminution or expansion of the dry farming landscape and the seasonal availability of pastoral forage.

The local authority has a policy which encourages developing eco-tourism combining cultural tourism with the native community participation in nature resource protection and development, a matter that will certainly lead to fostering sustainable development in the entire region.

The abundance of wild relative and medicinal plants in the Lajaht would be a stimulator for the development of a project on designing and testing mechanisms for *in-situ* conservation of native

economic species that would be beneficial to humans, not only at the local and regional scales but also at the global level. A project proposal on this subject is currently in preparation by a multidisciplinary team of experts.

The proposed Syrian Lajaht Biosphere Reserve may get additional significance from two unique aspects:

- 1- According to the map of the “World Network of Biosphere Reserves”, the Lajaht is located at an intersection of two biogeographic regions (Temperate prairies and Hot desert and semi-desertic zones), thus occupying a “biogeographic crossroads” which is considered of high conservation priority (Sacha Spector, 2002¹). The habitats found in the Lajaht Biosphere Reserve are then those found in an ecotone ranging from woods to continental steppes, rangelands and desert-like semi-arid plains intercepted with shallow basaltic wadis. Also from a biogeographical view point, the flora of Lajaht consists of Mediterranean species in the form of either mono-biogeographical region or bi-regional with the Irano-turanian phytogeographical elements. The phytogeographical origins of the Lajaht Biosphere Reserve explain the designation of Lajaht and its immediate surroundings as a Mediterranean island by Zohary (1966).
- 2- Most of the Lajaht cultivated lands of the transition zone are growing mainly Koranic plant species such as barely, date palm, fig, garlic, grape, olive, onion, pomegranate and wheat, etc. (the Zaqqoom [the tree of hell] that grows in the desert of the port of Sudan, the ginger that was apparently imported from India, the Talh (banana) that requires less harsh conditions, and the thornless sidr (Lote) trees under which righteous will recline in the Paradise, are not included). In addition, the wild relatives of these koranic species are all provided in one place, the Lajaht Plateau. Within this context, the Lajaht can be considered a site of assistance to the Koranic botanical garden project of the Al-Reem Biosphere Reserve in Qatar serving as such the article 3 of the Statutory Framework.

4. CRITERIA FOR DESIGNATION AS A BIOSPHERE RESERVE

[Article 4 of the Statutory Framework presents 7 general criteria for an area to be qualified for designation as a biosphere reserve which are given in order below.]

4.1. "Encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human intervention"

(The term "mosaic" refers to a diversity of natural habitats and land cover types derived from human uses such as fields, managed forests, etc. The term "major biogeographic region" is not strictly defined but it would be useful to refer to the map of the "World Network of Biosphere Reserves" which presents 12 major ecosystem types at a global scale).

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The varied habitat types between higher basaltic black cones and plateaux and low-lying gravel plains strongly contribute to the landscapes of the Lajaht biosphere reserve. In addition, the

¹ . Sacha Spector (2002).- **Biogeographic Crossroads as Priority Areas for Biodiversity Conservation** Conservation Biology Volume 16, Issue 6 , Pages1480 – 1487.

² . Sacha Spector (2002).- **Biogeographic Crossroads as Priority Areas for Biodiversity Conservation** Conservation Biology Volume 16, Issue 6 , Pages1480 – 1487.

varied forms of land-use within the Reserve point to a complex mosaic of ecological systems with gradation of successive human intervention: large abandoned fortified farms with olive, pistachio and grape presses beside recent cultivated lands and orchards in plains or terraces, village houses built between the third and sixth centuries and are noteworthy for their dimensions, their structure and their decoration showing building techniques that are perfectly adjusted to the use of a single material, basalt, and a recurrent organization separating spaces used for economic activities (agriculture) from those kept for private life. These houses were subject to severe damage probably caused by the earthquake of 749. Then several periods of rebuilding, abandonment, and reoccupation followed until the 1960s-70s, date of the definitive abandonment of 90% of them and the beginning of a significant process of decay; open gravel plain grazing pastures interspersed with water-draining *wadis*, numerous point-source irrigated crop farming operations, Romano-Byzantine archaeological ruins; traditional, artisanal communities and semi-nomadic animal husbandry. The Lajaht has sustained humans for thousands of years, but during its very recent history, the increased population, wood cutting and uncontrolled grazing have contributed to the development of the current landscapes. Today, there are two categories of different but contradictory practices. One is for the protection of trees and rangelands violation and the other is for controlled grazing and free logging. The Biosphere Reserve would offer the opportunity to solve this conflict and to bring back the customs and landscapes of the past.

4.2 "Be of significance for biological diversity conservation"

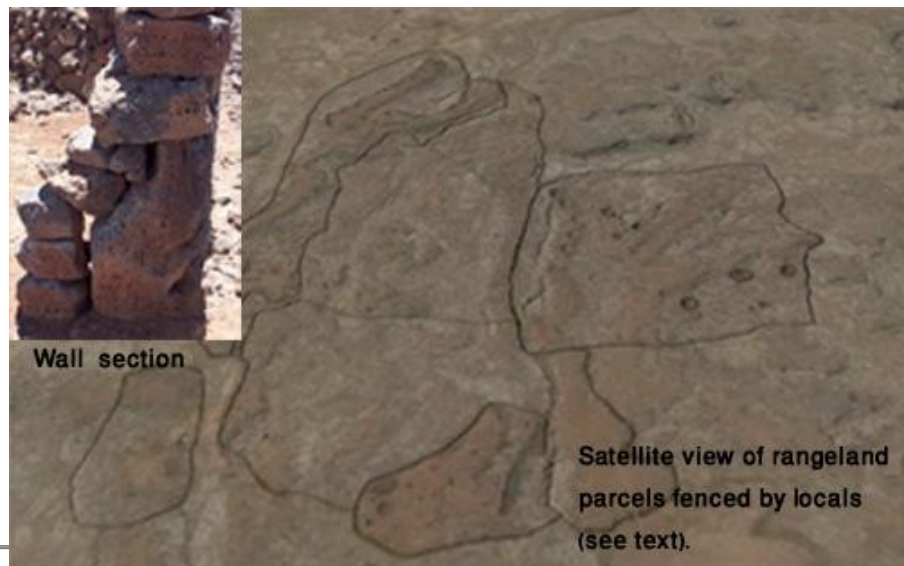
(This should refer not only to the numbers of endemic species, or rare and endangered species at the local, regional or global levels, but also to species of globally economic importance, rare habitat types or unique land use practices (for example traditional grazing or artisanal fishing) favouring the conservation of biological diversity. Give only a general indication here.)

The Lajaht reserve is home to several globally threatened populations of mammal species (Striped Hyaena *Hyaena Hyaena hyaena*, Grey Wolf *Canis lupus lupus*, Indian Porcupine *Hystrix indica*, Ethiopian Hedgehog *Hemiechinus aethiopicus*, etc.), refuge to many internationally threatened bird species (Lesser Kestrel *Falco naumanni*, Imperial Eagle *Aquila heliaca*, Black Vulture *Aegyptius monachus*, Egyptian Vulture *Neophron percnopterus*, Red Kite *Milvus milvus*, Macqueen's Bustard *Chlamydotis macqueeniii*, the regionally threatened Grey Shrike *Lanius meridionalis*, and the locally endangered Hoopoe Lark *Alaemon alaudipes* and Chukar Partridge *Alectoris chukar synaica*), along with a high diversity of migratory birds which use the Lajaht as a migratory pathway and stopover.

The floral diversity consists of endemic, medicinal, aromatic, culinary such as.....

The Lajaht Biosphere reserve is also identified as a priority area for economic plant species, wild relatives and plant landraces within the regional Agro-biodiversity project. The most known landraces and wild relative plant species found at Lajaht Biosphere Reserve are: wheat, barley, lentils, lathyrus, vetch, medics, clover, almonds, plums, pears, pistachio, figs, onion, garlic, date palm, grape, olive, and pomegranate.

One of the rare land use practices at the Lajaht is the construction of walls using the only available stones (basalt) by local initiatives to fence parcels of rangelands so that these protected



parcels can be used on rotational bases for grazing.

4.3 "Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale"

(Describe in general terms the potential of the area to serve as a pilot site for promoting the sustainable development of its region (or "eco-region"))

Lajaht provides an opportunity to work with public land managers and private landowners on sustainable development issues. The result is a mosaic of working and protected lands, with forestry and agriculture industries, tourism operators and recreational enthusiasts utilizing the landscape for several purposes. In fact, there is a good potential to use the proposed biosphere reserve activities as a mechanism to encourage "best practice" techniques, building on the willingness of local communities to develop their region environmentally and to look for a better economic life standard, while maintaining the unique nature and landscape values of this region. Within this context, there are at Lajaht Biosphere Reserve many opportunities for sustainable development:

- Being one of the richest landscapes with wild relatives and landraces and selected a priority area for economic plant species by the regional Agro-biodiversity project, the Lajaht Biosphere Reserve offers an outstanding opportunity contributing to conservation of globally important economic species, improved food supply, poverty alleviation, and formulation of guidelines for a sustainable exploitation of agro-biodiversity.
- Lajaht also provides significant opportunities for development of sustainable grazing programmes, and for reduction in use of fossil ground waters through the introduction of treated sewage-water irrigation schemes and even the cultivation of less water exigent vegetation for animal fodder.
- Lajaht will be a base for the dissemination of reports of lessons learned and best practices of the rangelands management to assist, in this domain, other villages within and outside Syria.
- The proposed Biosphere Reserve shall improve forest practices with regards to the rotation of Pistachio and Bitter Almond usage for oil extraction and sumac utilisation for culinary and medicinal purposes.
- Trails within the Lajaht could be demarcated with basaltic stones on the same traditional model or way used for rangelands fencing. This should create scenic landscape and habitats for wildlife and maintain the landscape values..
- The Reserve offers significant opportunities for ecologically- and culturally-based tourism through promotion of eco-tourism, including hiking, visits to traditional manufacturing places of pottery, olive oil presses, pistachio oil presses, historic winepresses and bird watching; and including also visits to archaeological sites, ruins and monuments.
- Promotion of green farming and improved facilities for irrigation and access to agricultural lands are expected to contribute to improving sources of incomes, reducing costs of production and reducing poverty of local communities.

4.4 "Have an appropriate size to serve the three functions of biosphere reserves"

(This refers more particularly to (a) the surface area required to meet the long term conservation objectives of the core area(s) and the buffer zone(s) and (b) the availability of areas suitable for working with local communities in testing out and demonstrating sustainable uses of natural resources.)

The total area of the proposed Lajaht Biosphere Reserve is approximately **xxx** sq. km. This area represents **xxx**% of the entire Governorate of Suweida. Within this coverage, Lajaht is the largest reserve in Syria. It is predicted that the expected future success of the Lajaht Biosphere Reserve will encourage neighbouring communities to join the Lajaht either through extension of the

development zone or through the designation of new sisters' core and buffer zones. This proposed Biosphere Reserve is large enough to accommodate the significant biodiversity as well as a suite of agricultural settlements and cultural values belonging to 13 villages and to encompass an extensive and sizeable suite of habitats suitable for experimental grazing, grassing, seeding, in-situ conserving and income generating through environmentally friendly activities.

4.5 Through appropriate zonation:

"(a) a legally constituted core area or areas devoted to long term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives"
(Describe the core area(s) briefly, indicating their legal status, their size, the main conservation objectives)

The Lajaht had been declared a reserve through Ministerial Decree No. 144/T/2006. Within this context, the core area which covers 2000 ha is legally constituted protected areas in accordance with the conservation criteria of the MAB biosphere reserve program. **The core area extends** Its area and outlines are determined by the Decree mentioned above to serve its objectives which are also stated in the same Decree (to protect the ecosystems and their components from increased degradation and extinction and to provide appropriate conditions for their natural renovation).

The determination of the area and boundary of the core area took in consideration that it should include the least altered habitats by human activities and the most significant biodiversity values that are in need of protection or that are seen as the vital components of the reserve. Similarly, the need to have representatives of the critical or most significant wild habitats, of the whole biosphere in the core area is also considered.

In this core area, only non harmful individual activities of scientific research and monitoring with the intention of obtaining the data that allow understanding the ecosystems and their changes over the time as well as the degree or effectiveness of their conservation are allowed.

"(b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place..."
(Describe briefly the buffer zones(s), their legal status, their size, and the activities which are ongoing and planned there).

The buffer zone covers an area of **xx ha**. It surrounds the core area with an outer boundary clearly identified as the legal boundary of **the Lajaht** reserve in accordance with the Decree No. **xxx**. It incorporates two small villages, Samid and Waqam. Within this conservation and management zone, only activities complementary to a Biosphere Reserve are permitted (e.g. research, recreation, monitoring, eco-tourism, etc.), This buffer zone also intends to minimize the effects on the core area, serve the latter's objectives and allow environmentally friendly activities that are compatible with the conservation activities of the core area. Environmental demonstration and experimentation projects on sustainable use of natural resources find their appropriate place in this buffer zone. Small scale development projects benefiting conservation and people may be allowed provided they are first submitted to impact evaluation or assessment. The managing authority plans to develop and run a research programme in the buffer zone for *in-situ* conservation of wild relatives and to experiment their utilization in order to find out to which extent they are effective in improving crops and fruits. Furthermore, the managing authority aims at experiencing sustainable eco-tourism management within the buffer zone to increase revenues not only to benefit the locals but also to improve serving the reserve and to use the interpretation material of eco-tourism for educational purposes.

"(c) an outer transition area where sustainable resource management practices are promoted and developed"

(The Seville Strategy gave increased emphasis to the transition area since this is the area where the key issues on environment and development of a given region are to be addressed. The transition area is by definition not delimited in space, but rather is changing in size according to the problems that arise over time. Describe briefly the

transition area as envisaged at the time of nomination, the types of questions to be addressed there in the near and the longer terms. The size should be given only as an indication).

The transition or development zone covers an area of xx ha and incorporates ten villages (Khalhale, Radima El Shamalia, Soura Soghra, Lahitha, Matoula, Sweimer, Um El Zaytoun, Mjadel, Kharsha and Dama). This zone represents x% of the total area of the Lajaht reserve. It is to serve traditional and organic farming, pastoral activities, fattening units and fodder production, marketing of homemade traditional products and items (Pistachio oil, olive oil, almond oil, liquors, syrups, honey, etc.), recreational and educational activities. In addition, this transition zone plays an additional role in conserving some cultural and natural spots within a number of private properties and in restoring fragmented habitats of certain publicly owned areas of the Lajaht transition area. It is planned by the managing authority of the Lajaht that workshops, seminars, eco-friendly events, cultural festivals and eco-lodges will have place in this transition area to benefit the local communities and generate incomes to improve conservation efforts. However, it is expected that further development in the flexible transition zone boundary to be minimal and non-destructive.

The villagers of the Lajaht primarily depend on agriculture focussing on olive plantation, grape yards, fig, apple and pears orchards, cereals and vegetables. Pastoral activities follow agriculture on the rank of priority to constitute the second aspect of the economy of the villagers. The latter's interest in the buffer zone and core area of the Lajaht biosphere reserve is mainly related to collection of culinary and medicinal plants for domestic use, collection of wood as fuel for local use, grazing and utilization of wild relatives for improving their crops.

Within the framework of a preparatory process to obtain a common consensus of the local communities on the management of the Lajaht biosphere reserve, the Ministry of local Administration and Environment conducted two workshops at Suweida with participants from Ministries of Agriculture, Tourism and Environment, Governorate of Suweida, municipalities, schools, NGOs and several scientists and experts of various disciplines from the local communities. These workshops drafted the outlines of the expected management plan but also recommended several activities to be implemented within the transition zone, of them:

- Establishment of information and interpretation centres,
- Renovation of old traditional houses to be used as eco-lodges,
- Training guides and rangers from the different villages of the Lajaht on patrolling, guiding, interpreting and reporting (ongoing),
- Construction of four bird-watching/ controlling towers at the four corners of the reserve (achieved),
- Maintaining and promoting the existing grazing rotation system as a successful traditional approach,
- Regulating the use of the underground water table,
- Enforcing the laws that are in relation with hunting, logging and collection of wild plant species.

4.6 "Organizational arrangements should be provided for the involvement and participation of a suitable range of *inter alia* public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve."

(Are such arrangements in place or foreseen)

The linkage and partnership between the Ministry of Local administration and Environment, Ministry of Agriculture, Ministry of Tourism, Governorate of Suweida, Damascus University (governmental agencies), and the UNESCO Beirut office (intergovernmental agency) as well as the National MAB Committee, the National UNESCO Commission, farmers, shepherders, **artisans**, beekeepers, etc. provided the impetus and skills necessary to develop the Lajaht Biosphere Reserve nomination form, which resulted in its endorsement by all concerned bodies. Further partnerships are expected with private universities, independent NGOs, international

universities and a suite of private ventures to further develop and promote the Biosphere Reserve.

The overall supervision of the Lajaht Biosphere Reserve will be under the responsibility of the Ministry of Local administration and Environment (MLAE) through its environmental management authority in cooperation with a committee that will be formed by the Minister of MLAE to collaboratively administer and manage the proposed reserve. This committee will be formed from the Director of Biodiversity and Protected areas Department at the MLAE, Director of Agriculture in Sweida, Director of Agro-research Institute of Suweida, Director of Forest Department in Suweida and one representative for each of the following entities: National MAB Committee, UNESCO National Commission, Executive Bureau of Tourism, General Counsel of Remote Sensing, municipalities, schools of the Suweida, farmers Order of Suweida, NGOs, and one focal person from each of the villages that are within or contiguous to the reserve. The national focal person for the biosphere reserve(s) will be the Director of Biodiversity and Protected areas Department at the MLAE.

4.7 Mechanisms for implementation

Does the proposed biosphere reserve have:

"(a) mechanisms to manage human use and activities in the buffer zone or zones" ?
(Briefly describe)

A suite of management mechanisms exists which meets the requisite oversight as required through the UNESCO MAB programme related to human and other uses. The Biodiversity and Protected Areas Department (BPAD) at the MLAE is Syria's environmental management authority. Being legally protected through the Decree No. xxx, the Buffer zone of the Lajaht Biosphere Reserve enjoys the country's highest level of protection with regard to environmental protection. Within this context, patrols to stop poaching and illegal activities are provided by police stations that are neighbouring the reserve. In addition, a national grazing policy that is benefiting from the Lajaht experience, among others, is currently under development by the Ministry of Environment. Hence, it is expected that this national grazing policy will, on its turn, reward the local policy of Lajaht through providing it with new well studied guidelines for its improvement. Furthermore, the Agro-biodiversity project that was financed by GEF and implemented in Lajaht and its environs by ICARDA between 1999-2005 completed studies on farm socio-economy, botany, genetic diversity, potential use of wild relatives, landrace populations, rangelands restoration, livestock improvement, plant breeds and agro-climate education tool and training on farm management and best practices. All these studies and resulting experimentations have lead to improved management of human use and activities in the Lajaht biosphere reserve, including its buffer zone, especially that the project conducted several awareness workshops by introducing the project to technical staffs and farmers and trained many stakeholders on water harvesting, soil maintenance and better use of management of natural resources by local people.

Development within the core area is not allowed at all but it is not permitted, within the buffer zone, without requisite Environmental Impact Assessments through Law No. 50 (2002). The managing authority gives special attention to the assessment of environmental effects of all development projects, to ensure that environmental aspects are taken into consideration in development projects. Syria's EIA process was designed in accordance with the protection of the environment procedures recommended by various international organizations, and meets the principles of sustainable development as adopted during the Earth summit in 1992. Further, hunting is restricted within the core and buffer zones of the Lajaht Reserve via Decree No. 144/T/2006 and regulated within the transition zone through the Presidential Decree No. 152/70.

Complementing the role of the Ministry of Local Administration and Environment, the Ministry of Agriculture and Agrarian Reform (MAAR) is responsible for monitoring and managing the

wooded areas of Lajaht and the agricultural and farming activities within the buffer and transition zones of the Reserve, and has a number of departments which are directly relevant to the management requirements within the MAB programme. The MAAR conducts field experiments for horticulture, crops, animal breeders, water, soil resources and develops water and agricultural development studies and research activities. These are aimed at improving consumption irrigation water, rationing water distribution to achieve its best utilization, and develop/protect water and soil resources from deterioration. At the MAAR, options exist to study scientific methodologies, and apply modern technologies relevant to water and agriculture. Also the Agricultural Guidance and Information section of MAAR provides advice, guidance, consultation and direction for the benefit of farmers, and forwards the results of successful experiments, after proving their agricultural adaptability, and recommendations to the scientific community. As for the Department of Information and Public Awareness in the MLAЕ, it assists in conducting awareness campaigns and producing leaflets, brochures and posters to sensitise public and decision-makers.

"(b) a management plan or policy for the area as a biosphere reserve" ?
(Briefly describe)

The Main Policy for managing the protected status of the Lajaht Reserve is set out in Institutional Arrangements of the MLAЕ and its Established Department, "Biodiversity and Protected Areas" supplemented by Decree No. 144/T/2006 establishing the Lajaht Reserve, and is focussed primarily on conserving ecosystems and landscapes and their components, regeneration and restoration. **The managing authority** is responsible for all the functions and actions that are deemed necessary to protect the Lajaht Biosphere Reserve, especially its core and buffer zones where the general policies for the Lajaht as a biosphere reserve aim at ensuring sustainable development, conserving endangered species of native fauna and flora, including economic species and protecting their natural habitats; combating desertification and soil erosion, stopping the introduction of exotic species, drawing up necessary plans to implement these policies and overseeing their implementation by the ministries, government agencies, public institutions and other parties; monitor the activities, procedures and practices relating to the protection and promotion of the environment and flora and fauna, and to monitor the implementation and evaluate the results; evaluate the environmental impact assessment studies of any major development project, whether public or private and to submit opinion on their expected environmental impacts prior to granting permit to operate for such projects by the competent authorities.

In addition, the managing authority is tasked with drawing up plans for training of locals in ways and means of protecting their environment and the reserve, and to evaluate the results. The managing authority is also concerned to incorporate awareness programmes highlighting the protection of the reserve, develop educational and mass media programmes; and to encourage novel research through the development of research agenda.

In the eighteen-month period following submission of the Biosphere Reserve nomination file, the managing authority expects to prepare a realistic and practical management plan considering the following:

- Development of a management framework vertically integrating legislative requirements and policies and horizontally integrating management in regional context.
- Development of goal (vision) themes, topics, sub-topics, objectives, actions and indicators for monitoring,
- Development of annual workplan
- Development of sub-management plans for community relations, recreation, eco-tourism with infrastructure, grazing, education, research, risk assessment, benefits and sharing, business and fundraising.

"(c) a designated authority or mechanism to implement this policy or plan" ?
(Briefly describe)



Yes



No



Planned

The Department of Biodiversity and Protected Areas in cooperation with its management committee is the designated management authority for the proposed Biosphere Reserve. The management committee is formed from the Director of Biodiversity and Protected areas Department at the MLAE, Director of Agriculture in Sweida, Director of Agro-research Institute of Suweida, Director of Forest Department in Suweida and one representative for each of the following entities: National MAB Committee, UNESCO National Commission, Executive Bureau of Tourism, General Counsel of Remote Sensing, municipalities, schools of the Suweida, farmers Order of Suweida, NGOs, and one focal person from each of the villages that are within or contiguous to the reserve. The national focal person for the biosphere reserve(s) will be the Director of Biodiversity and Protected areas Department at the MLAE. In the coming year the management committee will develop a practical (easily understood by the reader with its logical sequences) and realistic (all its components are inspired from consultation and communication with a wide range of stakeholders) management plan for the Reserve addressing points raised above in 4.7.

(d) programmes for research, monitoring, education and training"?

(Describe briefly research/activities monitoring (ongoing or planned) as well education and training activities)

Research programmes aimed at developing hypotheses that will contribute to addressing specific management challenges and/policy are being carried out. Some of these involve Master research of students on two aspects: Threats to the flora and fauna diversity of Lajaht Biosphere Reserve, and Socio-Economic Profiles of the pastoral community in the Lajaht BR. One of the ongoing monitoring activities is the bird annual count that is conducted by the MAAR to establish the list of species and number of birds that are hunted without being classified as gamebirds. Similarly, the Lajaht is currently benefiting from several study-projects on in-situ conservation and monitoring that are conducted by professors and students from neighbouring universities such as the International University for Science and Technology and the Syrian International University for Science and Technology, and from other universities with interest in Lajaht habitats, chiefly the public Damascus University. Since at least 2003, experts from the Ministry of Agriculture and Ministry of Environment conduct research studies on the biodiversity components of the Lajaht BR, identify threats to species and ecosystems and recommend solutions to losses of biodiversity. They produced brochures, leaflets and posters aiming at educating students and sensitising public with regards to the importance of sustainable development. Laboratories of several foreign universities regularly engage researchers of different domains (ecology, biology, eco-toxicology, geomorphology, geography, economy, history and sociology ...) in the study of the Lajaht. Of them, there are currently two French expeditions in two of the villages of the transition area of the Lajaht BR where excavations and archaeological researches are taking place. It is expected that the proposed biosphere reserve will benefit from such expeditions not only for promoting eco-tourism through combination of natural and culture tourism but also to educate people on the impact of climatic and cultural changes on the social life and land use through the history.

Being one of the pilot sites of the Agro-biodiversity project that was implemented between 1999-2005, the Lajaht Biosphere Reserve offers an opportunity to monitor its progress made following the achievement of the Agro-biodiversity project, especially with regards to the effectiveness of the *in-situ* conservation of wild relatives, **landraces and breeds**; and to the efficiency of the rangeland restoration and grazing management.

Educational opportunities, other than educational materials produced by MAAR and MLAE, would be to highlight the way houses, agricultural activities and other land utilisation used to be in the past, or would be to use eco-tourism interpretative material as educational tool for school students. On the other side, the Lajaht Biosphere Reserve would provide naturalist guides with training courses and improve their skills in an attempt to provide the local communities with new job opportunities. In addition, the managing authority is tasked with drawing up plans for training of locals in ways and means of protecting their environment and the reserve, and to evaluate the results.

Within the management framework, it is supposed that the horizontal integration of the management in a regional context will strengthen the cooperation with the biosphere reserves of the neighbouring countries, for instance Lebanon and Jordan. Consequently, it will be a prime priority to develop a regional training programme, in which, each biosphere reserve can complement the training activities of the others.

5. ENDORSEMENTS

5.1 Signed by the authority/authorities in charge of the management of the core area(s):

Full name: _____

Title: _____

Date: _____

Signature

Full name: _____

Title: _____

Date: _____

Signature

5.2 Signed by the authority/authorities in charge of the management of the buffer zone(s):

Full name: _____

Title: _____

Date: _____

Signature

Full name: _____

Title: _____

Date: _____

Signature

5.3 Signed as appropriate by the National (or State or Provincial) administration responsible for the management of the core area(s) and the buffer zone:

Full name: _____

Title: _____

Date: _____

Signature

Full name: _____

Title: _____

Date: _____

Signature

Full name: _____

Title: _____

Date: _____

Signature

5.4 Signed by the authority/authorities, elected local government recognized authority or spokesperson representative of the communities located in the transition area.

Full name: _____

Title: _____

Date: _____

Signature

Full name: _____

Title: _____

Date: _____

Signature

Full name: _____

Title: _____

Date: _____

Signature

5.5 Signed on behalf of the MAB National Committee or focal point:

Full name: _____

Title: _____

Date: _____

Signature

PART II: DESCRIPTION

6. LOCATION (LATITUDE AND LONGITUDE):

[Indicate in degrees - minutes, seconds the coordinates of the central point AND the external limits of the proposed biosphere reserve to be used for a Geographic Information System (GIS)]

Central: 32° 59' 41.16"N
36° 30' 22.76"E

North: 33° 04' 17.15"N
36° 32' 07.10"E

South: 32° 53' 47.47"N
36° 28' 45.95"E

East: 32° 58' 18.78"N
36° 40' 47.23"E

West: 33° 01' 13.25"N
36° 20' 10.14"E

7. AREA (see map xxx):

Total: 12038 ha.

7.1 Size of terrestrial Core Area(s): 2031 ha;
If appropriate, size of marine Core Area(s): ha.

7.2 Size of terrestrial Buffer Zone(s): 1752 ha;
If appropriate, size of marine Buffer Zone(s): ha.

7.3 Approx. size of terrestrial Transition Area(s) (if applicable): 8255 ha;
If appropriate, approx. size of marine Transition Area(s): ha.

7.4 Brief rationale of this zonation (in terms of the various roles of biosphere reserves) as it appears on the zonation map. In the cases where a different type of zonation is also in force at the national level, please indicate how it can coexist with the requirements of the biosphere reserve zonation system:

The Lajaht core area is legally constituted protected area in accordance with the conservation criteria of the MAB biosphere reserves programme. Its area and outlines are determined by the Decree No. 144/T/2006 to protect its ecosystems and their components from degradation and/or extinction and to provide appropriate conditions for their natural renovation. This core area is given high protection attention for its high cultural and natural heritage values consisting of several historic sites and woods made from wild relatives and economic wild plant species at the junction of two bio-geographic regions (Temperate prairies and Hot desert and semi-desertic zones). The determination of the area and boundary of the core area took in consideration that it should include the least altered habitats by human activities and the most significant biodiversity values that are in need of protection or that are seen as the vital components of the reserve.

Similarly, the need to have representatives of the critical or most significant wild habitats, of the whole biosphere in the core area is also considered.

In this core area, only non harmful individual activities of scientific research and monitoring with the intention of obtaining the data that allow understanding the ecosystems and their changes over the time as well as the degree or effectiveness of their conservation are allowed.

The buffer zone surrounds the core area with an outer boundary clearly identified as the legal boundary of the Lajaht reserve in accordance with the Decree No. xxx. The outer border of this buffer zone was identified as such to incorporate cultural and natural ecosystems that were created or influenced through human use, and to minimize the effects on the core area. Within this buffer zone, only environmentally friendly activities that are complementary to a Biosphere Reserve are permitted (e.g. research, recreation, monitoring, eco-tourism, etc.). Environmental demonstration and experimentation projects on sustainable use of natural resources are also placed within this zone.

The transition or development area consists of private and public lands surrounding the buffer zone where human populations of the reserve live and work. In this area, management intends to serve traditional and organic farming, pastoral activities, fattening units, fodder production, marketing of homemade traditional products and items (Pistachio oil, olive oil, almond oil, liquors, syrups, honey, etc.), recreational and educational activities. In addition, the transition area plays an additional role in conserving some of its cultural and natural spots within a number of private properties and in restoring its fragmented habitats in certain publicly owned areas. The outer boundary of the transition zone is subject to extension when appropriate but for instance it is limited to areas encompassing people having interests in and benefits from the reserve. It contains landscapes and habitats representative of those found in other zones of the reserve, and is delimited by topographical or natural and anthropological barriers.

8. BIOGEOGRAPHICAL REGION:

[Indicate the generally accepted name of the bio-geographical region in which the proposed Biosphere Reserve is located. You may wish to refer to the map of the World Network of Biosphere Reserves presenting 12 major ecosystem types.]

Transition area between or junction of two bio-geographical regions: “Temperate prairies with Hot desert and semi-desertic zones” (see Map of the World Network of Biosphere Reserves). In fact, studies proved that the Lajaht BR is, with immediate surroundings, a “Mediterranean semi-arid island” with Irano-Turanian influences.

9. LAND USE HISTORY:

[If known, give a brief summary of past/historical land use(s) of the main parts of the proposed biosphere reserve]

Researchers and Archaeologists have shown that the area had been inhabited long before the recorded history (since the last 3000 years), and major powers throughout the known history have left their imprints on the landscape of the Lajaht Biosphere Reserve. The latter is composed of rocky basaltic hills that extend from south to north, interspersed with pumice cones and earthen plains with highly fertile soil and patches of lithosol and to a much lesser extent pellic vertisol. Research showed that the Lajaht was a centre for viticulture³ and olive oil production as it is witnessed by the many old presses of the giant and abandoned fortified farms. Beside grape and olive trees, inhabitants of the Lajaht planted figs, pomegranates and cultivated huge fields of cereals such as wheat and barley. In the history of the Lajaht, the woods of pistachio and almond as dominating wild trees were of higher density than what is seen today until they were

³ The main city of the governorate of Suweida which includes the Lajaht was called in the past “Dyonisus” (god of wine).

unsustainably exploited by the Ottomans in early 20th century to provide wood for railroads, fuel to trains and to their troops. In 1975, a system of agricultural stability zones was introduced as part of the overall effort of the Government to regulate agricultural production through medium and long-term agricultural sector planning. This central planning exercise involves a comprehensive annual agricultural plan specifying each of the zones and administrative units. Farmers in a particular zone may be required or allowed to grow certain crops and to use selected seeds or other inputs, if available. Since then, the inhabitants of the Lajaht depend on cultivation of barley, lentil, cotton, tobacco, grape, olive, vegetable (mainly relying on rain water instead of irrigation) and livestock. What is remarkable is the traditional rotating grazing system that is commonly applied at the Lajaht and the use of wild pistachio fruits to produce oil that is considered by locals as an alternative for olive oil.

;lkjhglk`

The basaltic black rocks are exploited in construction of houses, walls and pavement of roads whereas the volcanic pumice is mainly used, after being crushed, as an underlying layer of tiles.

10. HUMAN POPULATION OF PROPOSED BIOSPHERE RESERVE:

[Approximate number of people living within the proposed biosphere reserve]

A specific census of inhabitants within the Reserve has not been carried out, but estimates of the human population can be derived from several published and/or unpublished papers and reports on the villages of the reserve. Therefore, the total number of people found to be living within the Lajaht Biosphere Reserve is about 16445 individuals. Of them 0.6% are on seasonal basis in the core area and 3.6% are permanently and seasonally in the buffer zone. The following table shows the distribution of people over the villages.

Village	Population	Zone	Village	Population	Zone
Deir Dama	70	Buffer	Sweimra	371	Transition
Samid	891	Transition (9% in buffer zone)	Matouna	1454	Transition
Mjadel	1724	Transition	Lahitha	2296	Transition
Kharsa	580	Transition	Soura Soghra	1450	Transition
Wakem	435	Transition	Radima Shamalia	1662	Transition
Dama	2136	Transition	Khalkhala	1720	Transition
Um El Zaytoun	1806	Transition	Total=13 villages	16595 individuals	

permanently / seasonally

- 10.1 Core Area(s): Zero/80
- 10.2 Buffer Zone(s): 150 / 300
- 10.3 Transition Area(s): c.16445 / Unknown

10.4 Brief description of local communities living within or near the proposed Biosphere Reserve:

[Indicate ethnic origin and composition, minorities etc., their main economic activities (e.g. pastoralism) and the location of their main areas of concentration, with reference to a map if necessary]

The Lajaht Biosphere Reserve encompasses a mix of cultures and ethnic groups which have been building up for more than 3,000 years. Although most of the population (about 90%) of the Lajaht are Druze and about 10% are Greek Orthodox⁴, also known as the Melkite church. The appellation "Greek" refers to the language of liturgy, not to the ethnic origin of the members.. Still, religious and ethnic distinctions sometimes coincide, since religious sects have tended to marry within the group, thus preserving not only religious but ethnic characteristics. In general, all minorities have a strong cultural identity, resulting in cultural differences that distinguish the ethnic and religious communities. There are differences in clothing, household architecture, agricultural practice, and outlook, besides the differences in belief and practice.

As the Lajaht is part of the Governorate of Suweida that is considered the country's Druze population, it will be normal that the major population of Lajaht is also formed from Druzes who are a minority at the national level. Their old shrines exist almost everywhere. Peripheries of villages are often a temporary settlement for the nomadic Bedouins which roam the area with their sheep and goats.

Major contemporary activities by local inhabitants of the Reserve and its surroundings include farming, tending herds sheep and goats (being one of the main components of economic development in the country after the cultivation of cereals, fruits and vegetables. The agricultural sector in the Lajaht and its environs is getting a lot of attention from the government, which has been working hard in supporting farmers and encouraging national investments in the agricultural sector), small-scale trade and commerce, and working in the tourism industry.

Schooling is divided into 6 years of compulsory primary education, 3 years of lower secondary education, and 3 years of upper secondary education. Vocational secondary training schools offer courses in industry, agriculture, commerce, and primary school-teacher training. The usual entrance age for secondary schooling is 15, and is 14 for teacher training institutions.

10.5 Name(s) of nearest major town(s): Suweida, Qanawat and Shahba

Suweida

Located 128 Km southeast of Damascus the city of Suweida is the main city of Suweida governorate. It is quite an important center and has a predominantly Druze and Greek Orthodox community; it is also the seat of a Greek Orthodox bishop. Not much of the ancient ruins of Suweida are still existing, most were built over and destroyed by the Ottomans and then the French mandate, who built many barracks here to watch closely the Druze community after the 1925 rebellion. The only ruins left are three ancient columns that used to be part of a Nabatean temple and the remains of a large basilica dating back to the 4th century AD. Suweida museum however has quite a large collection of interesting mosaics that resemble the ones found in the Shahba museum. Themes include Artemis taking a bath, and a banquet scene. There is also a fine collection of statues sculpted in the black basalt, although not as elegant as marble statues they deserve just as much credit.

Qanawat

Situated at a distance of 7 km from Suweida and at an altitude of 1200m, is the beautiful city of Qanawat. Archaeological discoveries have proved that this area was settled by Stone Age Man, although the ruins available now are mainly from the Roman period. It is mentioned in the Biblical texts as Kenath. During the Roman period, Qanawat, was named Decapolis and it was allowed to live independently for a while. After the first Century AD it was incorporated within the Roman Empire, and later flourished under the Byzantine Empire when it became a Bishopric. When the Arabs took over Syria in the 7th century, Qanawat was not of much use to them and it declined. The main ruin at Qanawat is the Serai or Seraya. This was originally two Roman structures dating back to the 2nd century AD, which were altered and adapted for Christian worship in the 4th and 5th centuries. It now consists of two churches and an atrium. Also dating

⁴ Suweida is also the seat of a Greek Orthodox bishop.

back to the 2nd century is a temple dedicated to the God of Gods, Zeus. It is situated in the southern part and its' six Corinthian columns are surrounded with a thicket of plants. The temple of the Sun God, Helios is northwest of the Zeus temple. Its structure dates back to the 2nd century and used to have 31 columns. Remains of the columns can be seen in the public town square. The other temples are dedicated to the God of water (3rd century) and another to Athena Al Lat (2nd century). There is a large number of Roman and Byzantine tombs located on the road coming from Suweida and dating back to the 4th century is the Qanawat church. Other vestiges include the theater, the public baths and a great water tank.

Shahba

Located 87 Km south of Damascus is the Roman city of Shahba. Shahba, or Philippopolis is one of, if not the, only Roman city that was built from nothing. Usually Roman cities had Arab or Hellenistic origins. Shahba was founded by the Emperor Philip the Arab, who built it as a symbolic capital dedicated to his family during his reign between 244 and 249 AD. However the building of this city was stopped abruptly at his death and was never finished. It was left abandoned for several centuries until the Druze reoccupied the area after emigrating from Lebanon. The town's walls, which nearly shape into a square, are still recognizable with the four gateways leading into the city. The main cluster of ruins lies near the center of the square city. The main ruins include a forum, a palace, a temple, a theater, baths, and a kalybe. This kalybe is a 30-meter niche area as part of the façade of the palace, it is thought that Philip might have sat here on his throne. The temple was probably erected as a shrine dedicated to his chieftain father Julius Marinus. This square like temple has evidence that it was decorated with marble and that the niches in between the walled arches were filled with statuary of Philips family. The theatre is not much compared to the superior one in Bosra, but at 42 meters in diameter it is one of the best preserved theatres in Syria. The baths however are relatively large compared to the rest of the city, the inside walls were covered with marble, and their quality of architecture was as good and even better than some of the great baths in Rome itself. There is also a museum of mosaics here that exhibits some beautiful Syro-Roman art. Some of the themes in these mosaics include: Orpheus surrounded by animals, the wedding of Ariadne and Bacchus, and one of Aphrodite and Ares.

10.6. Cultural significance:

[Briefly describe the proposed Biosphere Reserve's importance in terms of cultural values (religious, historical, political, social, ethnological)]

Archaeological discoveries have proved that the Lajaht Biosphere Reserve was settled by Stone Age Man, although the ruins available now are mainly from the Roman period. Many houses from the Byzantine epoch are still in their original conditions and are still inhabited by locals. Dama, one of the reserve's villages played a major role in the late stages of the Great Syrian Revolution (1925-1927). It hosted the important Dama Convention which resulted in the refusal of French proposals and the collapse of negotiations between the Druze rebels and the French. It was also the site of some of the last battles in the revolution fought by guerrilla groups led by Emir Adel Arslan. Dama and neighboring villages are thought to be the place where Saint Paul took refuge after escaping from Damascus.

The main population of the Lajaht is formed from a 1) majority of Druze



Weaving silk carpet at women's center of Lahitha village

Muslims who trace their origin to Wadi El Tym in South Lebanon, 2) minority of Greek Orthodox Christians who tend to focus on the Greek heritage of the region from the days of the Byzantine Empire and 3) Bedouins Muslims who trace their origin to Arabia. Both Druze and Greek Orthodox depend largely on agricultural activities. They also have large and flourishing artisan communities that produce basic items such as soap, textiles, glassware, and shoes in small cottage industries. Aghabani cotton hand embroidered tablecloths, silk carpets, pottery, and wood carvings are other popular crafts. Bedouins rely on grazing their sheep and goats on seasonal basis.

Socialism became the official economic policy in 1958. Since then, the trend has been toward socialist transformation and industrialization. In commerce, state control is mainly restricted to foreign-exchange operations. Small private businesses and cooperatives are still in operation, and the retail trade is still part of the private sector, despite competition from consumer cooperatives in the large cities. The government controls the most vital sectors of the country's economy and regulates private business. In 1975, a system of agricultural stability zones was introduced as part of the overall effort of the Government to regulate agricultural production through medium and long-term agricultural sector planning. This central planning exercise involves a comprehensive annual agricultural plan specifying each of the zones and administrative units. Farmers in a particular zone may be required or allowed to grow certain crops and to use selected seeds or other inputs, if available.

11. PHYSICAL CHARACTERISTICS

11.1. General description of site characteristics and topography of area:

[Briefly describe the major topographic features (wetlands, marshes, mountain ranges, dunes etc.) which most typically characterize the landscape of the area.]

the province is composed of volcanic range of mountains that extend from south to north and has a wonderful natural exposure to the Northern and Western parts of Syria, of which one can see Mount Haramone to the North and the green plains of Huraan to the West.

The Lajaht Biosphere Reserve is composed of volcanic range of mountains that extend from south to north and has a wonderful natural exposure to the Northern and Western parts of Syria, of which one can see Mount Haramone to the North and the green plains of Huraan to the West. It is rather a plateau with interspersing volcanic basalt and pumice

cones of , and volcanic springs. It is located in Suweida Province, 128 kms south to Damascus, at an altitude ranging between 600 and 1800 metres *asl*. The landscape in the reserve is generally mountainous with hills looking north and uneasy accessed stony plains with earthen pockets of fertile soil. Due to the porosity of the basalt, water penetrates the porous rocks, forming underground springs or subterranean water sheets close to the surface.

11.2.1 Highest elevation above sea level: 1800 metres

11.2.2 Lowest elevation above sea level: 600 metres

11.2.3 For coastal/marine areas, maximum depth below mean sea level:

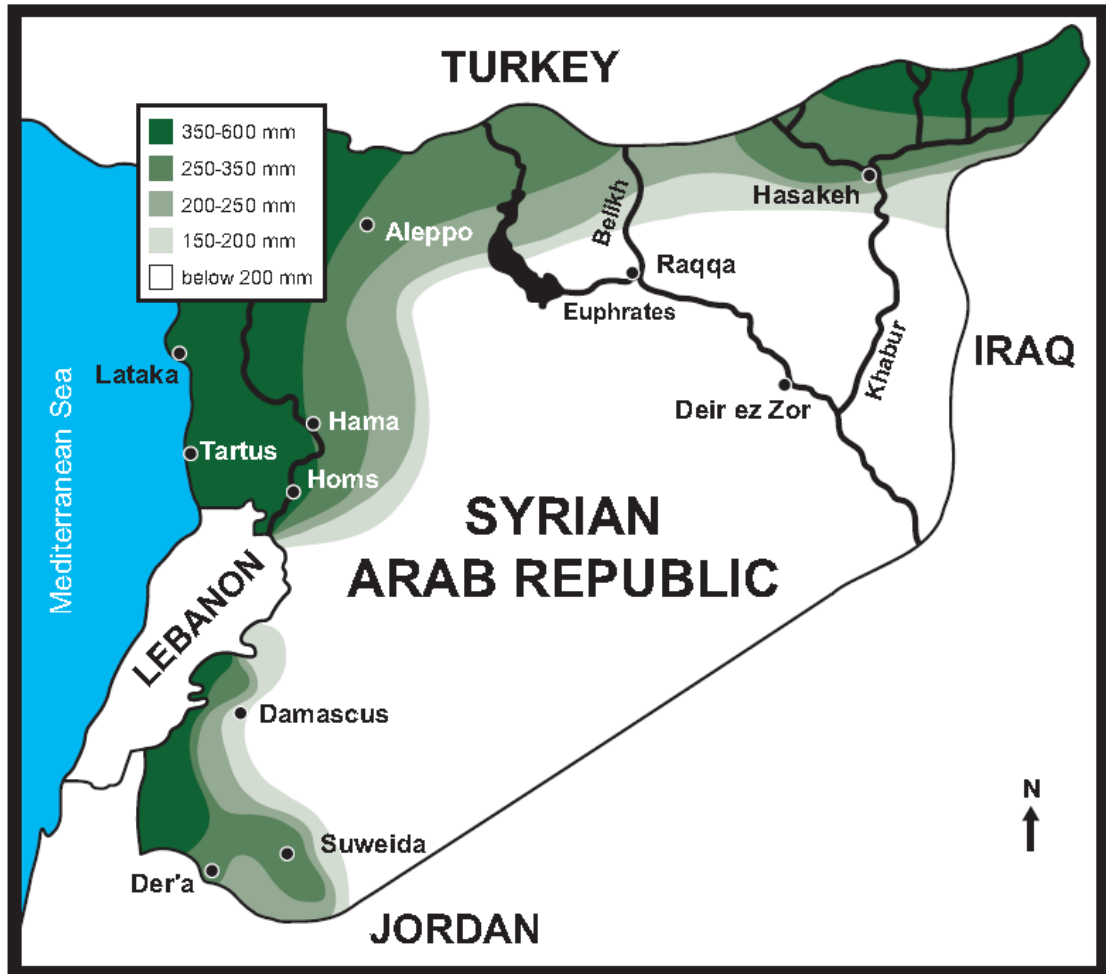
11.3. Climate:

[Briefly describe the climate of the area using one of the common climate classifications]

The Lajaht enjoys a moderate climate year round with Mediterranean affinity due the dominant westerly wind in both summer and winter. The mean winter temperature is 10 °C and the mean summer temperature is 20 °C. The precipitation mainly occurs in November-March with an

annual average of 300 mm (250-350 mm/year). As for the humidity, it varies between 70% in winter and 41% in summer (average 54%). According to the FAO, The Lajaht of Suweida falls within the zone 2 of the agricultural stability as it is shown on the Syrian map below.

Agricultural stability zones in the Syrian Arab Republic



11.3.1 Average temperature of the warmest month: 33 °C

11.3.2 Average temperature of the coldest month: 5 °C

11.3.3 Mean annual precipitation: 300 mm, recorded at an elevation of: 800 meters

11.3.4 If a meteorological station is in or near the proposed Biosphere Reserve, indicate the year since when climatic data have been recorded:

a) manually: 1958-1960

b) automatically: 1984-1987

c) Name and location of station: Samid, Lahitha, Dama, Um El Zaytoun and Majadel villages.

11.4. Geology, geomorphology, soils:

[Briefly describe important formations and conditions, including bedrock geology, sediment deposits, and important soil types]

Syria occupies the northern part of the Arabian Shield and comprises both tectonically stable and active zones (Ponikarov, 1966; Best *et al.*, 1993). The stable zones include the Rutbah uplift in the south-east and the Jordan uplift in the south, separated by the Drouz depression. Ophiolitic rocks were emplaced with other volcanic extrusives in the Jurassic and two phases of volcanism

occurred in the Cretaceous (Dubertret, 1933). In the Aleppo region, there was a brief phase of volcanic activity during the Palaeogene (Mouty *et al.*, 1992). In Miocene to Holocene times, there was active volcanism over most of Syria, although it occurred predominantly along the margins of the rift zone to the south and south-west. These younger volcanics commenced with subaerial flood basalts in the Early Miocene, mostly 20 to 16 Ma ago, and extended over most of southern Syria, Jordan and Saudi Arabia, although this phase is absent along the coastal zone (Mouty *et al.*, 1992). A period of quiescence followed until c.8 Ma ago when intensive volcanism commenced over most of Syria, but particularly along the rift margins in the south. Some 400 largely basaltic volcanoes were formed at this time, mostly associated with NNW/SSE fissures. These now form a volcanic shield which is some 1500 m thick in the Drouz depression. This phase of volcanism remained active into prehistoric time; for example, the Majdel Shams volcano (in the Golan Heights) and the Abou Rasein volcano (Jabal Al-Arab) in south-eastern Syria. The coverage of the volcanic lava $\beta 4Q4$ at the Lajaht is about 300 square kilometers (Ponikarove 1966) with a thickness varying between 8-10 metres.



Studies using stratigraphy combined to magnetic properties of rocks showed that the rocks of the Lajaht are more than 10000 years old and that they precisely belong to the upper Pleistocene. The prevailing soil type of the Lajaht area is Lithosol and pellic vertisol is very limited in its distribution. The first is relatively a shallow soil lacking well-defined horizons and composed of imperfectly weathered fragments of rock whilst the second is a soil order formed in regoliths high in clay; subject to marked shrinking and swelling with changes in water content; low in organic content and high in bases.

12. BIOLOGICAL CHARACTERISTICS

[List main **habitat types** (e.g. tropical evergreen forest, savanna woodland, alpine tundra, coral reef, kelp beds) and **land cover types** (e.g. residential areas, agricultural land, pastoral land). For each type circle REGIONAL if the habitat or land cover type is widely distributed within the biogeographical region within which the proposed Biosphere Reserve is located to assess the habitat's or land cover type's representativeness. Circle LOCAL if the habitat is of limited distribution within the proposed Biosphere Reserve to assess the habitat's or land cover type's uniqueness. For each habitat or land cover type, list characteristic species and describe important **natural processes** (e.g. tides, sedimentation, glacial retreat, natural fire) or **human impacts** (e.g. grazing, selective cutting, agricultural practices) affecting the system. As appropriate, refer to the vegetation or land cover map provided as supporting documentation.]

12.1. First type of habitat/land cover: Forest-like of *Pistachia atlantica*-*Amygdalus korschinskii*
 DISTRIBUTION: Regional / Local

This habitat acquires its uniqueness from its accompanying plant association and from its status as "Mediterranean semi-arid island", on basaltic substratum, in an ecotone between two main biogeographic regions and with Irano-Turanian influences.

12.1.1. Characteristic species:

This is a basaltic habitat supporting large open woods of Mt. Atlas Mastic tree *Pistacia atlantica*, Bitter almond *Amygdalus communis* & *Amygdalus korschinskii*, Roman (dating back to Roman times) Olive trees *Olea europaea*, Sumac *Rhus coraria*, endemic Wild Pear *Pyrus syriaca* and Common hawthorn *Crataegus azarolus* that are underlined with *capparis spinosus*, *Ononis sp.*, *Atraphaxis sp.*, *Peganum harmala* and the endemic *Iris aurantiaca*. In this woody formation, genetic resources of wheat and barley (*Triticum and Hordeum*) are found. All of them are highly appreciated and demanded by locals for different domestic and commercial uses. Wolf *Canis lupus syriaca*, Striped hyaena *Hyaena hyaena syriaca* and Indian Porcupines *Hystrix indica* find their refuge and shelter in this type of habitats. Among bird species, Chuckar Partridge *Alectoris chuckar synaica* characterizes the site. Of the globally threatened reptiles, the chameleon *Chamaeleo chameleon* is also found here.

12.1.2. Important natural processes:

This habitat served as the main foraging range for goats and sheep until it was protected by communal initiative in 1999. Surface water is scarce, but due to the porosity of the basalt, rain water penetrates the porous rocks, forming underground springs or subterranean water sheets close to the surface. However, the dry riverbeds (wadis) transecting the area offer a microhabitat that adds to the landscape. The forest-like habitat is relatively well vegetated and is home to significant faunal and insect assemblages. It enjoys climatic conditions with Mediterranean affinities (see 4.1 & 8 above).

12.1.3. Main human impacts:

Despite its relative inaccessibility, the forest was overharvested by the Ottoman troops in early 20th century and overgrazed by Bedouins until recently. In addition, the use of pesticides and fertilisers within the Provence of suweida may contaminate the forest's groundwater.

12.1.4. Relevant management practices:

Prohibition of all loggings and grazing, increasing patrolling, and control of farms extension towards the forests.

12.2. Second type of habitat/land cover: Stony plain with scattered woody formation

DISTRIBUTION: Regional Local

12.2.1. Characteristic species:

Most known species of this basalt stony habitats are Sumac *Rhus coriaria*, Mount Atlas Mastic Tree *Pistacia atlantica*, Common fig *Ficus carica*, and Syrian wild pear *Pyrus syriaca*. Also the vegetation comprises Crown anemone *Anemone coronaria*, Azarole *Crataegus azarolus*, Common rosemary *Rosmarinus officinalis*, Thyme *Thymus capitatus* and the regionally threatened Gundelia *Gundelia tournefortii* among others. Stone Curlews *Burhinus oedicnemus*, Hoopoe Lark *Alaemon alaudipes*, Cream Coursers *Cursorius cursor* and the globally threatened Macqueen's Houbara Bustard *Chlamydotis macqueenii* can invariably be found foraging between stones and scrubs. The commonest raptor species in this habitat is the Kestrel *Falco tinnunculus*.

12.2.2. Important natural processes:

The distinct local climate of the Lajaht with its warm summer temperatures supports in its steppic habitat a rich herpetofauna which includes southern species. In addition representatives of southern species can be found among birds and mammals as well as plants.

12.2.3. Main human impacts:

Overgrazing seems to be the main impact.

12.2.4. Relevant management practices:

Management needs to focus specifically on encouraging the traditional rotating grazing scheme that was established by the villagers and to control the nomadic movements of the Bedouins in accordance with the guidelines of a practical grazing plan.

12.3. Third type of habitat/land cover: Steppic sandy pockets with scattered *Amygdalus communis*

DISTRIBUTION

Regional/ Local

12.3.1. Characteristic species:

Much of the flora of the stony plain can also be found in the steppic sandy pockets. However, this habitat is characterized by scattered trees like Bitter almond *Amygdalus communis* and Kermes oak *Quercus calliprinus* with Spiny caper *Capparis spinosa*, Turban buttercup *Ranunculus asiaticus*, Palestine buckthorn *Rhamnus palastina*, Common rosemary *Rosmarinus officinalis*, Felty germander *Teucrium polium* and Mountain tulip *Tulipa montana*. Porcupines, Jackals and foxes are among the commonest mammals of this habitat. Birds of the families Alaudidae and Alectoridae usually use the habitat for feeding.

12.3.2. Important natural processes:

This habitat provides one of the most striking aesthetic landscapes of the Lajaht Biosphere Reserve. They constitute pockets between the basalt and have either thin layers of soil that are in favour of natural grass growth and formation of pastoral lands or thick layers of attraction to farmers. In absence of agricultural roads, these habitats are conserved.

12.3.3. Main human impacts:

Overgrazing, road construction and extension of agricultural lands into this type of habitats constitute the main anthropological impact.

12.3.4. Relevant management practices:

Controlling the extension of the cultivated areas into public properties is an appropriate action.

12.4. Fourth type of habitat/land cover: Orchards and agricultural lands

DISTRIBUTION

Regional/ Local

12.3.1. Characteristic species:

This habitat is made from privately owned pockets of fertile soil in the vicinity of the villages. The planted species usually depend on altitudes and the support provided by the government. The landraces of durum wheat, barley, lentil, garlic, onion and chickpea are still used by the farmers. Variety of vegetables is also cultivated. Orchards are mainly planted with olive trees, pomegranate, fig, pears and apples. In general rain-fed crops dominate.

12.3.2. Important natural processes:

The extension of land reclamation for the plantation of fruit trees, mainly apple trees, and of grazing mainly in the drier parts have affected drastically the local biodiversity mainly of wild species such as Triticum species, wild almond, pears and pistachio for which a few populations are remaining in the region compared to the documented information 20 years back. The acreage of landraces has dropped significantly. Grapes which predominated in the past are largely

replaced by the progression of the plantation of two introduced varieties of apple. Fig were also slightly affected and only few farmers have kept the local varieties.

12.3.3. Main human impacts:

Extension of the grazing roads of the Bedouin herders has promoted the expansion of the Irano-Turanian elements towards the Mediterranean Basin. A major task is to characterize the kind of disturbance caused by human activity and its role in shaping new routes of dispersal, which facilitate colonization by new invaders. The grasses and weedy annuals have a greater rate of spread. This feature is undoubtedly linked with the higher organic content of the Lajaht's soil and the higher annual rainfall within the area. But it should be mentioned that, in the past three decades, agricultural activities, the spreading of the grazing into the Lajaht area and, lately, the use of heavy machines have favoured the spreading of patches of some species.

12.3.4. Relevant management practices:

Control of introduced species and submission of the grazing activities to managements under a grazing plan.

13. CONSERVATION FUNCTION

13.1. Contribution to the conservation of landscape and ecosystem biodiversity

[Describe and give location of landscapes, ecosystems, habitats and/or land cover types of particular significance for the conservation of biological diversity.]

The Lajhat Biosphere Reserve plays a critical role in maintaining ecological processes at regional and even broader levels. The area lies at an intersection of two biogeographical regions (Temperate prairies and Hot desert and semi-desertic zones), thus occupying a "biogeographic crossroads" which is considered of high conservation priority (Sacha Spector, 2002). The ecosystems and landscapes found in the Lajaht Biosphere Reserve are then those found in an ecotone ranging from woods to continental steppes, rangelands and desert-like semi-arid plains intercepted with shallow basaltic *wadis* underlined with superficial groundwater. Also from a biogeographical view point, the flora of Lajaht consists of Mediterranean species in the form of either mono-biogeographical region or bi-regional with the Irano-turanian phytogeographical elements. The phytogeographical origins of the Lajhat Biosphere Reserve explain the designation of Lajaht and its immediate surroundings as a Mediterranean island by Zohary (1966). Within this framework, the forest-like habitat of the Lajaht can be considered unique of its kind and deserves high conservation attention. This habitat lies within the core area of the reserve and hosts several endemic species as well as many wild relatives that are the parents of cultivated varieties. Hence the Lajaht as Biosphere Reserve will play an important role in conserving the forest-like habitat with its specific plant associations, especially that this habitat has already shown a remarkable resurgence in natural regeneration during the past few years since it was protected by communal initiative in 1999 and saved - to some extent - from uncontrolled harvesting for firewood and from overgrazing.

The construction of stone walls by villagers to conserve huge areas of rangelands and to regulate grazing created new naturally looking and scenic landscape values, and protected the rangeland ecosystem in a traditional way with practically no harm seen over the environment. This type of habitats surrounds the villages of the transition zone and partially penetrates into the buffer zone of the reserve. Similar landscapes but without stone walls exist in the buffer and core areas of the Lajaht Biosphere Reserve.

The steppic earthen but fertile pockets support the cultures and traditions of the local communities around the villages. It is also represented in the core and buffer zones of the reserve where it is home to a wide range of reptiles, birds and small mammals, and a diverse floral assemblage. The long-term preservation of this type of landscape is seen as paramount to the objectives of both the locals and government, and in keeping with MAB objectives.

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13.2 Conservation of species biodiversity

[Identify main species (with scientific names) or groups of species of particular interest for the conservation of biological diversity, in particular if they are rare or threatened with extinction; use additional sheets if need be.]

The Lajaht Biosphere Reserve provides habitat for several plant species that are of global significance such as the endangered and rare Almond *Amygdalus korschinskii*, Mt. Atlas Mastic tree *Pistacia atlantica*, Common fig *Ficus carica*, Sumach *Rhus coriaria*, Roman olive *Olea europaea* var. *roman*, Wild Syrian pear *Pyrus syriaca*, Common hawthorn *Crataegus azarolus*, Spiny restharrow *Ononis spinosa*, Common clever *Trifolium plebium*, Syrian marjoram *Origanum syriacum*, Viscous sage *Salvia viscosa*, Felty germander *Teucrium polium*, Common chicory *Cichorium intybus*, Syrian hawkweed *Crepis syriaca*, Gundelia *Gundelia tournefortii*, Shrubby restharrow *Ononis natrix*, Iris *Iris aurantiaca*, Emmer *Triticum dicoccoides*, Mountain tulip *Tulipa montana*

Endemism rate, in the Province in which the Lajaht is located, is high (Mouterde 1966-1983). From the endemic species characterizing the reserve we can cite the following: Wild Syrian pear *Pyrus syriaca* Sage *Salvia drusica*, Cedar knorweed *Polygonum cedrorum*, Clover *Trifolium bonnevilliei*, Syrian *smyrniopsis* *Smyrniopsis syriaca*, Syrian hawkweed *Crepis syriaca* and Iris *Iris aurantiaca*.

There are no endemic species of mammals in the Lajaht biosphere Reserve. Instead endemic subspecies do occur and they are nationally threatened. Of them: the Jackal *Canis aureus syriacus*, Red Fox *Vulpes vulpes palaestina*, Hyaena *Hyaena hyaena syriaca*, Wild Cat *Felis sylvestris tristrami*, Squirrel *Sciurus anomalous syriaca* and the Hyrax *Procavia capensis syriaca*.

Of the reptiles, only two species of the Lajaht are globally threatened and nationally extremely rare: Black Cat Snake *Telescopus nigriceps* (Martin 1993) and Chameleon *Chameleo chameleon restricta*.

Migrating birds pass through or over the reserve twice a year, during autumn and spring seasons. Of these there are 23 recorded raptors. Seven of them are globally threatened: the Egyptian Vulture *Neophron percnopterus*, Red Kite *Milvus milvus*, Lesser Kestrel *Falco naummani*, Imperial Eagle *Aquila heliaca*, Great Spotted eagle *Aquila clanga*, Red-footed Falcon *falco vespertinus* and Saker Falcon, *Falco cherrug*. Among the other wintering, passing or resident species, 4 are considered globally threatened: Great Snipe *Gallinago media*, Corncrake *Crex crex*, European Roller *Coracias garrulus* and Cinereous Bunting *Emberiza cineracea*,

13.3. Conservation of genetic biodiversity:

[Indicate species or varieties of traditional or economic importance and their uses, e.g. for medicine, food production, etc.]

The Agrobiodiversity project considered Suweida, including the Lajaht Biosphere Reserve, an area of megadiversity of important food crop and pasture species. It is one of the few nuclear centers where numerous species (notably wheat, barley, lentil, pea and vetch) of temperate-zone agriculture originated 10,000 years ago, and where their wild relatives and landraces of enormous genetic diversity are still found. Many fruit trees such as almond, olive and pistachio also originated from this region and have dominated its traditional agricultural systems. They are present as a diverse range of wild relatives and local varieties. The biodiversity in this region is most outstanding for the within-species genetic diversity and the high number of endemic species. Furthermore, the indigenous crops and food plants of the lajaht region are known for

their resistance to disease and abiotic stresses, making them a valuable source of genetic material for germplasm enhancement upon which global food security depends. The following is the list of the most known traditional or economic species and their use (to name a few):

Species	USE			Wild relative
	Medicine	Food	Production	
<i>Pistacia atlantica</i>			Oil	
<i>Amygdalus korschinskii</i>			Oil, soap	x
<i>Amygdalus communis</i>	Skin ointment		Oil, soap	x
<i>Rhus coraria</i>	Multi use	Culinary	Tanning	
<i>Pyrus syriacus</i>		Eaten		x
<i>Ficus carica</i>		Eaten	Dried fig, jam	x
<i>Olea europea</i>	Multi use	Eaten	Oil, condiment.	Old trees left in wild
<i>Crataegus azarolus</i>	Related heart diseases			
<i>Ononis spinosa</i>	Analgesic, kidney stone			
<i>Trifolium plebium</i>			Fodder	x
<i>Origanum syriacum</i>	Stomac ulcer, Memory improv	Culinary		
<i>Salvia viscosa</i>	Blood pressure, stomach ulcer			
<i>Gundelia tournefortii</i>		Eaten	Commercially harvested	Similar to Artichoke
<i>Triticum dicoccoides</i>	Multi use	Culinary		x
<i>Capparis spinosa</i>	Multi use	Culinary		
<i>Anemone coronaria</i>	Multi use			
<i>Rosmarinus officinalis</i>	Memory improvement	Culinary	Oil	Cultural use
<i>Cicer arietinum</i>	Menstruation, kidney stone	Culinary	Processed and conserved	x
<i>Allium sativum</i>	Multi use	Culinary		x
<i>Laurus nobilis</i>	Multi use	Culinary	Soap	
<i>Lens culinaris</i>	Multi use	Culinary		x
<i>Hordeum spontaneum</i>	Multi use	Culinary	Fodder	x

14. DEVELOPMENT FUNCTION

14.1. Potential for fostering economic and human development which is socio-culturally and ecologically sustainable:

[Describe how the area has potential to serve as a pilot site for promoting the sustainable development of its region or "eco-region".

The proposed Biosphere Reserve is designed with people and cultures in mind. This is a key facet and wish of the Lajaht people and a driving force behind the Ministerial Decree establishing the Reserve. It is fully intended that the Reserve will foster continued development of traditional practices, in accordance with a blend of modern and historical management measures and controls. The planned development of zonation for sustainable grazing carrying capacity initiatives points to ecologically sustainable utilization of the landscapes. The strategic objectives for the management of the Lajaht Reserve, which focus on traditional cultures,

conservation, recreation, science and education, are being designed to provide for the protection and conservation of the unique biodiversity, while maintaining the key ecological processes of the Reserve and allowing appropriate traditional and recreational activities. The strategic objectives of science and education promote increased understanding of the proposed Biosphere Reserve also aim to engender community stewardship.

Traditionally, the villagers of the Lajaht reserve have regulated the use of rangeland habitats and prohibited wood cutting. They also developed types of protected areas using stone walls. It is under this premise that the proposed Biosphere Reserve is being developed, and through which the Governor of Suweida intends to resurrect and maintain traditional conservation philosophies. The Lajaht Biosphere Reserve will certainly offer significant opportunities for the development of ecologically sustainable inter-relations between man and the environment, through the maintenance of the existing rotation grazing schemes, landscape restoration and possible reintroduction of disappeared native species like *Gazella gazella*, excavations and development of the Lajaht archaeological ruins. In addition, extensive educational opportunities would be to highlight the way houses, agricultural activities and other land utilisation used to be in the past, and to reveal to students and other stakeholders the importance of the fauna and flora in their life and economy as well as the value of the interdependence cultural-biological diversity. These initiatives would be complemented by improving current traditional activities through promotion of best practice standards and through the recognition of the value of at least helping species to adapt to climate change when the local communities of the Lajaht have little role to contribute to the reduction of carbon use. In order to secure long-term gains for both environment and communities, the Lajaht Biosphere Reserve shall develop eco-tourism infrastructure, including information centres, hiking and riding trails, interpretation panels, bird hides, eco-lodges; and develop a visitation programme to the archaeological sites, old monasteries and shrines, old pistachio oil presses, Roman olive oil presses, Ariqa cave, bird flyways and hotspots (bird-watching), open woods, old agricultural terraces, naturally sculptured rocks (scenic viewing), old road of pilgrimage which crossed Lajaht at a time in which only horses and camels were used as means of transportation, etc. The reserve would provide naturalist guides with training courses and improve their skills in an attempt to provide the local communities with new job opportunities. Moreover, the genetic wealth contained within the flora of Lajaht has the potential to address poverty and contribute to famine eradication though much of the arid-climate world, given its proven capacity to grow in marginal, water-poor environments. The development of suitable and sustainable farming practices, including organic farming, using native flora and benefiting from the highly fertile soil, is also expected to contribute to health improvement programmes and poverty alleviation.

14.2. If tourism is a major activity:

- how many visitors come to the proposed Biosphere Reserve each year?
- is there a trend towards increasing numbers of visitors? (Give some figures if possible)

At present tourism is limited mostly to foreigner's visits in small numbers via tour operators. The Lajaht is actually part of a package and the targets are chiefly monuments, ruins and other historic sites. Beside foreigners, local people from different parts of Syria visit the biosphere reserve for a variety of reasons. In total, the average number of visitors is 18000 persons/ year. There will likely be an increasing trend in visitor numbers in the coming years, especially after the implementation of the Lajaht eco-tourism infrastructure plan.

14.2.1. Type(s) of tourism

[Study of flora and fauna, recreation, camping, hiking, sailing, horse riding, fishing, hunting, skiing, etc.]

There are three types of tourism in the reserve:

1- Cultural tourism: the attracting monuments (Roman ruins, museum of mosaics, amphitheatres, gates, paved roads, temples and baths), events (celebrations of cultural nights, festivals and

folkloric events in summer times) and the availability of accommodation coupled with the friendliness of the people constitute a destination for seasonal mass visitation. This type of visitation attracts 85% of total visitors.

2- Recreational tourism: the recreational options are limited to picnicking, bike riding and camping). They attract a variety of visitors from Syria, ranging from individuals to families and groups. The activities depend on the age and skills of the individual. This type of visitation may concern 5% of the Lajaht's visitors.

3- Discovery tourism: the richness in physical and biotic diversity of the Lajaht and its biogeographical position catch the attention of scientists (geologists, agriculture engineers, biologists, ecologists of flora and fauna, etc.). The large migratory flock of birds are a magnet to birdwatchers and unfortunately to hunters.

14.2.2. Tourist facilities and description of where these are located and in which zone of the proposed biosphere reserve:

At present no tourism facilities exist in the Reserve except for beasts-created trails and limited number of occasional interpreters of nature or naturalist guides.

14.2.3. Indicate positive and/or negative impacts of tourism at present or foreseen:

It is likely that tourism development will bring positive impacts to the Reserve, raising awareness of both its existence and of its value to the Syrian, regional and global audiences. There are also potential downsides to tourism development, including cultural inappropriateness and environmental stresses through waste disposal. Sensitive, vulnerable or shy species will be negatively affected with increased visitation.

However, with correct planning, understanding of the relevant issues and approaches, and oversight by a competent managing authority, it is possible that these negative impacts can be minimised or even eliminated, fostering the economic development of the Reserve and its people. One key mechanism for the mitigation of impacts through eco-based tourism will be the development of a series of guidelines for responsible ecology-based tourism in Lajaht-Suweida.

14.3. Benefits of economic activities to local people:

[Indicate for the activities described above whether the local communities derive any income or benefits directly or indirectly from the site proposed as a Biosphere Reserve and through what mechanism]

Local communities are set to derive direct and indirect benefits from several of the forms of tourism highlighted above. However, there are some benefits of economic activities to locals like a) additional revenues that will be injected into the local economy, b) opened up opportunities for improvement to the services offered within the communities, c) new opportunities for small business owners to develop new business or expand existing ones to meet the needs of increased traffic and the diversified needs and desires of the additional visitors, d) new job opportunities for residents in tour guiding and interpretation of nature and culture. In addition, the local communities will derive direct incomes from the sale of home made products such as jam, molasses, Kishk, labneh, cheese, dried fruits, dried vegetables, fresh legumes, rural bred, syrup, wine, Arak, etc.; and from the sale of other products like embroideries, silk, cover sheets, knives, toys, etc. The local communities also derive direct incomes from guiding tourists of the reserve, including the natural and cultural monuments, and from selling items frequently searched by tourists like hats, insect repellent, binoculars, walking sticks, etc.

15. LOGISTIC SUPPORT FUNCTION

15.1. Research and monitoring

15.1.1. To what extent has the past and planned research and monitoring programme been designed to address specific management questions in the potential biosphere reserve? (For example, to identify areas needing strict protection as core areas, or to determine causes of and means to halt soil erosion, etc.).

Past research has, for the most part, been opportunistic and not linked to a long-term vision of knowledge needs and with a view to fulfilling the Reserve's nomination file. In fact, Lajaht has not received adequate study of its ecology and flora. The only reference to this is found in Mouterde's Flora published in 1953, where it is reported that plant gatherers reached this area only recently as it is far from the main road and has a rough topography. Mouterde's flora of Lajaht and Jabal El Arab to which the first belongs indicates that more than 900 plant species are found in the area. It was until 1996 when the Lajaht received the second research mission after that of Mouterde. This mission worked in the area until 2000, inventorying the vegetation and finding that about 512 plant species were still found. At the same period, M. Chikhali conducted research on the ecology and vegetation of south east Syria, including the reserve, as part of his PhD Thesis. Only since 1999, oriented studies became designed to address specific management questions for the reserve. The "Conservation and Sustainable Use of Dryland Agrobiodiversity in the Near East" project involved many experts to characterize the floristic richness and study the genetic diversity and potential uses of selected species in Lajaht as a pilot site among others. The project aims at promoting the conservation and preservation of important wild relatives and landraces of agricultural species by introducing and testing *in-situ* and on-farm mechanisms and techniques of conservation and sustainable use of agro-biodiversity. Subsequently, the research conducted within this project revealed the economic importance of the Lajaht plants and diagnosed the threats of unsustainable practices to the biodiversity, habitats and local communities. This project ended in 2005.

Another study on the use of fertilizers by crop in Syria was conducted by FAO and reported in Rome in 2003. This study reviewed the agro-ecological zones and farming system. It provided valuable information on the soil of the reserve, winter and summer crops and the agriculture stability zones.

Lajaht proved to be a site for demonstration of projects enabling poor farmers to improve their incomes, food security and living standards. In fact the International Fund for Agricultural Development (IFAD) implemented a project at Lajaht and its surrounding, in 1983-1987, focusing on literacy courses and training in marketing skills for rural women. This initiative resulted in the reversal of a trend towards migration from rural to urban areas.

However, if a significant amount of work has been conducted in the area, there is a need to collate and bring together the conducted studies in a fashion that will point the direction for future research needs in a form of research prioritized agenda, certainly through the management of the Lajaht Biosphere Reserve.

- Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.]

Meteorology

Meteorological stations were installed in 5 villages of the reserve since 1958.

Geology

Dubertret made his research on the Miocene in Syria, including the reserve in 1934

Roperch and Bonhomme studied the Paleomagnetism of Miocene volcanism from south Syria, including the reserve in 1986

Syada conducted his research on petrological projections of volcanic complex and volcanic rocks alteration in southern Syria between 1986 and 1996.

Mouty et al studied the volcanic activities in southern Syria, including the reserve in 1992

Paleomagnetic study of volcanic rocks at Lajaht were conducted by Abou Deeb et al in 1998.

Hydrology

The UNDP/FAO implemented a project on improved water resources for agriculture use in 1990-1994.

Mainstreaming Gender Dimension Into Water Resources Development and Management in the Mediterranean Region (GEWAMED) conducted in 2007 a survey on water management at Suweida, including Lajaht.

Geomorphology

A detailed geomorphological map was produced by the Department of Geological and Mineral Research in 1964. Another more recent but unreferenced and undated map was produced in a report by the MAAR in 2002..

Pedology

FAO developed the dominant soil map for Syria in 2003

- Biotic research and monitoring [flora, fauna]:

Flora

Mouterde studied the flora of Jabal El Arab, including the Lajaht in 1953

Chikhali conducted research on the ecology and vegetation of south east Syria, including the reserve, as part of his PhD Thesis, Germany, in 2000.

Flora surveys and assessment were conducted at the Lajaht by the experts of the biodiversity project in 2000

Musselman surveyed Suweida, including Lajaht, during a study on the plants of Koran and Bible in 2000.

FAO undertook a study research on agro-ecological zones and farming system at Lajaht and its surroundings in 2003.

The ecogeographic and botanical surveys conducted within the GEF-UNDP project on conservation of dryland agrobiodiversity has allowed the scientists to gather important information on the distribution of many flora species in the target project areas, including Lajhat, in 1999-2005..

Fauna

There are few and scattered data on the fauna of south Syria but without any mention to the Lajaht Biosphere Reserve or its immediate surroundings. Only in 2004 and for the purpose of supporting the reasons behind declaring the Lajaht a reserve, the Ministry of Local Administration and Environment conducted a fauna survey and assessment in the reserve and established for it a preliminary fauna list.

- Socio-economic research [demography, economics, traditional knowledge, etc.]:

Archaeology

About half of the archaeological expeditions to Syria have worked in Suweida, including the Lajaht area.

Demography

One of the recent demographic studies for Syria was based on estimation in 1998 by relevant Ministry and produced a map of density population in 1990.

The latest demographics of Syria were executed and reported by FAO in 2007

None of the above studies is specific to the core and buffer areas of the Biosphere Reserve

Economy

IFAD implemented in 1983-1987 a project at the Lajaht focusing on literacy courses and training in marketing skills for rural women.

The Agrobiodiversity Project assessed the economy of the Lajaht and its surroundings and trained farmers on best practices and improved their incomes through series of training between 1999-2005.

GEWAMED conducted in 2007 a survey at Suweida, including Lajaht, on access to work paid.

Traditional knowledge

Apparently, only the Agrobiodiversity project 1999-2005 and the FAO (2003) explored the traditional knowledge of local communities of Suweida, including the Lajaht area.

15.1.3. Brief description of on-going research and/or monitoring activities:

- Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.]:

At present the main permanent, ongoing studies relate to meteorological studies. Hydrological studies are opportunistic, such as those pertaining to the improvement of water resources for agriculture use, as are geological studies for aging rocks with paleomagnetism.

- Biotic research and monitoring [flora, fauna]

Fauna and flora studies are sporadic and conducted at the Lajaht by researchers from the University of Damascus and the MLAE. Ornithological studies are opportunistic and presently conducted by visitors from abroad on irregular basis.

Only the UNDP/GEF project (BD/OP1/BD1) of Biodiversity and Protected Areas Conservation that started in 2004 in cooperation with MAAR and MLAE is still functioning. It aims at effective conservation of biodiversity and protect the interests of local communities while supporting the consolidation of an enabling environment that will facilitate replication throughout the country.

- Socio-economic research [demography, economics, traditional knowledge, etc.]:

The Syrian Department of Archaeology continue to undertake several studies at Suweida and its environs.

15.1.4. Brief description of planned research and/or monitoring activities:

- Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.]:

- Meteorological and air quality studies are not be limited to villages of the transition zone but also to be established in the core and buffer areas.

- Hydrologic studies specific to the Lajaht Biosphere Reserve are needed to enable regulating the water extraction and setting a wise use plan as well as exploring additional conservation opportunities for ground water sources.

- Mapping the detailed geomorphology of the reserve, including micro habitats.

- Biotic research and monitoring [flora, fauna]:

- The ecosystem approach will require substantive research related to the carrying capacity of grazing lands, identification and assessment and monitoring of all components of biodiversity within the boundary of the reserve, relating species to their habitats and studying of dynamics of change as well as the trends in relation with management of threats.

- Mapping of flora and fauna using GIS and GPS facilities, so that access to *in-field* information for potential researchers or eco-guides is easier and time saving.

- Establish baseline data for monitoring and database for habitats and species as a benchmark for further studies.

- Exploring opportunities for sustainable conservation of species, mainly those used as aromatic, culinary and medicinal.

- Socio-economic research [demography, economics and traditional knowledge]:

- Documentation of written or unwritten traditional knowledge with regards to the different aspects of use of the cultural and natural resources in the reserve.
- Assessment of the socio-economic conditions for the local communities and investigation into past and present traditional activities so that a business plan can be developed based on realistic information and requirements.
- Study the density of local populations in each zone of the biosphere reserve and their seasonal movement between zones and the reasons behind such movements.

15.1.5. Estimated number of national scientists participating in research within the proposed biosphere reserve on:

- a permanent basis: 0
- an occasional basis: >14

15.1.6. Estimated number of foreign scientists participating in research within the proposed Biosphere Reserve on:

- a permanent basis: 0
- an occasional basis: > 5

15.1.7. Estimated number of masters and/or doctoral theses carried out on the proposed biosphere reserve each year: 0.5

15.1.8. Research station(s) within the proposed Biosphere Reserve:

[5] = permanent (only Meteo)

[0] = temporary

15.1.9. Permanent research station(s) outside the proposed Biosphere Reserve:

[If no permanent research station exists within the proposed Biosphere Reserve, indicate the location, distance to the core area, name and address of the most relevant research station]

The Al-Suweida Research Centre is located at Suweida city, c.37 kms from the Lajaht core area.

The General Commission for Scientific Agricultural Research (GCSAR) of MAAR, conducts scientific research in the following areas: Field Crops, Horticulture (Fruit trees and vegetables), Plant protection, Biotechnology, Natural recourses (Water, Soil, and Forestry), live stock production, Food technology and Socio-economic studies. It has a location at Suweida city, c.37 kms from the Lajaht core area.

The International University for Science and Technology at Um El Qusur, c34 kms from the core area of the Lajaht Biosphere Reserve.

The University of Damascus at 70 kms north of the Biosphere Reserve core area.

15.1.10. Permanent monitoring plots

[Indicate the year established, the objective of monitoring, the type and frequency of observations and measurements, and whether an internationally recognized protocol is being used, for example the Smithsonian-MAB MAPMON protocol for monitoring forest biodiversity]:

None

15.1.11. Research facilities of research station(s)

[meteorological and/or hydrological station, experimental plots, laboratory, computerized databases, Geographical Information System, library, vehicles, etc.]:

There are five meteorological stations within the reserve boundaries. Also the MAAR has an office with staff of administration and experts at Suweida. However, all the research stations, mentioned under 15.1.9 above, have access to complete GIS laboratories as well as computer labs, vehicles, and laboratories. In addition, the International Centre for Agricultural Research in the Dry Areas (ICARDA) offers facilities for chemical analysis, setting of experimental plots, GIS, computer studies, among others. It is important to point out that all the assisting research stations are less than an hour's drive from the Reserve. Additionally, the Agrobiodiversity project developed, in 2000, a program-course on the *Use of GIS/RS and data management* and circulated it to the National Project Components, a matter which increase their knowledge in this field.

15.1.12. Other facilities

[e.g. facilities for lodging or for overnight accommodation for scientists etc.]:

Scientists are welcomed and offered overnight accommodation by municipality of Suweida and villagers.

15.1.13. Does the proposed biosphere reserve have an Internet connection?

Not yet but the MLAE planned for supplying the biosphere reserve with internet facilities

15.2. Environmental education and public awareness

[Environmental education -- sometimes now referred to as education for sustainable development -- can be aimed at schoolchildren, the adult population of the local communities, and visitors from home and abroad].

15.2.1 Describe environmental education and public awareness activities, indicating the target group(s):

The Department of Protected Areas at MLAE gives special attention to the environmental awareness and education for all the social sectors. Many activities were designed for school students and other sectors, including the general public and specialists and decision-makers. These activities included lectures, seminars, environmental campaigns, press reports, contests and publications. The MLAE has published many pamphlets and booklets on environmental issues and sustainable use of natural resources with the aim of sensitizing targeted people at Lajaht so that they appreciate more the natural heritage they have.

The Agrobiodiversity project launched, in 2000, with farmers at the sites of wild *Triticum* a number of awareness activities for enhancing the *in-situ* conservation of these important genetic resources. These include rangeland management, water harvesting techniques, and protection from grazing. This form of awareness and dynamic conservation will continuously benefit the process of natural selection.

GCSR in cooperation with GEWAMED organized workshops and seminars in 2007 increasing awareness about the role of women in water management. The events were attended by a large number of senior lecturers from universities and concerned institutions and over 130 persons of which 60% females from the following Arab & international organizations (UNDP, FAO, ICARDA, WHO, GTZ, JICA, UNRWA, UNESCO, ACSAD) and NGOs (FRIDOS, General Union of farmers, Syrian Society for Family Planning, Women Union, Syrian-Euro Business Center, Environment Friends Society, Environment Protection and Sustainable Development).

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15.2.2. Indicate facilities for environmental education and public awareness activities [visitors' centre; interpretative programmes for visitors and tourists; nature trails; ecomuseum demonstration projects on sustainable use of natural resources]:

At present within the Reserve there are no major ongoing environmental awareness initiative, but these are planned as part of education programmes related to the development of the Reserve and its management plan, tourism activities, and environmental management opportunities. Only the traditional trails exist but they will be assessed within the eco-tourism and educational infrastructure plans before deciding on which of them will be used by visitors.

15.3 Specialist training

[Acquisition of professional skills by managers, university students, decision-makers etc.]

[Describe specialist training activities: for example research projects for students; professional training and workshops for scientists; professional training and workshops for resource managers and planners; extension services to local people; training for staff in protected area management]

Basic training on biodiversity conservation and sustainable development as well as protected areas management occurs at two levels:

1) *School Activities*: include children's seminars, tree planting in camps and schools and other activities to convey the message of sustainable development. Environment is being taught within the curriculum at schools.

2) *University Education Programmes*: There are good numbers of courses dealing with environmental education at university levels. At the same time, there are graduate study programmes (diploma, master, doctorate) at different departments leading to higher degrees in environmental engineering; aquatic environment; and soil and agronomy.

Training to upgrade skills of professionals usually occurs during projects implementation to improve the skills of the project staffs and some targeted stakeholders. Training are performed through Ministries of Environment, Agriculture, Higher Education, Tourism, Information and scientific centers and community-based organizations. The most important training activities are those provided by ICARDA. In fact since 1978, ICARDA has provided training opportunities to thirteen thousand individuals from over 100 countries. The Center offers a wide variety of training activities to suit group and individual needs such as degree and non-degree training and long- and short-term courses. Participants in ICARDA's training program are offered the opportunity to work with a team of international scientists in the classroom, laboratory and field. ICARDA encourages national agricultural research organizations and universities to secure funding from international, regional and bilateral donor agencies to support the direct costs of training participants at ICARDA. Most of the other trainings are conducted either by the MLAЕ or MAAR in partnership with international agencies:

Within the Farming systems of Arid lands Project in Syria, technical skills and capacities of national project staff for implementing project activities improved significantly through intensive regular training activities in the technical fields of the project. In addition, training of trainers of women groups on possible income generation activities has been successfully achieved. The biggest impact of the first phase of the project has been the training of technicians (over 12 project technicians, over 10 extension officers including three women extensionists, 4 Bedouin promoters and over 20 short training courses for national and international technicians), the training of Bedouins (almost half of the population was trained through field days and short courses).

The Syrian government partnered UNDP in 2004 and collaborated with national and international environmental consultants, and several local populations to raise awareness about biodiversity and set aside a number of Protected Areas (PAs) to preserve Syria's natural habitat. Through the Project Biodiversity and Protected Areas Conservation that was the fruit of this partnership, three PA sites have been exposed to training courses on micro-credit, micro-financing, and villages' funds in order to facilitate the transition to sustainable livelihood practices that do not interfere with the biological habitat.

Within the framework of the Project "Biodiversity and Protected Areas Conservation" a workshop was conducted in May 2007 to train managing authorities on preparing zoning plans

for protected areas, using the biosphere reserves as guiding model in defining the objectives for each zone.

15.4 Potential to contribute to the World Network of Biosphere Reserves

[Collaboration among biosphere reserves at a national, regional and global level in terms of exchange of scientific information, experience in conservation and sustainable use, study tours of personnel, joint seminars and workshops, Internet connections and discussion groups, etc.]

This site has the potential to contribute to one of the most underrepresented habitats within the MAB network. To our knowledge, none of the Biosphere Reserves of the Arab countries represent a “Mediterranean Island” three hundred kilometres to the east of the Mediterranean Basin and probably none of these represent a basaltic area within an ecotone of two biogeographical regions (Temperate prairies and Hot desert and semi-desertic regions). The potential for this proposed Reserve to contribute to the diversity of landscapes and habitats within the MAB is thus immeasurable.

15.4.1. Collaboration with existing biosphere reserves at the national level (indicate on-going or planned activities):

If approved, the proposed Lajaht Biosphere Reserve will be the first of its kind in Syria. Plans exist to further the proposals for the Lezzab area at the border with Lebanon as a Biosphere Reserve nomination or a full proposal as a Transboundary Biosphere Reserve. Until such a time, the Lajaht Reserve is the most advanced within the UNESCO framework for global recognition. However, under the overall supervision of the Ministry of Local administration and Environment and its policy, all managing authorities of Syrian reserves are collaborating with each another and linked for this purpose by the Department of Protected Areas at the MLAE.

15.4.2. Collaboration with existing biosphere reserves at the regional or subregional levels, including promoting transfrontier sites and twinning arrangements (indicate on-going or planned activities)

[Here, ‘regional’ refers to the regions as Africa, Arab region, Asia and Pacific Latin America and the Caribbean, Europe. Transfrontier biosphere reserves can be created by two or more contiguous countries to promote cooperation to conserve and sustainably use ecosystems which straddle the international boundaries. Twinning arrangements usually consist of agreements between sites located at some distance in different countries to promote activities such as cooperative research projects, cultural exchanges for schoolchildren and adults, etc.]

The proposed Lajaht Biosphere Reserve has a significant potential to be linked closely with three regional biosphere reserves: Dana in Jordan and Shouf and Jabal Rihane in Lebanon. Apparently all are hotspots for genetic diversity and wild relative. Within this context the four biosphere reserve complement the activities of each other in a horizontal integration of management. Giving the collaboration with the existing biosphere reserves of Lebanon a high priority is a matter that bodes well for the establishment of a transboundary biosphere reserve at the Lazzab area.

15.4.3 Collaboration with existing biosphere reserves in thematic networks at the regional or international levels (indicate ongoing and planned activities) [Networks of sites which have a common geographic theme such as islands and archipelagoes, mountains, or grassland systems, or a common topic of interest such as ecotourism, ethnobiology etc.]

No such plans at present, but the possibility will be investigated once official biosphere designation is given,

15.4.4 Collaboration with existing biosphere reserves at the international level (indicate ongoing and planned activities: [Notably through Internet connections, twinning arrangements, bilateral collaborative research activities, etc.]

None at the present time.

16. USES AND ACTIVITIES

16.1 Core Area(s):

16.1.1 Describe the uses and activities occurring within the core area(s):

[While the core area is intended to be strictly protected, certain activities and uses may be occurring or allowed, consistent with the conservation objectives of the core area]

At present the major land uses within the Core areas are limited to grazing and collection of fuel wood and wild fruits for domestic use. Hunting may occur but the efficiency of patrolling the reserve is certainly reducing the chances of such kind of poaching. However, the managing authority of the reserve intends to keep the core area well conserved and to allow in it non harmful individual researches and may also allow the use of some existing traditional trails ending into hides for observing the wildlife or monuments such as the abandoned Roman wells.

16.1.2. Possible adverse effects on the core area(s) of uses or activities occurring within or outside the core area(s):

(Indicate trends and give statistics if available)

There are no adverse effects on the core area foreseen if the biosphere reserve is managed appropriately and when the regulations are strictly applied. Extension of agricultural lands with increased urbanisation in the transition area should not crouch over the buffer zone to consequently affect the core area. Adverse effects may be caused by poaching (illegal grazing or hunting or harvesting plants of economic values) only when the management is inadequate (inefficiency of patrolling, absence of partnership with local community, lack of incentives, etc.). In fact, illegal hunting has a potential to cull the populations of sedentary bird species, especially those playing a role in seed distribution; whilst illegal grazing may eliminate the shoots that are necessary for the regeneration of the forest or destroy the remaining wild relative plant species like *Triticum* for example.

16.2. Buffer zone(s)

16.2.1 Describe the main land uses and economic activities in the buffer zone(s):

[Buffer zones may support a variety of uses which promote the multiple functions of a Biosphere Reserve while helping to ensure the protection and natural evolution of the core area(s).]

Present uses of the buffer zone include small-scale farming and limited pastoral activities at the villages of Samid and Waqm (southern part of the reserve). At present there is only oversight management of pastoral and farming activities, which would come under greater scrutiny with the declaration of the Lajaht a Biosphere Reserve.

16.2.2. Possible adverse effects on the buffer zone(s) of uses or activities occurring within or outside the buffer zone(s) in the near and longer terms:

The farming practiced at Samid and Waqm villages is of traditional type. The present pastoral activities are limited to specific parcels of lands using traditional rotation system. The main adverse effect on the buffer zone may be that one caused by transhumance pastoral activities of the nomadic Bedouins who are known to have herds of goats and sheep with densities exceeding the carrying capacity of the buffer zone. The development and application of a grazing plan

within the management plan of the site as a biosphere reserve will mitigate the impacts of grazing through series of appropriate management activities.

16.3. Transition area

[The Seville Strategy gave increased emphasis to the transition area since this is the area where the key issues on environment and development of a given region are to be addressed. The transition area is by definition not delimited in space, but rather is changing in size according to the problems that arise over time. Describe briefly the transition area as envisaged as the time of nomination, the types of questions to be addressed there in the near and the longer terms. The size should be given only as an indication]

16.3.1 Describe the main land uses and major economic activities in the transition area(s):

The Transition areas is a living, working, recreational and development place, thus having a greater diversity and concentration of land use patterns than any other area of the reserve. The transition area comprises urban areas, farmland, rural settlement areas and natural areas. This transition area encompasses 9 villages where nearly every family has orchards in backyards and may have farms on parcels usually adjacent to houses. Most of the families have small stables or enclosures for poultry, goats, sheep or cows. Within this rural way of life, agriculture practices constitute about 75 percent of the villagers activities whereas pastoral activities occupy the second rank. Economic activity in the Said villages is focused on tourism, traditional small industries of agriculture and businesses that service local needs.

16.3.2 Possible adverse effects of uses or activities on the transition area(s):

Increased encroachment of cultivated areas over the natural lands will affect biodiversity of fauna and flora. Increased population growth in absence of sewage treatment units coupled with increased use of pesticides and fertilizers will increase the pollution of the ground water. Careful consideration of future development areas and stringent land use and subdivision controls are likely to mitigate adverse impacts.

17. INSTITUTIONAL ASPECTS

17.1. State, Province, Region or other Administrative Units:

[List in hierarchical order administrative division(s) in which the proposed Biosphere Reserve is located (e.g. state(s), counties, districts)]

Country Name:

conventional long form: **Syrian Arab Republic**

conventional short form: **Syria**

local long form: **Al Jumhuriyah al Arabiyah Al Suriyah**

local short form: **Surya**

Governorates (Muhafaza):

Es-Suweida, Suweida, Suwaida, Swaida

District:

Hadabat El Lajaht

Region

South Syria

Municipalities (Baladiyat):

Suweida, xxx

17.2 Units of the Proposed Biosphere Reserve:

[Indicate the name of the different land management units (as appropriate, e.g. protected area, territories of municipalities, private lands) making up the core area(s), the buffer zone(s) and the transition area).

Municipal and governmental properties make the core area that is protected by the Decree No. 144/T/2006 and designated as Lajaht forest protected area. Public properties with a few privately owned lands constitute the buffer zone that is also getting benefits from the same Decree. The transition zone is mainly privately owned.

17.2.1. Are these units contiguous or are they separate?

[A biosphere reserve made up of several geographically separate units is called a "cluster biosphere reserve". Please state if this is the case of the proposal.]

The Lajaht Biosphere Reserve is made from contiguous units.

17.3. Protection Regime of the core area(s) and, if appropriate of the buffer zone(s)

17.3.1. Core area(s):

[Indicate the type (e.g. under national legislation) and date since when the legal protection came into being and provide justifying documents (with English or French summary of the main features)

The Core area is protected through the Decree No. 144/T/2006, which states that human activities are not allowed within it and that research activities require permits from the MAAR.

17.3.2 Buffer zone(s):

[Indicate the type (e.g. under national legislation) and date since when the legal protection came into being and provide justifying documents (with English or French summary of the main features. If the buffer zone does not have legal protection, indicate the regulations that apply for its management.)

The Buffer zone, which encircle the core area, is also protected through the same Decree. 7(2005). More regulations govern the use of this buffer zone:

-
-

17.4. Land use regulations or agreements applicable to the transition area (if appropriate)

Till now there is no national plan for land use in Syria. The Ministry of Housing and Utilities is preparing Master plans for urban and rural settlements. The Ministry of Irrigation and the Ministry of Agriculture and Agrarian Reform are involved in delineating the lands to be reclaimed in compliance with soil classification and water availability. There are legislations and regulations at the level of governorate classifying the land use as agricultural, industrial or urban.

17.5. Land tenure of each zone:

[Describe and give the relative percentage of ownership in terms of national, state/provincial, local government, private ownership, etc. for each zone.]

17.5.1. Core area(s):

Land tenure in the core area is 100% government owned.

17.5.2. Buffer zone(s):

Land tenure in the buffer zone is 90% government owned, with the remainder owned by individuals from Deir Dama, Samid and Waqm villages.. However, there are governorate guidelines on the activities which can be carried out under private lands, including the drilling of new water wells, and the type of crops that can be cultivated.

17.5.3. Transition area(s):

Similarly, transition zone is approximately 90% privately owned and 10% publicly owned. Land use of private properties is also regulated by the governorate of Sweida.

17.5.4. Foreseen changes in land tenure:

[Is there a land acquisition programme, e.g. to purchase private lands, or plans for privatization of state-owned lands?]

None foreseen at present.

17.6. Management plan or policy and mechanisms for implementation

[The Seville Strategy recommends promoting the management of each biosphere reserves essentially as a "pact" between the local community and society as a whole. Management should be open, evolving and adaptive. While the aim is to establish a process leading to elaborating a comprehensive management plan for the whole site reflecting these ideas and involving all stakeholders, this may not yet exist at the time of nomination. In this case however, it is necessary to indicate the main features of the management policy which is being applied to guide land use at present for the area as a whole, and the 'vision' for the future.]

The Main Policy for managing the protected status of the Lajaht Reserve is set out in Institutional Arrangements of the MLAE and its Established Department, "Biodiversity and Protected Areas" supplemented by Decree No. 144/T/2006 establishing the Lajaht Reserve, and is focussed primarily on conserving ecosystems and landscapes and their components, regeneration and restoration. **The managing authority** is responsible for all the functions and actions that are deemed necessary to protect the Lajaht Biosphere Reserve, especially its core and buffer zones where the general policies for the Lajaht as a biosphere reserve aim at ensuring sustainable development, conserving endangered species of native fauna and flora, including economic species and protecting their natural habitats; combating desertification and soil erosion, stopping the introduction of exotic species, drawing up necessary plans to implement these policies and overseeing their implementation by the ministries, government agencies, public institutions and other parties; monitor the activities, procedures and practices relating to the protection and promotion of the environment and flora and fauna, and to monitor the implementation and evaluate the results; evaluate the environmental impact assessment studies of any major development project, whether public or private and to submit opinion on their expected environmental impacts prior to granting permit to operate for such projects by the competent authorities.

In addition, the managing authority is tasked with drawing up plans for training of locals in ways and means of protecting their environment and the reserve, and to evaluate the results. The managing authority is also concerned to incorporate awareness programmes highlighting the protection of the reserve, develop educational and mass media programmes; and to encourage novel research through the development of research agenda.

In the eighteen-month period following submission of the Biosphere Reserve nomination file, the managing authority expects to prepare a realistic and practical management plan considering the following:

- Development of a management framework vertically integrating legislative requirements and policies and horizontally integrating management in regional context.
- Development of goal (vision) themes, topics, sub-topics, objectives, actions and indicators for monitoring,
- Development of annual workplan
- Development of sub-management plans for community relations, recreation, eco-tourism with infrastructure, grazing, education, research, risk assessment, benefits and sharing, business and fundraising.

17.6.1. Indicate how and to what extent the local communities living within and next to the proposed biosphere reserve have been associated with the nomination process [This can range from

being an entirely locally driven initiative, to a more ‘top down’ approach led by government authorities or scientific institutions. Describe the steps taken and the stakeholders involved]

Following the awareness campaigns that were conducted in Suweida Province by the Agrobiodiversity project, the local communities of the Lajaht became aware of the significant biodiversity they have, including the wild relative plant species. Within the framework of the same project, they were also informed of the threats facing their natural heritage from transhumance pastoral activities and overexploitation of the forest on which they depend to improve their orchards, crops and produce their preferred oil, the pistachio oil. Subsequently they proposed to the Governor of Suweida to assist them declaring the Lajaht a protected area. Then their request was taken to a higher level through a formal proposal to the Minister of Agriculture. This was later signed into Decree in 2006 and the Lajaht Reserve was established. As for the nomination process for this Reserve to be a biosphere reserve, it was undertaken in a partnership manner between the MLAE, MAAR and Governorate of Suweida with assistance from the UNESCO office in Beirut and in consultation with a wide range of stakeholders from the local communities of the Lajaht area. The process consisted of holding three organizational meetings with the Minister of Local Administration and Environment, Director of MLAE, and Governor of Suweida Province; and three technical meetings incorporating the following bodies: Director of Biodiversity and Protected areas Department at the MLAE, staff from MLAE, Director of Agriculture in Sweida, Director of Agro-research Institute of Suweida, Director of Forest Department in Suweida and one representative for each of the following entities: National MAB Committee, UNESCO National Commission, UNESCO Beirut Office. Following these meetings most of the participants visited the lajaht site on two occasions during which they introduced the concept of biosphere reserves and discussed with a wide variety of stakeholders from the local communities, including students, police officers, administrators, farmers, beekeepers, agriculture engineers, NGOs, shepherders, etc. their willingness to contribute to the the process of preparing the nomination form. Upon their acceptance and welcoming the idea, they were interviewed and/or provided with a lengthy questionnaire of relevance, in which each stakeholder was also assigned the role to think about and discuss the future direction of Lajaht from their sector’s point of view; and asked for feedback. The whole process ended in preparing the present nomination form.

17.6.2. Main features of management plan or land use policy

(Describe the ‘vision’ of what the proposed biosphere reserve is expected to achieve in the short and longer term, and the benefits foreseen for the local communities and other stakeholders)

The Lajaht Biosphere Reserve aims at 1) developing the capacity of the local communities and staff from various administrations to use the Lajaht, that is a diversity hotspot of importance to global economy, wisely and sustainably, 2) promoting strong sustainable economy, 3) improving the relationship of people and their environment, 4) protecting cultural and natural heritages, 5) introducing novel land-use practices, 6) implementing experimental and trial programmes and 7) improving quality of life while minimizing impacts on environment. In the long-term, the Resrve aims to become a renown center of research and development with regards to Middle-East semi-arid climate habitats, and a model for the sustainable use of natural and culture resources, and the maintenance of local positive traditions.

17.6.3. The designated authority or coordination mechanisms to implement this plan or policy

(Name, structure and composition, its functioning to date)

Environmental management Authority?

Biodiversity and Protected areas Department at the MLAE?

Management Committee of the Lajaht Biosphere Reserve?

MAAR?

Partnership between MAAR & MLAE?

17.6.4. The means of application of the management plan or policy (For example through contractual agreements with landowners or resources users, traditional users' rights, financial incentives, etc.)

Various strategies will be implemented to achieve a balanced implementation of the management strategy which addresses local community needs and aspirations, development, and government goals and strategies. One of these strategies will be to designate a management team that will be composed from members of the local communities to manage the Biosphere Reserve in accordance with the management plan, in close cooperation with all stakeholders and under the overall supervision of the xxxx. Memoranda of Understanding, contractual agreements and financial incentives with landowners and traditional resource user's rights may take place when appropriate.

17.6.5. Indicate how and to what extent the local communities participate in the formulation and the implementation of the management plan or policy (informed/consulted: decision making role etc.)

It is expected that a practical management plan will be developed following close consultation with local communities via workshops, informal interviews and village meetings to have common consensus on the biosphere reserve management. Then the management plan will be developed in a logical sequence and with themes, objectives and actions consistent with the overall goal of the Biosphere Reserve. The management plan will then be made available for public comment and amendments prior to adoption by the Minister. The implementation of the management plan will be through a day-to-day management via a team that will be composed from members of the local communities.

17.6.6. The year of start of implementation of the management plan or policy

Policy is in its implementation phase since the date in which the multilateral committee inaugurated the nomination process. As for the management plan, it will be implemented upon its finalization one year from the date of declaring the Lajaht a Biosphere Reserve.

17.7. Financial source(s) and yearly budget:

[Biosphere reserves require technical and financial support for their management and for addressing interrelated environmental, land use, and socio-economic development problems. Indicate the source and the relative percentage of the funding (e.g. from national, regional, local administrations, private funding, international sources etc.) and the estimated yearly budget in the national currency]

Presently undetermined, but the Lajaht will not be different from the other reserves of Syria where the government and local community based organizations contribute significant resources to addressing these issues. In addition, donors are potential contributors whereas project proposals are more secure tool for finding financial resources. Furthermore, it is expected that the quarries that are outside the reserve but in its vicinity shall contribute in form of compensations for the residual, unavoidable harm to biodiversity caused by disturbance, dust, engines pollution, bad views and loss of species, to name a few.

However at this time the full extent of these resources has not been quantified.

17.8. Authority(ies) in charge

17.8.1. The proposed biosphere reserve as a whole:

Name:

The management of the proposed biosphere reserve will be a shared responsibility between the government and the communities. The main groups involved will be the MLAE in conjunction with the MAAR and the **Lajaht Biosphere Reserve Association**.

If appropriate, name the National (or State or Provincial) administration to which this authority reports:

Only the Ministries will report to the Syrian Council of Ministers

17.8.2. The core area(s):

[Indicate the name of the authority or authorities in charge of administering its legal powers (in original language with English or French translation)]

Name(s): **Biodiversity and Protected Areas Department.**

Legal powers:

The entity is a governmental Department within the Ministry of Local Administration and Environment and has the associated legal powers.

17.8.3. The buffer zone(s)

Name: **Biodiversity and Protected Areas Department and the Association for the Protection of Lajaht Biosphere Reserve**

Legal powers (if appropriate): **As above in Section 17.8.2**

18. SPECIAL DESIGNATIONS:

[Special designations recognize the importance of particular sites in carrying out the functions important in a biosphere reserve, such as conservation, monitoring, experimental research, and environmental education. These designations can help strengthen these functions where they exist or provide opportunities for developing them. Special designations may apply to an entire proposed biosphere reserve or to a site included within. They are therefore complementary and reinforcing of the designation as a biosphere reserve. Check each designation that applies to the proposed biosphere reserve and indicate its name]

Name:

- UNESCO World Heritage Site
- RAMSAR Wetland Convention Site
- Other international/regional conservation conventions/directives [Please specify]
- Long term monitoring site [Please specify]
- Other [Please specify] **Lajaht Reserve under Decree No. 144/T/2006**

19. SUPPORTING DOCUMENTS (to be submitted with nomination form)

[Clear, well-labelled maps are indispensable for evaluating Biosphere Reserve proposals. The maps to be provided should be referenced to standard coordinates wherever possible. Electronic versions are encouraged]

(✓) General location map

A GENERAL LOCATION MAP of small or medium scale must be provided showing the location of the proposed Biosphere Reserve, and all included administrative areas, within the country, and its position with respect to major rivers, mountain ranges, principal towns, etc.

See Annex I.

(✓) Biosphere Reserve zonation map [large scale, preferably in black & white for photocopy reproduction]

[A BIOSPHERE RESERVE ZONATION MAP of a larger scale showing the delimitations of all core area(s) and buffer zone(s) must be provided. The approximate extent of the transition area(s) should be shown, if possible. While large scale and large format maps in colour are advisable for reference purposes, it is recommended to also enclose a Biosphere Reserve zonation map in a A-4 writing paper format in black & white for easy photocopy reproduction. It is recommended that an electronic version of the zonation map be provided]

See Annex II.

(✓) Vegetation map or land cover map

[A VEGETATION MAP or LAND COVER MAP showing the principal habitats and land cover types of the proposed Biosphere Reserve should be provided, if available].

See Annex III.

(✓) List of legal documents (if possible with English or French translation)

[List the principal LEGAL DOCUMENTS authorizing the establishment and governing use and management of the proposed Biosphere Reserve and any administrative area(s) they contain. Please provide a copy of these documents, if possible with English or French translation].

Decree No. 144/T/2006

xxx

(✓) List of land use and management plans

[List existing LAND USE and MANAGEMENT PLANS (with dates and reference numbers) for the administrative area(s) included within the proposed Biosphere Reserve. Provide a copy of these documents]

See Annexes xxx

(✓) Species list (to be annexed)

[Provide a LIST OF IMPORTANT SPECIES (threatened species as well as economically important species) occurring within the proposed Biosphere Reserve, including common names, wherever possible.]

See Annex

(✓) List of main bibliographic references (to be annexed)

[Provide a list of the main publications and articles of relevance to the proposed biosphere reserve over the past 5-10 years].

See Annex.

20. ADDRESSES

20.1 Contact address of the proposed biosphere reserve:

[Government agency, organization, or other entity (entities) to serve as the main contact on the MABnet to whom all correspondence within the World Network of Biosphere Reserves should be addressed.]

Name:
Street or P.O. Box: [PO Box](#)
City with postal code: [Damascus](#)
Country: [Syrian Arab Republic](#)
Telephone: [+ 963](#) [Ext.](#)
Telefax (or telex): [+ 963](#)
E-mail:
Web site:

20.2. Administering entity of the core area:

Name:
Street or P.O. Box: [PO Box](#)
City with postal code: [Damascus](#)
Country: [Syrian Arab Republic](#)
Telephone: [+ 963](#) [Ext.](#)
Telefax (or telex): [+ 963](#)
E-mail:
Web site:

20.3. Administering entity of the buffer zone:

Name:
Street or P.O. Box: [PO Box](#)
City with postal code: [Damascus](#)
Country: [Syrian Arab Republic](#)
Telephone: [+ 963](#) [Ext.](#)
Telefax (or telex): [+ 963](#)
E-mail:
Web site:

Annex to Biosphere Reserve Nomination Form, February 2004
MABnet Directory of Biosphere Reserves
Biosphere Reserve Description⁵

Administrative details

Country: [Syria](#)

Name of BR: [Lajaht Biosphere Reserve](#)

Year designated: *(to be completed by MAB Secretariat)*

Administrative authorities: [xxx](#)

Name Contact: [xxx](#)

Contact address: [PO Box](#) [Tel + 961](#)

Related links *(web sites)*:

Description

General description: *(Site characteristics in 11.1; human population in 10; land management units in 17.2)*

[Approximately 25 lines](#)

⁵ To be posted on the MABnet once the nomination has been approved. The numbers refer to the relevant sections of the nomination form.

Major ecosystem type: xxx

Major habitats & land cover types: Basalt plateau, Stony Plains, Sandy pockets

Location (latitude & longitude): 32° 59' 41.16"N, 36° 30' 22.76"E

Area (ha):

Total: 12038 ha.

Core area(s): 2031 ha.

Buffer zone(s): 1752 ha.

Transition area(s) (when given): 8255 ha.

Different existing zonation: N/A

Altitudinal range (metres above sea level): 600-1800

Research and monitoring

Brief description: 15.1.3)

Approximately 5 lines

Xxxxxxxxxx

Specific variables (please fill in the table below and tick the relevant parameters)

Abiotic		Biodiversity	
Abiotic factors	✓	Afforestation/Reforestation	✓
Acidic deposition/Atmospheric factors		Algae	
Air quality	✓	Alien and/or invasive species	✓
Air temperature	✓	Amphibians	
Climate, climatology	✓	Arid and semi-arid systems	✓
Contaminants		Autoecology	
Drought		Beach/soft bottom systems	
Erosion	✓	Benthos	
Geology	✓	Biodiversity aspects	✓
Geomorphology	✓	Biogeography	✓
Geophysics		Biology	✓
Glaciology		Biotechnology	
Global change	✓	Birds	✓
Groundwater	✓	Boreal forest systems	
Habitat issues	✓	Breeding	✓
Heavy metals		Coastal/marine systems	
Hydrology	✓	Community studies	✓
Indicators	✓	Conservation	✓
Meteorology	✓	Coral reefs	
Modeling		Degraded areas	✓
Monitoring/methodologies	✓	Desertification	✓
Nutrients	✓	Dune systems	
Physical oceanography		Ecology	✓
Pollution, pollutants	✓	Ecosystem assessment	✓
Siltation/sedimentation		Ecosystem functioning/structure	✓
Soil	✓	Ecotones	✓
Speleology		Endemic species	✓

Topography	✓	Ethology	
Toxicology		Evapotranspiration	
UV radiation		Evolutionary studies/Palaeoecology	
		Fauna	✓
		Fires/fire ecology	
		Fishes	
		Flora	✓
		Forest systems	✓
		Freshwater systems	
		Fungi	
		Genetic resources	✓
		Genetically modified organisms	
		Home gardens	✓
		Indicators	✓
		Invertebrates	✓
		Island systems/studies continental island	✓
		Lagoon systems	
		Lichens	
		Mammals	✓
		Mangrove systems	
		Mediterranean type systems	✓
		Microorganisms	
		Migrating populations	✓
		Modeling	
		Monitoring/methodologies	✓
		Mountain and highland systems	✓
		Natural and other resources	✓
		Natural medicinal products	✓
		Perturbations and resilience	✓
		Pests/Diseases	✓
		Phenology	✓
		Phytosociology/Succession	✓
		Plankton	
		Plants	✓
		Polar systems	
		Pollination	✓
		Population genetics/dynamics	
		Productivity	✓
		Rare/Endangered species	✓
		Reptiles	✓
		Restoration/Rehabilitation	✓
		Species (re) introduction	✓
		Species inventorying	✓
		Sub-tropical and temperate rainforest	
		Taxonomy	✓
		Temperate forest systems	
		Temperate grassland systems	
		Tropical dry forest systems	
		Tropical grassland and savannah systems	
		Tropical humid forest systems	
		Tundra systems	
		Vegetation studies	✓
		Volcanic/Geothermal systems	✓
		Wetland systems	

		Wildlife	✓
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Socio-economic		Integrated monitoring	
Agriculture/Other production systems	✓	Biogeochemical studies	
Agroforestry	✓	Carrying capacity	✓
Anthropological studies	✓	Conflict analysis/resolution	✓
Aquaculture		Ecosystem approach	✓
Archaeology	✓	Education and public awareness	✓
Bioprospecting	✓	Environmental changes	✓
Capacity building	✓	Geographic Information System (GIS)	✓
Cottage (home-based) industry	✓	Impact and risk studies	✓
Cultural aspects	✓	Indicators	✓
Demography	✓	Indicators of environmental quality	✓
Economic studies	✓	Infrastructure development	✓
Economically important species	✓	Institutional and legal aspects	✓
Energy production systems		Integrated studies	✓
Ethnology/traditional practices/knowledge	✓	Interdisciplinary studies	✓
Firewood cutting	✓	Land tenure	✓
Fishery		Land use/Land cover	✓
Forestry	✓	Landscape inventorying/monitoring	✓
Human health	✓	Management issues	✓
Human migration	✓	Mapping	✓
Hunting	✓	Modeling	
Indicators	✓	Monitoring/methodologies	✓
Indicators of sustainability		Planning and zoning measures	✓
Indigenous people's issues		Policy issues	✓
Industry	✓	Remote sensing	
Livelihood measures	✓	Rural systems	✓
Livestock and related impacts	✓	Sustainable development/use	✓
Local participation	✓	Transboundary issues/measures	✓
Micro-credits		Urban systems	✓
Mining		Watershed studies/monitoring	✓
Modeling			
Monitoring/methodologies	✓		
Natural hazards			
Non-timber forest products	✓		
Pastoralism	✓		
People-Nature relations	✓		
Poverty	✓		
Quality economies/marketing	✓		
Recreation	✓		
Resource use	✓		
Role of women	✓		
Sacred sites	✓		
Small business initiatives	✓		
Social/Socio-economic aspects	✓		
Stakeholders' interests	✓		
Tourism	✓		
Transports	✓		

ANNEX I

ANNEX II

ANNEX III

ANNEX IV

ANNEX V

ANNEX VI

ANNEX VII

ANNEX VIII

ANNEX IX

ANNEX X

ANNEX XI: SPECIES LIST

ANNEX XII: LITERATURE CITED