PALESTINE: "LAND OF OLIVES AND VINES CULTURAL LANDSCAPE OF SOUTHERN JERUSALEM, BATTIR" World Heritage Site

Biodiversity Conservation Plan

December 2019

Output of Project: "Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine"

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III. Abbreviations

ACs	Current Agricultural Cooperatives in the WHP
BU	Bethlehem University
BCP	Biodiversity Conservation Plan
CBD	Convention on Biological Diversity
CCHP	Centre for Cultural heritage Preservation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMP	Conservation Measures Partnership
CMS	Convention on Conservation of Migratory Species of wild animals
DSOCR	Desired State of Conservation Report
EIA	Environmental Impact Assessment
EQA	Environment Quality Authority
HIA	Heritage Impact Assessment
IBAs	Important Bird Area
ICOMOS	International Council on Monuments and Sites.
IPPC	International Plant Protection Convention
ITPGRs	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for Conservation of Nature
JSC	Joint Service Council
JSCTDB	Joint Service Council for Tourism Development of Bethlehem Governorate
MCP	Management and Conservation Plan
MDLF	Municipal Development and Lending Fund
MEAs	Multi Environmental Agreements
MoA	Ministry of Agriculture
MoLG	Ministry of Local Government
MoTA	Ministry of Tourism and Antiquities
NBSAPP	National Biodiversity Strategy and Action Plan for Palestine
NGOs	Non-governmental organization
NTFP	Non-timber Forest Products
OUV	Outstanding Universal Value

PCC	Pioneer Consultancy Center for Sustainable Development
PIBS	Palestine Institute for Biodiversity and Sustainability
PMNH	Palestine Museum of Natural History
PWA	Palestinian Water Authority
RAPPAM	Rapid Assessment and Prioritization of Protected Area Management
SMC	Site Management Committee
SWOT	Strengths, Weaknesses, Opportunities, and Threats analysis
UNCCD	United Nations Convention to Combat Desertification
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations' Framework Convention on Climate Change
WHC	World Heritage Convention
WHP	World Heritage Property
WHS	World Heritage Site
WWF	World Wide Fund for Nature

IV. Preface

The Biodiversity Conservation Plan (BCP) for "*Land of Olives and Vines Cultural Landscape of Southern Jerusalem, Battir*"; Battir World Heritage Property (Battir WHP), represents one of the main outputs of the project entitled:" **"***Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine*" which is funded by Darwin Initiative Fund and is conducted by PIBS/PMNH – BU (Palestine Institute for Biodiversity and Sustainability /Palestine Museum of Natural History – Bethlehem University over the years 2018-2021. The project targeted Battir WHP, as the site encompasses number of significant cultural and natural heritage values upon which it was inscribed on the World Heritage List following an emergency nomination, in accordance with criteria (iv) and (v) in the year 2014. The WHP was announced as Important Bird Area (IBAs) and was designated as a Key Biodiversity Area at national and global levels. It is located in the Mediterranean Forests, Woodland and Scrub biome, one of WWF's Global 200 priority biomes for conservation. It is also part of Conservation International's Global Biodiversity Hotspot Mediterranean Basin, and of a global Centre of Plant Diversity, two additional designations of global conservation importance.

The WHP embraces number of intrinsic and authentic values starting from the terraces that bear witness to thousands of years of human activity centered primarily in the area to the springs, footpaths, and rich natural landscapes of mainly Mediterranean maquis forest, with batha/garrigue associations; where one can find a wealth of cultural heritage remains

and rich diversity of biota. Hence, it was found necessary to develop a specialized plan for the conservation of biological diversity of the property with an ultimate aim to protect and sustain the significant ecological and biological attributes of such outstanding landscapes of Battir WHP, while supporting their interactive processes.

This BCP works on advancing the knowledge-base regarding the biological importance, ecological services, habitats and species of conservation value and relevant pressures of Battir World Heritage Property. This BCP presents strategic objectives and action plans for effective protection and maintenance for the property's valuable biodiversity, ecosystem services and its supportive habitats while considering both the landscape and socio-economic systems and climate change aspects. This is accomplished while also considering supporting the local population livelihoods and outreaching the decisions makers and stakeholders to create a national impact on biodiversity conservation level that can be replicated.

The BCP responds to the objectives of Palestine's National Biodiversity Strategy and Action Plan (NBSAPP), and comes in accordance to the guidelines of CBD/COP/14/7, 14/8, 14/12, 14/13, and 14/14 provided by the CBD (Convention on Biological Diversity) and related international conservation frameworks such as the Strategic Plan for Biodiversity 2011-2020. It also complements the Management and Conservation Plan (MCP) set by MoTA and its partners during the year 2018 to Battir WHP; with the aim to provide a sustainable regulatory management framework for conserving and protecting the World Heritage Property (WHP), its Outstanding Universal Value (OUV) including its authenticity and integrity, as well as to improve the socio-economic situation of the local community. BCP will complement the objectives set at MCP; specifically objective 11 which calls on conserving the biodiversity and natural ecosystem of the WHP.

This plan was developed through comprehensive consultation and engagement of the local community and related partners and stakeholders. Number of meetings and workshops were conducted targeting related governmental institutions, technical experts, and representatives of local community and municipalities/councils of localities in proximity to Battir WHP. The discussions and diagnosis done together with the different stakeholders concluded the targets of conservation value, and the necessary actions of prospect to halt and or reduce the pressures and potential threats on site, and those actions needed for habitats restoration that respond to the strategic objectives of the BCP.

V. Executive Summary

The inscription of the "Land of Olives and Vines Cultural Landscape of Southern Jerusalem, Battir"; Battir on the World Heritage Sites in the year 2014, has secured for the site attention to preserve its outstanding features and to continuously assess its status and to work out plans for its sustainability. This Biodiversity Conservation Plan (BCP) comes in line and respond to the obligations of the State of Palestine towards its ratified international conventions (see section 1), the national strategies mainly the Biodiversity Strategy and Action Plan for Palestine, the World Heritage Committee recommendations and the Management and Conservation Plan (MCP) set to manage the site (sections 1 and 2). It is built with total integration with the MCP and in a manner that secures an effective management to this BCP; with full support of the Operation Management System of the

MCP. The BCP comes to complement the effective management of the site with developing a conservation plan specialized in protecting and sustaining the ecology, landscape and biodiversity of the WHP.

The plan works effectually to identify the biodiversity conservation status and values (socio-economic and biological) on the property (see sections 3, and 4), the pressures and threats the property handles (section 6), ecosystem services and valuation (section 3), the key targeted habitats and species of high conservation value on site (section 5), and the response with the appropriate methods/actions for the property sustainable conservation (sections 7, 8 and 9). The Conservation Measures Partnership, 2013 (CMP) model (CMP, 2013), RAPPAM (Ervin, J. 2003) and IUCN relevant guidelines (IUCN, 2012) were used while preparing the plan.

In the last stage of the planning process the conservation goals were set based on the different inventories, diagnosis and information collected in a participatory approach during the planning process. Goals for conservation were established; for (1) species and communities; with numeric goals were established for endemic and endangered or vulnerable targets, (2) goals for ecological systems were based on relative abundance and representation of diverse habitats and connectivity, and richness of species and communities and threats facing habitats and communities. In addition, the preparation of the BCP was based on a participatory approach that involves all relevant stakeholders, involved actors and experts in all phases of preparation and development of the BCP. A value-driven approach that is consistent with Palestinian local conditions has also been developed and applied as a methodology for the preparation of the BCP.

Up to 23 strategic long term goals, 28 conservation strategies supported with 42 actions were all concluded to reflect on the protection of the natural ecosystems and their biotic and abiotic components within the WHP; through conservation and restoration works and in conformity with international standards, and the engagement of the local community in the WHP.

1. INTRODUCTION FOR CONSERVATION APPROACH OF BIODIVERSITY at Battir WHP

1.1 International Conservation Frameworks

The globalization of environmental issues and International environmental law has developed rapidly over the past 30 years; a number of conventions have been completed, acting as both multilateral and bilateral instruments, to address global and regional issues. This approach has been accelerated by the processes of economic and political globalization, which is gradually beginning to affect environmental regimes. In the past two decades, international environmental law has become increasingly driven by the concept of sustainable development, which now underpins to a great extent the global environmental debate. This has also brought a rapid growth in the number and scope of international legal instruments and institutions relating to the conservation of biodiversity (Boer, Ben, 2002). Given the development and population pressures on both terrestrial and marine environments, there became an urgent need for improved legal frameworks for biodiversity conservation planning at international, regional and national levels. Two key

texts emerged from a number of preparatory meetings that rang the danger bell at the global level: Publication of the Global Biodiversity Strategy and the adoption of the Convention on Biological Diversity (CBD) signed at the Earth Summit in Rio de Janeiro (both in 1992).

Conservation approaches have been manifested mainly through the decisions, guidelines and tools set by those international conventions related to Biodiversity. Those conventions were all found to implement actions at the national, regional and international levels with the aim to reach shared goals of conservation and sustainable use. Of the major and high impact international conventions of prime importance to biodiversity conservation, and some of which have been enacted in law in signatory countries are: the Convention on Biological Diversity (CBD), the Convention on Conservation of Migratory Species of wild animals (CMS), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the International Treaty on Plant Genetic Resources for Food and Agriculture, the Ramsar Convention on Wetlands, the World Heritage Convention (WHC), the International Plant Protection Convention (IPPC), United Nations' Aarhus convention, United Nations' Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD).

The international conventions, multilateral agreement and national legislation of interest to the targeted site for this BCP; Battir WHP that are highlighted here are the ones that were signed by the Palestinian authority during the last few years. It is worth mentioning here that the State of Palestine in alignment with national priorities agreed on ratifying 16 multilateral environmental conventions (see Annex 1.1) upon which it has signed number of conventions and protocols (see table 1.1). Palestine's obligations under those ratified international treaty law are to enhance protection of Palestinian cultural and natural heritage and to ensure conformity of Palestine's own legislation and practice to international standards.

Table 1.1: List of relevant biodiversity conventions and planning frameworks

Conventions and Planning Frameworks	Date of Ratification / Completion
UN Convention on Biological Diversity (CBD)	Ratified on the 2nd April 2014
CBD National Biodiversity Strategy and Action Plan (NBSAP)	Completed in 1999
Cartagena Protocol on Biosafety to the Convention of Biological Diversity	Ratified on the 2nd April 2014
UN Framework Convention on Climate Change (UNFCCC)	Signed on 1st December 2015
World Heritage Convention (WHC)	Ratified on the 8th December 2011
UN Convention to Combat Desertification (UNCCD)	Ratified on the 30th September 1997
Basel Convention Controlling Trans-boundary Movement of Hazardous Wastes and their Disposal	Ratified on the 2nd April 2015
Convention on Conservation of Migratory Species of wild animals (CMS)	Entered into force 1979 – not ratified
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	Entered into force 1975 – not ratified
United Nations' Aarhus convention	Entered into force 2005 – not ratified

International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRs)	Entered into force 2004- not joint
Ramsar Convention on Wetlands	Entered into force 1971- not ratified
International Plant Protection Convention (IPPC)	Entered into force 1952 – not ratified
Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution	Entered into force 1976 – not ratified

On November 2011, Palestine ratified several other conventions related to cultural property, such as the 1954 Hague Convention and its two protocols. It also joined, amongst other legal instruments, the 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage and the 2003 Convention for the Safeguarding of Intangible Cultural Heritage.

In addition, Palestine was admitted as a full UNESCO member on October 2011, and it subsequently ratified the World Heritage Convention of 1972 on December of the same year. In this context, the convention and its related provisions, decisions, and operational guidelines, has become part of the Palestinian legal framework used to secure the World Heritage Property (WHP) and its boundaries. The convention sets out the duties of States Parties in identifying potential sites of significance and their role in protecting and preserving them. By signing the convention, each country pledges to conserve not only the World Heritage sites situated on its territory, but also to protect its national heritage. The States Parties are encouraged to integrate the protection of the cultural and natural heritage into regional planning programmes, set up staff and services at their sites, undertake scientific and technical conservation research and adopt measures, which give this heritage a function in the day-to-day life of the community. This is in particular what the state of Palestine is committed to do and hence is willing to apply on the Palestinian announced World Heritage Sites including "Palestine: Land of Olives and Vines Cultural Landscape of Southern Jerusalem, Battir"; Battir World Heritage Property (Battir WHP).

1.2 National Conservation Frameworks of Relevance

Several national strategies and action plans were set in relevance to the sustainable protection and development of Battir WHP including the Environment Sector Strategy 2014-2016, Cross-Sectoral Environmental Strategy 2017-2022, the National Biodiversity Strategy and Action Plan for the State of Palestine (NBSAPP) 1999,Water Strategy 2016-2018, Palestinian Water Authority Strategic Plan 2016-2018, National Agricultural Sector Strategy (2017-2022), Palestinian Climate Change Adaptation Strategy 2011 and the National Policy and Legislation for Promoting the Conservation of Agro-biodiversity in the Palestinian Authority 2005. Another relevant action plans is the EQA Strategic Action Plan (2016-2020), and Sustainable Consumption and Production National Action Plan in Palestine 2016.

Of those of most significance and relevance to this BCP are the below legislations.

1.2.1 National Cultural Heritage Legislations

In 1966, the Jordanian Law of Antiquities, number 51 replaced the 1929 Law, which is still in effect today in the Gaza Strip. Both laws only protect tangible heritage (movable and immovable objects and buildings that were constructed before the year 1700 AD, and

human and animal remnants predating 600 AD). It is worth noting that according to the Oslo Accord and the presidential decree (1994), the 1966 Jordanian Law is applied in Areas "A" and "B," in addition to the Israeli military orders in Area "C," which are applied by the Occupation Authorities.

The new Law (No. 11, 2018) for the Protection and Conservation of Tangible Cultural Heritage Resources in Palestine was endorsed by the president of Palestine on 29 April 2018. It overcomes the shortcomings of previous laws by replacing the conventional terms of "antiquities" and "historical buildings," with "cultural heritage." It also references all categories of cultural heritage resources, including movable and immovable cultural heritage remains, cultural landscapes, protection, management, conservation, vandalism and violations etc., as well as specifying legal measures for conserving and safeguarding other components of cultural heritage during peace time and armed conflict in conformity with the international conventions, recommendations and standards. It also offers Ministry of Tourism and Antiquities (MoTA).
Article [5] of the Tangible Cultural Heritage Law (No. 11, 2018), states the Rights guaranteed by this law which are:

a. The right of every human being to live in a sound and clean environment as well as enjoy the highest extent of public health and welfare.
b. Protect the country's natural wealth's and its economic resources as well as maintain its historical and civilization heritage without damage or side effects which may appear sooner or later as a result of the different industrial, agricultural or constructional activities on the basic life species and the environmental systems such as air, water, soil and sea, animal and botanical wealth.

Whereas Article (23, Par. 2) of Law states that "New buildings and construction additions may be allowed in the cultural landscape properties and in their surrounding areas; or implementation of infrastructure works and major projects after obtaining a written permission from MoTA. The permission should be based on Heritage Impact Assessment and Environment Impact Assessment."

1.2.2 National Natural Heritage Legislations

Environmental legislation, policies and planning are the responsibility of the Palestinian Environmental Quality Authority (EQA) in cooperation with other relevant ministerial bodies such as the Ministry of Planning and Ministry of Agriculture. Accordingly, EQA issued the Environmental Law in 1999, (finalized in 2003). Both articles 5 and 7 of the law are significant to the BCP of Battir WHP. Article 5 of the Law considers the preservation of cultural heritage sites to be one of the basic aims of the Palestinian environmental strategy. Article 7 of the law contains different provisions on protection of nature, fauna, and flora. It also defined the natural preservation sites as the specified sites for protecting specific kinds of living creatures or any environmental systems that have natural or aesthetic values. In addition Article 44 bans any activity or behavior that might cause damage to cultural heritage properties or disturb the aesthetic value of these sites.

The National Biodiversity Strategy and Action Plan for Palestine (1999) is one of the most relevant and significant Palestinian frameworks to the BCP of Battir WHP as it sets the primary guidelines for biodiversity conservation and utilization in Palestinian chart a

course for strengthening human capacity for this task. In order to contribute to this goal, five objectives were arrived at through a wide range of consultative processes: (1) the conservation of Palestine's biodiversity; (2) the sustainable use of Palestine's biodiversity; (3) the enhancement of local and traditional knowledge and skills and the improvement of people's attitudes and participation for the conservation of biodiversity and the sustainable use of biodiversity; (4) the equitable sharing of biodiversity benefits within Palestine; and (5) the development of Palestinian human resource capacity in the field of biodiversity.
The Ministry of Agriculture (MoA) also finalized the Agricultural law (2003), supporting the production of Forest Policy, Strategic Options, and Scenarios, and the Palestinian National Biodiversity and Agro-biodiversity strategies and action plans are considered the basic legislations for Biodiversity in Palestine.

To ensure the alignment with the guidelines and decisions set by the ratified conventions, EQA and relevant governmental bodies have been reviewing by laws, strategies, action plans and reports. For this purpose, In terms of biodiversity, EQA has produced the 5th National Report on Biodiversity. The EQA, in joint efforts with its partners, has determined 51 protected areas, which have been reflected in the National Spatial Plan. In addition, the EQA and its partners have classified another 51 areas as rich biodiversity areas on of them is the Battir WHP. Another relevant report is "The National Strategy, Action Programme and Integrated Financial Strategy to Combat Desertification in the Occupied Palestinian Territories" published by EQA in the year 2012, which laid out plans and sought funding for many projects to educate people about combating desertification. Moreover, the Palestinian authorities still needed to work on the updating of the NBSAPP, the endorsement of the Environment bylaw, the National Report on Biosafety for Palestine and Climate Change 1st National Communications Report and others.

1.3 Related Current National Conservation acts at Battir WHP

All the above has prepare the State of Palestine to submit the "*Land of Olives and Vines Cultural Landscape of Southern Jerusalem, Battir*"; Battir World Heritage Property for nomination for UNESCO World Heritage Site on the year 2013, where it was inscribed as a WHP on 2014[1]. This nomination has secured for the site attention to preserve its outstanding features (see section 3) and to continuously assess its status and to work out plans for its sustainability.
Hence on February 2019, the State Party submitted a state of conservation report to the World Heritage committee[2], showing the progress in number of conservation issues at Battir WHP, as follows:

- A draft Management and Conservation Plan (MCP) was submitted to the World Heritage Centre in 2018 and reviewed by ICOMOS. Response to the technical review was submitted for further review in December 2018. The MCP will be endorsed and implemented by the State Party once final feedback is received;
- The new Decree Law on Tangible Cultural Heritage no. 11/2018 requires that a Heritage Impact Assessment (HIA) and/or Environmental Impact Assessment (EIA) be conducted prior for all potential developments within the State Party's

[1] https://whc.unesco.org/en/list/1492/
2 https://whc.unesco.org/en/list/1492/documents

World Heritage properties in order to evaluate effectively the potential impacts on their Outstanding Universal Value (OUV).

- Progress is made towards the Desired state of conservation for the removal of the property from the List of World Heritage in Danger (DSOCR) and in implementing corrective measures:
    - *Dismissal of plans to build a "Wall" along the property, or within its surroundings.* No progress has been made, since this is dependent on actions and decisions that are beyond the control of the State Party,
    - *Adequate conservation of the agricultural terraces and their associated components.* Key stakeholders have implemented projects toward achieving this objective, which are anticipated to be completed by 2024,
    - *Adequate restoration of the irrigation system and the development of a sufficient sewage system.* A Water and Sewage Unit has been established for managing sewage water within the property and for seeking funds to develop an adequate sewage system,
    - *Protection methods are in place for the property and its buffer zone.* The MCP will provide strong guidance for several management issues and activities within the property. This desired state of conservation and its related corrective measures are planned to be completed by 2021,
    - *Adoption of a management plan and monitoring system, and a sustainable management structure.* Once the MCP is adopted and the management system is operational, a monitoring system will be established for the property and its buffer zone. A specialized "General Directorate of the World Heritage Sites in Palestine" will be established within the Ministry of Tourism and Antiquities (MoTA), with the primary responsibility of conserving the State Party's properties on the World Heritage List and Tentative List,
    - The State Party draws attention to the negative impacts of several constructions undertaken in and near the property during 2018.

However, WH Committee reported that little progress has been made on the development of a sufficient sewage system, though a Water and Sewage Unit has been established to manage sewage water within the property and to seek funds to develop an adequate system. It is recommended that the Committee urge the State Party to continue seeking, on a priority basis, the required funds for this corrective measure. It is also noted that the dismissal of plans to build a "Wall" along the property, or within its surroundings, is essentially beyond the State Party's control. It also requested the State of Palestine to inform the World Heritage Centre of any proposed plans for major restoration or new construction projects that may affect the OUV of the property, in accordance with Paragraph 172 of the *Operational Guidelines*, before making any decisions that would be difficult to reverse. Considering the above-mentioned information, the Committee retain the property on the List of World Heritage in Danger.

"Palestine: Land of Olives and Vines— Cultural Landscape of Southern Jerusalem, Battir": Management and Conservation Plan

As a response to the international and national conventions to protect cultural and natural heritage, and to provide a sustainable regulatory management framework for conserving and protecting the World Heritage Property (WHP), the Palestinian Ministry of Tourism and Antiquities (MoTA) Prepared the Management and Conservation Plan (MCP) for the

World Heritage Property, "Palestine: Land of Olives and Vines— Cultural Landscape of Southern Jerusalem, Battir". The MCP was prepared to protect one of the best-known representation of the Palestinian cultural landscapes and its significant cultural and historical heritage values, which testifies to thousands of years of human interaction with the natural environment.

Battir MCP was developed with the aim to provide a sustainable regulatory management framework for conserving and protecting the World Heritage Property (WHP), its Outstanding Universal Value (OUV) including its authenticity and integrity, as well as to improve the socio-economic situation of the local community, and to enrich the experience of the visitors and inhabitants alike. Safeguarding this rich and exceptional Property is a shared responsibility. The final management plan aims to expand on the existing MOTA (2018) draft management plan for this UNESCO site, but also to improve self-sustainability in order to conserve the outstanding universal value (OUV) for this area. The management includes a SWOT analysis for the area and detailed recommendations including an action plan. It also includes human capacity building activities.

Accordingly, this plan was developed through comprehensive consultation and engagement of the local community and related partners and stakeholders. It also takes into account the adopted Desired State of Conservation and the Corrective Measures to remove the site from the World Heritage List in Danger.
Although there are number of legislations aimed at protecting Palestinian heritage, significant shortcomings remain and are compromising the effectiveness of the management system for the WHP. Furthermore, the implementation of these laws has not always been consistent especially in the light of the political conflicts and the numerous changes in ruling authorities.

Moreover, in order to regulate the WHP's especially the Buffer Zone, there is an urgent need to develop and enact legal framework, as natural and cultural heritage in the property is facing threats through uncontrolled urban development and a lack of community awareness. The challenges posed by competing private ownerships, property fragmentation and intensive land use within or around the WHP also needs to be regulated. In response to changes in heritage legislation or other legislation that impacts heritage management, it is occasionally necessary to focus efforts on adapting the mindset of the local community to match these formal changes.

2. RATIONAL AND PURPOSE BEHIND BIODIVERSITY CONSERVATION PLAN (BCP)

2.1 Objectives behind BCP at Battir WHP

The Biodiversity and Conservation Plan comes as an output to the project entitled:" *Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine*" that aims to conserve biodiversity in Al-Makhrour Valley of Bethlehem (Palestine) benefiting the local communities through sustainable use of ecosystem services. Since AL Makhrour Valley is part of Battir World Heritage Property (Battir WHP); a well-known WHS in Palestine specifically for its natural significance and the interrelations between locals and its physical attributes, it was found of high importance to develop a

conservation plan specialized in protecting and sustaining the ecology, landscape and biodiversity of the whole property including AL Makhour valley. Hence, the BCP was developed mainly to effectually identify the biodiversity conservation status and values on the property, the pressures and threats the property handles and set in response the appropriate methods/actions for the property sustainable conservation. The plan highlights the biodiversity status at the targeted site based on the conducted biodiversity inventory surveys done during the year 2018/2019; including flora, fauna and avifauna inventories done during the noted project period, describes the main ecological services, the biological and socio-economic importance of the site, the targets of high conservation values, strategic objectives and action plans for conservation. The Conservation Measures Partnership, 2013 (CMP) model (CMP, 2013), RAPPAM (Ervin, J. 2003) and IUCN relevant guidelines (IUCN, 2012) were used while preparing the plan.

2.2 Interrelations with UNESCO and MoTA conservation approach on site

2.2.1 In relation to MoTA Conservation Approaches on site

The outputs of the "Biodiversity Conservation Plan" BCP were compiled after detailed reviewing for key inputs used during the plan development process which were all set in a manner that complement the "Management and Conservation Plan (MCP) for Battir WHP and its strategic objectives drafted for the World Heritage Property in the year 2018 by MoTA and relevant stakeholders.

The outcomes of this BCP will respond directly to the MCP Strategic objectives; specifically the following strategies:

MCP Objective	MCP Strategy	Relation to BCP	Method of incorporation	BCP objective (see section 7)
Objective3: To synergize and mainstream the MCP within the national and local planning framework, for the benefit of the property and its inhabitants	**Strategy 3.2** - Any study or plan prepared by other NGOs and civil societies shall be in line with the MCP's objectives and strategies	BCP is another plan that is developed to complement the MCP. BCP is consistent with the framework of the MCP's objectives & strategies. It also fulfil some specific strategic objectives and actions.	BCP shall be considered a complementary plan to MCP when preparing all necessary set up to initiate and implement the MCP, especially regarding the legal, institutional and managerial frameworks	**Objective 2, Strategy 2.2**
Objective7: To strengthen the legislations and regulations for conservation and protection of the cultural landscape, the historic old core, the archaeological remains, and the physical attributes of the OUV.	**Strategy 7.1** – Develop good conservation practice measures for the WHP that are based on a multidisciplinary approach in cooperation with relevant stakeholders. **Strategy 7.2** – Enact heritage protection legal frameworks in cooperation with relevant stakeholders to regulate urban expansion within the WHP, ensuring that new houses and buildings fit harmoniously with the property's cultural heritage. Any new construction shall be compatible with the traditional context of the WHP. **Strategy 7.4** – Agricultural development and practices taken	BCP strategic objectives is concerned about supporting the implementation of physical conservation interventions on the property, taking into consideration various natural values of the property and their physical attributions. BCP aims to regulate urban expansion within the WHP to ensure that new houses and facilities fit in harmony with natural landscapes and are not threatening the habitats and species of conservation value. BCP aims to regulate agriculture development in a way that sustains	The BCP outputs shall be integrated in the Conservation manuals that will be prepared under MCP by MoTA and other partners. BCP objectives and actions shall be considered when developing the heritage protection bylaws, and when those bylaws are enforced. BCP objectives and actions shall be considered when the land use zoning plan is prepared, especially regarding	**Objective 4, Strategy 4.1**

	place in the WHP shall be consistent with the MCP objectives and strategies.	the traditional farming and its harmony with natural ecosystems.	the protection of the habitats of high conservation value. BCP actions shall be considered when permission procedures are prepared & used through the MCP	
Objective 8: To conserve and improve conditions of the physical attributes of the cultural landscape and their integrity and authenticity.	**Strategy 8.6** – Appropriate conservation interventions should be utilized to prevent erosion, landslides, regulate surface water, and keep the momentum of using local and native varieties of agricultural crops. **Strategy 8.7** – Agricultural terraces and dry-stone landscapes should be documented, and assessed to prioritize their protection, conservation, and renovation.	BCP aims at conserving the agro-biodiversity component of the WHP and hence aims at keeping and maintaining the walls & agricultural terraces and the traditional farming especially the conservation of wild relatives and local landraces' seeds and seedlings is a priority.	BCP objectives and actions shall be considered when setting plans for restoring or maintaining the wall, agricultural terraces, traditional paths, and irrigation system and when reclaiming agricultural lands.	**Objective 7, Strategy 7.1 and 7.2** **Objective 10, Strategy 10.5**
Objective 10: To enhance and conserve traditional agrarian practices and knowledge to be transmitted to future generations.	**Strategy 10.1** – Sustain local traditional agricultural products through the product value chain model at the local and regional level. **Strategy 10.2** – Traditional agrarian practices, water distribution rights, and customs shall be documented, studied and preserved through sustainable interventions.	BCP aims to conserve the traditional agro-ecological practices, the local landraces and their wild relatives at local farms, and to maintain the whole setup that supports the sustainability of the traditional farming system at local Palestinian farms.	BCP is considered when developing necessary set up to ensure the sustainability of the Agricultural Cooperatives (ACs). Those cooperatives shall be trained and their capacities shall be built regarding relevant issues especially the protection of their inherited knowledge.	**Objective 7, Strategy 7.2 and 7.3** **Objective 9, Strategy 9.1**

	Strategy 10.4 – The WHP's agricultural lands should be protected from any negative side effects from chemical pesticides from nearby farms. This strategy should be undertaken in cooperation with the Ministry of Agriculture and farmers themselves by developing organic alternatives to pesticides and other solutions	BCP aims to halt or reduce to the minimum the use of chemicals such as chemical fertilizers and pesticides at farms through the application of integrated Pest Control management and ecological friendly practices including organic alternatives to pesticides and other solutions	BCP actions are considered when local products are promoted, especially the landraces and agro-biodiversity components. BCP is calling for documenting and preserving the traditional knowledge of local agrarian practices. BCP is calling for enhancing the livelihood of the locals from promoting agro tourism but it emphasis the adoption of sustainable methods. BCP is calling for introducing safe and environmental agro-ecological practices at local farm level in parallel to MCP.	
Objective 11: To conserve the biodiversity and natural ecosystem of the WHP	**Strategy 11.1** – Ensure the sustainable use of the WHP's ecological resources through both traditional and modern practices, including creating "green areas" and encouraging the cultivation of native trees on private property to control	BCP ultimate goal is to conserve ecosystem, habitats, and species of the WHP. This shall be done while implementing set of actions including conservation and restoration programs supported with monitoring plan (see sections	BCP is built on flora & fauna comprehensive surveys. Inventory studies are annexed to the BCP. This fulfil MCP- Objective 11- action 44 BCP has identified the WHP's ecological services see section 3. This fulfil the MCP objective 1-Action 45.	**Objective 6, Strategies 6.1, and 6.2** **Objective 10, Strategies 10.1-10.4** **Objective 11,**

	soil and water pollution. Strategy 11.2 – Implement a species conservation and recovery program that would include such activities as removing and combating invasive species in favor of native ones. Strategy 11.3 – Regular inspection of water resource quality to mitigate contamination and protect wildlife and greater ecosystem	7&8). BCP is focusing on combating invasive species in favor of native ones through specialized monitoring and opposing methods. BCP is tackling the preservation of water resources and their quality as they are considered of high importance for the integrity of ecosystems and manifestation of rich wildlife and vegetation cover.	BCP has identified the green areas, and habitats of high conservation value where preservation and restoration actions shall be promoted see section 5. This fulfil the MCP – objective 11- action 46. BCP aims to conserve the richness, diversity of flora and fauna in the WHP. Species of conservation value are of conservation priority. This fulfil the MCP –objective 11 – action 47 BCP aims to regulate the number of invasive species growing or dwelling at WHP. This fulfil the MCP – objective 11- action 48 BCP aims at restoring and preserving the available water resources on site. This fulfils the MCP – objective 11 action 49 & 50 BCP aims at restoring and conserving the seed stock of local landraces, local & native crops with their related	**Strategies 11.1-11.3** **Objective 12, Strategy 12.1**

			traditional farming practices. This fulfils the MCP – objective 11 action 52	
Objective 12: To enhance the capacity of human resources within the WHP	**Strategy 12.2** – Build capacity of local farmers and landowners in the appropriate modern cultivation techniques, alternative organic agriculture practices, and the use of bio-control agents	BCP aims at documenting, and preserving the traditional knowledge regarding traditional farming practices, utilization of native plants, wildlife and other ecosystem resources. Capacity building to locals and farms for evaluation f resources they are benefiting of and the necessary actions for preserving and sustaining such resources is another aim for BCP.	BCP implementation plan considers organizing systematic training programs, specialized trainings & workshops for local farmers, volunteers & landowners that tackles issues related to agro-ecological practices, pest control using organic alternative methods and bio-control agents, and other environmental friendly practices along all cultivation processes.	**Objective 8, Strategies 8.1-8.3**
Objective 20: To solve and mitigate the most urgent environmental problems: water pollution, solid waste dumps, and soil pollution	**Strategy 20.1** – Put in place an efficient mechanism to protect water quality within the WHP. Strategy 20.2 – Enacting bylaws and regulations to mitigate environmental problems in the WHP	BCP aims at keeping the WHP clean from all types of pollution especially the pollution resulting from solid waste and waste water discharge.	BCP actions consider conducting public awareness on environmental protection issues and encourage reduction of pollution especially water and soil pollution. BCP propose actions to rehabilitate main water springs and pools on site, while calling for a public sewage network on site to stop the discharge of waste water in nature.	**Objective 5, Strategies 5.1-5.3** **Objective 6, Strategies 6.1, and 6.2** **Objective 7, Strategy 7.1**

The detailed physical conditions and attributes, nomination history, heritage value, state of conservation and ownership, SWOT analysis, management and institutional frameworks and others are all detailed in the Battir WHP MCP which will not be presented in this BCP but will be presented briefly just to give a glance about the WHP.

2.2.2 In relation to UNESCO - WHC Conservation Approaches on site

In reference to the World Heritage Committee decisions (Decision 39 COM 7A.28, 40 COM 7A.15, and 41COM 7A.43), the World Heritage Committee urged the State Party to undertake "the preparation, approval, and implementation of a Conservation and a Management Plan for the property." Thus, it became necessary to prepare a plan for conserving and managing the property, as well as to develop protection methods for the property and its buffer zone, in addition to implement of an active system of management that involves local community and stakeholder Consequently, the various stakeholders—mainly the Ministry of Tourism and Antiquities (MoTA), the UNESCO Ramallah Office, Environment Quality Authority (EQA), Ministry of Agriculture (MoA), Ministry of Local Government (MoLG), The Centre for Cultural heritage Preservation (CCHP), Beit Jala Municipality, Hussan Village Council, and Battir Municipality—bore the responsibility to develop a proper management system and plan for the property in compliance with the Operational Guidelines for the Implementation of the World Heritage Convention, the Committee's Decisions and the adopted DSOCR and related Corrective Measures. The MCP was developed and received by the committee for endorsement.

The Biodiversity Conservation Plan, on the other hand, is another document that fulfil the guidelines and obligations of UNESCO / WHC. The plan was developed in full participation with MoTA, EQA, local experts and key stakeholders of local authorities, local farmers and residents with the aim to enhance and conserve one of key heritage values on site; the natural component which actually supports all other values on site. It comes in line with MCP and shall be implemented and considered in parallel while implementing the MCP. The actions that shall be considered when implementing the MCP are all described in section 2.2.1 and sections 7 and 8. The plan shall be the responsibility of the "General Directorate for Site Management and World Heritage Sites in Palestine," which aims to provide a comprehensive management system for all cultural heritage sites in Palestine. The BCP shall be considered as an outcome to the MCP and hence be implemented in parallel to it (when necessary financial resources are secured). Hence, the BCP will also be managed and supervised by the two committees that were delegated under the MCP as following: (1) The MCP's Steering Committee (headed by MoTA and comprised of representatives including the EQA, MoA, MoLG, Battir Municipality, Beit Jala Municipality, and Hussan Village Council, with responsibility to make key decisions and to monitor the implementation of the MCP at a local level according to the commitments and responsibilities set in the MCP's Action Plan), and (2) The Site Management Committee (technical representatives from the Steering Committee, in addition to those who take part in day-today activities related to the WHP under mandate of the Site Manager, with responsibility to implement and develop the MCP with its strategies nad action plan). In

conclusion, the BCP development will be backing the position of the State of Palestine in fulfilling its obligations towards its membership at UNESCO, World Heritage Convention.

2.3 Structure and Approach of BCP

The approach taken for developing the BCP at Battir WHP is considered, one of the central methods in the maintenance of biological diversity including different taxa, or ecosystems of any site (Hunter, M., 1996). The adopted framework for conservation planning for the BCP at Battir WHP is less linear and more dynamic. It took into consideration the representation of biodiversity on site and the ecoregions or habitats in the form of conservation targets. The BCP focus on setting conservation targets; the entities or features for which the conservation plan is attempting to ensure long-term persistence. The word "target" has also been used in a different context in the plan, mainly to imply a particular goal, such as conserving a specific habitat (conservation area) or specific species / communities (species of conservation value). Because it is impractical to conduct planning efforts for each of the hundreds of species that inhabit the site, the plan seek to identify a set of conservation targets that presumably represent the biodiversity of the site. These targets may be defined based on their biological features (e.g., species and communities), physical features (e.g., soils, geology, climate), or a combination of both biotic and abiotic features. The assumption is that, by focusing planning efforts on these targets, there will be a high likelihood of conserving the vast majority of biological component in that region, both those known during the inventories conducted on site and the many yet to be discovered.

The principal elements and structure of the BCP typically include (Margules CR, et-al., 2000): (a) preparing inventories of biological information for selected species or habitats; (b) assessing the conservation status of species within specified ecosystems and / or habitats; (c) identifying targets for conservation and restoration; (d) assessing the pressures and threats threatening the conservation value and (d) establishing objective strategies and action plans including timelines and institutional partnerships for implementing the BCP.
Of management principles that were taken into consideration in this BCP are the following:

1. That biodiversity is conserved across all levels and scales structure, function and compositions.
2. That examples of all ecological communities are adequately managed for conservation.
3. Ecological communities and habitat connectivity are managed to support and enhance viable populations of animals, birds and plants and ecological functions (BCNSAP, 1997).

The focal areas of the BCP includes the following while considering the objectives of both the CBD and Palestinian NBSAPP:

- Reducing the rate of loss of the components of biodiversity, including: (i) habitats, (ii) species and populations; and (iii) genetic diversity;

- Promoting sustainable use of biodiversity on site; including wise collection, managed hunting, sustainable agro-practices, sustainable tourism, adaptive management, and others.
- Addressing the major threats to biodiversity on site, including those arising from mis-land use, land fragmentation, habitat change, waste and pollution, invasive alien species, climate change, and others.
- Maintaining ecosystem integrity, and the provision of goods and services provided by biodiversity in ecosystems, in support of human well-being;
- Protecting traditional knowledge, innovations and practices;
- Ensuring the fair and equitable sharing of benefits arising out of the use of resources on site.

2.4 Methods of Compilation and Community Participation

The BCP planning process started from collecting information and identifying information gaps. The plan required a variety of data, ranging from human population trends, major land ownership patterns and utilizations, to environmental and biological information. The BCP utilized information from all available sources, including the following data sources:

(1) Previous research reviews and studies carried out on the property as follows:

a. UNESCO and MOTA, 2009. Inventory of Cultural and Natural Heritage Sites of Potential Outstanding Universal Value in Palestine. October, 2009. Ramallah. Palestine.

b. ICOMOS, 2011. Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. A publication of the International Council on Monuments and Sites. January, 2011.

c. MoTA, 2013. Palestine, Land of Olives and Vines Cultural Landscape of Southern Jerusalem, Battir. World Heritage Site Nomination Document. Palestinian Ministry of Tourism and Antiquities. Department of Antiquities and Cultural Heritage Palestine. Available via http://whc.unesco.org/en/list/1492/documents/

d. Advisory Body Evaluation (ICOMOS Report), UNESCO World Heritage Website, 2014.

e. MoTA, 2018. Palestine: "Land of Olives and Vines Cultural Landscape of Southern Jerusalem, BAttir" MANAGEMENT AND CONSERVATION PLAN. Palestine

f. The biological inventories done on site regarding inventory report for ecology, flora, avi-fauna and fauna species and related reports (Annex 2.1, 2.2, and 2.3),

g. Relevant maps produced and provided by MoTA, those prepared based on GIS-based survey of the physical features of the "Battir Cultural Landscape" done mainly by PMSP (Palestinian Municipalities Support Programme).

(2) the rapid assessment technique specifically the RAPPAM methodology to set pressures/threats and eco-services of the site through utilization of rapid assessment specialized questionnaires (6 templates), and (3) finally the consultation with experts, decision makers, local authorities representing the localities in proximity (including municipalities of Beit Jala and Battir and village councils of Husan and Al Walajeh) and local communities in workshops and meetings setting.

During the planning process the conservation areas for their biodiversity values on site were identified and assessed, in addition to assembling necessary relevant information about each area. Then a set of pressures and threats that face the WHP were assessed through using the RAPPAM methodology supported with additional indicators that goes with Palestinian context to gather the most accurate and comprehensive overview regarding the services provided by the biological resources on site. Of key points considered for setting priorities among conservation areas are: (1) measuring the biodiversity components and their conservation value, (2) assessing the threats facing those values. Both the qualitative and quantitative approaches were used, (3) then select those areas that are of the greatest biodiversity value and those support the persistence of threatened species, and represent the diverse habitats and abiotic features.

In the last stage of the planning process the conservation goals were set based on the different inventories, diagnosis and information collected in a participatory approach during the planning process. Goals for conservation were established; for (1) species and communities; with numeric goals were established for endemic and endangered or vulnerable targets, (2) goals for ecological systems were based on relative abundance and representation of diverse habitats and connectivity, and richness of species and communities and threats facing habitats and communities.

In addition, the preparation of the BCP was based on a participatory approach that involves all relevant stakeholders, involved actors and experts in all phases of preparation and development of the BCP. A value-driven approach that is consistent with Palestinian local conditions has also been developed and applied as a methodology for the preparation of the BCP. Based on the participatory approach, all the relevant stakeholders sets out objectives, strategies and actions for the conservation plan to be better respond to challenges and obstacles facing the property and to be better managed, and conserved for present and future generation. All of this was done through conducting three meetings and number of interviews as following:

1. Meeting with the technical experts (Biodiversity Committee of Darwin Initiative Project) on 19th of August 2019 with the purpose of discussing the components of the conservation plan and the basis for choosing the conservation values and targets relating to habitat level and species level, and determined the main areas in the valley where there are rich biodiversity and rare species.
2. Meeting with the Biodiversity experts on 27th of August 2019, with the purpose of identifying List of biodiversity conservation targets; discussing the potential habitats and list of species of high conservation value at Al Makhrour Valley with focus on fauna and avifauna components.
3. Meeting on 5th of September 2019 with the relevant key stakeholders that manage and/or run activities at Battir World Heritage Site; in an attempt to get the needed feedback for the development of the Biodiversity Conservation Plan in a participatory approach with local community and decision makers. The meeting was aiming to accomplish number of tasks including: (1) identify and discuss the ecosystem services provided by Battir WHP site including Wadi AL Makhrour and

its surroundings, (2) identify the challenges and pressures that face the area and their negative impacts, (3) uncover the potential threats that face biodiversity and ecosystems at the studied site, and (4) set recommendations including the planning and institutional framework to adopt and run the plan.

4. Interviews with number of key stakeholders, mainly representors of local authorities of localities in proximity, and some active farmers to conclude on the previously (under No.3) discussed points and to refine the ranking for the threats and the recommendations.
5. Meeting on the 2nd of December to revise and approve the BCP by technical experts (Biodiversity Committee of Darwin Initiative Project), where the BCP was shared with them and presented to them. All their feedback and comments were revised and considered in this BCP. (To be done)

3. BACKGROUND AND SIGNIFICANCE OF AL MAKHROUR VALLEY AND SURROUNDINGS

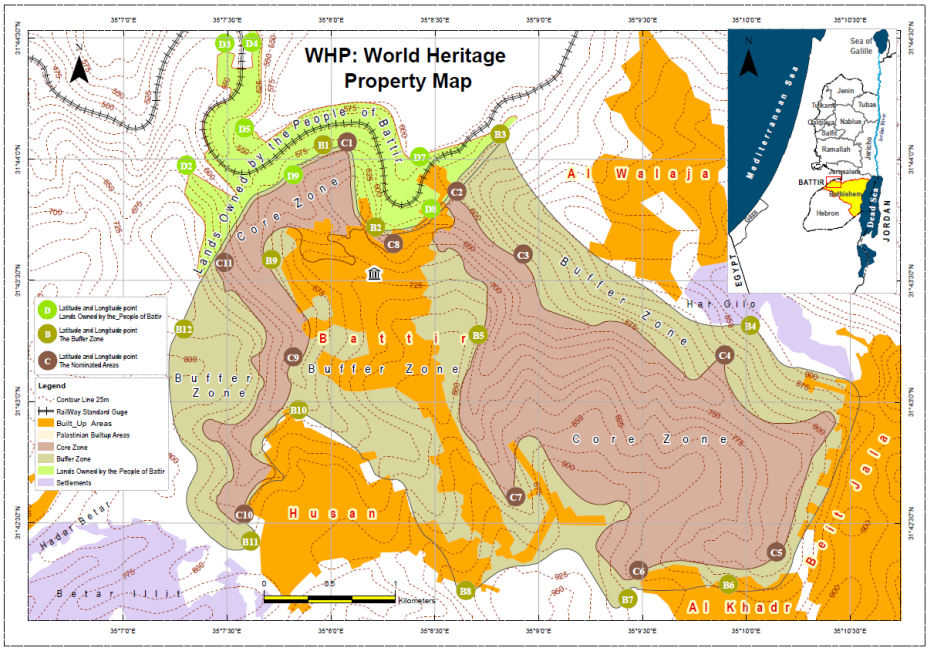
3.1 Physical conditions and Land Use

General description
Altitude: 710-920 m a.s.l.
Area: 13 kilometer square
Ecozone: Mediterranean Region
Annual rainfall: 501-688 mm
Mean annual temperature: 15-18˚C
Land owner: mainly private ownership

The World Heritage Property, "Land of Olives and Vines: Cultural Landscape of Southern Jerusalem, Battir" is located in the central West Bank, approximately 7 kilometers southwest of Jerusalem and 6.4 kilometers west of Bethlehem. The site is situated on the western side of the mountain range that runs parallel to the Mediterranean coast. It stretches from Beit Jala, west of Bethlehem (approximately 900 meters above sea level) to the Armistice Line, or Green Line (approximately 500 meters above sea level), which divides Israel from the West Bank (Map 3.1) (MoTA, 2013).

Battir WHP is part of a valley system that starts from Beit Jala (the Cremisan Monastery or Wadi Ahmad area) around Al-Walaja then progresses through the villages of Al Khader, Battir, Husan, and Nahhalin, continuing to collect runoff along the way to reach major discharge on the Mediterranean via Wadi Es-Sant, while also filling the Western water aquifer. The geography of the area, and especially the human transformation of the landscape, was most prominently studied in the case of Battir (Abu Hammad, 2016). Because of the availability of springs in the valleys of the Cultural Landscape of Southern Jerusalem, Battir, in addition to its strategic location, the area was adapted by its inhabitants to become one of the important terraced landscapes that provided surrounding communities, namely Jerusalem and, at a later stage, Bethlehem Governorate, with fruits, vegetables, and herbs, and most importantly, olives and olive oil.

The site is very picturesque, with deep valleys, some of them terraced for hundreds or thousands of years (part of the reason it is a UNESCO World heritage Site) and with typical Mediterranean vegetation cover. Excavations in the valley show humans used the bounty of the valley from the Middle Bronze Age (Rapoport 2006) through the Iron Age, Persian, Hellenistic, and early Islamic Periods up until today (Dagan 2010). Wadi Al-Makhrour, specifically is 2.6 Km² of natural areas interspersed with agriculture and rich flora and fauna (Amr et al., 2016) also incorporating an equivalent buffer zone of an area of more than 5 km² (Photo 3.1). The valley is named as such because of the way the water trickles down the old limestone rocks (Photo 3.2). In addition it is rich in cultural heritage, containing, among other monuments, old Roman tombs and wells and old Palestinian watchtowers.



Map 3.1: Battir World Heritage Site; location, topography and nominated zones
Source: MOTA, 2018

Photo 3.1: Typical valley structure in Wadi Al-Makhrour
Source: PCC, 2018

Photo 3.2: The reason the valley is called Al-Makhrour (seepage of water)
Source: BU-PMNH, 2018

Battir WHP is located in the Mediterranean climatic zone; local elevations ranging from 710-920 m above sea level with mean annual temperature is 15-18˚C and annual precipitation is between 501mm-688 mm (MD, 2009-2018). This zone is the largest in Palestine (Katsnelson 1964). In addition, it is also an important eco-touristic asset in the area, as it provides beautiful green scenery, clean air, shadow and humidity, soil stability and fertility, and most importantly, a unique recreational site. Further, it offers great potential for environmental, cultural and historic education, as it is close to Palestinian urban centers and rural villages.

Edaphic Conditions of the site

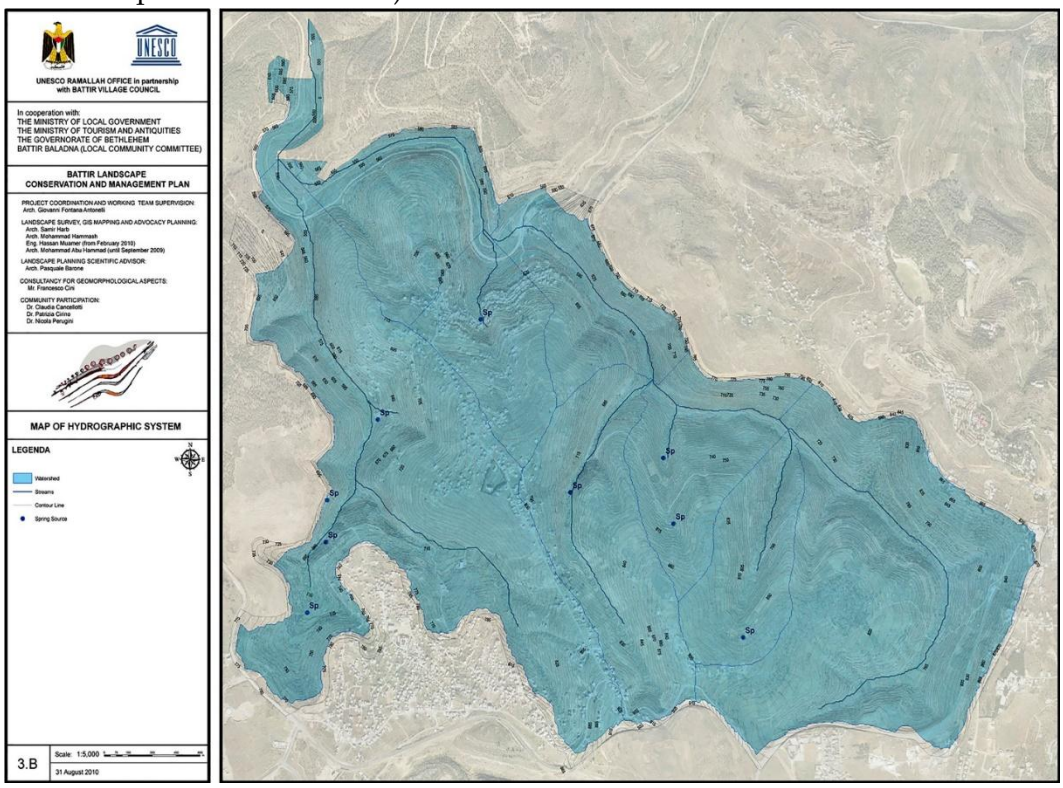
The Battir WHP is mainly composed of mixture of soil types, from white rendzina and dark brown rendzina soils; especially on the northern series of hills of Al Makhrour Valley, to patches of mixed terra rossa and rendzina soils and terra rossa pure stands in other patches; especially at Battir villages and the valley that encircles the city towards Husan village.

The rendzina series comes along with typical terra rossa, and under identical climatic conditions. The parent rocks of this series are soft calcareous formations of the Upper Cretaceous and Eocene, including chalks, soft limestones, marls and nari. The humiferous topsoil, which is formed in the advanced stages above the gray subsoil, is a common feature of the entire series. The light – colored rendzina (white rendzina) is a variety of this group that is derived chiefly from soft Senonian chalk, nari, and Cenomanian marls. This type of soil occur most commonly in the central highlands/mountain range of the West Bank region, where Battir WHP is located and supports the growth of *Pinus halepensis*- and its plant associations. Terra Rossa is a fertile soil, on the whole. It contains fairly high proportion of silt and clay. It supports most of the native trees and shrubs, as well as many cultivated trees. It was found mainly as patches along the agriculture terraces (Zohary, M. 1962).

Water Resources on site

The availability of springs in Battir WHP attracted people who settled the area and adapted its steep landscape into arable land, through developing complex irrigation systems for the water supply (see Map 3.2, photos 3.3 and 3.4). This led to the creation of a unique cultural landscape composed of agricultural terraces that supported bountiful cultivation of olives and vegetables and other crops (MoTA, 2013). Battir alone has more than ten water springs. The most important springs are Ein Al-Balad and Ein Jama'. The water from these springs is collected in two pools and used to irrigate the surrounding man-made dry-stone terraces. The water from these two fountains and the irrigation system, including the canals and pools, are public property, and are managed by Battir's eight main families (Tmeizeh, 2004). The village of Husan contains more than twelve springs. The main spring is Ein El-Haweyyeh and the remaining springs are located west of the village along the Spring Valley (Wadi Al-'Aion), which is comprised of nine springs spread along it: Ein-Alsukhuna, Ein Elerq, Ein Alnamous, Ein Kadra, Ein Alaros, Ein Ateah, Ein Alateqa, Ein Albaqe'a, and Ein Alamoud (Al-balad). The springs have their own irrigation traditions,

customs and water distribution system, including canals and pools, and are managed by Husan's farmers (MoTA, 2018). (For more details about the springs, and their irrigation networks and pools read the MCP).



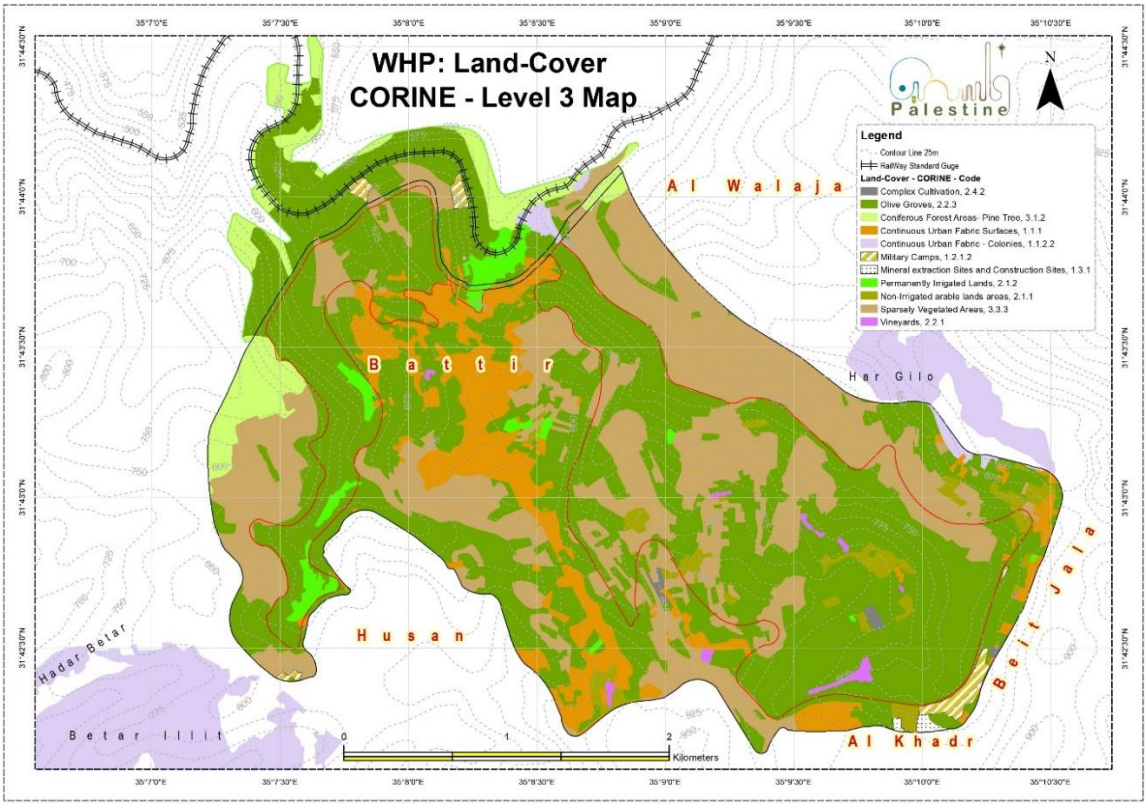
Map 3.2: Water sources in Battir WHP. *Source: UNESCO*

Photos 3.3, 3.4: Traditional irrigation system in Battir City
Source: PCC, 2018

Land Use at WHP

According to the Land Use Land Cover analysis done using CORINE Level3 (MoTA, 2018), it was found that the coniferous forest, olives groves and sparsely vegetated areas forms up to 85% (4.58%, 51.04% and 29.4% respectively) of total WHP area (Map 3.3). This fact shows the significance of natural landscapes on site and their interrelationship with the human well-being on site. Hence the protection and conservation of the WHP natural components; most prominently the biodiversity, soil and water resources, will ensure the protection and sustainability of other

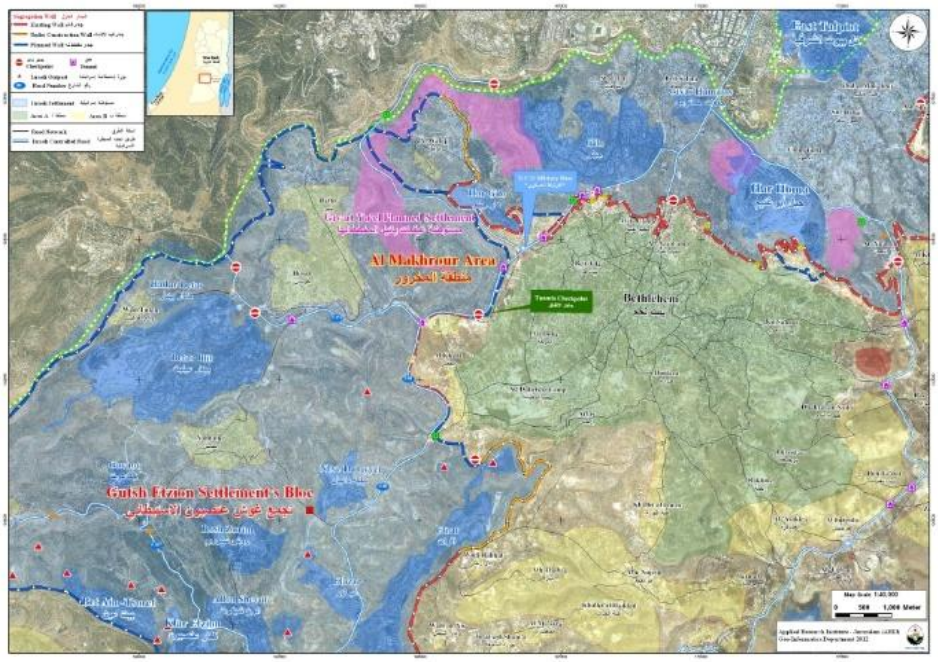
values on site including the OUV, livelihood resilience and the traditional use and knowledge on site.



Map 3.3: Land Use Land Cover of BAttir WHP - CORINE Classification of Land Cover, Level 3. *Source: MoTA, 2018*

Political Status at WHP

Since December 2011, Al-Makhrour area had witnessed accelerated Israeli demolitions for the Palestinian houses and properties (agriculture wells, restaurant, electric poles, agriculture roads, etc.). The residents of the area are deprived by the Israeli Occupation authorities from their legitimate right to build as the area is classified as "C" which according to the Oslo II Interim Agreement of 1995 falls under the full Israeli control. Al-Makhrour area falls in a strategic site that constitute the geographical linking point between the Israeli settlements north of Al-Makhrour and Gutsh Etzion settlement bloc in a manner that closing the settlement chain that surrounding the city of Jerusalem and cutting it from the West Bank (ARIJ, 2012) (Map3.4).



Map 3.4: Al-Makhrour area and its Surroundings. *Source: www.poica.org*

Al Makhrour land is a strategic area for the settlers; in the recent months the settlers had begun to exert pressure to take over the area. In December 2018, settlers attempted to establish a new outpost about a kilometer from the current outpost. They paved an access road and erected a building and infrastructure, but they were evacuated by the Civil Administration immediately after the outpost was established. The reason for the importance of the area is that it constitutes a continuum of Palestinian presence west of Bethlehem, without any Israeli settlement, and in fact connects five Palestinian villages to Bethlehem (Walaja, Battir, Husan, Wadi Fukien, Nahhalin), where almost 28,000 Palestinians live. The Palestinian continuity from west to east interrupts the settlement continuity from north to south, between Jerusalem and the settlements of the Gush Etzion area (Peace Now, 2019).

3.2 Ownership and Management Structure

Most of the World Heritage Property is privately owned. The Core Zone (Map 3.1) is all private property. Part of the Buffer Zone is also private property, except for public buildings, which are owned by the community, and religious buildings, which are owned by the religious institutions. The largest part of the WHP is made up of agricultural terraces, which are owned by the inhabitants of the village of Battir, the town of Beit Jala, and the village of Husan. The Battir village owns about 65% of the WHP's Core Zone, while the town of Beit Jala owns 31%, and the Hussan village owns 4%. While more than two thirds of the Buffer Zone belongs to the Battir village, while 12% belong to Beit Jala, 15% to Hussan, 10% to Al-Walaja, and 4% to Al Khader. The mosques and shrines are Islamic endowments (waqif), and are managed by the Ministry of endowment and Religious Affairs (Al-Awqaf). The archaeological sites are privately owned lands that are managed and supervised by the Palestinian Ministry of Tourism and Antiquities (MoTA, 2013).

Management of the cultural heritage properties in Palestine is conducted by MoTA, in accordance with the Jordanian Law of Antiquities, number 51 (1966), which is the law currently in effect. According to this law, MoTA's responsibilities include management and conservation of sites, setting protection policies, conducting excavations, raising public awareness, establishing museums, and cooperating with foreign archaeological institutions to ensure proper protection and management of the property (MoTA, 1966). The three essential, interdependent elements that comprise the management system on site are the "Legal Framework", "Institutional Framework", and "Resources: the human and financial", which all discussed thoroughly in the MCP section 4.3. 4.4, and 4.5 respectively. Here in the BCP the legal and international related frameworks were described under section 1.

In 2018, MoTA proposed a new institutional structure that includes a "General Directorate for Site Management and World Heritage Sites in Palestine," which aims to provide a comprehensive management system for all cultural heritage sites in Palestine. The responsibilities of this proposed directorate are to conserve, manage, valorize, and promote the cultural heritage sites and the inscribed World Heritage Sites, submit new sites to the WHC on the Tentative List, and regularly monitor and report on Palestinian WHPs for the WHCom. Hence as described under the management structure set by MCP the MoTA-General Directorate for Site Management and World Heritage Sites in Palestine will have the mandate to run and manage the MCP, as well as this BCP.

3.3 Significant values and physical attributes

Battir WHP encompasses various cultural heritage elements that represent an outstanding example of cultural landscape and illustrates the development of human settlements for the past 4,000 years. The site has significant sociocultural, educational, aesthetic and natural values that shall be considered when setting the conservation plan. Especially that protecting, sustaining and keeping the harmony of those values will ensure the sustainability of the site and its outstanding features.

- **Sociocultural Values:** The property is a source of pride for the local people of Battir and Husan villages. Its social values include various tangible and intangible resources that are associated with cultural heritage sites, including political, identity, nationality, memorial, and religious values, among others. People who live in the WHP have an extensive oral history that includes traditional stories, songs, dances, traditional dress and traditional foods. Educational Value
- **Educational Value:** The cultural landscape of the property includes a raw resource of scientific material that generates knowledge about the past, either through archaeological investigation, conservation interventions, building styles, education, nature and/or historic research
- **Aesthetic Values:** The landscape in which the WHP lies is varied. It includes a series of valleys and hills with agricultural terraces spread throughout, as well as many water springs, pools and canals, which have produced over time a vibrant aesthetic experience.

- **Natural value:** The availability of water springs and other natural resources in the area enriches the site's biodiversity; a complex genetic ecosystem of unique flora and fauna has inhabited the area since antiquity. The habitat originally classified as a *Quercus calliprinos* woodland on limestone, which is characterized by the domination of the oak species in companion with various natural native trees, shrubs and perennials that supports the dwelling of diverse fauna and avifauna on site (see section 4).

Battir has always been considered the vegetable garden of Jerusalem due to the abundance of springs in the area. This led to the development of a system of irrigation that permitted the development of agricultural terraces in a very steep mountainous landscape fed by a complex irrigation system that is managed by the eight main families inhabiting the village. It is simultaneously a simple and complex system, and is still in use today. The traditional system of irrigated terraces within the nominated property is an outstanding example of technological expertise, which constitutes an integral part of the cultural landscape. The methods used to construct the terraces illustrate significant stages in human history, as the ancient system of canals, still in use today, dates back to ancient times. Hence of the major features that considered of significant physical attributes of the site are the following:

- **Rural dry-stone vernacular architecture:** the landscape around Battir contains ample amounts of stone. Due to the profusion of different varieties of stone, the local people used them for constructing their shelters, fences, and monuments, benefiting from each variety's particular aesthetic, physical, and geological characteristics. In addition, they used these stone to re-form the rocky mountainous landscape, and adapt it for their agricultural activities.
- **Agricultural terraces and olive tree cultivation:** Extensive olive groves extend from Wadi Al-Makhrour north-west towards Wadi Es-Sikkeh. The man-made terraces that surround the valley are planted mainly with olive trees, some of which are ancient. This system dates back to the Chalcolithic period (4500 to 3000 BC); marking the beginning of traditional village patterns in Palestine. The traditional cultivation of olive trees is an essential component in the historical development of the cultural landscape systems in this area, and has multiple functions and meanings at the environmental, agricultural, socio-cultural, and symbolic levels. Most of the olive tree plantations are rain-fed, along with other crops such as fruit trees and field crops, and occupy extensive hilly and mountainous areas that are susceptible to soil erosion due to water runoff (Photo 3.5).
- **Agricultural watchtowers:** About 230 watchtowers were registered along the route from Wadi Al-Makhrour towards Battir. The majority of the agricultural watchtowers were constructed at an intermediate level of the property, and are used by the farmers to watch over their fields during the harvest season.
- **Limekilns:** They were usually temporary structures that were developed by the Romans to burn limestone and produce lime for use as mortar. Limekilns exist throughout the property, and are called *qabbara or lattoun*. Until few decades ago, the limekilns remained in use by the local population to produce lime mortar, locally called *khallale*, from local lithic and soil materials.
- **Ancient olive presses:** The cultivation of olives for the production of olive oil required techniques to produce the oil. Methods to extract olive oil before mechanically operated

machines included three techniques of pressing olives. Most farmers preferred pressing their oil near their cultivated lands.

- **Agricultural fields surrounding the village of Battir and their paradise**: The vegetables of Battir have always been well appreciated in the nearby towns and villages. The eggplants of Battir (beitinjan batttiri) are considered to be the best and the most famous in the area. The closeness of the terraces to the village, and the availability of water within the boundaries of the village, have both enabled Battir to develop an agricultural system for growing vegetables that is totally dependent on irrigation. Vegetables are grown in the terraces all year around
- **The irrigation system**: The majority of the cultivation near the terraces depends on irrigation. The ancient pools and the water canals are used during the dry season to irrigate the terraces, and the distribution of the water among the farmers follows a traditional system known as shares (al-ma'dud). The traditional irrigation system, which continues to be used today, has been used by the peoples of Battir for centuries, presumably all the way back to Roman times.
- **Canals, al-masakib:** Canals are made from the soil and the water runs through them to irrigate small garden beds (*mashakib*). The irrigation system makes it possible for farmers to use their land in three seasons: summer, winter, and spring.
- **Human settlement remains (*al-khirab*):** The location of the Cultural Landscape of Southern Jerusalem, Battir along the ancient road that connected Jerusalem with the southern of Palestine encouraged several civilizations to settle in the area. Archaeological remains; locally known as khirab, from different periods (Canaanite, Roman, Byzantian, Mamluk, and Ottoman) attest to the presence of different layers of civilizations and of different phases of domestication of the local landscape. Seven khirab have been found within the Cultural Landscape of Southern Jerusalem, Battir, the majority of which are located near the modern village.

Photo 3.5: Ancient Canaanite stone terracing and typical stone home in the valley
Source: PMNH- BU, 2019

Conferring to such significant values and features, the property was inscribed on the World Heritage List in 2014 (Ref. 1492) following an emergency nomination, in accordance with criteria (iv) and (v), and immediately on the List of World Heritage in Danger, after it

was acknowledged that the landscape was threatened by emerging and intensifying sociocultural and geopolitical transformations with the potential to cause irreversible damage to the site's authenticity and integrity—citing specifically the start of construction of an Israeli "Wall" that may isolate local farmers from fields they have cultivated for centuries. To ensuring adequate respect and effective safeguarding of the property and its inherent Outstanding Universal Value (OUV), The Ministry of Tourism and Antiquities (MoTA) has composed for the site a Management and Conservation Plan (MCP) in cooperation with the Battir Municipality, UNESCO Ramallah Office, and related stakeholders; based on the guidelines cited in the nomination file. This MCP aims to set the overarching strategy for achieving an appropriate balance between conservation, access, the interests of the local community, and the sustainable use of the site over time, whether for recreation and tourism or agriculture. It also aims to protect the site's OUV and its physical attributes, provide visitors access in a way that promotes responsible and respectful use of the site, help enhance the socio-economic situation of the WHP's community, and aid in sustaining local agricultural activities

3.4 Ecosystem services and human well being

Ecosystem services provided by Battir WHP as well as their benefits and uses by the local communities, were assessed in two ways. One through assessment done based on the RAPPAM methodology that was established based on consultation with key stakeholders, and the other through the available knowledge about existing ecosystem services, field visits and other sources. On the other hand, a desk study was done where mainly the Battir WHS nomination file and the MCP were revised. The revised literature has mentioned number of the services provided on site upon which they were analyzed for uses, trends and benefits from resources and conclude under this section. Ecosystem services were documented qualitatively, or semi-quantitatively where possible.

3.4.1 Socio-economic environment and importance of Battir WHP

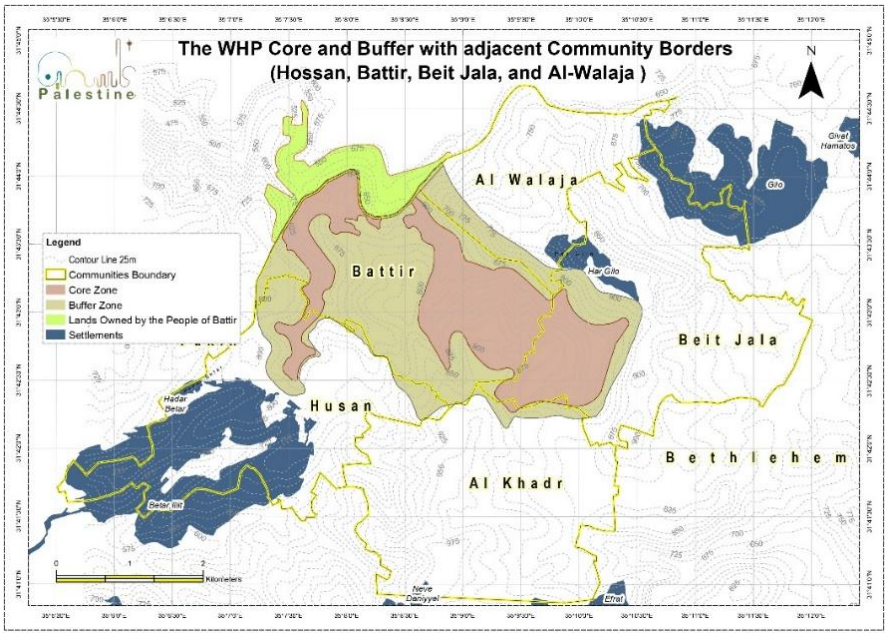
Nearby villages/cities: Beit Jala and Battir municipalities, Husan and Al Walaja villages
Population: 27,899 persons
Agriculture dependency: 5%-30%
Economically active population: 33% - 40%
Employed persons: 72%-88%
Percentage of poor: 12%-20%
No. of Livestock heads (sheep goat): 2,606 heads

3.4.1.1 Local Communities and Traditional Farming

Palestine, including areas like Battir, Al-Makhrour and Al-E'youn valleys, are part of the Fertile Crescent, where humans first settled and developed agricultural practices, including the domestication of plants and animals. The Palestinian cultural heritage relating to nature and agriculture is very extensive, for example the use of plants for medicinal purposes (Said, O., et-al., 2002). Further knowledge and use of this cultural heritage is intertwined with biodiversity conservation (Alves, R.R.N. 2012). Battir and Wadi Al-Makhrour is a

prime example of this because of existence of agricultural models practiced over thousands of years. Cultural protection of this landscape is critical (Tengberg, A., et-al., 2012).There are few ethno-ecological works on our region, starting in the 19th century (Canaan, T., 1928). Ecosystem benefits come from reexamining human-nature interactions; i.e. the cultural-ecological landscape. Ethnobotanical methods are available with support from UNESCO (Martin, G.J., 2004). In the context of Palestine, such studies can also enhance the attachment of people to their lands (Qumsiyeh, MB. 2018).

Battir and its surrounding valleys, as a World Heritage Property under the state of Palestine, stretches from Al-Makhrour Valley to Battir village to Al-E'youn Valley in Husan, and includes traditional footpaths, various human settlements that developed around the many springs that dot the slopes of the mountains and have contributed to the creation of a unique cultural landscape composed of agricultural terraces that are supported by dry-stone walls, agricultural watchtowers (manatir or qusoor), olive oil presses, ancient irrigation pools to collect the water flowing from the springs, ancient irrigation canals, and the remains of human settlements (khirab), all of which have been conserved by the local villagers (Battir, Hussan, and Beit Jala) for centuries (see Map 3.5).



Map 3.5: Battir WHP area, borders and localities in proximity

Source: MoTA, 2018

The place is famous for its thousands of meters of dry-stone walls compose the terraces that extend along the valley of Wadi Al-Makhrour towards Battir that are used for traditional cultivation of mainly olive trees and diverse fruit trees. This is an essential component in the historical development of the cultural landscape systems in this area, and has multiple functions and meanings at the environmental, agricultural, socio-cultural, and symbolic levels. The cultivation of the olive tree involves low-density plantations, sometimes planted in an irregular pattern, with low labor and material inputs, and a manual harvest. Most of the olive tree plantations are rain-fed, and, with other crops such as fruit trees and field

crops, occupy extensive hilly and mountainous areas that are susceptible to soil erosion due to water runoff (MoTA, 2013). The Palestinian natural trees, such as oak, can be found amongst the olives in terraces that are away from the village, while vines and fruit trees, such as apricots, almonds, and plums are planted near the villages. Some citrus trees, mainly lemon trees, are also found in these fields. The majority of the cultivation near the terraces depends on irrigation. The ancient pools and the water canals are used during the dry season to irrigate the terraces, and the distribution of the water among the farmers follows a traditional system known as shares (al-ma'dud). The agricultural activities related to olive cultivation are usually managed by individual families, and the olives and oil produced is used predominantly for self-consumption and for the local market.

Hence, Battir and the three localities in proximity, Al Walaja, Husan and Beit Jala are Palestinian localities that are part of or surround the WHP rely on farming for either their own consumption and / or for enhancing their income by marketing their produce at the local level (Map 3.6). The agriculture production in those areas is the backbone for food security at the household level. The cultivation production of the four localities used to form the food basket for Bethlehem, the basket replete with vegetables, fruits, and field crops. A summary of the population size, cultivated areas and livestock by locality is presented in tables 3.1 and 3.2.

Table 3.1: Total population number, locality area, and cultivated area (in dunums) by targeted locality

Village	Population Number (2017)	Area (dunum)	Cultivated Area (dunum)	% of cultivated land of total area
Battir	4696	6,795	3352	28.9
Husan	7048	7,361	1026	8.8
Al Walaja	2671	4,328	1942	16.7
Beit Jala	13484	9,749	5289	45.6
Total	**27899**	**28,233**	**11609**	**41.12**

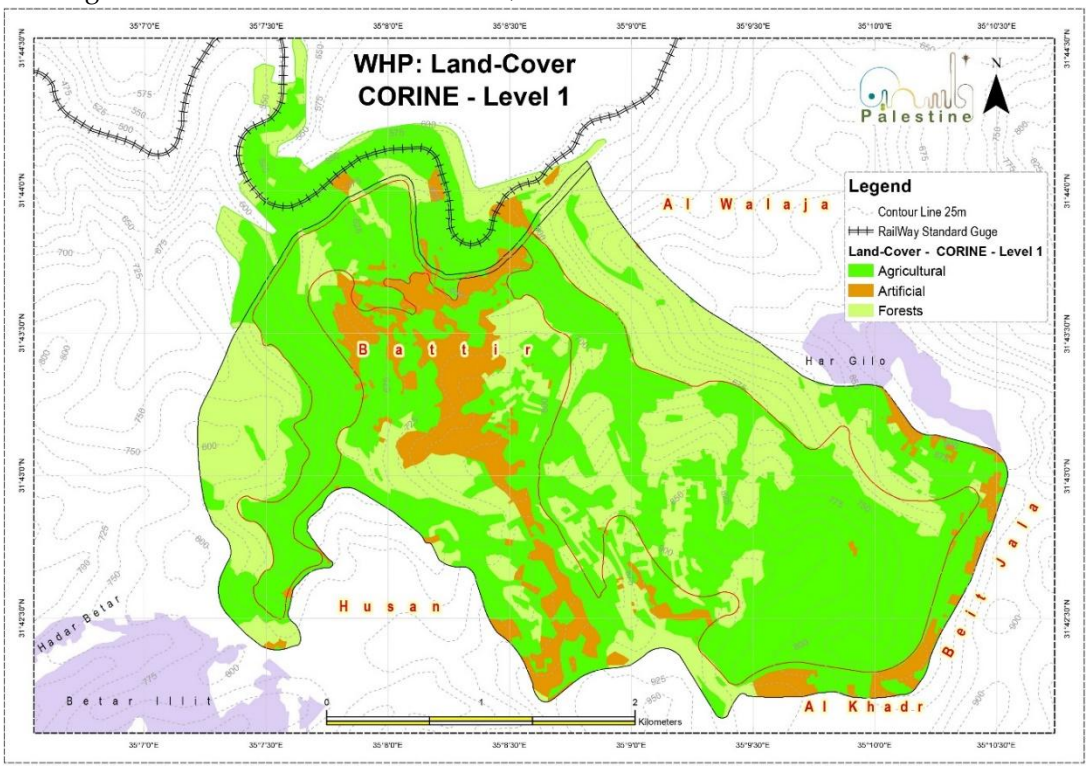
Source for Population: PCBS, Housing and Establishments Census, 2017.
For locality Areas: ARIJ, Village profiles to Battir, Beit Jala, ALWAlaja and Husan localities, 2010.
For Cultivated Areas: Agricultural Directorate of Bethlehem, 2018

Table 3.2: Total area (in dunums), crop type, and number of livestock, in the targeted localities, 2017

Village	Numbers of livestock				Crop type				
	Sheep & Goats	Bee hives	broiler farms	layers farms	No. of Plastic houses	Area of plastic houses	Area of Field crops & forages	Area of Fruit trees	Area of Vegetables
Battir	635	169	2		6	4	24	3187	137
Husan	558	72	13		4	2	41	767	216

Al-Walaja	846	73	0		4	2	42	1844	54
Beit Jala	567	56	7	1	3	2	33	5199	55
Total	**2606**	**370**	**22**	**1**	**17**	**10**	**140**	**10997**	**462**

Source: Agricultural Directorate of Bethlehem, 2018



Map 3.6: The agricultural lands at Battir WHP - CORINE Classification of Land Cover, Level 1. *Source: MoTA, 2018*

Additional data on the socio-economic makeup of the area are summarized below.

Plant production: The percentage of cultivated land of total area in Battir and localities in proximity to Battir WHP and surroundings is 41.12% (Agricultural Directorate of Bethlehem, 2018). The highest percentage is found in Beit Jala as this municipality has a strong tradition of fruit trees mainly apricot, almond, grape, apple, peach and olive production.

Animal Production:

The main species of livestock are sheep and goats. They are fed of two sources; one is from natural grasslands available on site, and another from high-energy fodder. In addition to beehives and broiler farms. Up to 2606 head of sheep and goat are kept in total in the surrounding villages, with the highest abundances found in Al Walaja, and Battir (846, 635, respectively) (Agricultural Directorate of Bethlehem, 2018). The livestock number has reduced from the past numbers as noted by the directorate, mainly as a result of increase prices of fodder, limited range lands and bad economic status.

Labour force participation:

Available data about the localities in proximity is covering only until the year 2007[3]. The analysis indicates that 77.3% of those economically active are employed whereas 22.7% are unemployed (PCBS, 2007).

Percentage of poor:

According to the last publication of the Palestinian Central Bureau of Statistics (PCBS, 2017), Bethlehem Governorate shows 9.4% of its population under poverty line (It reached up to 11.2% in rural areas of Bethlehem Governorate (PCBS, 2007). Among the villages surrounding WHP, the poverty range was between 12-20% (PCBS, 2013).

3.4.1.2 Socio-Economic Importance at Battir WHP

Referring to the stakeholders' consultation done using the Rapid Assessment Socio-Economic Questionnaire, number of socio-economic aspects of importance at WHP were identified. Of main WHP socio-economic aspects of importance mentioned by key stakeholders are the following: (1) income generating opportunities, (2) significant aesthetic features, (3) plant and animal species available on site, (4) ecosystem services, education and scientific studies of value (see Table 3.3).

Table 3.3: Socio-Economic Importance of Battir WHP

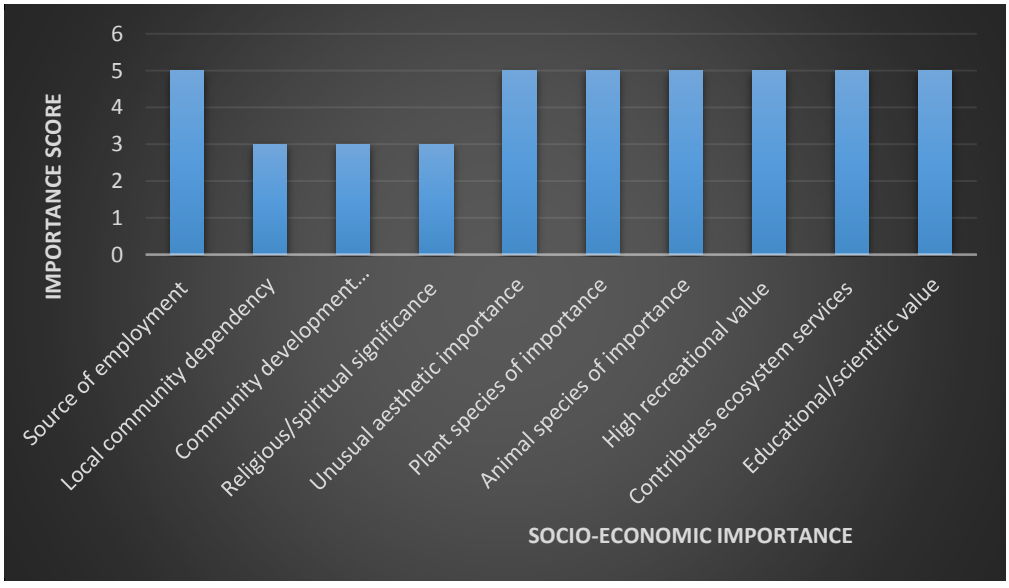
Socio-economic score	Importance aspects	Notes
Yes (5)	The WHP is an important source of employment and income generation for local communities	Restaurants, handicrafts and embroidery shops, fresh and processed food shops, and others are opening and running on site, especially since the declaration of WHS. Selling of cultivated crops and landraces is another source of income.
Mostly Yes (3)	Local community depend upon the WHP resources for their subsistence	This is manifested with all the cultivation taking place on site especially the agro-biodiversity of the available landraces and local crops that local farmers are keeping from a cultivation season to the following; storing the seeds *in situ* at their farms. The collected spices, medicinal plants and fruits are all local resources used on daily basis. Of the plants used caper, arum, sumac, germander, thyme, and many others. Water resources mainly springs are all used by locals.
Mostly Yes (3)	The WHP provides community development opportunities through sustainable resource use	Through mainly eco-tourism facilities, including visitors path, restaurants, rest areas, handicraft centered and others. In addition to the agricultural lands that form an asset and an opportunity to enhance locals' livelihoods.
Mostly Yes	The WHP has religious or	There are shrine (Hasan Abu Mua'mar Abu Yazeed

3 The new census that was set in the year 2017 did not publish the data at locality level.

(3)	spiritual significance	Shrine) and waqf on site that needs restoration. The Olive harvesting season is also a traditional occasion where people celebrate the harvesting and pressing of olive oil at Battir WHP during the months of October and November of every year.
Yes (5)	The WHP has unusual features of aesthetic importance	The beautiful natural landscapes and the WHP topography with the available water resources makes it a very unusual aesthetic place where people like to visit to enjoy its hills and valleys.
Yes (5)	The WHP contains plant species of high social, cultural, or economic importance	There are several plant species that highly valued by local people such as all the native local crops, landraces and wild relatives, the medicinal and aromatic plants, native trees that provide fruits ad/or shade, etc.
Yes (5)	The WHP contains animal species of high social, cultural, or economic importance	There are number of animals dwelling on site of importance to the locals such as the mountain gazelle and the eagle owl, which are considered a symbol for the site, The chukar is a bird dwelling in Al Makhrour valley of economic value. But in general there is very low rates of hunting actions of animals and birds on site, hence the economic aspect is not that important.
Yes (5)	The WHP has a high recreational value	This site significant natural and cultural heritage makes it an indispensable destination for foreign and domestic tourists alike. The number of visitors has significantly increased since its inscription as a WHP; in 2017 it received approximately 250,000. Visitors come for several purposes but mainly for hiking, entertaining near the springs and pools, eating at the restaurants etc.
Yes (5)	The WHP contributes significant ecosystem services and benefits to communities	There are several services provided by ecosystems available on site including in brief the following: (1) Agriculture fertile terraces for farming practices, (2) Grasslands for grazing livestock (3) Water natural springs for domestic/agricultural use, livestock, and wildlife use. (4) Forest resources mainly medicinal and aromatic Plants, native trees for spices, and food. (5) Fruit trees and olive groves (6) Landscapes/sceneries, paths, pools for

		recreation; especially eco-tourism activities (7) Hydrological regulation as part of the natural water harvesting taking place on site especially hills and forested areas; helping replenishing the western aquifer. (8) Knowledge, education, heritage values
Yes (5)	The WHP has a high educational and /or scientific value	The site can be a very dynamic site to learn and built the knowledge base regarding several national sectors such as biodiversity, traditional farming and local seed stock, the water resources, runoff and harvesting, climate adaptation and forest restoration and many other subjects. But until today not much studies were done on AL Makhrour. The project entitled" *Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine*" and the primary baseline done by MCP are the ones who comes with scientific methods and applications to assess and study the site for its ecosystems, biodiversity, traditional farming and conservation frameworks. School trips to AL Makhrour valley and Battir city are taking place but it is more a recreational type of visits than educational. It is expected that those trips increase with the availability of educational and orientation signs along visitors paths. The site became more a material used for education, awareness and research after its nomination as a UNESCO World Heritage Site.

Figure 3.1: Scores of socio-economic importance of Battir WHP



3.4.2 Natural Resources and Importance of Battir WHP

Water: Use of spring water for irrigation, household use during summer.
Grazing: Very limited because of reduction in numbers of livestock heads.
Wild plants: Household use many plants of them: *Sisymbrium irio, Salvia fruticosa, Majorana syriaca*, *Malva parviflora*, *Arum palaestinum, Teucrium capitatum, Mentha longifolia, and* various edible mushrooms.
Native trees: household use number of trees of them: *Olea europea*, *Rhus coriaria, Amygdalus communis*, *Ceratonia siliqua*, *Pyrus communis*, *Crataegus aronia, Pistacia Palaestina, Styrax officinalis* and others.
Fuel wood: Very limited.
Poaching: Very limited.
Recreation: More than 250,000 visitors per year, very important place for recreation for domestic and foreign tourism, locals, schools and universities, and others.
Ecosystems provide subsistence, livelihoods and income generation on site

3.4.2.1 Biological Components of Battir WHP

Battir WHP including AL Makhrour Valley is a Mediterranean landscape composed of different interacting vegetation patches. Pine and oak ecosystems form contiguous patches within this landscape, in pure stands, or as mixed pine–oak ecosystems. AL Makhrour landscape typically form a patch mosaic where different vegetation types are intermingled in complex patterns created by the variation in physical, biological, and anthropogenic landscape conditions. Further, the mosaics are a heterogeneous combination of both "natural" and man-made patches interleaved with one another in complex patterns that result from different edaphic conditions, topography, exposure to wind and sun, fire and other disturbances, and land-use histories.

The landscapes at the WHP are mainly encompassing series of hills' formations, terraces (natural and man-made) and the valley that flows bounded by hills; all influenced by human interventions that have created the abundance of diverse habitats along the valley including the abundant agricultural lands (fallow lands), the olive groves that their owners still take care of, the abundant olive groves, the batha – garrigue associations with fairly new succession of wild plant cover, the maquis Mediterranean forest with developed succession of vegetation cover, in addition to the planted areas with mainly pine and cypress trees. In summary, the main habitats that were classified on site are the following: (1) Quercus calliprinos woodland on limestone, with *Quercus calliprinos* dominant species, (2)Man-made Coniferous forest with *Pinus halepensis* dominant species, (3) Garrigue/Batha forest dominat with shrubs and perennials, (4) Olive Groves with *Olea europea* dominant species, (5) Fallow land dominant with segetal plants, (6) The valley (5-8ms width) elongated lowland bounded by hills, and (7) mixed habitats of two or more habitats of

listed (for details see section 4 and 5) (Ghattas, R., et-al., 2019). Those diverse habitats were formed in one site as it is a rich area with diverse environmental features as described in section 3.1. But of the main features are: (1) the wide range of elevation ranging from ca.550m to ca. 920 m above sea level, (2) Diverse soils from light to dark brown Rendzina with pure stands of Terra Rossa and soil mixtures of them all, (3) mean annual temperature is between 15-18˚C, (4) annual average precipitation is between 500-650 mm (MD, 2009-2018) (See Annex 3.1 for ecosystem sheet). Such abiotic Mediterranean conditions have favored the occurrence of diverse and unique vegetation cover of a range of 40-93% plant density that supports the existence of diverse varieties of wildlife on site (Ghattas, R., et-al., 2019).

The availability of water springs and other natural resources in the area enriches the site's biodiversity; a complex ecosystem of unique flora and fauna has inhabited the area since antiquity. However, the transformation of the natural landscape into traditional agricultural terraces and water canals through history has negatively affected many floral species. The habitat originally classified as a *Quercus calliprinos* woodland on limestone, which is characterized by the domination of the oak species in companion with the *Pistacia* spps, *Arbutus andrachne*, *Crataegus aronia*, and *Rhamnus palaestina species*, in addition to many other tree species and other companioned shrubs and perennials (EQA, 2017). It also supports the occurrence of wide range of invertebrates, and vertebrates especially important endangered and threated mammals such mountain gazelle *Gazella gazella* and striped haeyna *Hyaena hyaena*. It supports the occurrence of three vulnerable birds namely Cretzschmar's bunting *Emberiza caesia,* long billed pipit *Anthus similis* and little swift *Apus affinis.*

3.4.2.2 Biological Importance of Battir WHP

Battir WHP including Al Makhrour Valley falls in the Mediterranean botanical and zoogeographical region (Zohary, M., (1973) and the Mediterranean biogeographical zone (Soto-Berelov, M., et-al., 2012). The valley is announced as Important Bird Area (IBAs)[4] and was designated as a Key Biodiversity Area[5] at national and global levels. AL Makhrour valley is in the Mediterranean Forests, Woodland and Scrub biome, one of WWF's Global 200 priority biomes for conservation (Olson, D. M., et-al., 2002).). The area is also part of Conservation International's Global Biodiversity Hotspot Mediterranean Basin (Conservation International, 2013), and of a global Centre of Plant Diversity (WWF & IUCN, 1994), two additional designations of global conservation importance. It was also valued by stakeholders/locals that it encompasses valuable plants and animals of high social, cultural, and economical importance, in addition it contributes significant ecosystem services and benefits to local communities. The place is also one of the forested green areas in southern West Bank region that is known to be of great significance to contribute to biodiversity conservation, climate change adaptation and mitigation and combatting land

4 http://datazone.birdlife.org/country/palestinian-authority-territories and http://datazone.birdlife.org/site/results?cty=240&fam=0&gen=0

5 http://www.keybiodiversityareas.org/site/results?reg=8&cty=240&snm=

degradation/desertification, relevant to all three Rio Conventions; CBD, UNFCCC, UNCCD. The *Quercus calliprinos* forest in particular, is of high nature conservation value in the Mediterranean region. Sclerophyllous oak forests are an important ecosystem type of the natural vegetation in the Mediterranean region. As a part of the mosaic-like landscape, old-growth oak forests, in particular, provide a wide range of ecosystem functions and services. By conserving sustainably the biodiversity and its ecosystems on site and by enabling locals to co-benefit for sustaining their livelihoods from the provided ecosystem goods on site, through ecosystem-based approaches all will respond to national and international Multi Environmental Agreements (MEAs).

Referring to the technical experts' consultation done using the Rapid Assessment Biological Importance Questionnaire, concluded all potential biological aspects of value in the WHP context. The following were found of main biological importance at Battir WHP: (1) the site contains high number of rare and endemic species with high levels of biodiversity, (2) ecosystems sustains viable populations of key species, (3) ecosystems are consistent with historic norms and maintain full range of natural processes (see Table 3.4 and Figure 3.2).

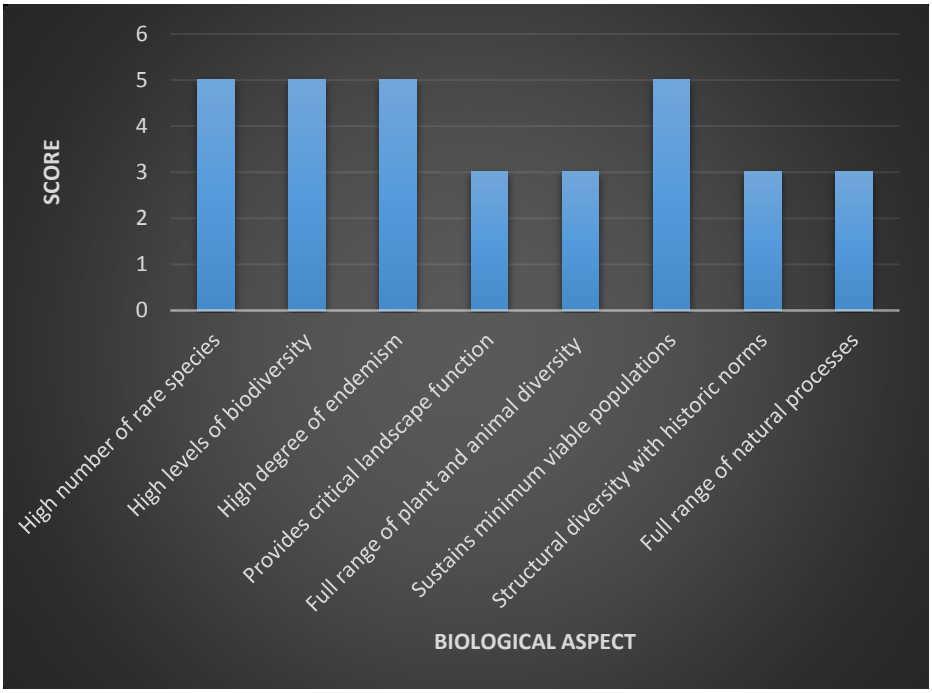
Table 3.4: Biological Importance of Battir WHP

Biological score	Importance aspects	Notes
Yes (5)	The WHP contains a relatively high number of rare, threatened or endangered species	Up to 34 rare and very rare plant species at national level were found growing on site, another 34 species were found rare in the study site, 45 LC species, and 1NT (Near Threatened) species at global level according to IUCN Red list. Another 6 rare birds at the study area, 5 birds are EN/VU at national level, and 35 LC birds at global level. 10 rare mammals, 4 rare reptiles and 2 rare amphibians were found inhabiting the site (see section 4).
Yes (5)	The WHP has relatively high levels of biodiversity	Up to 427 plant species, 63 birds, 30 mammals, 14 reptiles, and 2 amphibian, in addition to large number of biota including 19 mushroom species, and 20 species of butterflies were all surveyed on site (See section 4)
Yes (5)	The WHP has a relatively high degree of endemism	Up to 26 plant endemic species; three of them are endemic to Palestine only, the rest are endemic to Palestine and another country of the Fertile Crescent countries (Syria, Lebanon, Turkey, Eygpt).
Mostly Yes (3)	The WHP provides a critical landscape function	Although a landscape ecology study was not done to understand better how landscape structure influences ecological processes at Battir WHP, but there are clear interactions between both at the WHP. Within the greater landscape of Battir WHP there are different ecosystem/habitat types occurring as patches. Having more habitats / or patches is healthy to those organisms that thrive at boundaries between two ecosystem/habitat types, whereas if it was less fragmented

		landscape it would have been better for those species that require larger areas of undisturbed forest such as mammals. It is also important to know how the patches are distributed across the landscape. The changes in structure of patches at Battir WHP, whether caused by natural forces or by humans, can have significant impacts on the ecology of the available landscape. This clearly manifested with all the pressures taking place on site (see Section 5). But in conclusion the WHP provides important feeding, breeding, corridor for movement, and migration value for species whose existence would be jeopardized by the alteration of that area.
Mostly Yes (3)	The WHP contains the full range of plant and animal diversity	According to the inventories done on site, the occurrence of species of the Mediterranean ecosystem was dominant. All of the species that normally associated with the Mediterranean ecosystem type and natural communities within the WHP are present.
Yes (5)	The WHP sustains minimum viable populations of key species	The site was found supporting the growth of trees with more than 200 years old such as the Oak and Pistachio trees. This indicator implies that the site has adequate populations of key species as well as sufficient habitats to sustain the populations of these species. Key species here means those species whose conservation and management will likely benefit a broad range of associated species. For example the mountain gazelle, the striped haeyna, and Golden Jackal are of area-limited species as they have specific distribution requirements such as the rocky hills and slopes and a relatively large green area. It is worth noting that Battir WHP is not standing alone as a green landscape on site, it is an extension to a larger landscape physically connected to Cremisan valley and Beit Shemesh Park. The oak, olives, pine, pistachio, hawthorn Azarole, trees and rock rose, prickly burnet, spiny broom and Headed thyme shrubs area species that have a disproportionately large impact on the ecosystem, and whose removal would cause drastic and unpredictable consequences.
Mostly yes (3)	The structural diversity of the WHP is consistent with historic norms	Historic norms here means the conditions prevalent prior to wide scale, industrial and /or intensive human disturbance. The site is known to be of the few sites that kept the historic norms, landscape elements and configuration of ecosystem in the West Bank region as it is a place kept for thousands of years for rural use (traditional agriculture use) in total harmony with nature. That is why it was inscribed as a UNESCO WHS. Although the place was cultivated in Pine trees before 80-100 years in certain patches, (now most of the Pine trees on site are mainly reseeding plants) but the place supports the occurrence

		of natural Mediterranean forest succession specifically the batha-garrigue and the maquis forest succession. The place has kept its natural landscapes as a condition prior to human disturbance. But it is difficult to forget the human pressures imposed on site specifically the urban developments and their pollution effects that have definitely altered the historic norms of the ecosystems, but it is difficult to measure the extent of this alteration (needs further investigation/research).
Mostly no (1)	The WHP includes ecosystems whose historic range has been greatly diminished	The place does not know an ecosystem that was widespread and predominant in the landscape in the past, but that have been extensively converted into other land uses. The WHP is approximately 13 square kilometers of land, encompasses various cultural and natural heritage elements that represent an outstanding example of cultural/natural landscape and illustrates the development of human settlements for the past 4,000 years. Hence the agricultural terraces and the basic human interventions available on site did not change drastically any ecosystem on site. All comes in harmony with natural components. The real threat is the expansion of urban fabric in a unsustainable manner form both Palestinian localities and from the confiscation of land and construction of settlements by Israel occupation. The MCP has already targeted this problem and set a plan for its monitoring and control.
Mostly yes (3)	The WHP maintains the full range of natural processes and disturbance regimes	The heathy ecosystems on site shows that the site allows the ecosystem to function and evolve. The successional processes, nutrient recycling and reproduction are all events taking place successfully on site. The healthy ecosystem here manifested by having native plant and animal populations interacting in balance with each other and nonliving things, while enjoying the sun as a major energy source. One of the threats for healthy ecosystem here is the uncontrolled invasive species that need to be well managed and monitored so as it won't cause a major disturbance on site.

Figure 3.2: Scores of biological importance of Battir WHP



3.4.2.3 Main Ecosystem Services Provided at Battir WHP

According to the consultation sessions and interviews done with key stakeholders and experts, number of main services were identified as services provided by the property to the local communities. Of main services are the following:

(1) Agriculture fertile terraces for farming practices,
(2) Grasslands for grazing livestock
(3) Water natural springs for domestic/agricultural use, livestock, and wildlife use.
(4) Forest resources mainly medicinal and aromatic Plants, native trees for spices, and food.
(5) Fruit trees and olive groves
(6) Logging and fuel wood collection
(7) Landscapes/sceneries, paths, pools for recreation; especially eco-tourism activities
(8) Climate and hydrological regulation as part of the natural water harvesting taking place on site especially hills and forested areas; helping replenishing the western aquifer.
(9) Knowledge, education, heritage values

Use of Plant Resources:

Food and Raw material

There are number of native plant species growing in Battir WHP that were found of high economic value and intensively utilized by local community as either as medicinal and aromatic plants, or as food such as seeds, spices, and resins and or as dyes and so on. Hence, they are significant elements of the ecosystem services provided by the site to the locals. Rural women carefully collect the fruit, leaves and roots of native plants in their

field or from the nearby forest and for use in the family diet. This practice is reducing by time for several reasons (discussed under traditional knowledge in section 6 and 7).

- Of the plants used as source of food including: Olive tree *Olea europea,* Almond *Amygdalus communis,* Carob *Ceratonia siliqua,* and Pear *Pyrus communis*, Solomon's lily *Arum Palaestinum*, Prickly asparagus *Asparagus aphyllus* white beet *Beta vulgaris*, dwarf chicory *Cichorium endivia*, rocket *Sisymbrium irio*, garden purslane *Portulaca oleracea*, garden rocket *Eruca sativa, and edible mushrooms*.
- Of the plants used as Medicinal and aromatic plants including: Cat thyme germander *Teucrium capitatium*, hedge germander *Teucrium divaricatum*, hawthorn *Crataegus aronia*, styrax *Styrax officinalis*, common sage *Salvia fruticosa*, horse mint *Mentha longifolia*, round-leaved mint *Micromeria nervosa*, wild thyme *Majorana syriaca*, common varthemia *Varthemia iphionoides,* Headed thyme *Coridothymus capitatus,* and African fleabane *Phagnalon rupestre.*
- Of the plants used as seeds including: pine *Pinus pinea*, fenugreek *Trigonella foenum graecum,* and Sicilian sumach *Rhus coriaria*.
- Of the plants used as ornaments including: Crown Anemone *Anemone coronaria*, *Ranunculus spp*, seeds of *Styrax officinalis*, and others.
- OF the plants used in grafting other plants including: *Pistacia Palaestina* to graft green pistachio, and wild Pyrus to graft the cultivated one.

Wild relatives and landraces

Battir WHP is famous for the cultivation of local landraces and for preserving their wild relatives. Those species are considered the agrobiodiversity component and forms a significant part of the plant genetic resources of the site; as they are the ones locally domesticated, adapted to the local environment, and evolved in parallel. They are of high importance as they contribute to plant breeding in Palestine and as they have traits for efficient nutrient uptake and utilization, as well as useful genes for adaptation to stressful environments such as water stress, salinity, and high temperatures. They especially show important traits for drought and disease resistance. They conserve soil and increase natural soil fertility and health.

A widespread practice among farmers is to save seed from their crops annually for the following year's cultivation such as the seeds of plants of cucurbitaceous as zucchini, pumpkin and calabash gourds that are usually kept hanged for the following season to dry and then take their seeds to be cultivated for the following season, or to be eaten fresh and /or use their dried skin to produce handicrafts and ornaments. Of the landraces on site wheat, barley, battiri eggplants, baladi zucchini, baladi green beans, baladi cauliflower, thyme baladi, and others. They also collect seeds or seedlings from nature the wild relatives especially wheat (*Ageilop spp.*), lettuce (*Lactuca spp.*), pear (*Pyrus syriaca*), green Pistacio (*Pistacia palaestina (terebinthus*)), barley (*Hordeum spontaneum*), fennel (*Foeniculum vulgare*), cauliflower (*Brassica nigra*), peas (*Pisum sativum*), vetch (*Vicia sativa*) and wild thyme *Majorana syriaca* others. All forms a very important germplasm that need to be preserved and the practice itself need to be

promoted among the local farmers. Local knowledge and culture can therefore be considered as integral parts of agrobiodiversity, because it is the human activity of agriculture that shapes and conserves this biodiversity.
The non-harvested species in the BAttir WHP production ecosystems that support food provision, including but not limited to soil micro-biota, pollinators and other insects such as bees, butterflies, earthworms. For detailed information see section 4.

Logging and fuel wood collection
Logging of trees for fuel (particular during winter) or timber is an uncommon activity but does occur at Battir. It arises because of high prices of petroleum fuels and the increase of the poverty rate among local inhabitants. Part of the local community; especially low-income people depends on collecting dead or falling cypress and pine trees inside the WHP. There are no exact statistics how much wood has been removed The extent and effect of dead wood removal from WHP will need to be assessed both from a fire risk reduction and a nature conservation perspective as part of the further management planning process. But through the consultation session with the stakeholders and the locals it was noted that locals uses *sarcopoterium spinosum Rhamnus lycoides and Pistacia palaestinae* as source of fuel, the oak and pistachio used for carpentry, and some used for making handicraft, artistic sculptures, axes, plows and others.

Use of Grasslands for Grazing
This activity has become less important recently, as the number of animals raised by surrounding communities has declined, and most of the remaining animals do not graze on rangelands but are fed in stables. In addition, there is a lack of interest among the young generation to raise animals. Grazing directly at the WHP mainly happens in winter and spring. Herders from surrounding communities come to graze their animals all over the site; this activity is spread and not concentrated in one particular area. But it was noted that this activity is not intense and is less practiced during the last few years. For number and types of livestock raised in localities in proximity see section 3.4.1.

Use of Water resources and Climate Regulations:
Use of Water resources
Humans settled the WHP since thousands of years as a result to the intense availability and well distribution of water resources along the property. Local communities are benefiting from the available water resources for several reasons but mainly to irrigate their cultivated fields. There are many springs and pools that are used in a systematic and well managed system. The five main springs and their irrigation system within the WHP are: Ein El-Balad, Ein Jama' located in Battir city, Ein El- Haweyyeh, Ein Emdan located in Al Makhour Valley, and Wadi Al-'Aion (Valley of Springs) located close to the Husan village (MoTA, 2018). The discharge of those springs and the amounts consumed by locals per year are not known; this needs further investigation. But the status of those springs and necessary interventions for each is well interpreted at MCP document (MoTA, 2018).

Climate Regulation

Historic trends in climate in the State of Palestine (IPCC AR5) shows very *high* confidence that temperatures have risen over the past 100 years but less confidence in quantitative rates of change, due to spatial and temporal dependencies and data quality (EQA, 2016). Precipitation trends on the other hand show overall reductions in annual precipitation. Significant decreasing trend in rainfall were observed during the spring season with an average reduction of 15%/decade since the 1970s (Ziv et al., 2014.). The temperature increase is estimated to range between 2.2-5.1°C and the annual rainfall decline is estimated to be at 10% by 2020 and at 20% by 2050 (EQA, 2010). Hence the green areas of the WHP, in particular the forested areas, are significant assets that would help stabilizing climate change affects at national level, especially that the site is one of the key rich sites with biodiversity in the West Bank region. It also provides multiple water and climate-related services, including precipitation recycling, cooling, water purification, infiltration and groundwater recharge on site. On average, at least 40% of rainfall over land originates from evapotranspiration. Hence, the forest vegetation in the WHP would stabilize rainfall amounts in the area. It also plays an important role in protecting water quality, slow water movement and help stabilize soil. In addition, some of the WHP patches are places of carbon-dense ecosystems, mainly dense pine and oak forests, where carbon sink. More studies are needed to conclude relevant quantitative data.

Knowledge, education, and heritage values:

The local oral cultural heritage and traditional knowledge of agrarian and water distribution system practices inherited on site is an essential component that supports the local agrarian systems, landscapes and the socio-cultural processes. The traditional knowledge of irrigated terraces system is an outstanding example of technological expertise, which constitutes an integral part of the cultural heritage landscape. This local knowledge plays a key role in the processes of socialization and building capacities of the locals to keep the system running while maintaining its heritage. Hence, the transmission of knowledge from one generation to the other is vital to sustain the cultural heritage and enhance abilities of new generation in managing and sustaining the property.

Some educational school visits and camps already taking place on site, but more educational oriented visits and extended educational use by various target groups is of significant potential. Scientific research is of high potential especially for botanical, zoological, ecological, agro-biological and other related research, including the impacts of climate change, and water regulation.

4. ASSESSMENT AND INVENTORY FOR FLORA AND FAUNAL COMPONENTS

This section describes in brief the status of ecosystems, flora and fauna components that the WHP supports based on the comprehensive inventory studies done by the experts' team of the project entitled: "*Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine*". For more details see annex 2.1, 2.2, and 2.3.

> '*Ecosystem*' means a *dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit*.
>
> CBD, 2006

4.1 At Habitat level

Ecosystems and Habitats of WHP

Battir WHP falls in the Mediterranean botanical and zoogeographical region (Zohary, M., (1973). and the Mediterranean biogeographical zone (Soto-Berelov, M., et-al., (2012). It is also an important part of the hydrological system that replenishes the western aquifer. The mean annual temperature in this area is 15-18˚C. The annual average precipitation is 500-680 mm, some of which falls as snow in some years (MD, 2009-2018). The soil is diverse from light to dark brown Rendzina with some area with mixture of Terra Rossa and in some areas of Terra Rossa alone. With an elevation ranging from ca. 550 m to ca. 920m above sea level (Ghattas, R., et-al, 2019). The WHP area is well – known as the governorate's most fertile land and its traditional breadbasket.

The landscapes at WHP mainly the series of hills' formations, terraces (natural and man-made) and the valley that flows between the hills of each side, and the related human interventions have created the abundance of diverse habitats along the valley including the abundant agricultural lands (fallow lands), the olive groves that their owners still take care of, the abundant olive groves, the batha – garrigue associations with fairly new succession of wild plant cover, the maquis Mediterranean forest with developed succession of vegetation cover, in addition to the planted areas with mainly pine and cypress trees.

A complex and dynamic mixture of ecosystems are available on site including mainly the natural maquis forest and a man-made coniferous forest. The valleys landscape typically form a patch mosaic where different vegetation types are intermingled in complex patterns created by the variation in physical, biological, and anthropogenic landscape conditions. Pine and oak ecosystems form contiguous patches within this landscape, in pure stands, or as mixed pine–oak ecosystems. However, the main ecosystem of the natural areas of the property is a *Quercus calliprinos woodland on limestone* dominated with Oak trees accompanied with pistachio, hawthorn azarole, strawberry trees, and carob trees and others.

The property encompasses diverse habitats that supports diverse flora, fauna and avi-fauna species. The habitats of the property are highly affected with the different human interventions. As it is clear that the whole property is used for cultivation and, in Al Makhrour valley and the valley that encircles Battir towards Husan cultivation is still

practiced by locals; mainly those inhabiting the Palestinian localities in proximity; but mainly Battir and Beit Jala cities. The man-made terraces, the olives' cultivations, the cisterns and the 'Manateer' (watchtowers for crops' harvest storage) are main human elements distributed all over the valley. However, a major part of the valleys is not cultivated anymore, number of places are totally abundant and neglected and hence the major part of the valley is a mixture feature of both natural and man-made components (See Annex 2.1 the Inventory Report).

Of the main habitats that were surveyed are the following:

1. Natural Oak forest: Sclerophyllous Broad Leaved Oak Forest and Maquis. This habitat is dominated with *Quercus calliprinos* Oak tree that supports the growth of diverse and dense batha/garrigue plant associations of mainly *Sarcopoterium spinosum, Cistus spp., Calicotome villosa, and Coridothymus capitatus*. This habitat supports the growth of diverse wild Mediterranean trees such as *Rhamnus lycioides, Crataegus aronia, Pistacia Palaestina,* and the reseeding of *Pinus halepensis, and Pinus pinea*, in addition to diverse shrub and herbaceous species such as *Teucrium divaricatum, Teucrium capitatum, Fumana arabica, Andropogon distachyos* and many others.
2. Mixed natural oak and olive groves: This habitat is dominated with both oak and olive trees. The habitat support the growth of number of trees such as *Arbutus andrachne, Pistacia Palaestina*, *Styrax officinalis* and number of shrubs and herbaceous species such as *Pistacia lentiscus, Phlomis viscosa, Calicotome villosa, Cyclamen persicum, Smilax aspera*, and many others.
3. Man-made planted coniferous woodland: This habitat is dominant with *Pinus halepensis* cultivated tree and its reseeding plants. This habitat does not support diverse plants but mainly scattered herbaceous species especially at the sides of the habitat where new habitats starts to emerge.
4. Batha and Garrigue habitat: This habitat support the growth of shrub/subshrubs and herbaceous species. Of the main species are *Phlomis viscoa*, *Cistus spp., sarcopoterium spinosum, coridothymus capitatus, Calicotome villosa, Bellis sylvestris, Teucrium creticum, and many others.*
5. Fallow lands and olive groves: This habitat is mainly located at the flat lowland valley, where there are wide spread olive groves either cultivated or still taken care of by its owners as those groves are plowed lands or groves that are cultivated and left alone for one or two seasons only, or groves that were cultivated but neglected and only visited for harvesting and here the fallow land appear under or on the sides of the olive grove land. The plant associations in this habitat are *Asparagus aphyllus, Andropogon distachyos, Calicotome villosa, Carlina spp., Arum Palaestinum, Malva parviflora* and many *graminae spp. and papilionaceae spp*. (to be classified in spring season).
6. Mixed oak and Pine forest supporting batha association, which supports diverse types of plants such as *Pistacia palaestina, Rhamnus Lycoides, Crataegus aronia, Teucrium capitatum, Thymus spicata, Thymbra spicata, Leontodon tuberosus*, and others.

7. The trench of the lowland valley (the deepest point in the valley): This trench is 5-8 meters in width and it supports the growth of all plant forms including trees, shrubs and herbaceous species. Of main plants *are Pistacia palaestina, Quercus calliprinos, Sarcopoterium spinosum, Calicotome villosa, cistus spp., Salvia indica Daucus carota, Phagnalon rupestre, Dittrichia viscosa* and many others.

   It was also noticed that there are many micro-environments that support the growth of specific plant species within the different habitats. This is mainly obvious on terraces (natural and man- made), near the paths, near water collections and on Heaps of small rocks. For example, of the lithophyte species that grow abundantly in the valley are *Cyclamen persicum, Umbilicus intermedius, Arisarum vulgare, Chiliadenus iphionoides (varthemia), Ajuga chamaepitys, Eremostachys laciniata* and others which are mainly geophytes. Near the paths and water collection sites there were diverse plants growing such as *Sinapis arvensis, Malva parviflora, Foeniculum vulgare, Nasturtium officinale, Verbascum sinuatum, Ferula communis and many others. And there are number of climbing plant species including Smilax aspera, Clematis cirrhosa, Clematis flammula, lonicera etrusca.*

4.2 At Species Level

4.2.1 Floristic Diversity on Site

A total of 417 vascular plant species were recorded of the flora survey at AL Makhrour Valley and hills behind Battir towards Husan village) during the report period. This number includes also the species that grow in Battir village itself except ten species that were found in Battir village alone (Annex 2.1). This number of plant species forms almost 20% of total plant species growing in the West Bank region and Gaza Strip (which is estimated at 2076 plant species (Ghattas R., 2008). The area clearly hosts high number of vascular plants; as the results of the diverse habitats, which forms a supporting environment for the growth of diverse plant species. The valley supports the growth of 63 plant families; most dominantly are Compositae, Papilionaceae, Labiatae, Graminae and Cruciferaceae (Figure 4.1).

The total number of tree species surveyed at the valleys is 17 trees, while the valleys encompasses 47 shrubs and sub-shrubs, 2 aquatic plants, and 351 herbaceous plant species.

BIOLOGICAL DIVERSITY, OR BIODIVERSITY, IS A TERM USED TO DESCRIBE THE MYRIAD LIFE FORMS FOUND ON EARTH. IT IS NUMBER OF DIFFERENT SPECIES OF PLANTS, ANIMALS AND MICROORGANISMS IN EXISTENCE. BIODIVERSITY ALSO ENCOMPASSES THE SPECIFIC GENETIC VARIATIONS AND TRAITS WITHIN SPECIES AS WELL AS THE ASSEMBLAGE OF THESE SPECIES WITHIN ECOSYSTEMS.

CBD, 2006

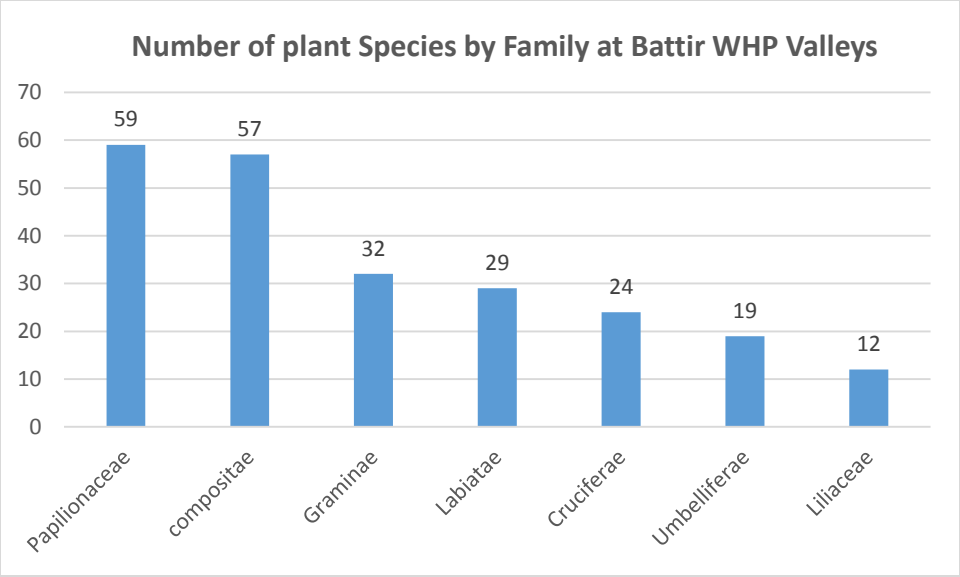


Figure 4.1: Number of plant species by family surveyed at Battir WHP
Source: Ghattas, R., et-al., 2019.

Of the dominant wild tree species growing at WHP are Oak trees *Quercus calliprinos,* Aleppo Pine trees *Pinus halepensis,* and Olive trees *Olea europea*. Other tree species were identified in the area including Pistachio trees *Pistacia palaestina*, Strawberry trees *Arbutus andrachne*, Carob trees *Ceratonia siliqua*, Stone Pine trees *Pinus pinea*, Cypress trees *Cupressus sempervirens*, Hawthorn Azarole trees *Crataegus aronia,* snowbell bush trees *Styrax officinalis,* Syrian Pear *Pyrus Syriaca,* Sumaq tree *Rhus coriaria and others*. Three main dominant trees were found growing at the valley; Pine, Olive and Oak trees. The pine trees are mainly cultivated trees (some reseeding is taking place) of an estimated age that ranges between 20 and 80 years old, while the olive trees which are also cultivated (some reseeding is taking place) of an estimated age that ranges between 2 to 100 years old. The oak trees which are all wild natural trees were found of an estimated age between 5 to 200 years (reseeding is taking place). The old oak were mainly found on the eastern hills of Al Makhrour valley from Beit Jala side. The old pine trees were mainly found at Al Malhrour valley near Abu Saliba house. It is worth noting that two plants of Pinus Pinea were found in Al Makhour Valley were their age was estimated to be between 70-80 years.

Regarding the main shrub species growing at MKV are Rock rose *Cistus creticus, Cistus salvifolius,* Headed Thyme *coridothymus capitatus*, Spiny Broom *Calicotome villosa*, Prickly Burnet *sarcopoterium spinosum*, Hedge Germander *Teurcium divaricatum*, Cat Thyme Germander *Teucrium capitatum*, Shrubby Jerusalem Sage *Phlomis viscosa,* Mediterranean thyme *Thymbra spicata* and others. Of the three most dominant shrubs found growing on site are Rock rose, Prickly burnet, Spiny broom and Headed thyme. Regarding the main herbaceous species are Persian Cyclamen *Cyclamen persicum*, Arabian Cistus *Fumana arabica*, Rough Binweed *Smilax aspera,* Spanish Carline Thistle *Carlina Hispanica,* Early virgin's-bower *Clematis Cirrhosa* and many others.

The valleys and Battir city supports that growth of large number of rare species that are distributed along the valley. It was found 34 rare and very rare plant species where 14 are very rare species at local level (forming 3.6% of total number of plant species growing on site) and 45 LC species, and 1 NT (Near Threatened) species at global level according to IUCN Red list. The rare species are mainly found among 8 families of which are orchidaceae, polygonaceae, solanaceae, verbenaceae, and violaceae. It was also found that the valley supports the growth of 26 endemic species; mostly endemic to Palestine and Syria, which are all of high conservation value. Five of them are rare/very rare species and three species are endemic only to Palestine such as *Nonea philistaea, Onopordum carduiforme* and *Reseda alopecuros.* Hence, they are of high conservation value as they are also threatened species. There was also found number of species that are recorded as common or frequently found species at national level however they were found rare in the study area. Rare species in the study area forms 34 plant species.

Plant Cover Studied specifically at Battir City

A total of 98 vascular plant species were recorded at Battir city. It was found that there are 35 plant families growing at Battir village; most dominantly are Compositae, Papilionaceae, Labiatae, Graminae and Umbellifecae. The total number of tree species surveyed at the village is 8 trees, while the village encompasses 17 shrubs and sub-shrubs, 1 aquatic plants, and 70 herbaceous plant species. Up to 3 rare plant species were recorded, 7 species were found rare at the study area level, ٩ LC species, and 1 NT species according to IUCN Red list according to IUCN Red list. It was also found that the village supports the growth of 3 endemic species. Of the plant species that were only found in Battir Village and of high conservation value are: Italian buckthorn (*Rhamnus alaternus*), Polular tree *Populus euphratica* and water arum (*Arum hygrophilum*). *Arum hygrophilum* is of high importance as it was found near threatened according to IUCN RED List. Of the endemic species that was found of high conservation value is *Onopordum carduiforme,* which is a very rare species and endemic to Palestine (Annex 2.1).

4.2.2 Faunal Diversity on Site

The property supports the occurrence of wide range of invertebrates, and vertebrates as following.

Amphibians and Reptiles: Three species of amphibians were reported: *Pseudepidalea variabilis* found in Beit Jala, Walaja, Battir, *Pelophylax bedriagae* Green Frog found in spring of Al-Walaja, also in Talitha Qumi and Battir. *Hyla savignyi* the Tree Frog was found in Battir. Up to 12 reptile species were recorded on site. Of main ones *Chamaeleo chamaeleon, Testudo graeca,* and *Hemidactylus turcicus.*

Mammals: Up to 30 species of mammals were recorded in the property. Bats and rodents were the largest orders of mammals in the property. It also supports the occurrence of the important endangered and threated mammals; the mountain gazelle *Gazella gazella* and striped haeyna *Hyaena hyaena*.Two earlier studies done on in Bethlehem area related to Wadi Al Makhrour area with connection to mammals. In Qumsiyeh *et al*., (2014b) they shows the diversity of mammals that exist in Bethlehem district with 31 record of species from 16 family, which includes data from Al Makhrour. In the other hand a study done on

the Eagle owl diet from Al Makhrour shows five species of mammals (*Erinaceus europeaus, Rattus rattus, Meriones tristrami, Microtus guentheri*, and *Rousettus aegyptiacus*) and a domesticated cat (Amr *et al*. 2016).

Invertebrates: Insects were the most numerous in terms of species counts in the property. For example, there is over 20 species of butterflies. As for Moths there was found 11 families and over 21 species (many yet to be unidentified of the families Erebidae and Noctuidae). A rather interesting insect was found in the property is the first reported invasive Western conifer seed bug *Leptoglossus occidentalis* (Hemiptera, Coreidae, 1910); representing its southern most record in Asia. *L. occidentalis* is a significant pest on pine trees and an invasive species to the Mediterranean region from western North America (Handal, E.N., and Qumsiyeh, M.B. 2019).

Arachnida: Of a total of four species of scorpions**,** Mt. Nebo scorpion *Nebo hierichonticus* was the largest and the smallest was *Scorpio maurus* in the property. The most impressive was Androctonus and the most poisonous the Palestine yellow scorpion known also as "deathstalker" (*Leiurus quinquestriatus).* Other pseudoscorpions found are *Chithonius jonicus, Cardiolphum stupidium, and Ephippiochthonius spp.* In addition, there was foudn two species of camel spiders. There are two dozen species of the regular spiders (Order Araneae) recorded under at least 8 families.

Land Snails: Sixteen species of land snails are recorded at the property. Of those are the following: *Granopupa granum, Buliminus labrosus, Paramastus episomus, Pene bulimoides, Euchondrus septemdentatus, Euchondrus chondriformis,* and others.

4.2.3 Avi-Faunal Diversity on Site

A total of 63 species of birds were recorded at al Makhrour area and its vicinity (Annex 2.3). A total of 33 bird species were recorded breeding at the study area, while the other 30 species are classified as migratory species. Out of the recorded breeding birds, 26 of them are considered as resident breeders while the other 7 recorded species are classified as summer breeders. The long legged Buzzard (resident breeder) and the Short-towed Eagle (Summer breeder and passage migrant) were both recorded at the site and both showed breeding signs but non The most abundant breeding species recorded at the site are the (Common) Blackbird, Sardinian Warbler, Spectacled Bulbul, Great Tit, Graceful Prinia, (Eurasian) Collared Dove and Chukar. Five of the recorded birds are classified as threatened species at the national and regional level, which include Long-billed pipit, Black-eared Wheatear, Long-legged Buzzard, Cretzschmar's Bunting and Little Swift.

4.2.4 Mushrooms/Fungi on site

A total of 19 species were recorded under 15 families at the property. OF those mushroom are the following: *Lentinus arcularius*, *Trametes hirsute*, *Suillus collinitus*, *Xerocomellus redeuilhii*, *Tapinella panuoides*, *Psathyrella bipellis*, *Coprinopsis friesii* and others (Annex 2.2).

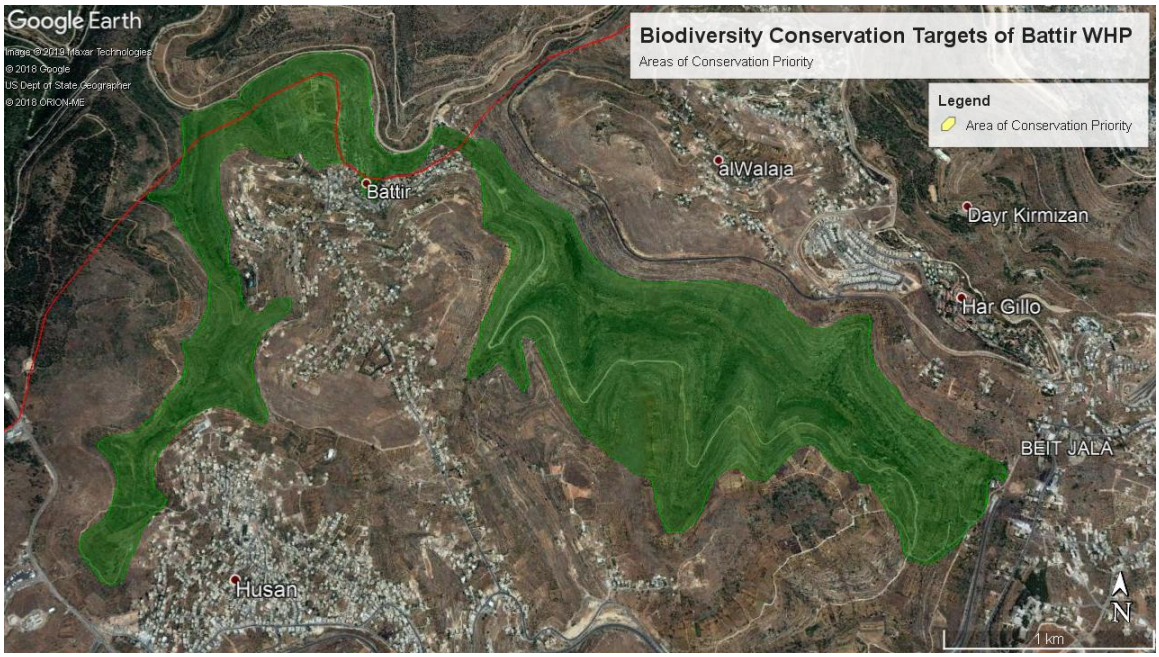
5. BIODIVERSITY CONSERVATION VALUES AND TARGETS

Battir WHP including Al Makhrour valley and its surroundings was found of high biodiversity conservation value; as reported in the biodiversity baseline survey reports done on the site during the year 2018/2019 by flora, fauna and avi-fauna specialists under the project entitled:"*Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine*". The selected area within Battir WHP for researching and studying almost overlaps the core zone of the Battir World Heritage Property (WHP) identified by MoTA in the WHS nomination report for the site (MoTA), 2013) (Map 3.5).

The Valley and the green area encircling Battir and Husan Villages supports the growth of diverse vegetation cover and plant forms as it falls under the Mediterranean botanical and zoogeographical region (Zohary, M., 1973) and the Mediterranean biogeographical zone (Soto-Berelov, M., 2012). The green natural areas along the valley are mainly composed of Sclerophyllous oak woodlands on Limestone (*Quercus calliprinos* forest), which is an important ecosystem type of the natural vegetation in the Mediterranean region and of high nature conservation value in the region. As a part of the mosaic-like landscape, old-growth oak forests, in particular, provide a wide range of ecosystem functions and services.

The Oak forests are important ecosystem type of the natural vegetation in the Mediterranean region; providing a wide range of ecosystem functions and services (Westphal C., et-al., 2009). In the disturbed landscapes occurring in the Mediterranean region, the well-kept areas especially those with woods forms natural base with significant biodiversity elements. Sacred trees, groves and forests such as the evergreen oak forest are found all over the Mediterranean basin. They were established for spiritual and cultural purposes sometimes for centuries (Harding J.S., et-al., 1998). This evergreen oak tree; dominantly *Q. calliprinos*, supports the conservation of a great number of associated species (Martinez J., et-al., 2014) even small species such as ants, spiders, snails, especially, in hot region by providing suitable habitats and shelter. This is manifested in Palestine in Battir WHP. In conclusion, the evergreen oak forests and their mixed habitats have a high conservation value, because they are rare examples of intact Mediterranean forests; representing important elements in ecosystems with stable species composition and high cultural values (Deil U., et-al., 2009).

In conclusion, the area as a whole including Al Makhrour valley itself and the two slopes of hills surrounding the valley from the north and south and the same with the valley enclaving Battir towards Husan village are worth to be identified as an area of conservation value and hence necessary to be conserved for its biodiversity components at Battir WHP. It is the one that encompass the green natural areas as specified in map 5.1 below.



Map 5.1: Area of Biodiversity Conservation Value at Battir WHP, *Source: PCC, 2019*

5.1 Habitats of High Conservation Value

5.1.1 Habitats of High Conservation Value for Plant Biodiversity:

According to the plant biodiversity baseline surveys done during the years 2018/2019 for Battir WHP under the project *"Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine",* it was found that there are diverse habitats existing at the property that supports the growth and survival of large number and diverse plant and animal species on site. See section 4.1 for the main habitats that were classified on site.

The Key characteristics for the selection of the conservation areas in Battir WHP[6]

Representativeness and balance: The conservation areas represent the full range of biogeographic diversity within the site in as balanced a manner as possible (not underrepresenting some targets, while over representing others).

Adequacy: The conservation targets have sufficiently high levels of viability or ecological integrity to persist over long time periods.

Consistency: the management objectives and strategies set in this document are consistently applied across the selected conservation areas

Efficiency and equity: They represent the minimum number of areas achieve overall conservation goals and distributes the benefits of these areas to local communities in proximity in an equitable fashion.

Corridors where also part of the selected conservation areas. The selected corridors are linear landscape element in a dissimilar matrix that connects two or more habitat

6 (According to the principles of Davey 1998)

patches that are proposed for conservation on the grounds that it will enhance or maintain the viability of selected species and wildlife populations in the habitat and enhance the movement of species through them. To reduce the edge habitat (negative effect on species using these corridors, such as invasions by exotic species) the corridors were set within and as part of the conservation areas.

As the Battir WHP encompasses high number of habitats, a set of criteria was necessary to follow in the process of choosing those habitats with high conservation value. In summary those that were found of high conservation value were chosen in accordance to the following criteria:

- Habitats with high biological diversity (High number of plant, bird and animal species)
- Habitats that supports the growth of endemic and threatened species
- Unique paths and corridors that supports the growth of endemic or threatened species or unique species individuals (species of one or two individuals only growing in one specific site only and not another).

Key habitats for Plant biodiversity

The habitats that were found of high conservation value for Plant Biodiversity are diverse, located at different altitudes, and supported with different soil types. The habitats were also selected in accordance to the availability of high diversity of plant species and those that support endemic and rare/very rare plant species. See summary in table 5.1 and maps 5.2, and 5.3.

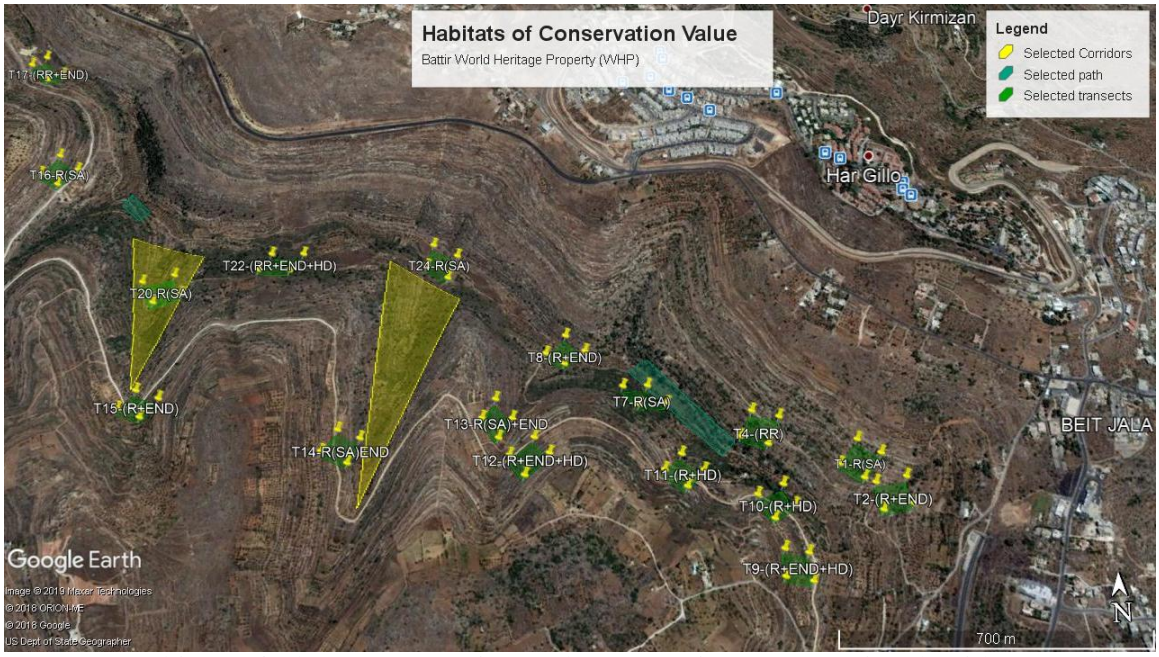
Table 5.1: WHP habitats of high conservation value by type, physical characteristic and value

Habitat	Transects	Conservation Value	Altitude (meters)	Soil type	Slope
Mixed oak forest and olive groves	T2 – Northern Mountainous slope – Beit Jala side	Rare and endemic plant species	771-781	Rendzina	Steep
	T9 Southern Mountainous slope- Beit Jala side	Rare, endemic and key stone plant species High plant diversity	769-770	Dark Rendzina	Steep to moderate steep
	T10 Southern Mountainous slope- Beit Jala side	Rare and key stone species High Plant Diversity	764-769	Dark Rendzina	Very steep (v.steep)
	T15 Southern Mountainous slope –Mid AL Makhour Valley	Rare, endemic and key stone plant species	791-792	Dark Rendzina	Steep
	T17 Southern Mountainous slope – from Battir side	Rare, very rare, vulnerable, and endemic plant species	640	Light Rendzina	V. steep
Oak forest and batha association	T4 Northern Mountainous slope – Beit Jala side	Rare and very rare species, and key stone plant species	748-760	Rendzina	Moderate steep
	T11 Southern Mountainous slope –	Rare and key stone species	759	Dark Rendzina	V. steep

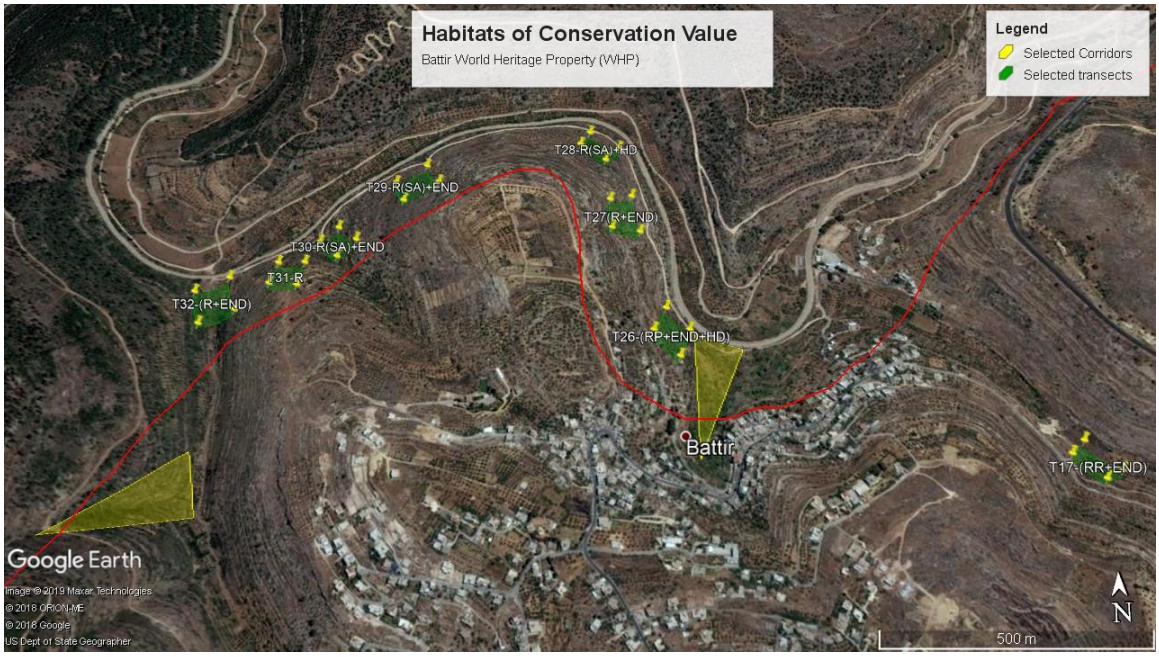
	Beit Jala side	High plant diversity			
	T31 The hill north west Battir Village	Rare plant species	565-569	Mixed Terra Rossa & Rendzina	Steep
Olive groves and fallow land	T6 The valley of AL Makhrour- from Beit Jala side	Rare and key stone plant species	710-712	Brown Rendzina	Flat
	T8 The valley of AL Makhrour- from Beit Jala side	Rare, endemic species and key stone plant species	708-712	Rendzina	Flat
	T32 The cultivated valley behind Battir village – North west Battir	Rare and endemic plant species	550	Terra Rossa	Flat
	T33 The cultivated valley behind Battir village – west Battir	Endemic plant species	551	Terra Rossa	Flat
Olive groves and batha association	T13 Southern Mountainous slope – Beit Jala side	Endemic and key stone plant species	775	Light Rendzina	Fore Slope - steep
	T14 Southern Mountainous slope – Beit Jala side	Endemic plant species	784-792	Light-brown Rendzina	Moderate to steep
	T22 At Al Kulieh Rock – AL Makhrour Valley	Rare, very rare, vulnerable, and endemic plant species High plant Diversity	657-659	Rendzina	Flat to Steep
	T26- The valley and mountain range enclaving Battir Village from the north	Rare, very rare, and key stone and endemic plant species High plant Diversity	584-597	Terra Rossa	Steep
	T27 The valley and mountain range enclaving Battir Village from the north	Rare, and endemic plant species	601	Mixed Terra Rossa & Rendzina	Steep
Mixed pine and oak forest	T28 The valley and mountain range enclaving Battir Village from the north	High Plant Diversity	584-593	Terra Rossa	Steep
	T29 The valley and mountain range enclaving Battir Village from the north	Endemic and key stone plant species High plant Diversity	579-586	Mixed Terra Rossa & Rendzina	Steep
	T30 The valley and mountain range enclaving Battir	Endemic and key stone plant species	579-582	Terra Rossa	Steep

	Village from the north				
Batha association	T12 Southern Mountainous slope – Beit Jala side	Rare, endemic and key stone plant species High plant Diversity	802-805	Light to Brown Rendzina	Moderate Steep
Paths and corridors	Corridor Links T14 and T23	High Plant Diversity			
	Corridor Links T15 and T21	High Plant Diversity			
	Path Below T4 and T5 – and trench below T7	Rare species and sole species (ex.*Orchis galilaea*)			
	Path below T20 and T21 And near E'in A'mdan	Rare species and sole species (ex.*Pyrus communis)*			

For rare, endemic and key stone species see section 5.2



Map 5.2: Habitats of Plant Conservation Value at Battir WHP – Beit Jala side towards Battir Village. *Source: PCC, 2019*

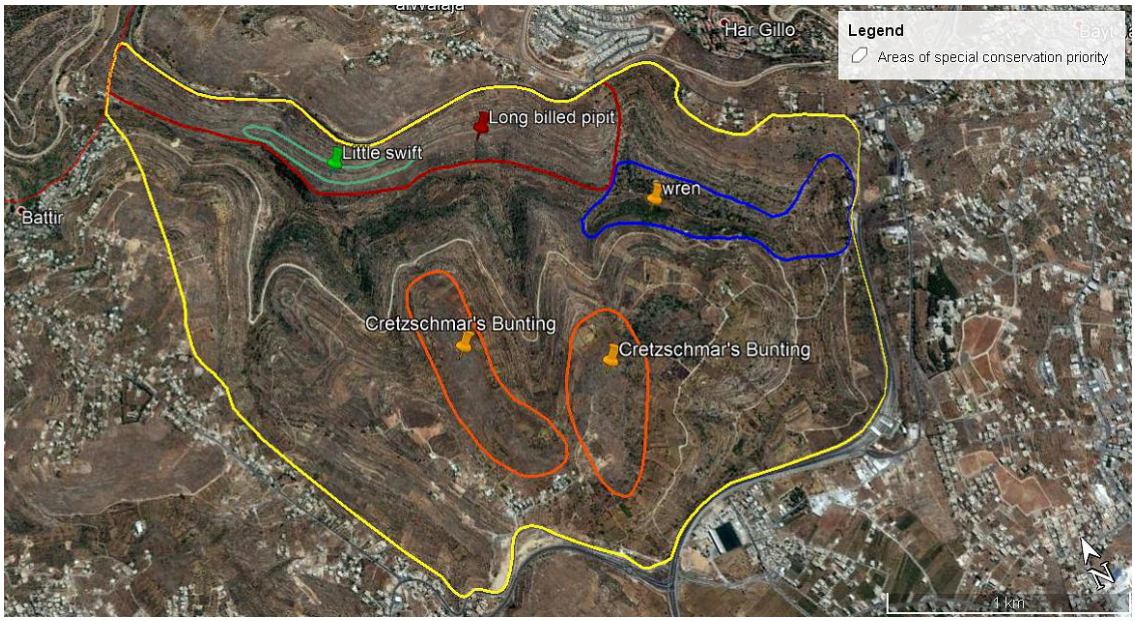


Map 5.3: Habitats of Plant Conservation Value at Battir WHP- Battir Village and Surroundings. *Source: PCC, 2019*

5.1.2 Habitats of High Conservation Value for Animals:

5.1.2.1 Habitats of High Conservation Value for Birds:

As noted during the birds baseline survey done during the years 2018/2019 for Battir WHP under the project "*Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine*" that AL Makhrour Valley and its surroundings belongs in general to the Mediterranean mountain range; slopes covered with different size patches of maquis, garrigues, and batha vegetation types, in many cases mixed with orchards (or cultivated areas), and different type of scattered coniferous trees. The study area also include exposed rocky sites and cliffs, mainly at the center-northern part of the valley. In addition, several small springs are located at different areas within the site. All this formed a based to support the occurrence of diverse bird species including number of conservation value at national and international level. It supports the occurrence of resident and summer breeding birds and migrant and vagrant birds. The habitats that found of conservation value for bird species and supports the occurrence of species of conservation value are those specified in map 5.4.



Map 5.4: Habitats of Conservation Value for Bird Species at Battir WHP, *Source: PNS, 2019*

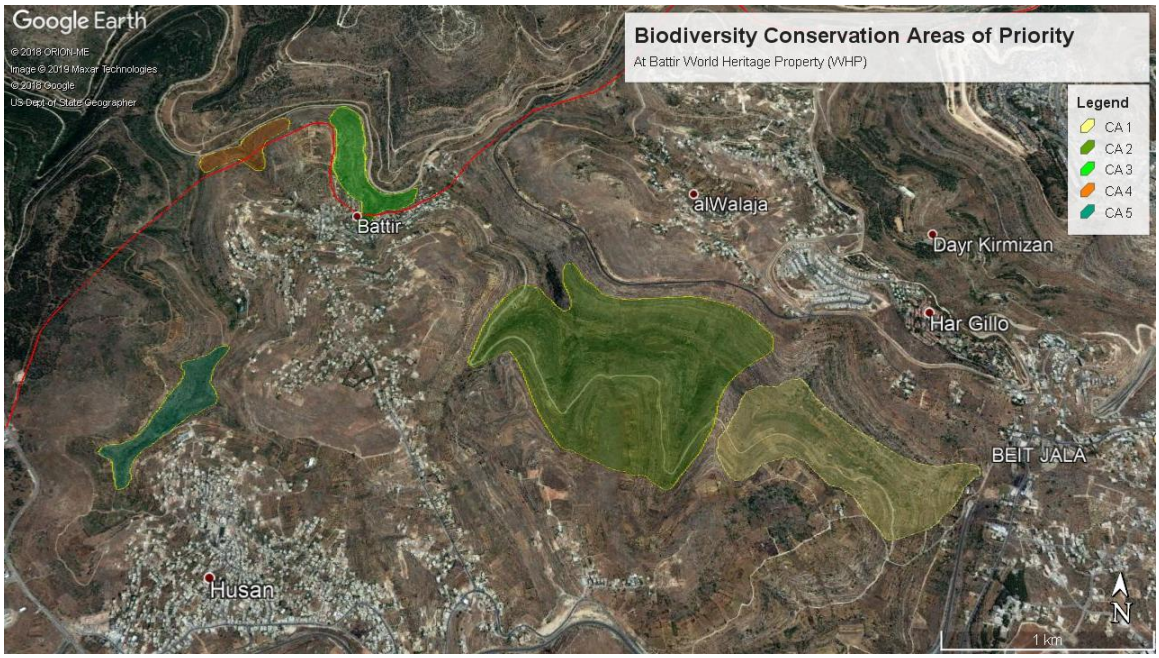
5.1.2.2 Habitats for High Conservation Value for Mammals, Reptiles, Amphibians and Invertebrates:

According to the fauna surveys done at Al Makhrour Valley during the field trips done throughout the year 2018/2019 under the project "*Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine*", It was highlighted that some

important habitats that supports the growth of species need to be conserved covering range of groups including vertebrates, some invertebrates and mushroom. For example, Mountain gazelle *Gazella gazelle,* was found mainly on mountainous slopes of hills where transect 1 and 2 are located and also at the mountainous cliffs located below transect 15 and 16. Another important habitat the area of Ein A'mdan where transects 20 and 21 are located. This area support wide range of threatened amphibians, reptile, and mammals such as Long-eared bat *Plecotus christici,* Levant water frog *Pelopgylax bedriagae,* and many others see section 5.2.

5.1.3 Selected Habitats of Priority for Conservation at Battir WHP

Reviewing the habitats that were selected solely as habitats of conservation value for plants, and those for animals and for birds and so on, enabled the experts to select and delineate number of areas of high priority for conservation (see map 5.5). Each conservation area has certain biological and ecological feature that distinguished the area and put it in the context of one of high priority areas for biodiversity conservation at Battir WHP.



Map 5.5: Biodiversity Conservation Areas of Priority at Battir WHP, *Source: PCC, 2019*

Conservation Area 1: This area extends from Beit Jala city western borders towards almost the middle part of Al Makhrour Valley. It is known to support three types of habitats in mixed or pure stands; mainly maquis oak forest, olive groves, and batha/garrigue association with some scattered pine trees. Plant diversity shows a range of 40% to 90% and soil type is mainly light Rendzina. The elevation is also diverse ranges from 709 to 805 meters above sea level. The northern hills are composed of high rock content and less plant density while the valley and the southern slope enjoys more fertile soils with lots of humus and supports the growth of more plant varieties and density. Two water sources exist in

this area; one is E'in Kapryanous and the second is E'in Dar Saliba. Both are important sources of water for birds and animals. In this area the Mountain Gazelle was found. The gazelle is globally threatened mammal and its conservation is a must in this valley. Another two threatened reptiles were also found in this area (Table 5.2). The area supports the growth of 7 rare plant species such as *Salvia Indica, Verbena supina*, and *Viola occulta*, 8 key stone species (Section 5.2) and 5 endemic species to the Fertile Crescent Region such as *Echium judaeum* and *Trifolium eriosphaerum* (Table 5.2).

Conservation Area 2: This area extends from the middle part of Al Makhrour Valley reaching the last cliff south East Battir. It is known to support four types of habitats in mixed or pure stands; mainly maquis oak forest, olive groves, pine woodlands and batha/garrigue association. Plant diversity shows a range of 52% to 80% and soil type is light to dark Rendzina. The elevation ranges between 640-701 meters above sea level. The northern hills are composed of high rock content and less plant density while the valley and the southern slope characterized of having more fertile soils with three moderate to high steepy cliffs that work as corridors between the bottom of the valley and the upper parts of the southern mountainous range hills. The cliffs supports the growth of diverse and dense pant cover and the rocky cliffs supports the occurrence of number of birds and animals in the area. One water source exist in this area namely E'in E'mdan spring, which forms relatively medium sized pool located in valley surrounded by two mountainous hills. It is an important source of water for birds, amphibians and animals. The *Hyaena hyaena* was found in this area and it is globally threatened mammals and its conservation is a must in this valley. In this area two endangered frogs and 8 threatened/endangered mammals were found in this conservation area mainly near or at E'in E'mdan spring (Table 5.2). It also supports the occurrence of three vulnerable birds namely *Emberiza caesia, Anthus similis* and *Apus affinis.* The area supports the growth of 3 rare plants, 6 key stone species (Section 5.2) and 3 endemic plants to the Fertile Crescent region (Table 5.2).

Conservation Area 3: This area extends from Battir village agricultural terraces until the middle part of the valley that enclave Battir village from the north western side. It is known to support four types of habitats in mixed or pure stands; mainly maquis oak forest, olive groves, batha and garrigue association and agricultural terraces. Plant diversity shows a range of 60% to 82% and soil type is a mixture between Rendzina and Terra Rossa soils. The elevation range is between 584-601 meters above sea level. This area is in general lower in elevation and enjoys higher temperature than CA 1 and CA 2. This favors the growth of different type of vegetation cover especially among the herbaceous species. Of the plant species that was found in this area and not in CA1 and 2 is *Pistacia lentiscus* (except in one site near entrance path towards AL Makhrour Valley from Beit Jala Side, near T2). The valley along the train railway and the southern hills supports the growth of diverse plants, and the occurrence of animals. In addition, the area encompasses a unique water aqueduct that takes the water from Battir Spring throughout the agricultural terraces. It is an important source of water for birds and animals. Hence, several important plant species were found growing in Battir village but not in the valleys surrounding it such as *Arum hygrophilum (NT), Populus euphratica (R), Arum dioscoridis (SA)* and *Rhamnus alaternus (SA).* The area supports the growth of 3 rare plants, 3 key stone species (Section 5.2) and 3 endemic plants to Palestine and the Fertile Crescent region (Table 5.2). *Onopordum*

carduiforme (R/EP) and Scrophularia hierochuntina (RP/ ES) are species of high conservation importance as they were found threatened and endemic plants (Table 5.2).

Conservation Area 4: This area extends from the middle part of Battir Valley that enclaves Battir village from north western side reaching the bridge which crosses Battir agricultural lands and the train railway. It is known to support three types of habitats in mixed or pure stands; mainly maquis oak forest, olive groves, and batha/garrigue association. Plant diversity shows a range of 57% to 80% and soil type is mix soils of Rendzina and Terra Rossa and pure soil of Terra Rossa. The elevation range is between 550 and 586 meters. The area is lowest among the previous conservation areas. The area changes its habitats from mixed olive groves and oak maquis forest to totally agricultural lands at western side of the area (T32 and T33). Within the curved hills between T30 and 31 there is the possibility for water collection on the rocks, the area forms special environment for the growth of diverse herbaceous species. The area supports the growth of 2 rare plants, 4 key stone species (Section 5.2) and 3 endemic plants to the Fertile Crescent region (Table 5.2).

Conservation Area 5: This area is located to the north western side of Husan village and encompasses E'in Al Haweh. It is known to support three habitats of oak maquis, olive groves and some batha and garrigue association. It is famous for the natural spring that exists there forming a relatively medium sized pool where birds, and animals drink from. It is a good habitat for number of plants such as orchids, and animals such as geckos, and solitary bees. Most importantly that the *Gazella gazelle* was found there feeding.

Table 5.2: Distribution of selected species by conservation area of priority at Battir WHP (please refer to Map 5.5)

Conservation Area of Priority	Plant Species of Conservation Priority	Animal Species of Conservation Priority	Bird Species of Conservation Priority
CA1 20	*Carduus australis (R)*	*Chalcides ocellatus (NE)*	*Troglodytes troglodytes (Eco-health indicator)*
	Colichium hierosolymitanum (R)	*Gazella gazelle (EN)*	*Tyto alba (LC)*
	Herniaria glabra (R)	*Ptyodactylus guttatus (NE)*	
	Polygonum argyrocoleum (R)	*Bufotes variabilis (EN)*	
	Salvia Palaestina (R)	*Monacha crispulata*	
	Salvia indica (R)		
	Silene alexandrina (R)		
	Verbena supina (R)		
	Gypsophila pilosa (RR)		
	Ophrys iricolor (RP)		
	Salvia ceratophylla (RR)		
	Viola occulta (RR)		
	Viola modesta (RR)		
	Anthemis bornumuelleri (ES)		
	Biarum angustatum (ET)		
	Bellevalia flexuosa (ES)		
	Bellevalia eigii (EE)		
	Chaetosciadium trichospermum (ES)		

	Echium judaeum (ES)		
	Trifolium erioshpaerum (ES)		
CA 2 18	*Colichium hierosolymitanum (R)*	*Crocidura leucodon (LC)*	*Apus affinis (VU)*
	Clematis flammula (R)	*Pipistrellus kuhlii (LC)*	*Emberiza caesia (VU)*
	Polygonum argyrocoleum (R)	*Hypsugo savii (LC)*	*Anthus similis (VU)*
	Portulaca oleracea (R)	*Pipistrellus pipistrellus (LC)*	*Buteo rufinus (NT)*
	Populus euphratica (R)	*Plecotus christici (DD)*	
	Rumex dentatus (R)	*Rhinolophus ferrumequinum (LC)*	
	Trifolium boissieri (R)	*Tadaridaa teniotis (LC)*	
	Cephalaria syriaca (RP)	*Taphozous perforates (LC)*	
	Lactuca undulata (RR)	*Hyaena hyaena (NT)*	
	Onosma gigantean (RR)	*Gazella gazelle (EN)*	
	Turgenia latifolia (RR)	*Bufotes variabilis (EN)*	
	Alkanna strigose (ET)	*Pelopgylax bedriagae (NT)*	
	Echium judaeum (ES)	*Monacha crispulata*	
	Reseda alopecuros (EP/R)		
	Scrophularia rubicaulis (ES)		
	Trifolium erioshpaerum (ES)		
	Vagaria parviflora (ES)		
	Trigonella berythea (ET)		
CA3 11	*Apium nodiflorum (R)*	*Monacha crispulata*	
	Colichium hierosolymitanum (R)		
	Populus euphratica (R)		
	Silene rubella (R)		
	Samolus valerandi (R)		
	Onopordum carduiforme (R/EP)		
	Calendula palaestina (EL)		
	Centaurea cyanoides (ES)		
	Echium judaeum (ES)		
	Nonea philistaea (EP)		
	Scrophularia hierochuntina (RP/ ES)		
CA 4 15	*Clinopodium insulare (R)*		*Bubo bubo (LC)*
	Erodium acaule (R)		
	Salvia palaestina (R)		
	Veronica arvensis (R)		
	Silene arabica (RR)		
	Spergularia bocconei (RR)		
	Tetragonolobus requienii (RP)		
	Crocus hyemalis (ES)		
	Trifolium scutatum (ET/R)		
	Campanula hierosolymitana (EL)		
	Campanula stellaris (EL)		
	Salvia hierosolymitana (ES)		
	Salvia Judaica (ES)		

	Salvia pinnata (ET) *Trifolium erubescens (EL)*		
CA5		*Gazella gazelle (EN)*	

Species selected are those found of high priority for conservation; very rare (RR or RP), rare (R), endemic to Palestine and Fertile Crescent region. There are other numerous plant species of other values were found in those CAs but were not mentioned here such as wild relatives, of economic value and key stone species.

- Ad1 (abundance at local level, according to Checklist and Ecological Database (Ori F., et-al., (1999): CC=Very common species, C=Common species, F=Frequent species, R=somewhat rare species, RP=Rare species with 31-100 surviving sites, RR=Very rare species with only 4-30 surviving sites, NR= Not Registered in the study area before but was found during surveys, (LD)= species with limited distribution.
- Abd2 (abundance at global level, according to IUCN RED List): LC= Least Concern, VU= Vulnerable – decreasing, NT= Near Threatened.
- Endemism= EP=Endemic to Palestine, ET=Endemic to Palestine and Turkey, EL=Endemic to Palestine and Lebanon, ES=Endemic to Palestine and Syria
- Wild Relatives=WR

5.2 CONSERVATION TARGETS AT SPECIES LEVEL

In summary and in reference to the inventory and analysis done on all plant, animal and bird species that inhabit Battir WHP, it was found that 21 plant species (Table 5.3), 7 key stone species, 17 plants of economic value, 7 bird species (Table 5.4), 10 mammal species (Table 5.5), 6 reptile and amphibian species (Table 5.6), and 3 invertebrates are found of high conservation value. The details and results for the species of conservation value are all summarize under this section.

5.2.1 Plant Species of High Conservation Value

A total of 427 vascular plant species were recorded as a result to the flora survey done at Battir WHP (AL Makhrour Valley, Battir village and hills behind Battir towards Husan village); of which 98 plants were recorded during the flora surveys done at Battir village alone. This number of plant species forms almost 20% of total plant species growing in the West Bank region and Gaza Strip (Ghattas R., 2008). The area clearly hosts high number of vascular plants; as a result to the diverse habitats and physical conditions, which forms a supporting environment for the growth of diverse plant species. The valley supports the growth of 63 plant families; most dominantly are Compositae, Papilionaceae, Labiatae, Graminae and Cruciferaceae. The total number of tree species surveyed at the valley is 19 trees, it also encompasses 48 shrubs and sub-shrubs, 2 aquatic plants, and 358 herbaceous plant species.

5.2.1.1 Plant Key Stone species:

Studying the WHP natural habitats and the plant species that it encompasses, it was possible to specify the dominant and key stone species of each habitat. In summary the dominant species on site are Oak trees *Quercus calliprinos,* Aleppo Pine trees *Pinus halepensis,* and Olive trees *Olea europea*. But of those that are considered as key stone species on site are Oak trees *Quercus calliprinos (CA 1, 2, 3, 4, 5),* Pistachio trees *Pistacia palaestina (CA 1, 2)*, Strawberry trees *Arbutus andrachne (CA 1, 2)*, Carob trees *Ceratonia siliqua (CA 1, 4)* , Hawthorn Azarole trees *Crataegus aronia (CA 1, 2, 3, 4),* snowbell bush trees *Styrax*

officinalis (CA 1, 2), Syrian Pear *Pyrus Syriaca (CA 2)*, Sumaq tree *Rhus coriaria (CA1, 4)*, Palestine Buckthorn *Rhamnus lycioides* (CA 1, 2, 3), as trees and shrubs growing in the area. Those important woody species; *Quercus calliprinos*, the Palestine oak, in particular, are typically Mediterranean tree species of the maquis of the region and the major evergreen elements in the *Q. Calliprinos - Pistacia palaestina* association of Mediterranean region. Those key stone species are necessary for long-term maintenance of a viable forest population. Hence, habitats and populations of those species shall be adequately represented and conserved in the area to ensure their long-term survival and thus the maintenance of the ecological processes related to them. The habitats that supports the growth of those species are already considered of conservation in section 5.1.

5.2.1.2 Endemic Plant species:

The property supports the growth of a representative number of endemic species to Palestine and to the Fertile Crescent that are distributed along the valley. It supports the growth of 26 endemic species (3 were found in Battir village); mostly endemic to Palestine and Syria, which are all of conservation value. Of the endemic species that were found of high conservation value are those three endemic species to Palestine only; specifically *Nonea philistaea, Onopordum carduiforme* and *Reseda alopecuros.* And those five species found also as threatened species including *Onopordum carduiforme, Reseda alopecuros, Colchium hierosolymitanum, Trifolium scutatum, Scrophularia hierochuntina* (Table 5.3). Two species; specifically *Onopordum carduiforme* and *Reseda alopecuros,* overlaps between being endemic to Palestine and of threatened status and hence shall be given attention while implementing the conservation plan.

Table 5.3: Endemic species found at WHP and their abundance

Family	Species name	Endemism	Abundance at local level (AB1)	Abundance at global level (AB2) (IUCN Red List)
Amaryllidaceae	*Vagaria parviflora (Pancratium parviflora)*	ES	F	LC
Araceae	*Biarum angustatum*	ET	F (LD)	-
Boraginaceae	*Alkanna strigosa*	ET	C	-
	Echium judaeum	ES	CC	-
	Nonea philistaea	EP	C(LD)	-
Campanulaceae	*Campanula hierosolymitana*	EL	C(LD)	-
	Campanula stellaris	EL	C(LD)	-
Colchicaceae	*Colchium hierosolymitanum*	ET	R	-
Compositae	*Anthemis bornmuelleri (Anthemis galilaea)*	ES	CC	-
	Calendula palaestina	EL	C(LD)	-
	Centaurea cyanoides	ES	C(LD)	-
	Onopordum carduiforme (Onopordum telavivense)	EP	RP	-
Iridaceae	*Crocus hyemalis*	ES	C	LC
Labiatae	*Salvia hierosolymitana*	ES	C (LD)	-
	Salvia judaica	ES	C	-
	Salvia pinnata	ET	C (LD)	-

Liliaceae	*Bellevalia eigii*	EE	F	-
	Bellevalia flexuosa	ES	CC	-
Papilionaceae	*Trifolium eriosphaerum*	ES	C	-
	Trifolium erubescens	EL	C(LD)	-
	Trifolium scutatum	ET	R	-
	Trigonella berythea	ET	F	-
Resedaceae	*Reseda alopecuros*	EP	R	-
Scrophulariaceae	*Scrophularia hierochuntina*	ES	RP	-
	Scrophularia rubicaulis	ES	F	-
Umbelliferae	*Chaetosciadium trichospermum*	ES	CC	-

- Ad1 (abundance at local level, according to Checklist and Ecological Database (Ori F., et-al, 1999): CC=Very common species, C=Common species, F=Frequent species, R=somewhat rare species, RP=Rare species with 31-100 surviving sites, RR=Very rare species with only 4-30 surviving sites, NR= Not Registered in the study area before but was found during surveys, (LD)= species with limited distribution.
- Abd2 (abundance at global level, according to IUCN RED List[7]): LC= Least Concern, VU= Vulnerable – decreasing, NT= Near Threatened.
- Endemism= EP=Endemic to Palestine, ET=Endemic to Palestine and Turkey, EL=Endemic to Palestine and Lebanon, ES=Endemic to Palestine and Syria
- Wild Relatives=WR

5.2.1.3 Threatened and Endangered Plant Species

The property supports that growth of a relatively large number of threatened species that are distributed along the valley. It was found 34 rare and very rare plant species where 14 are very rare species at local level (forming 3.7% of total number of plant species growing on site) and 45 LC species, and 1 NT (Near Threatened) species at global level according to IUCN Red list. The threatened species are mainly found among 9 families of which are orchidaceae, polygonaceae, solanaceae, verbenaceae, and violaceae (Ghattas, R., et-al, 2019).

Of those found of conservation value are the following plant species that were found growing at WHP and their status is very rare; *Onosma gigantea, Gypsophila pilosa, Spergularia bocconei, Lactuca undulata, Cephalaria syriaca, Onopordum carduiforme, Salvia ceratophylla, Salvia palaestina, Scrophularia hierochuntina, Ophrys iricolor, Tetragonolobus requienii, Turgenia latifolia, Viola modesta, Viola occulta.* Of the plant species that were found in Battir Village alone and found of conservation value are: water arum (*Arum hygrophilum*) (NT), and Popular tree (*Populus euphratica) (R). Arum hygrophilum* is of high importance as it was found near threatened according to IUCN RED List.

5.2.1.4 Plant Wild Relatives:

The wild relative species found growing in Battir WHP and of conservation value are as following: wild relatives of wheat (*Ageilop spp.*), lettuce (*Lactuca spp.*), pear (*Pyrus syriaca*), green Pistacio (*Pistacia palaestina (terebinthus*)), barley (*Hordeum spontaneum*), fennel (*Foeniculum vulgare*), cauliflower (*Brassica nigra*), peas (*Pisum sativum*), vetch (*Vicia sativa*) and others.

7 http://www.iucnredlist.org/search

5.2.1.5 Plant species of High Economic Value

There are number of species found growing in Battir WHP that were found of high economic value and they are utilized by local community as either as medicinal and aromatic plants, or as food such as seeds, spices, and resins and or as dyes and so on. Hence, they are significant elements of the ecosystem services provided by the site to the locals. Of the plants used as source of food including: Solomon's lily *Arum Palaestinum*, white beet *Beta vulgaris*, dwarf chicory *Cichorium endivia*, rocket *Sisymbrium irio*, garden purslane *Portulaca oleracea*, garden rocket *Eruca sativa,* Olive tree *Olea europea,* Almond *Amygdalus communis,* Carob *Ceratonia siliqua,* and Pear *Pyrus communis*. Of the plants used as Medicinal and aromatic plants including: Cat thyme germander *Teucrium capitatium*, hedge germander *Teucrium divaricatum*, hawthorn *Crataegus aronia*, styrax *Styrax officinalis*, common sage *Salvia fruticosa*, horse mint *Mentha longifolia*, round-leaved mint *Micromeria nervosa*, wild thyme *Majorana syriaca*, common varthemia *Varthemia iphionoides.* Of the plants used as seeds including: pine *Pinus pinea*, fenugreek *Trigonella foenum graecum,* and Sicilian sumach *Rhus coriaria*.

5.2.1.6 Selected Plant Species of High Conservation Value

In conclusion the following 21 Plant species were found of high conservation value and hence shall be given consideration while implementing the plan (see Table 5.4). Those plant species include the very rare species (11sp), the endemic to Palestine species (3sp), the rare endemic species (3sp) to the Fertile Crescent, wild relatives rare in study area, and threatened species according to IUCN RED List (1sp).

Table 5.4: Plant species found of high conservation value and the reason for their conservation (Ghattas, R., et-al., 2019)

Family	Species name	Endemism	Wild Relative	Abundance at local level	Abundance (IUCN Red List)
Araceae	*Arum hygrophilum*	-	-	F (BO)	NT
Boraginaceae	*Nonea philistaea*	EP	-	C(LD)	-
	Onosma gigantea	-	-	RR (LD)	-
Caryophyllaceae	*Gypsophila pilosa*	-	-	RR (LD)	-
	Spergularia bocconei	-	-	RR (LD)	LC
Colchicaceae	*Colchium hierosolymitanum*	ET	-	R	-
Compositae	*Onopordum carduiforme (Onopordum telavivense)*	EP	-	RP	-
	Lactuca undulata	-	-	RR (LD)	-
Cruciferae	*Brassica nigra*	-	WR	F (Rare in study area)	-
Dipsacaceae	*Cephalaria syriaca*	-	-	RP	-
Labiatae	*Salvia ceratophylla*	-	-	RR (LD)	-
	Majorana syriaca	-	WR	C (Rare in study area)	-
Papilionaceae	*Trifolium scutatum*	ET	-	R	-
	Trigonella foenum-graecum	-	WR	F (Rare in study area)	-
	Pisum sativum		WR	F (Rare in study area)	-
Resedaceae	*Reseda alopecuros*	EP	-	R	-

Rosaceae	*Pyrus syriaca*	-	WR	F (Rare in study area)	LC
Scrophulariaceae	*Scrophularia hierochuntina*	ES	-	RP	-
Umbelliferae	*Turgenia latifolia*	-	-	RR	-
Violaceae	*Viola modesta*	-	-	RR	-
	Viola occulta	-	-	RR	-

Note: selected species are those found as very rare, endemic to Palestine, endemic and rare, wild relatives found rare at study area, NT at global level.

- Ad1 (abundance at local level, according to Checklist and Ecological Database (Ori, F., et-al, 1999): CC=Very common species, C=Common species, F=Frequent species, R=somewhat rare species, RP=Rare species with 31-100 surviving sites, RR=Very rare species with only 4-30 surviving sites, NR= Not Registered in the study area before but was found during surveys, (LD)= species with limited distribution.
- Abd2 (abundance at global level, according to IUCN RED List): LC= Least Concern, VU= Vulnerable – decreasing, NT= Near Threatened.
- Endemism= EP=Endemic to Palestine, ET=Endemic to Palestine and Turkey, EL=Endemic to Palestine and Lebanon, ES=Endemic to Palestine and Syria
- Wild Relatives=WR

Arum hygrophilum

Majorana syriaca

Lactuca undulata

Photos (5.1, 5.2, and 5.3): Selected Plant Species found at Battir WHP. *Source: PCC, 2018*

5.2.2 Animals and Birds of Conservation Value at Species Level

5.2.2.1 Bird Species of Conservation Value

A total of 63 species of birds were recorded at Al Makhrour area and its vicinity during the spring season of 2019, where only six days of bird survey was conducted focusing on breeding species (resident and summer visitor breeders). A total of 33 bird species were recorded breeding at the study area, while the other 30 species are classified as migratory species. Out of the recorded breeding birds, 26 of them are considered as resident breeders while the other 7 recorded species are classified as summer breeders. The long legged Buzzard (resident breeder) and the Short-toed snake Eagle (summer breeder and passage migrant) were both recorded at the site and both showed breeding signs but the location of the nest was never located indicating that it is outside of the study area. Five of the recorded birds are classified as threatened species at the national and regional level, which include Long-billed pipit, Black-eared Wheatear, Long-legged Buzzard, Cretzschmar's Bunting and Little Swift (Anton, K., 2019).

Hence, of the bird species that were identified as species of high conservation value are 7 bird species listed in table 5.6. The reason for choosing them as priority conservation value

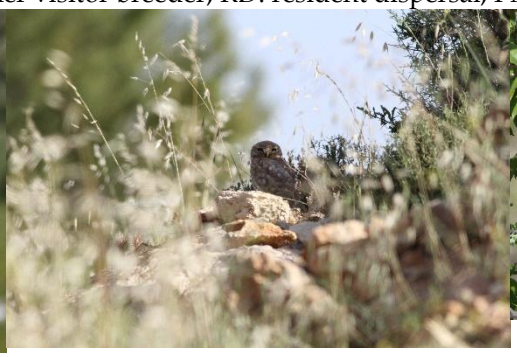
is mainly because they are either threatened/endangered at national or international levels, or reflects on the health of the maquis habitat or found breeding on the site and not in another surrounding the site.

Table 5.5: Bird Species of High Conservation Value at Battir WHP (Anton, K., 2019)

Species	Scientific name	Status	IUCN / National Status	Occurrence in Study Area
Cretzschmar's Bunting	*Emberiza caesia*	SB, PM	Least Concern/ Vulnerable	Uncommon
Little Swift	*Apus affinis*	SB, PM	Least Concern/ Vulnerable	Uncommon
Long-legged Buzzard	Buteo rufinus	RB, RD	Least Concern/ Near Threatened	Rare
(Eurasian) Eagle Owl	*Bubo bubo*	RB	Least Concern	Rare
Barn Owl	*Tyto alba*	RB	Least Concern	Rare
Long-billed Pipit	*Anthus similis*	RB	Least Concern/ Vulnerable	Rare
(Winter) Wren	*Troglodytes troglodytes*	RB	Least Concern	Common

RB: Resident breeder, SB: Summer visitor breeder, RD: resident dispersal, PM: Passage migrant.

Long billed Pipit



Little Owl

Blackcap

Photos (5.4, 5.5, and 5.6): Selected Bird Species found at Battir WHP. *Source: PNS, 2019*

5.2.2.2 Animal Species of Conservation Value

a. Vertebrates:

Mammals:

A list of 30 species of mammals were found in Battir WHP and the following species shows significant importance (Table 5.7). Up to 10 species of mammals were found on site need to be protect. Two species specifically the Hyena and the Mountain Gazelle are threatened and endangered at the global level, respectively. All shall be list as species of high conservation value.

Table 5.6: Mammals species of high conservation value found at Battir WHP and their local and global conservation status (Meiri, S., et-al., 2019).

English Name	Scientific Name	Global Status (IUCN RED LIST)	H. Palestine Status	Found
Bicolored Shrew	*Crocidura leucodon*	LC	NT	Near E'in E'mdan
Kuhl's pipistrelle	*Pipistrellus kuhlii*	LC	NT	E'in E'mdan
Savi's pipistrelle	*Hypsugo savii*	LC	EN	E'in E'mdan

Common Pipistrelle	*Pipistrellus pipistrellus*	LC	EN	E'in E'mdan
Long-eared bat	*Plecotus christici*	DD	EN	E'in E'mdan
Great horseshoe bat	*Rhinolophus ferrumequinum*	LC	EN	E'in E'mdan
European free-tailed bat	*Tadaridaa teniotis*	LC	NT	E'in E'mdan
Egyptian tomb bat	*Taphozous perforatus*	LC	EN	E'in Emdan
Mountain gazelle	*Gazella gazella*	EN	VU	CA 1 – Near T1 and T2 (Near Nicola Khamis Land and mid of down pathway) and cliff between T15 and T16 (near eagle owl nest)
Striped Hyaena	*Hyaena hyaena*	NT	EN	Near E'in E'mdan

For more explanation on the abbreviations that used see Dolev and Perevolotsky, 2004.

Reptiles and amphibians:

Up to 14 species of reptiles and amphibians (12 and 2 species respectively) were found in Battir WHP as a result to the survey done in the year 2018/2019. Only the two amphibian species need to be protected, according to Meiri et al., 2019. The status of both amphibians was classified as near threatened and endangered at local level (Table 5.8).

Table 5.7: List of Reptiles and Amphibians found at Al Makhrour Valley and their Status.

English Name	Scientific Name	Global Status (IUCN RED LIST)	H. Palestine Status	Found
Variable green toad	*Bufotes variabilis*	DD	EN	T20 and T21 E'in E'mdan
Levant water frog	*Pelopgylax bedriagae*	LC	NT	T20 and T21 E'in E'mdan
Mediterranean Spur-Thighed Tortoise	*Testudinidae Testudo graeca*	VU		

Source for H. Palestine Status: Dolev and Perevolotsky, 2004.

Photos 5.7, 5.8: Mountain Gazelle at Battir WHP. *Source: PNS, 2019*

b. Invertebrates:

Some groups of invertebrates were studied in Battir WHP including insects, snails, arachnids and other small groups. Some of them were found of conservation importance and of significance for the site.

Land Snails:

The species *Monacha crispulata* is a species found in Al Makhrour need a specific habitat with a dens oak trees, and the only distribution for this species is (Palestine, Lebanon and Jordan).

Mushroom:

Arrhenia rickenii (Hora) Watling (1989), the samples were found on moss-covered limestone gravel. Originally described in Europe, the range of this species was first recorded in Turkey by Kaya (2009). This is the first record of this species in Palestine.

6. THREAT AND PRESSURES FACING CONSERVATION TARGETS

6.1 Identification and evaluation of direct pressures and threats to conservation targets

To ensure maintaining biodiversity and delivering ecosystem goods and services at Battir WHP, a rapid assessment and prioritization for pressures and threats in the area was conducted using the WWF - RAPPAM methodology (Rapid Assessment and Prioritization of Protected Area Management). The RAPPAM methodology enabled achieving the following: (1) identifying and analyzing the scope, severity, prevalence, and distribution of a variety of threats and pressures, (2) identify areas of high ecological and social importance and vulnerability, (3) indicate the urgency and conservation priority the area, and (4) help to develop and prioritize appropriate policy interventions and follow-up steps. This assessment was done through participatory approach where an interactive workshop was held in presence of policy makers, local authorities, local farmers and representatives, who all participated fully in evaluating the site, listing and prioritizing pressures facing the area, analyzing the services provided on site, and identifying subsequent next steps and priorities.

One of the main conclusion which all participants agreed on and emphasized is that setting measures and plans to stop biodiversity loss and habitat alteration at Battir WHP is a priority as the site is facing number of serious pressures and threats that could cause disruption in its ecosystem functions, making ecosystems more vulnerable to shocks and disturbances, less resilient, and less able to supply humans with needed services. Not forgetting that biodiversity loss and ecosystem disruption are often harshest for the rural locals, who depend most immediately upon such ecosystem services for their livelihoods. Another conclusion is that sustaining the place is considered of priority to the Palestinians especially that it is one of only three places announced as World Heritage site in the State of Palestine and hence preserving the natural component of the site is the key element for keeping the cultural outstanding features that the site was nominated after. Without the

rich ecosystem on site with its biodiversity components and beautiful landscapes and scenery, the whole site would lose its charm and intact structure. Not forgetting the right of future generations to inherit such a biotic richness that continues to afford opportunities to reap the economic, cultural and spiritual benefits of nature.

All agreed that biodiversity at Battir WHP is under threat from a variety of pressures, which are further worsened by: unplanned urban expansion, over-exploitation, over-fragmentation, deforestation and unplanned forestry activities, drought, invasive alien species, pollution and contaminants, excessive use of pesticides and chemicals, climatic and environmental changes. In addition, to the impact of the political conflict including land confiscation, and expansion of the Israeli settlements, which all affect biodiversity especially at the borders of the Battir WHP. Such factors are causing direct changes in plant and animal species composition, distribution and density and thus the loss of such valuable heritage.
The listed factors affecting Battir WHP according to the World Heritage Committee report as noted in the years 2019 and 2018 are as following:

- Changes in traditional ways of life and knowledge system
- Identity, social cohesion, changes in local population and community
- Invasive/alien terrestrial species
- Abandonment of terraces and afforestation
- Impact of socio-cultural and geo-political transformations
- New constructions within the property's boundaries
- Other Threats: Potential construction of a separation fence (wall)

Using the RAPPAM methodology, the main pressures that were listed by relevant stakeholders during consultation sessions are the following:

- **Habitat fragmentation as a result to conversion of natural lands (natural landscapes) to agricultural areas, infrastructure and urban developments.**
  Diagnosis and drivers: The site is surrounded with Palestinian localities mainly Beit Jala from eastern side, Al Walaja from the north eastern side, Husan from south western side, and Battir is within its northern borders; those are of the largest Palestinian localities in the Western Bethlehem Area (see section 3). The urban growth of those localities comes at the expense of the natural open areas surrounding those localities. Such a pressure includes but not limited to: (1) the urban sprawl of Battir, Beit Jala, and Husan houses towards the green natural areas (core zone) on site. Here the urban expansion is mainly happening from Beit Jala side towards the Eastern side of Conservation Area 1, Battir towards Conservation Area 3, and Husan village towards the southeastern side of Conservation Area 5, (2) expanding agricultural lands in areas that are considered natural corridors or a sanctuary for birds and animals, (3) expanding the pedestrian path that connects Beit Jala with Battir to become a vehicle track that intersect the natural southern hills. This expansion does not only interrupt the biological components and the intact of the landscapes, it also causes different types of pollution as a result to vehicles emissions, solid waste accumulation, and noise pollution on site. It also interrupt the water flow in the

natural areas as the site is an important part of the hydrological system that replenishes the western aquifer of the West Bank region; not forgetting the natural flow. All types of land fragmentation cause interruption in the water flow, especially the water coming from number of springs that are heavily used by locals such as the natural water flows from E'in Kabryanos from Beit Jala side, Battir E'in EL Balad spring and Ei'n El Hawieh spring and another three springs from Husan side. It is worth noting that the WHP and as a result to its topography the water also collects on top of the hills and flow in natural small streams in the valley where plants, animals and birds drink from. In conclusion habitats fragmentation are affecting their ability to maintain biodiversity and deliver ecosystem goods and services.

It is worth noting here that this pressure is a result to several drivers mainly the following:

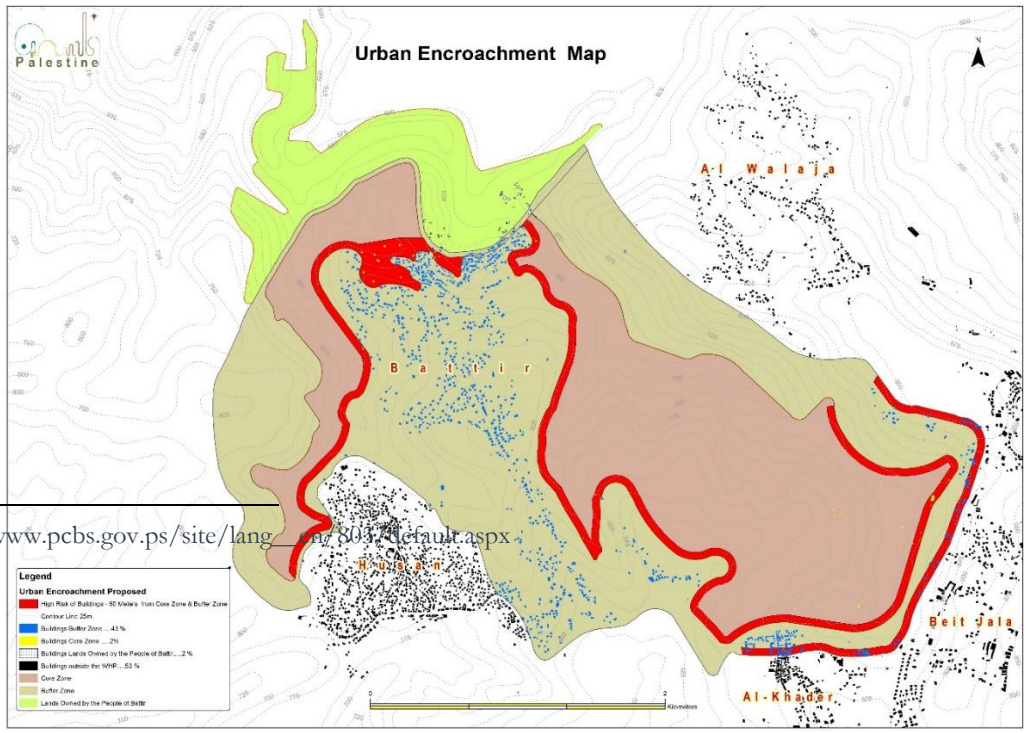
- Increase in population of localities listed in proximity. The growth rate in the West Bank region is 2.5% with an average household size of 4.9. The population in the localities in proximity to the WHP increased by approximately 34% during the last 20 years (specifically from 1997-2017) reaching up to 27657 person in the year 2017. It is projected that the number of people in those localities will increase by 8.12% in the year 2021 reaching up to 30132 person[8] (see table 6.1).

Table 6.1: Projected Mid -Year Population for Battir WHP Localities in proximity (1997-2021)

Locality	1997	2017	2021
Al Walaja	1243	2648	2885
Battir	3094	4655	5072
Husan	4183	6987	7612
Beit Jala	11957	13367	14563
Total	**20477**	**27657**	**30132**

Source: PCBS, Population Census Reports of both years 1997 and 2017. Ramallah Palestine PCBS, Population Projection – Bethlehem Governorate 2017-2021. Ramallah, Palestine.

- The built up area expansion is a serious threat as it appears in map 6.1. The area of



8 http://www.pcbs.gov.ps/site/lang__en/803/default.aspx

high risk from urban expansion is 50 meters from core zone of Battir WHP. Almost 43%of the urban area is located with the buffer zone, while 53% is outside the WHP, 2% in the core zone and 2% in the area owned by people from Battir at norther side of the WHP.

Map 6.1: Urban encroachment at Battir WHP. *Source: MoTA, 2018*

- Tourism at the site has increased as after the property was inscribed on the World Heritage List, it instantly became one of the important tourism destinations in Palestine. Its significant natural and cultural heritage makes it an indispensable destination for foreign and domestic tourists alike. The number of visitors has significantly increased since its inscription: during the late 2000s, the site received approximately 1500 visitors annually, but in 2016, it received approximately 150,000, and in 2017 it received approximately 250,000 (Bader, A., 2017). Visitors come for several purposes but mainly for hiking, entertaining near the springs and pools, eating at the restaurants etc. Hence the locals find it appropriate to invest in some touristic establishments such as restaurants, handicraft centers, souvenir shops, terraces and barbecue areas, etc. which all if not well planned would affect the natural resources available on site, changing the features and landscape scenery, changing the vegetation cover on site, accumulating solid waste, etc. This is highly manifested at Battir village near the terraces and the railway (from Battir side). This also opened an access to people/visitors to reach natural places that were not reached before and now those places are affected by human trafficking and interference. By time if there will be no enough planning for managing those visitors especially managing the places they can reach and the activities they can conduct in the wilderness, their activities will cause direct interruption for the ecosystems and its supporting biodiversity on site. Another challenge regarding the increase in tourism is the necessity to enhance the infrastructure on site, this has to be well planned so as it won't effect the integrity of the landscapes and will not increase habitat fragmentation on site.

  A tourism management scheme was set part of the MCP but it was oriented towards managing tourism on site in manner that would ensure enhancement to the tourism sector while preserving the cultural features of the site, to the economic sector and benefits to the locals, and the provision of capacities and facilities that serve the sector. But the impact and pressures the tourism sector is and will be imposing on biodiversity was not mentioned and hence it will be dealt with in this BCP.
- The conversion of natural areas to agricultural lands is a phenomena noticed specifically along Al Makhrour Valley and the valley that encircles Battir form western side towards Husan village. At Al Makhrour valley, people who owns piece of land in the valley especially near a water source such as E'in E'mdan, E'in Abu Saliba, and E'in El Hawieh are cultivating their lands, changing the vegetation cover; through unsustainable manner such as uprooting trees and removing the growing native shrubs and herbaceous species. In some cases fires are used to remove the wild plant species exiting at their lands before starting the preparation

of land for cultivation. In other cases they set physical elements such as fences to delineate their cultivated lands, in addition to setting farming infrastructure (stone walls and farm roads). Based on CORINE Land Use Analysis done by MCP (MoTA, 2018) up to 55% of the WHP is agricultural land. This underscores the need to dedicate more efforts to defining practical conservation and protection measures, which will ultimately be used to safeguard the natural landscape. Moreover, this assessment indicates that effective measures are also needed to regulate urban expansion in the Core Zone.

Photo 6.1:Terraces set at Al Makhrour Valley from Beit Jala side – changing natural features of the site

Photo 6.2: Use of power mechanics on site – changing vegetation cover on site

Source: PCC, 2018 and PIBS/PMNH-BU, 2018

- **Changes in cultivation patterns at Battir WHP from traditional to modern patterns.**
  Diagnosis and drivers: At this point it is not a problem to cultivate the old terraces that are available on site using the traditional type of cultivation (cultivating mainly fruit and olive trees) without threatening the loss of biodiversity. The cultivation of landraces using ecological agro-practices at the villages themselves is actually a practice that is encouraged and promoted under this BCP. The real threat is in the way the farmers are drifted to changing their agricultural practices towards mass agro-productions. The Palestinian farmers are looking for economic benefits from farming and hence practicing cash crop cultivations so as to ensure more production and better income. To accomplish this they are obliged to change their cultivation traditional patterns towards more modern patterns using machines, chemicals (fertilizers and pesticides) and introducing new crops (not native plant seedlings and seeds).

    Cultivations of modern techniques on site includes practices that are not eco-friendly such as (1) bringing new plant species on site (not native or of local seed stock), in most cases cash crops instead of subsistence crops which is grown to sell for profit, (2) bring on site new soils mixed with chemical compost, exotic or strange seeds, unfamiliar texture, (3) the use of power tools and tractors to build new terraces in a way that change its landscape scenery, (4) preparing land using unsustainable methods (weed chemicals, and uprooting trees and shrubs, etc.), and

(5) Using chemical fertilizers and pesticides during cultivation process that affect the wildlife and water quality on site.

The WHP is known for its traditional cultivations so any changes would impact the natural resources available on site. The cultivation pattern in the WHP depends on the dry-stone walls that compose the terraces that extend along the valley of Wadi Al-Makhrour towards Battir. The dry-stone walls (senasel) create a flat earthen surface known as habaleh, and thus prevent soil erosion and preserve soil moisture. Most of the olive tree plantations are rain-fed, and with other crops such as fruit trees and field crops, occupy extensive hilly and mountainous areas that are susceptible to soil erosion due to water runoff (MoTA, 2013). The agricultural activities related to olive cultivation are usually managed by individual families, the olives and oil produced is used predominantly for self-consumption and for the local market. The majority of the cultivation near the terraces depends on irrigation and using local animals for land preparation. The ancient pools and the water canals are used during the dry season to irrigate the terraces, and the distribution of the water among the farmers follows a traditional system known as shares (al-ma'dud).

- All the above shows how primitive is the type of cultivation used at Al Makhrour valley and valleys encircle Battir towards Husan. The introduction of new techniques hence could cause significant changes on site.
- This attitude is also causing negative impact on the local agro biodiversity preserved by farmers on site. Along with increased demands from a growing population, greater competition for natural resources, and the rapid expansion of industrial and green revolution agriculture; there resulting a more uniform, less diverse local crops. The changes in farmers' and consumers' perceptions, preferences and living conditions; all affect the traditional practices that Palestinian farmers used to adopt to conserve and maintain their local seed and seedling stocks; knowing they are more adaptable, productive and of high market demand! This also causes the genetic erosion of local crops; when old varieties in farmers' fields are replaced by newer. Genes and gene complexes, found in the many farmers' varieties, are not contained in the modern. Often, the number of varieties is reduced when commercial varieties are introduced into traditional farming systems and this is a serious problem that shall be tackled in Battir WHP.

Photo 6.3: New terraces filled with new soil mixtures on site **Photo 6.4: Use of mechcanics on site** *Source: PCC, 2018*

- **Habitat alteration as a result of the construction of Israeli Occupation encroachments, specifically land confiscation to construct settlements, bypass roads, and outposts.**

  Diagnosis and drivers: Battir WHP is surrounded by Israeli settlements such as Har Gilo from northern side and pass road 60, tunnel and Betar Illit and Hadar Betar settlements from southern western side which forms part of Gutsh Etzion settlement's bloc. The settlements are also expanding at the expense of natural areas[9]. The three mentioned settlement are in continuous expansion. Their population increased in 6 years' time to 89.9% (see table 6.2). The plan is to create territorial contiguity between Jerusalem and the Gush Etzion settlement bloc, which is adjacent to Bethlehem[10]. The expansion is taking place on lands of Western Bethlehem in proximity to WHP. It is highlighted by several parties /organizations who monitor the settlements expansion in the west Bank region that the Israeli authorities seek to annex the land and its environs to achieve territorial cohesion between "Har Gilo" and "Gush Etzion" settlements, which are located between Bethlehem and Hebron in the southern West Bank, as a prelude to implement the so-called "Greater Jerusalem Project"[11].

  - This is manifested in two cases: one is the incident of land confiscation took place at lands of AL Makhrour Valley in August 2019; specifically lands of Al Qaysyieh family which forms almost 4250 m^2 of lands and is located inside the designated borders of Battir WHP. The confiscation is for the purpose of setting an outpost[12], where several Israeli moveable caravans were set on site with establishments of a fence and gates for the site. As a response from the Palestinian side a specialized committee for protecting the WHP was formulated of MoTA, Bethlehem University, Beit Jala Municipality, and MoLG (Ministry of Local Governorate)-Bethlehem Governorate. The committee endorsed several letters; one from MoTA and another from BU which were sent to UNESCO; noting the importance that all parties bind to the MCP (Management and Conservation Plan) adopted by WH Committee in its 43rd session in Baku, Republic of Azerbaijan. The targeted land is located on the top of a mountain; considered part of south western hills of the valley, most of the area is planted with apple, grapes and peaches and rich with biodiversity (see Map 6.1).
  - Another relevant case that worth highlighting is the announcement for AL Walaja village isolation by Israeli side just on the northern borders Battir WHP to become part of Givat Ya'el Settlement Plan in 2019. Following the construction of the Israeli

9 https://www.haaretz.com/israel-news/.premium-plan-gains-pace-for-israeli-construction-all-the-way-to-west-bank-1.6213405
10 ibid
11 http://www.mofa.pna.ps/en-us/Media-Office/weekly-report-on-israeli-human-rights-violations-in-the-occupied-palestinian-territory-22-28-august-2019
12 Israeli outpost is usually few Israeli settlers' caravans occupying a hilltop; firstly to create new facts on the ground and expand the land included in the adjoining settlement or start a new settlement compound.

Segregation wall on lands of Al Walajeh village, a large area of land became somewhat isolated from its Palestinian land owners (between the route of the wall and Al Walajeh checkpoint (north of Al Walajeh); Palestinians could access these lands on seasonal bases since the construction of the wall is not completed in the area, but they will not after completion (see Map 6.2).

- At the end, those settlements are urban developments and hence they are totally taking place the open spaces rich with biodiversity in areas all on the borders of the Battir WHP; it will be a real threat if the expansion enters the borders of the WHP.

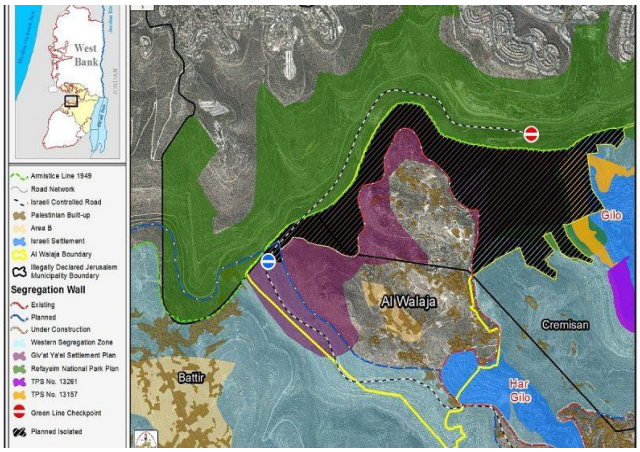
Table 6.2: Total Number of population in settlements in proximity to Battir WHP

Settlement	Populaiton Year 2011*	Populaiton Year 2017**
Har Gilo	630	1500
Betar Illit	4685	52000
Hadar BEtar	74	250
Total	**5389**	**53750**

*Source: * www.poica.org*

***Negotiations Affairs Department, State of Palestine. December 2017. Bethlehem 2017: Facts and Figures.*

Map 6.2: Location of land confiscation within Battir WHP boundaries



Map 6.3: Land isolation at Al Walaja village at borders of Battir WHP

Source: www.poica.org, February 2018. And www.peacenow.org.il

- **Overexploitation of NTFP (Non-timber Forest Products)**

Diagnosis and drivers: It is known and as noted by locals at Battir WHP, there is a continuous activity of non-timber forest products collection such as food, medicinal and aromatic plants, building material, dyes and resins, fruits and other resources from the property, either for trade or for subsistence. This is taking place at AL Makhrour valley and valleys surrounding Battir and Husan localities and specifically within the area rich with biodiversity and of conservation value. People living in proximity or those coming from other localities in Bethlehem governorate visit the property continuously with the aim to collect spices and medicinal plants and others to use them at home or to sell them for "Al 'Atareen" shops and others (to know more

about the types of plants collected see section 3 – ecosystem services and 5 – plants of economic value). However, harvesting is uncontrolled, without licensing, random, and most of the time methods used are devastating for plants (ex: collecting the plant from its roots). Little awareness about effect of overexploitation on Medicinal and Aromatic Plants and others, and lack of planning and research in this aspect is of major factors that makes the effect of overexploitation serious and of greater impact.

- **Disposal and accumulation of solid waste in the open natural areas.**
  Diagnosis and drivers: The Battir WHP is an open area for locals and visitors. And as noted earlier that since the declaration of the site as a WHP it became one of the most attractive sites in Palestine and a famous destination. Few signs are available on site providing instructions on best practices inside the property. This is in addition to the expansion of urban developments which also burdens the local authorities to keep the place clean and well monitored. Another factor that encourages the accumulation of waste deep in natural areas is the visitors accessibility (sometimes with their vehicles) reaching the upper hills of the valley inside the property within the core zone; specifically intersecting the natural southern hills of AL Makhrour valley made this pressure a serious one and of devastating effect to wildlife and birds on site. The uncontrolled disposal of relatively large quantities of waste with no management scheme for it, upsurge the effect of this pressure. Most of the waste found and reported on site is mainly the visitors' garbage including mainly litter, plastic, and food disposal containers. The waste is mainly found on sides of the paths, hence high number of ruderal plants are widespread along sides of those paths. One site that needs immediate action is the area below Transect T16 (end of AL Makhrour Valley from Battir side), there was found a dumping site where people using cars or walking come and dispose their domestic garbage (there became a pile of garbage, the locals noted that it is a closed dumping site but the garbage is still piled there and no real control or management is taking place regarding this site!). Not forgetting the phenomena of making barbecue in nature which is a loved habit by Palestinians which has serious impact on plants and wild life especially if fires take place on site (which is something not mentioned as a pressure by locals but could become one). This waste disposal, if neglected, can have further impact on quality of air, on environmental health, on water quality (especially water gathered and recharged in areas naturally) and endangering the health of wildlife dwelling on site.

Photo 6.5: Solid waste disposal on site

Photo 6.6: Waste disposal (mainly vehicles wheels) at E'in Kapriyanos spring

Photo 6.7: Scatered fires along Al Mkahrour Valley

Photo 6.8: Natural water harvesting stone used by local wildlife

Photo 6.9: Natural water runoff from top of hills towards the valley

Photo 6.10: Accumulation of solid waste generated from visitors at E'in E'mdan Spring

Source: PCC, 2019 and PIBS/PMNH-BU, 2019

- **Occurrence of Invasive Alien Species**
  Invasive species of both plants and animals purposefully or inadvertently introduced by humans to Battir WHP. As it was reported in the AL Makhrour biodiversity inventory reports and according to the local experts, Battir WHP encompasses number of invasive and exotic species that classified by Global Invasive Species Database[13]. Those species need to be dealt with using the appropriate mechanism taking into consideration not disturbing the biotic component of the site. The locally invasive species indicates the presence of some highly disturbed places within Battir WHP. The

13http://issg.org/database/species/search.asp?sts=sss&st=sss&fr=1&x=18&y=8&sn=&rn=Israel&hci=-1&ei=-1&lang=EN The Global Invasive Species Database is managed by the Invasive Species Specialist Group (ISSG) of the IUCN Species Survival Commission

rate and risk of alien species introductions will continue to rise as a result of increased tourism on site.

There is one local invasive plant species found growing at Battir WHP including:

Invasive species at local level:

1. ***Nicotiana glauca:*** Introduced in Hawaii, Ascension, Bermuda, Saint Helena and Canary islands. *Nicotiana glauca* thrives in disturbed habitats as well as sandy beaches and coastal areas. It may pose a threat to pristine environments and native wildlife by altering habitats.

   Common Names**:** gandul, mustard tree, paka, tabac canaque, tabaco moro, tabaco moruno, tabaco negro, tree tabacco, wild tobacco, wildetabak.

   Habitat at Battir WHP: it was found in Battir city, near the main road. It was growing solely.

There are three plant species were found invasive at global level, and growing in Battir WHP

Invasive species at global level:

1. ***Erodium cicutarium*** is an annual, winter annual or biennial that is a pioneer on disturbed and arid sites. It can cause yield reductions of crops and the seed is very difficult to clean out of small seeded crops. *Erodium cicutarium* is considered a noxious weed as it crowds out or outcompetes crops and native plant species. Erodium cicutarium provides forage for rodents, desert tortoise, big game animals, livestock and also upland game birds and songbirds. Prevention may be the best method for controlling *Erodium cicutarium*, however, it may be impossible to actually prevent this species from colonising, or to eradicate it, once present. There are few known chemical control methods for *Erodium cicutarium* besides, general herbicide controls.

   Common Names: alfilaree, alfilaria, alfilerillo, California filaree, cutleaf filaree, filaree, heronsbill, loiquilahuen, pin-grass, pin-weed, redstem, redstem filaree, redstem stork's bill, relojito, stork's bill, tachuela.

   Habitat at Battir WHP: it was found in a mixed man made Pine forest and Oak trees supporting garrigue-batha association; specifically in Transect 30.

2. ***Oxalis pes-caprae*** is a short, perennial herb that is native to southern Africa. It mainly reproduces vegetatively via bulbs, and can form large clonal colonies. Colonies flower synchronously, with distinctive bright yellow flowers that are large and cup-shaped. It is commonly found growing in agricultural areas, cultivated areas, fields, disturbed/ruderal zones, gardens, wasteland, riparian zones, dunes and scrubland.

   Common Names: African woodsorrel, Bermuda buttercup, buttercup oxalis, Englishweed, sour sorrel, sourgrass, soursob, yellow sorrel

   Synonyms: *Bolboxali scernua*, *Oxalis cernua*, *Oxalis libica*, *Oxalis leniflora*

   Habitat at Battir WHP: It was found in two different location in an olive groves and fallow land habitat; specifically Transect 8, and in a native oak forest habitat; specifically in T11.

3. ***Rhamnus alaternus*** is an evergreen tree native to the Mediterranean. It was introduced to many areas of the Australasian-Pacific region as an ornamental plant in the 1900s where it became an invasive tree along coastlines and forests because of its ability to form dense stands that eventually exclude all other types of vegetation.
   Common Names: alaterne, evergreen buckthorn, Italian buckthorn.
   Habitat at Battir WHP: It was found in the southwestern side of Battir city.


Rhamnus alaternus


Nicotiana glauca


Oxalis pes-caprae

Photos 6.11, 6.12, and 6.13: Selected plant invasive species at Battir WHP
Source: PCC, 2019

There are also three animal species that were found locally invasive at Battir WHP including one insect, one birds and two mammals as following:

Invasive Species at local level:

1. ***Leptoglossus occidentalis*** Heidemann, 1910 is an invasive Western conifer seed bug (Hemiptera, Coreidae) from geographic Palestine representing its Southern Most record in Asia. *L. occidentalis* is a significant pest on pine trees and an invasive species to the Mediterranean region from western North America. The invasive Western conifer seed bug *Leptoglossus occidentalis Heidemann*, 1910 (Hemiptera, Coreidae) was the first time recorded in geographic Palestine; representing its Southern most record in Asia. *L. occidentalis* is a significant pest on pine trees and an invasive species to the Mediterranean region from western North America (Handal, E., et-al, 2019).
2. ***Acridotheres tristis*** is the common myna, also called the Indian myna, is a highly commensal Passerine that lives in close association with humans. It competes with small mammals and bird for nesting hollows and on some islands, such as Hawaii and Fiji, it preys on other birds' eggs and chicks. It presents a threat to indigenous biota, particularly parrots and other birdlife, all over the world.
   Common names: house myna (English), common myna (English), Calcutta myna (English), mynah (English), Indian myna (English).
3. ***Rattus norvegicus*** is the Norway rat, globally widespread and costs primary industry hundreds of millions of dollars per year. It has caused or contributed to the extinction or range reduction of native mammals, birds, reptiles and invertebrates through predation and competition. It restricts the regeneration of many plant species by eating seeds and seedlings, eats food crops and spoils human

food stores by urinating and defecating in them. Additional economic damage is caused by chewing through power cables and spreading diseases.
Common Names: brown rat, common rat, isorotta, Norway rat, pouhawaiki, rat surmolot.
Synonyms: Epimys norvegicus Miller, 1912, Mus decumanus Pallas, 1778, Mus hibernicus Thompson, 1837, Mus norvegicus Berkenhout, 1769

4. ***Felis catus*** was domesticated in the eastern Mediterranean c. 3000 years ago. Considering the extent to which cats are valued as pets, it is not surprising that they have since been translocated by humans to almost all parts of the world. Notable predators, cats threaten native birdlife and other fauna, especially on islands where native species have evolved in relative isolation from predators.
Common Names: cat, domestic cat, feral cat, house cat.

Another two birds and one mammal were found invasive at global level, and dwelling in Battir WHP

Invasive Species at Global level:

1. ***Streptopelia decaocto*** is the Eurasian collared-dove, an extremely successful invader capable of phenomenal range expansion despite geographic barriers. In Europe, it spread from Turkey and the Balkans colonizing almost every country in Western Europe in a matter of 30 years, becoming viable breeders within two years of invasion. Believed introduced to the West Indies by accidental release of a pet trader in 1974, Eurasian collared-doves have spread throughout the Caribbean. In the early 1980's they invaded Florida and quickly established localities throughout the southeastern United States. Researchers cite factors such as genetic mutation, keen adaptation to human-dominated environments, and high reproductive potential as possible explanations for their abundant range expansion. Negative impacts include competition with endemic birds and potential disease transmission.
Common Names: Balkáni gerle, collared dove, Eurasian collared-dove, Indian ring-dove.
Synonyms: *Columba risoria decaocto*
2. ***Alectoris chukar*** has a wide distribution, stretching from the Aegean Sea through to Central and Eastern Asia. There does however seem to be two genetic clades within the species, those from the Mediterranean through to Central Asia and those from Eastern Asia. This is important as individuals used in the introduction into North America and Hawaii were from individuals from Eastern Asia; whereas individuals causing hybrization problems in Europe come from the Mediterranean and Central Asian clade. This hybridization is causing major problems to the genetic purity of the native Alectoris rufa in the Iberian Peninsula, and strict measures in regards to potential hybridization, and the importation and introduction of farm-reared individuals needs to be introduced.
Common Names: chukar, chukar partridge, coturnice orientale, Indian chukor, iwashako, perdrix choukar, rock partridge.
Synonyms: *Alectoris kakelik*, *Tetrao kakelik*
3. ***Rattus rattus*** is a native mammal of the Indian sub-continent, the ship rat (Rattus rattus) has now spread throughout the world. It is widespread in forest and

woodlands as well as being able to live in and around buildings. It will feed on and damage almost any edible thing. The ship rat is most frequently identified with catastrophic declines of birds on islands. It is very agile and often frequents tree tops searching for food and nesting there in bunches of leaves and twigs.

Common Names: black rat, blue rat, bush rat, European house rat, Hausratte, roof rat, ship rat

Synonyms*:* *Mus alexandrinus Geoffroy, 1803, Mus novaezelandiae Buller, 1870, Mus rattus Linnaeus, 1758, Musculus frugivorus Rafinesque, 1814*



Rattus norvegicus ***Acridotheres tristis*** ***Leptoglossus occidentalis***

Photos 6.14, 6.15, and 6.16: Selected plant invasive species at Battir WHP

Source: https://en.wikipedia.org

Regarding the birds, it was noticed that the jackdaw is dwelling in AL Makhrour valley while it was not found there before 8 years. This bird is considered an invader to the site especially that it is increasing in number in AL Makhrour Valley and became acclimated to the presence of human, consider the recreational area as a continuous source of food. In this case, these this bird will have a better opportunity to breed several times a year, as food is available all year round. Hence, its number increase at the cost of the existence of other bird species. This increase in the number of specific species, affect the population of other birds, as for food competition, nesting sites, and other resources. The increase in the number of the Jackdaw also affect the population of other animal species, such as the common kestrel and bulbuls as this bird species feeds on them.

- **Pollution of use of harmful agro-chemicals and disposal of wastewater in nature.**

  Diagnosis and drivers: As mentioned earlier Battir WHP is famous for its agricultural terraces, one of the outstanding features upon which it was nominated as a WHS. Battir, Husan and AL Walaja localities are also known as the western localities that provide the food basket to Bethlehem Governorate. However, the intensive use of chemicals during the cultivation processes would cause negative impact on the wildlife that dwell on site and the available site water resources.

  The impact of pesticides consists of the effects of pesticides on non-target species. Pesticides are chemical preparations used to kill fungal or animal pests. The sprayed insecticides and herbicides reach a destination other than their target species, because they are sprayed or spread across entire agricultural fields. Over time, repeated application increases pest resistance, while its effects on other species can facilitate the pest's resurgence. Runoff can carry pesticides into aquatic environments while wind

can carry them to other fields, grazing areas, potentially affecting other species. Fertilizers, such as nitrogen and phosphates, encourage algae growth, which blocks sunlight and affects the quality of the water, especially at water canals and open drainage systems.

In Battir case specifically those chemicals can have great negative influence on the available hydrological system; especially that the terraces are mainly located near water resources; springs and pools. The total amount of chemicals used on site needs further investigation. But the total cultivated lands in localities in proximity to Battir WHP is known to reach up to 11609 dunums in the year 2018 (see Table 6.3).

Table 6.3: Total locality area, and cultivated area (in dunums) by targeted locality

Village	Locality Area (dunum)	Cultivated Area (dunum)	% of cultivated land of total area
Battir	6,795	3352	28.9
Husan	7,361	1026	8.8
Al Walaja	4,328	1942	16.7
Beit Jala	9,749	5289	45.6
Total	**28,233**	**11609**	**41.12**

Source for Population: PCBS, 2017.
For locality Areas: ARIJ, 2010.
For Cultivated Areas: Agricultural Directorate of Bethlehem, 2018

The disposal of wastewater is a very challenging and serious pressure facing Battir WHP. Water pollution has several adverse impacts on natural resource in Battir WHP especially on the ground water and water tables and natural ecosystems. Battir, Al Walaja and Husan localities are not connected with the sewerage network, leaving the houses with no option but discharge of their wastewater in nature! Those localities uses cesspits and open channels for wastewater collection. Besides, there is no wastewater treatment exists either at source or at disposal sites. The uncontrolled flow of sewage causes many environmental problems and health hazards which lead to the transmission of infectious diseases and the release of foul odor. In addition, flooding and leakage of cesspits, open channels can cause spillage of raw sewage to residential areas, encourage insect breeding, provide opportunities for the spread of pathogens, and consequently pollute the surrounded environment and agricultural land. Moreover, contamination of groundwater aquifers and springs as a result of wastewater percolation is a serious problem that faces the site and the other localities in the Governorate in general. In a Place like Palestine which suffers from water scarcity, means clean water is of the utmost importance. This can render entire water supplies useless for people not only in the WHP and their surroundings but also in all localities depends on the Western aquifer of the West Bank region at the long term. Not forgetting the danger it inflicts on environment and wildlife.

Another aspect that should be investigated is whether the water in the WHP is contaminated by sewage, or any number of other man-made forms of waste, because if

yes then the ecosystems in Battir WHP are put at serious risk. Reckless disposal of waste can contaminate a far wider range of animals and environments. This needs further investigation (see table 6.4).

Table 6.4: Connection to sewerage network and amount of waste water and solid waste generation by locality (localities in proximity to Battir WHP)

Locality	Connection to sewerage network	Connection to waste water treatment plant at locality or outside	Wastewater generated per day in cubic meters	per capita wastewater generation in liter / day	daily per capita rate of solid waste productio n in kg	waste produced per day – collected by Joint Services Council
Battir	97.1% connected to cesspits 2.7% no mean of disposal	No connection	238 cubic meters	60 liters/day	0.7 kg/day	2.7 tons/day
Husan	98.4% to cesspits, 1.4% no mean of disposal	No connection	85 cubic meters	15.2 liters/day	0.7 kg / day	3.7 tons/ days
Al Walaja	97.6% to cesspits 1.6% no mean of disposal	No connection	148 cubic meters	75 liters/day	0.7 kg /day	1.4 tons/day
Beit Jala	74% use sewage network (connect to Bir Onah pumping station connected to West Jerusalem Private Sewage Network, 23.7% use cesspits	No connection	574 cubic meters	49 liters / day	1.05 kg/day	14. tons / day

Source: PCBS, 2009.

Photo 6.17: Farmer spraying pesticides **Photo 6.18: Leakage of wastewater from the cesspits in Battir city**

Source: PNS, 2019, and ARIJ, 2010

- **Feral/ Stray dogs and domesticated cats on site**

  Diagnosis and drivers: Feral dogs and cats are found all over the site, and some of them found breeding. These animals contribute significantly to the deterioration of the site's biodiversity as they feed on many animals (birds, small mammals, and reptiles). The site also suffers from accumulation of garbage, trash, and a human leftover that attracts feral dogs and cats, consequently make the situation worst. Those species have repeated reproductive cycle during the year and hence they increase in number on the expense of other species and hence cause serious threat to the native wild species that they feed on. This is in addition to the general disturbance they cause to locals.

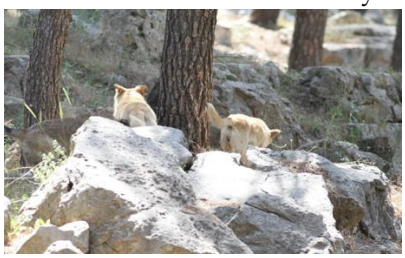


Photo 6.19, 6.20, and 6.21: Feral/stray dogs and cats on site

Source: PCC, 2018 and PIBS/PMNH-BU, 2018

6.2 Assessment of pressures, threats and management constraints according to RAPPAM

The Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) methodology (Ervin, J., 2003) allows for a quantitative comparison of pressures and threats on a site. Therefore, the main pressures and threats affecting Battir WHP were assessed regarding their extent, impact and permanence, based on the standard questionnaire of the RAPPAM tool. The questionnaire was presented to and discussed with relevant stakeholders, who were convened to a consultation workshop in Bethlehem University – PMNH on 4th of September 2019. It was conducted with participation of representatives of local communities and local resource users, and technical experts and decision makers (see section 2).

During the analysis of the RAPPAM survey, it was difficult to cover the threats (factors that may become pressures in the future), as time was not enough during the consultation session and hence the pressures (factors that currently have a negative impact on the conservation status of target species) were only concluded in consultation with stakeholders. But specific interviews were done by number of stakeholders to conclude the pressures, it was obvious that the persons interviewed had some difficulty in specifying the threats, but the experts did a major part and covered the threats.

Pressures in this context is defined as factors that currently effect the biodiversity or overall integrity of Battir WHP in a negative way, whereas threats are defined as factors that might become pressures in the future. For RAPPAM score: Stacked bar chart showing RAPPAM threat scores for eight pressure/ threat categories. This chart illustrates the overall accumulative threat to site and the relative importance of individual pressure/threat categories. The scores have been calculated based on RAPPAM consultation. They have been corrected based on additional information about pressures and threats that was gained at site inspections and interviews with number of stakeholders.

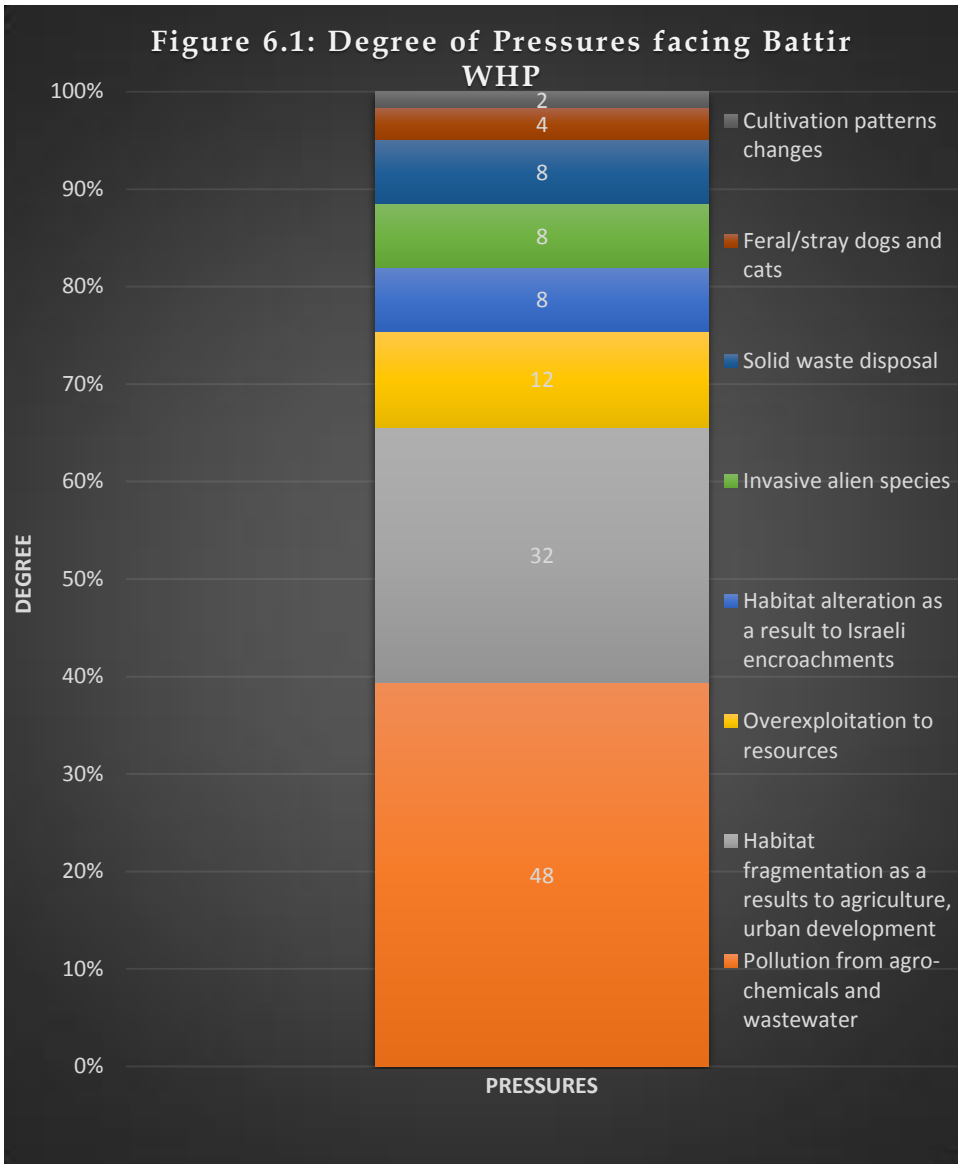
Studying the pressures and threats that face Battir WHP, it appears that pollution from agro-chemicals and wastewater has the highest negative impact on natural resources and biodiversity on site. Following with habitat fragmentation as a result to agriculture and urban developments on site (see Table 6.5, 6.6 and Figure 6.1).

Table 6.5: RAPPAM results for the pressures facing Battir WHP

Pressure	Status/ Probability	Extent	Impact	Permanence	Degree	Priority
Habitat fragmentation as a results to agriculture, urban development	Increased slightly	Scattered (5-15%) (2)	Severe (4)	Permanent (>100 years) (4)	32	***
Cultivation patterns changes	Increased slightly	Localized (5%>) (1)	Moderate (2)	Short term (5 years >) (1)	2	*
Habitat alteration as a result to Israeli occupation encroachments	Increased sharply	Scattered (5-15%) (2)	Mild (1)	Permanent (>100 years) (4)	8	*
Overexploitation to resources	Decreased sharply	Scattered (5-15%) (2)	High (3)	Medium term (5-20 years) (2)	12	**
Solid waste disposal	Increased slightly	Scattered (5-15%) (2)	Moderate (2)	Medium term (5-20 years) (2)	8	*
Invasive alien species	Increased slightly	Scattered (5-15%) (2)	Moderate (2)	Medium term (5-20 years) (2)	8	*
Pollution from agro-chemicals and	Increased sharply	Widespread (15-50%)	Severe (4)	Permanent (>100 years)	48	***

wastewater		(3)		(4)		
Feral/stray dogs and cats	Increased slightly	Scattered (5-15%) (2)	Moderate (2)	Short term (5 years >) (1)	4	*

Extent is the range across which the impact of the activity occurs. The extent of an activity should be assessed in relation to its possible occurrence.



Impact is the degree, either directly or indirectly, to which the pressure affects overall protected area resources. "Severe" impact is serious damage or loss to the area resources, including soil, water, flora and/or fauna, as a direct or indirect result of an activity. "High" impact is significant damage to area resources. "Moderate" impact is damage to area resources that is obviously detectable, but not considered significant. "Mild" impact is damage that may or may not be easily detectable, and is considered slight or insignificant.

Permanence is the length of time needed for the affected area resource to recover with or without human intervention. Recovery is defined as the restoration of ecological structures, functions, and processes to levels that existed prior to the activity's occurrence or existence as a threat. Recovery time assumes that the activity ceases, and that either management interventions take place, or natural processes are allowed to occur. The degree of permanence, which could also be called resilience, will depend on such factors as the type of damage, the ability for human intervention to restore the resources, and/or the regenerative capacity of the resource itself. Permanent means cannot recover.

Table 6.6: RAPPAM results for the pressures and threats facing Battir WHP

Pressure	Threat	Probability	Extent	Impact	Permanence	Degree
Habitat fragmentation as a results to agriculture, urban development	Encroachment, loss of habitats/ecosystem functions	Very High	Scattered (5-15%) (2)	Severe (4)	Permanent (>100 years) (4)	32
Cultivation patterns changes	Poisoning wildlife/pollution of resources	Medium	Scattered (5-15%) (2)	Moderate (2)	Medium term (5-20 years) (2)	8
Habitat alteration as a result to Israeli occupation encroachments	Encroachment, construction of the Separation Wall and land confiscation, loss of habitats/ecosystem functions	Very High	Scattered (5-15%) (2)	Severe (4)	Permanent (>100 years) (4)	32
Overexploitation to resources	Illegal natural resource use, loss of species/eco-services	Low	Scattered (5-15%) (2)	Moderate (2)	Medium term (5-20 years) (2)	8
Solid waste disposal	Waste Disposal, disruption in species composition/pollution of resources	High	Localized (<5%) (1)	High (3)	Medium term (5-20 years) (2)	6
Invasive alien species	Spread of invasive species, loss of native species	Medium	Scattered (5-15%) (2)	Moderate (2)	Medium term (5-20 years) (2)	8
Pollution from agro-chemicals and wastewater	Unsustainable natural resources, disruption in species composition/pollution of resources	High	Scattered (5-15%) (2)	Severe (4)	Permanent (>100 years) (4)	32
Feral/stray dogs and cats	Disruption in species numbers	Very High	Scattered (5-15%) (2)	High (3)	Short term (5 years >) (1)	6

The threats described in table 6.4 were assessed with the assumption that the adopted MCP will be initiated and number of activities such as expansion of built up areas, discharge of wastewater in nature and solid waste accumulation will all be reduced and tackled by the body that will be set to run and manage the site in reference to the MCP. If the MCP and BCP are not implemented on the ground immediately then all the results presented here

will be altered and the degrees will become higher by 5 years' time. Hence, the potential mitigation method as set in MCP or suggest here under the BCP are listed (see Table 6.6).

It is also important to note the rapid erosion of traditional skills and sustainable use knowledge that was not mentioned as a pressure or threat, but it is found as a threat that need to be kept in mind as elderly people who owns the knowledge are not able to transfer their knowledge effectively because of rapidly changing environments and fast shifting economic, political and cultural changes on both local and global perspective.

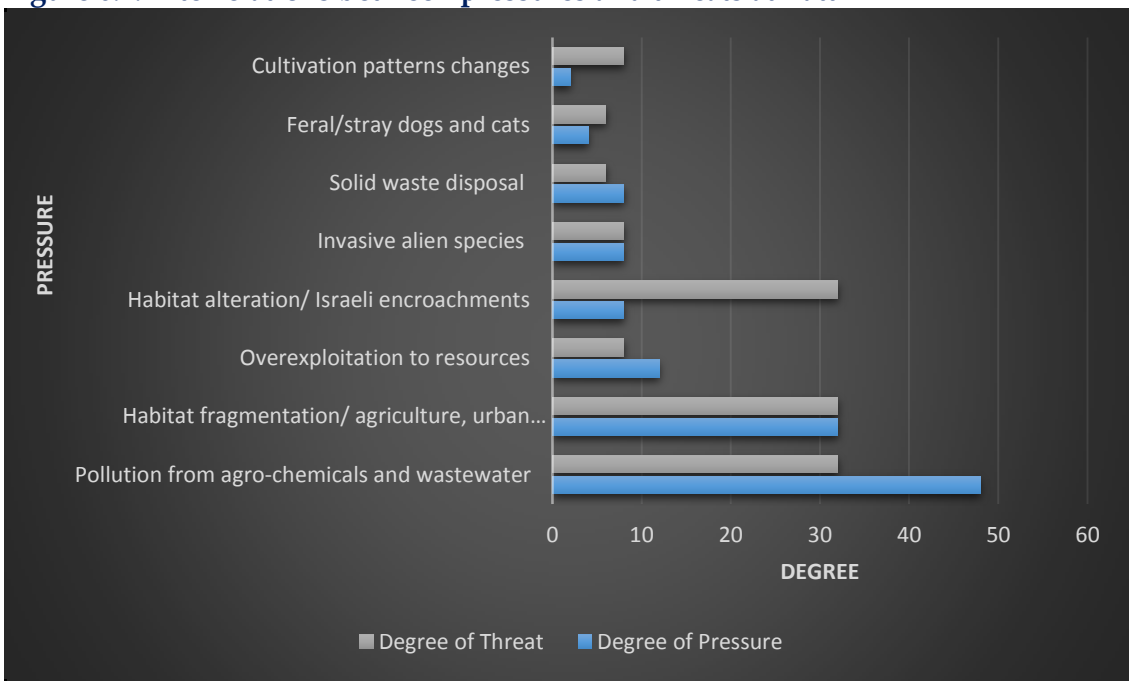
Table 6.7: RAPPAM results connecting pressures with threats and their degree of impact and potential mitigation method

Pressure	Degree	Threat	Degree	Potential Mitigation method
Pollution from agro-chemicals and wastewater	48	Unsustainable natural resources, disruption in species composition/pollution of resources	32	Implementation of MCP and BCP on WHP. Monitor the agro-chemicals available in the market by MoA, monitor the use and accessibility of farmers to those chemicals by MoA, set awareness campaigns and introduction of best agro-ecological practices on site by MoA, and related stakeholders. Set in place adequate sewage system by MoLG and related authorities.
Habitat fragmentation as a results to agriculture, urban development	32	Encroachment, loss of habitats/ecosystem functions	32	Implementation of MCP through mainly the endorsement of Urban Master Plan and set effective bylaws to regulate urban development on site by MoLG and related municipalities and authorities.
Overexploitation to resources	12	Illegal natural resource use, loss of species/eco-services	8	Set efficient monitoring system by MoTA, EQA and MoA. Implementation of capacity building programs to the local stakeholders and implement landscape, Enhance the conservation approaches on site in accordance with BCP strategic objective and plans; specifically the protection, promotion, and revitalization of Traditional Knowledge in conservation
Habitat alteration as a result to Israeli encroachments	8	Encroachment, segregation wall and land confiscation, loss of habitats/ecosystem functions	32	Stress on cancelling all plans of building the Wall by Israeli occupation authorities through employing the international UNESCO regulations for World Heritage sites on Battir WHP and through continuous monitoring and cooperation of all relevant parties.
Invasive alien species	8	Spread of invasive species, loss of native species	8	Implement invasive species combating methods set by EQA.
Solid waste disposal	8	Waste Disposal, disruption in species composition/pollution of resources	6	Set mechanisms and actions to prevent random dumps within the property by MolG and related municipalities especially Battir, Beit Jala municipalities

				and Husan village council.
Feral/stray dogs and cats	4	Disruption in species numbers	6	Reduce number of stray animals through cooperation of all parties including local authorities mainly the municipality health department and methods set by MoA and EQA.
Cultivation patterns changes	2	Poisoning wildlife/pollution of resources	8	Encourage farmers to use agro-ecological practices in their farms and keep the landraces seed stock etc., use of organic natural chemicals (fertilizers and pesticides) instead of chemicals.

Interrelating both the pressures and threats facing Battir WHP, it appears that it is expected that number of pressures will be controlled and their impact will be reduced as a result to the implementation of the MCP and this BCP in the coming 5 years; reducing their threats mainly: (1) Pollution from agro-chemicals and wastewater, (2) Solid waste disposal, (3) Overexploitation to resources, while other threats will increase as some pressures are difficult to control and were not directly targeted in the MCP mainly: (1) Cultivation patterns changes, and (2) Feral/stray dogs and cats. The habitat alteration as a result of Israeli encroachment on natural lands cannot be controlled and it is suggested by the stakeholders that its threat will increase in the coming 5 years' time.

Figure 6.2: Interrelations between pressures and threats at Battir WHP



6.3 Vulnerability of Battir WHP

According to the results of the stakeholders' consultation sessions, the following were identified as vulnerable aspects affecting negatively the quality of the landscape at the visual, ecologic, socio-economic and cultural levels at Battir WHP. It is clear that there is no

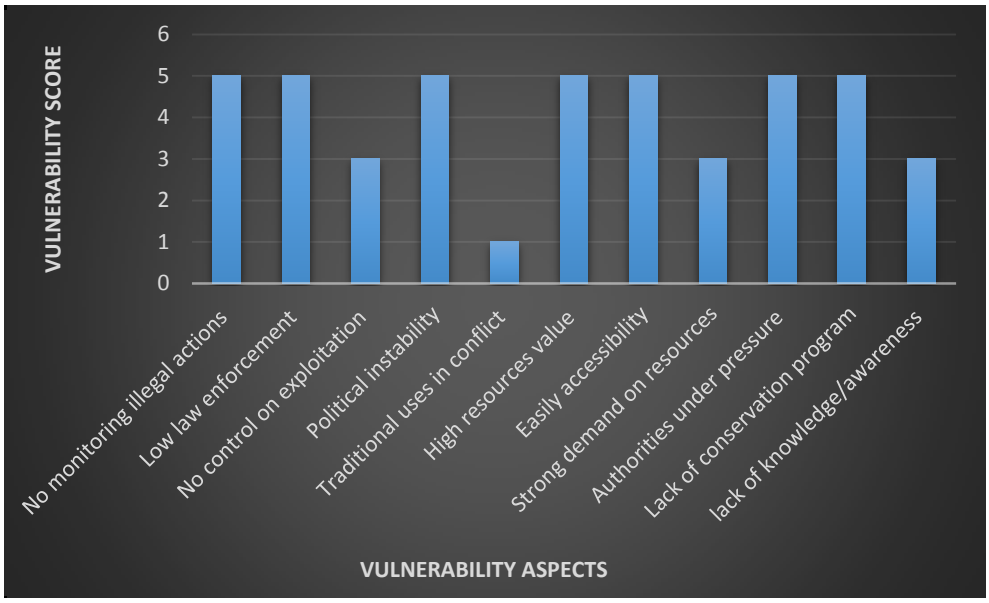
implementation for conservation program on site nor there is effective enforcement of law regarding the illegal activities taking place on site. Several factors play role in limiting the management effectiveness of the site including that the site is privately owned, located in geopolitical area C, no responsible party to manage and monitor the site, etc. (see Table 6.7 and Figure 6.3). It worth noting that this shall become better soon once the MCP and this BCP are adopted by the responsible parties and become initiated on the ground.

Table 6.8: Vulnerability Context of Battir WHP

Vulnerability score	Vulnerability aspects	Notes
Yes (5)	Illegal activities within Battir WHP are difficult to monitor	No responsible party for managing the site
Yes (5)	Law enforcement is low in the region	The site is privately owned property. It is not protected by law as it is not a Protected Area, but it is a WHP and hence shall be managed sustainably. At the moment the local authorities and communities are the ones who monitor and protect it (weak cooperation between them). EQA is ready to receive complaints from locals or authorities on site and conduct the necessary follow up
Mostly yes (3)	No control on exploitation of resources (cutting of trees, plant over-exploitation, overgrazing, poaching)	Cutting of tress and poaching does not take place on site, over-exploitation and overgrazing is limited on site. But there is no control or monitoring.
Yes (5)	The area is experiencing political instability	The site is located in Geopolitical Area C, and hence is susceptible to Israel land confiscation or settlements building
Mostly No (1)	Cultural practices, beliefs, and traditional uses conflict with the sustainable use concept and the WHP objectives	Most of the traditional uses on site goes in line with the concept of sustainable development.
Yes (5)	The market value of the WHP resources is high	-
Yes (5)	The area is easily accessible for illegal activities	There are pedestrian paths and vehicle tracks crossing all over the property. ThE topography is moderately difficult but still can be accessible
Mostly yes (3)	There is strong demand on WHP resources	-
Yes (5)	The related authorities is under pressure to unduly exploit the WHP resources	The related ministries and authorities on site are able to follow the needs of the site but are not effective in monitoring and restoration the site as needed. There was no management plan until the year 2018 which is still not in action. This is in addition to number of obstacles that face

		those authorities while implementing any needed action especially the site is privately owned in geopolitical area C and surrounded by Israel settlers.
Yes (5)	The site lack a conservation program to protect the ecosystems and their biodiversity components	There MCP is the plan developed to manage and conserve the cultural outstanding features of the site which is not in action yet. Regarding the biodiversity conservation, this BCP is the only one that was set for this purpose but is still in the preparation phase. No organized conservation actions are taking place on the site.
Mostly Yes (3)	Lack of knowledge and awareness among local communities regarding the importance of the WHP	There is weak knowledge and awareness among local inhabitants and visitors regarding the importance of the natural areas in Battir WHP.

Figure 6.3: Scores by vulnerability aspects at Battir WHP



7. CONSERVATION STRATEGY AND MEASURES

In order to develop this management strategy, a stepwise approach has been taken as following:

1. Set a long-term vision for Battir WHP as a World Heritage Site that can be shared by all key stakeholders.
2. Set long-term goals for each conservation target as identified in section 5.
3. Set Strategies and objectives that reflect on the main goals and address the specific requirments for effective managing, conserving and sustaining the conservation targets, while reducing and /or preventing the pressures/threats identified in section 6.
4. Set implementation plan for each objectives over the three BCP phases.
5. Formulation of a monitoring plan for the above strategies, objectives and implementation actions.

7.1 Overall vision and Management Goals

The main conservation goals of this BCP were determined mainly in reference to the inputs gathered from the participatory and consultation workshops done with key stakeholders and local experts and the inputs received from local and national stakeholders, in addition to the complementarity with the Management and Conservation Plan developed by MoTA mainly the SWOT analysis, and the strategic objectives and plan and other data sources mentioned in section 2.4.

The BCP – Battir WHP's Vision Statement describes the desired state of the ecosystems and biodiversity of the property in 10-20 years' time. It also details the steps needed to achieve that goal, including the safeguarding of the property's targets of high conservation value and its other related values including enhancing the socioeconomic status of the local community. The vision statement guides the development of objectives, strategies, and action plans.

The following is the long-term (2030) vision for Battir WHP from conservation prospective:

The Vision:
"*Battir World Heritage Property with all natural ecosystems that it interspersed is a well-managed, conserved and protected property with healthy Mediterranean forest, shrub and grassland areas, and olive groves; sheltering a rich flora and fauna of healthy populations, and of high conservation value. It shall be managed in a sustainable manner while being visited, studied and enjoyed as a distinct Palestinian nature by local communities, Palestinian and international visitors*".

7.2 Conservation Goals, Strategies and objectives

This section of the BCP introduces a set of management and conservation strategies and objectives for the WHP for the coming ten years (2020-2030), divided into three management phases as following: (1) a short term (2020-2022), (2) a mid-term (2022-2025), and (3) a long term (2025-2030). The Biodiversity Conservation Plan provides a schematic design and implementation plan for the conservation and management process for

ecosystems, biodiversity and their interrelationships at Battir WHP; in accordance to all aspects reviewed and agreed on by key stakholders while building this BCP. This will include listing the strategies and objectives that shall lead the natural heritage preservation and the decision-making guidance. The implementation plan for the strategic objectives is futher elaborated in section 8.

7.2.1 Long term Goals for Battir WHP

The following goals have been formulated for the identified conservation targets, including conservation areas and in reflection to the pressures and threats identified at Battir WHP based on the consultative process and participatory approach adopted and the inputs of all other data sources during the development of this BCP.

1. **Conservation Goals for ecological/biological content of Battir WHP specifically at the selected Conservation areas (CA1, CA2, CA3, CA4, CA5)**

Target A: Mediterranean Oak Maquis Forest

A.1 The area extent and density of oak maquis forest at Battir WHP is maintained at 2020 levels or increased to 20% until 2030 (in terms of number of trees and %of coverage).

A.2 The species richness of Mediterranean oak forest consisting of typical native species is increased to 20% by 2030.

Target B: Garrigue and Batha Forest (including grass and shrublands)

B.1 The area extent of grass and shrub lands at Battir WHP is maintained or increased to 20% until 2030.

B.2 The species richness of grass and shrub lands at Battir WHP is increased by 20% by 2030.

Target C: Olive Groves mixed in some patches with maquis/garrigue and baths forest

C.1 The area extent of Olive Groves at Battir WHP is maintained healthy until 2030.

Target D: Flora of High Conservation Value

D.1: The viable population of all key stone species, endemic species (to historical Palestine), nationally and internationally threatened species, wild relatives and those of high economic value recorded at Battir WHP are maintained at the level of 2020 and/or increased until 2030.

D.2: The species richness of flora of high conservation value at Battir WHP is increased by 10% by 2030.

Target E: Fauna and Avi-Fauna of High Conservation Value

E.1: The viable population of mammals, herpetofauna, and invertebrates particularly those nationally and internationally threatened, as well as endemic (to historical Palestine) species are maintained at their 2020 abundance or increased until 2030.

E.2: The species richness of mammals, herpetofauna, and invertebrates at battir WHP is increased to 20% by 2030.

E.3: The viable population of breeding birds and particularly those endemic species (to historical Palestine), as well as nationally and internationally threatened species and ecosystem health indicator species at Battir WHP are maintained at the 2020 level or increased by 2030.

E.4: The species richness of breeding birds at Battir WHP is increased to 20% by 2030.

E.5: Migratory Birds passing through the WHP particulalry those internationally threatened continue to use the area as a roosting site at at least the average level of 2020, and do not suffer losses to poaching, poisoning or other causes at Batti WHP until 2030.

2. Conservation Goals for ecological integrity and human wellbeing at Battir WHP:

Target F: Agrobiodiversity species and traditional agrarian knowledge

F.1: The local genes, varieties and local crop species are maintained at their 2020 level or increased through integrating *ex-situ* and *in-situ* approaches

F.2: The local agricultural system and its traditional agrarian knowledge is well managed, promoted and transmitted to future generations.

Target G: Water quality and discharge

G.1: the overall extent, water quality and discharge of local springs at Battir WHP especially those available at selected conservation areas are maintained, rehabilitated, and improved until 2030.

Target H: Solid waste, agro-chemicals and waste water pollutants

H.1: Solid waste disposal reduced to the minium to levels do not harm nature or humans by 2030.

H.2: Agro-chemicals utilization is reduced to levels that do not harm nature or humans by 2030**.**

H.3: Wastewater discharge is reduced to the minium to levels do not harm nature or humans by 2030.

Target I: Nature-based tourism, education, knowledge and pulic awareness

I.1: Battir WHP supports nature based education visits, classes and camps for Palestinian students and adults in a sustainable manner.

I.2: Battir WHP has all necessary procedures in place and is used by Palestinian researchers in a way that does not compromise its conservation targets.

I.3: Battir WHP local traditional knowledge and intellectual property rights are well protected and transferred from one generation to the second.

I.4: Access to genetic resources based on the biota of Battir WHP is regulated in an equitable, transparent and practicable way, aimed at supporting research and development activities in the common interest and in an equitable manner.

I.5: Battir WHP has all necessary infrastructure and procedures in place and is used for visitation and recreation in a sustainable manner.

7.2.2 Conservation Strategies and Objectives

Phase 1: Planning and Enabling Phase

This planning phase will rely greatly on the accomplishments of the Management and Conservation Plan (MCP), since it is assumed that the preparation of a managerial body to run and manage the BCP at the WHP will already be done under the guidance of the MCP and in accordance to the MCP's operational management system (Annex 7.1: The operational Management System set under MCP). This phase will define the main directions under which the management of the property will be undertaken to fulfill WHP

requirements. During this phase synergies will be done between BCP and MCP by mainly MoTA and EQA. It is also oriented to making use of available opportunities to ensure effective and efficient management.

The following objectives and strategies are set to fulfil the accomplishment of this phase.

Objectives and Strategies
Objective 1: To incorporate the BCP operational management system under the MCP's system.
Strategy 1.1: The BCP shall be endorsed and approved by MoTA and relevant stakholders as a complementary plan that responds to the MCP's vision and objectives.
Strategy 1.2: Effective and efficient biodiversity management shall be implemented based on the MoTA practical management structure set for the MCP and in full cooperation with related key stakeholders who have statutory or management responsibilities within the WHP. (In line with MCP's objective 2).
Objective 2: To ensure that any future plan within the property should sustain its natural resources mainly the ecosystems and biodiversity of the site.
Strategy 2.1: Any plan, project or study prepared by local authorities, academic institutions, NGOs and civil societies to be implemented within the property shall be in line with the BCP's objectives and strategies (in line with MCP's objective 3).
Strategy 2.2: Any project proposed within the property especially the WHP high conservation areas shall be assessed and monitored for its impact on biodiversity.
Objective 3: To develop funding mechnisms to sustain the operation of the BCP's management system on site.
Strategy 3.1: Set mechanisms to secure financial resources needed for the implementation of the BCP through MCP funding channels or through separate explicit channels.

Phase 2: Environment and Related Regulations Enhancement Phase

This planning phase will enhance the environmental conditions in favor of the conservation of the WHP's ecosystem and biodiversity. This planning phase will rely on the results of the RAPPAM analysis done to identify the pressures and threats that challenge the sustainability of the WHP's ecosystems and biodiversity. Hence, it is oriented to reducing and mitigating the adverse impact of pressures/threats highlighted under this BCP and making use of available opportunities to ensure effective mitigation for those threats. This phase will respond to the BCP's ecological integrity and human wellbeing conservation goals. Synergies are also done with relevant MCP's objectives.

Objectives and Strategies
Objective 4: To develop necessary regulations and measures for protection and conservation of natural landscape, ecosystems, and biodiversity.
Strategy 4.1: Regulate the land uses within the WHP in a way that protect the areas of high conservation value specifically in relation to urban, infrastructure and agricultural lands expansion, ensuring that any intervention on the site shall be compatible with the context of the WHP and incorporated with the setup of the MCP (In line with MCP's objective 7).
Objective 5: To develop and enhance the solid waste, and wastewater management systems
Strategy 5.1: Regulate wastewater discharge within the WHP, ensuring that no random discharge takes place in nature but through efficient mechanisms, no pollution of natural resources mainly water and soil, and no harm to wildlife on site, all done in a compatible manner with the context of

the WHP and incorporated with the setup of the MCP (In line with MCP's objective 11, 20)
Strategy 5.2: Regulate solid waste disposal within the WHP, ensuring that no accumulation of random solid waste disposal in nature specifically in conservation areas, no pollution of natural resources mainly water and soil and no harm to wildlife on site, all done in a compatible manner with the context of the WHP and incorporated with the setup of the MCP (In line with MCP's objective 20)
Strategy 5.3: Enact legal frameworks in cooperation with relevant stakeholders regarding both wastewater and solid waste management on site and incorporate all set regulations with the setup of MCP (In line with MCP's objective 20)
Objective 6: To ensure the protection and management of water resources in a sustainable way and in accordance to proper environmental and economic principles.
Strategy 6.1: Maintain, rehabilitate and enhance the status of water resources mainly springs in Battir WHP to enusure their sustainable water flow in terms of quantity and quality; benefiting both nature and people inhabiting the site, all done in a compatible manner with the context of the WHP and incorpatrated with MCP's objective (20).
Strategy 6.2: Manage key water resources on site especially those available at conservation areas, in a manner that ensures continuous monitoring measures and reflecting on relevant adaptable plans.
Objective 7: To initiate a programme to protect natural landscapes and biodiversity from adverse affects from utilization of agro-chemcials and changes in cultivation patterns.
Strategy 7.1: Regulate the utilization of agro-chemicals including chemical pesticides and fertilisers during cultivation processes, the changes in cultivation patterns, where minimum adverse affects on natural landscapes and biodiversity are taking place. All shall be done in cooporation with incoopration with MoA and EQA and local farmers and the MCP's objective 10.
Strategy 7.2: Maintain the traditional envrionmental practices, and traditional local cutlivation practices, ensuring the conservation of local agrobiodiversity and a healthy environment that supports the growth of diverse native plants and perform no harm to wildlife on site.
Strategy 7.3: Enhance local communities' livelihoods through opening marketing channels and set new public-private partnerships to ensure better marketing from the site's agro-chemical free products.
Objective 8: To promote nature based eduational programmes that build capacities and awareness in relation to biodiversity, agrobiodiversity conservation and related topics.
Strategy 8.1: Initiate systematic awareness campaigns and capacity building programs for locals, farmers, students and other stakeholders in relation to biodiversity and eco-services valuation, best conservation related to natural landscape and biodiversity issues, and monitoring and management methods in the context of this BCP.
Strategy 8.2: Initiate systematic awareness campaigns and capacity building programs for local farmers and landowners in relation to protection of traditional knowledge and the intellectual property rights and equitable utilization of resources for both biodiversity and agro-biodiversity.
Strategy 8.3: Initiate systematic awareness campaigns and capacity building programs for local farmers and landowners in relation to protection of local seeds/seedlings of landraces and local crops, water use optimization, alternative organic agriculture practices, and the use of bio-control agents, incorporated with MCP's objectives (10&20).
Strategy 8.4: Promote related studies and research on site in a manner that would offer innovative solutions to key challenges that face biodiversity and agro-biodiversity conservation on site, all done within the context of the WHP and incorporated with this BCP.
Objective 9: To Regulate the eco-tourism activities on site giving priority to conservation and protection of natural landscapes and biodiversity

Strategy 9.1: Develop and observe a visitor management system including visitors' rules and interpretation infrastructure/education for sustainable nature based, sustainable recreation and interpretation at the WHP, all done in the context of this BCP and incorporation with the MCPs' objective (13 to 16).

Phase 3: Biodiversity Conservation and Restoration Phase

This planning phase will target the conservation and restoration of ecosystems and their biotic components of Battir WHP in parallel with phase two where abiotic components are set in favor of the conservation theme of the WHP. This phase will rely on the results of the analysis done to identify the targets of high conservation value on site (section 5), where the conservation targets at habitat and species levels will be highlighted in the set programmes for the WHP's ecosystems and biodiversity conservation. Hence, this phase will be oriented to setting conservation and restoration programmes with the aim to protect and sustain the rich and diverse biota of the site in a sustainable and equitable manner. This phase will respond to the BCP ecological/biological content conservation goals. Synergies are also done with relevant MCP's objectives.

Objectives and Strategies
Objective 10: To conserve and monitor the ecology of the WHP property in a manner that sustain the habitats and their diverse biota
Strategy 10.1: Safeguarding the natural rejuvenation of existing Mediterranean maquis forest within WHP specifically within the high conservation areas, to ensure a gradual long-term shift towards a dominance of deciduous Mediterranean forest by 20% by 2030.
Strategy 10.2: Ensure an increase of the proportion and diversity in young Mediterranean forest species specifically within the high conservation areas as a result of natural forest rejuvenation.
Strategy 10.3: Safeguard the natural rejuvenation of existing garrigue and battha associations within WHP specifically within the high conservation areas, to ensure a gradual native natural vegetation succession at forest level by 20% increase by 2030.
Strategy 10.4: Ensure an increase of the proportion and diversity of grass and shrub lands young species and native young trees as a result to natural vegetation succession.
Strategy 10.5: Safeguard the integrity of olive groves with natural ecosystems within WHP specifically within the high conservation areas, to ensure that olive groves are maintained healthy. This is incorporated with MCP's objective 8.
Objective 11: To conserve and monitor the population of species of high conservation value; specifically the flora, fauna and avi-fauna species inhabiting the WHP.
Strategy 11.1: Maintain and systematically assess/monitor the health, size and trend of the viable population of plant species of high conservation value; specifically those key stone, endemic to Palestine, threatened and those of high economic value.
Strategy 11.2: Maintain and systematically assess/monitor the health, size and trend of viable population of mammal, herpetofauna and invertebrate species of high conservation value; specifically those endemic to Palestine, threatened, and those species that give indication regarding health of the ecosystem.
Strategy 11.3: Maintain and systematically assess/monitor the health, size and trend of population of breeding bird species of high conservation value; specifically those endemic to Palestine, threatened, and those species that give indication regarding health of the ecosystem.
Objective 12: To regulate and monitor the occurrence or the spread out of the invasive and alien

species present within the WHP; incorporated with the context of this BCP and MCP's objective 11.
Strategy 12.1: Set a management programe to halt the expansion of the plant and animal invasive species inhabiting the WHP, all done incorporated with this BCP and the MCp's objective 11.

8. IMPLEMENTATION OF CONSERVATION STRATEGY

8.1 Action Plan for Conservation Strategies of the Planning and Enabling Phase

The following action plans are related to the objectives and strategies set to fulfil the accomplishment of the *Planning and Enabling Phase* of this BCP.

Planning and Enabling Phase					
Objective 1: To incorporate the BCP operational management system under the MCP's system.					
Strategy 1.1: The BCP shall be endorsed and approved by MoTA and relevant stakeholders as a complementary plan that responds to the MCP's vision and objectives. Strategy 1.2: Effective and efficient biodiversity management shall be implemented based on the MoTA practical management structure set for the MCP and in full cooperation with related key stakeholders who have statutory or management responsibilities within the WHP. (In line with MCP's objective 2).					
Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Action 1: Approval of this BCP as a complementary plan to the MCP by MoTA, EQA and related key stakeholders (St 1.1)	The BCP is adopted and approved by MoTA, EQA and Key stakeholders	MoTA EQA Key stakeholders (ex. related municipalities)	Short term/ 2020-2021	#1	No need
Action 2: Set the BCP management structure in an integrated manner with MCP's Site Management structure & committees (Steering Committee & Site Management Committee); all functioning under the MoTA General Directorate for Site Management and WHS in Palestine (St 1.2)	MoTA specifically the General Directorate for WHS Management with support of steering and management committees are managing and running the BCP on site in parallel with the MCP The management committee will include a member expert in	MoTA, EQA, Site Management Committee (including biodiversity expert) Steering Committee, Key Stakeholders	Short term / 2020-2021	#1	No need

	managing and monitoring ecology /biodiversity on site				
Planning and Enabling Phase					
Objective 2: To ensure that any future plan within the property should sustain its natural resources mainly the ecosystems and biodiversity of the site.					
Strategy 2.1: Any plan, project or study prepared by local authorities, academic institutions, NGOs and civil societies to be implemented within the property shall be in line with the BCP's objectives and strategies (and in line with MCP's objective 3). Strategy 2.2: Any project proposed within the property especially the WHP high conservation areas shall be assessed and monitored for its impact on biodiversity.					
Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Ation 3: Any future plans related to the WHP shall be consistent with the framework of the BCP's objectives & strategies (St 2.1)	Strategies of the BCP are integrated within any relevant future plan or study done by any stakeholder on site	MoTA, MolG, Key stakeholders (ex. Related municipalities, JSC, related NGO's, & civil society orgs, and private sector)	Long term/ life time of the BCP (2020-2030)	#2	Not needed
Action 4: Set ecology/biodiversity impact assessments mechanism prior to the implementation of any intervention within the WHP; All will be done in parallel with the assessments mechanism set by MCP (St 2.2)	Ecology/biodiversity impact assessments are done prior to any intervention/ project on site	MoTA, EQA, related stakeholders (ex. Related municipalities)	Long term /life time of the BCP (2020-2030)	#2	To be secured – Potential funding source is the party responsible for implementation of the intervention that needs asessement
Planning and Enabling Phase					
Objective 3: To develop funding mechnisms to sustain the operation of the BCP's management system on site.					
Strategy 3.1: Set mechanisms to secure financial resources needed for the implementation of the BCP through MCP funding channels or through separate explicit channels.					
Action	**Indicator**	**Partners**	**Timeframe**	**Priority**	**Funding**

			/years		
Action 5: Secure enough funding for the implementation of this BCP, where funds can be secured through MCP's funding channels or through separate funds (St 3.1)	Funding opportunities (though MCP or other funding sources) are secured for fulfilling the actions that needs funding Necessary partnerships are set to apply to potential funding sources	MoTA, EQA, MoA, MoLG, related NGOs, & municipalities	Long term /life time of the BCP (2020-2030)	#1	Funding sources interested in sustaining biodiversity, agro-biodiversity, & ecology on site. Those international, regional, or national grants

8.2 Action Plan for Conservation Strategies for Environment and Related Regulations Enhancement Phase

The following action plans are related to the objectives and strategies set to fulfil the accomplishment of the *Environment and Related Regulations Enhancement* phase of this BCP.

Environment and Related Regulations Enhancement Phase					
Objective 4: To develop necessary regulations and measures for protection and conservation of natural landscape, ecosystems, and biodiversity.					
Strategy 4.1: Regulate the land uses within the WHP in a way that protect the areas of high conservation value specifically in relation to urban, infrastructure and agricultural lands expansion, ensuring that any intervention on the site shall be compatible with the context of the WHP and incorporated with the setup of the MCP (In line with MCP's objective 7).					
Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Action 6: Regulate the urban infrastructure expansion within WHP specifically within the areas of high conservation priority through the preparation of urban development nd/or heritage protection bylaws and Urban Master Plan to regulate urban development at the WHP during the implementation of the MCP (St 4.1)	Urban/heritage protection Bylaws and master plans are set as a result to MCP implementation, and urban infrastructures are regulated in a manner that would not threat the viability and sustainability of the areas of high conservation value within the WHP	MoTA, MolG, EQA, MoA, CCHP, UNESCO Ramallah office, and related municipalities and village councils	Long term /Life time of the BCP (2030)	#1	Need to be secured - By local govern-mental stake-holders

Action 7: Reflect on mechanism for granting permissions for activities/projects undertaken within the WHP (as set in the MCP); specifically within the conservation areas of high priority in a manner that secure no negative impact on ecology/biodiversity of the site (St 4.1)	Granting permission mechanism is set while considering the status of the areas of high conservation value. No persmission is given for any type of expansion (urban or intensive agriculture) towards natural landscapes especially within the areas of high conservation value	MoTA, MoLG, MoA, EQA, related municipalities and village councils	Long term / Life time of the BCP (2030)	#1	Need to be secured - By local governmental stakeholders
Action 8: Integrate the areas of high conservation priority into the conservation mannuals and Land Use Zoning Plan that will be set during the implementation of the MCP for the WHP (St 4.1)	Areas of high conservation priority are integrated into the conservation mannuals and land zoning map for the WHP	MoTA, EQA, MoLG and related stakeholders	Short term / 2020-2021	#1	Need to be secured – Local sources such as governmental organizations

Environment and Related Regulations Enhancement Phase					
Objective 5: To develop and enhance the solid waste, and wastewater management systems					
Strategy 5.1: Regulate wastewater discharge within the WHP, ensuring that no random discharge takes place in nature but through efficient mechanisms, no pollution of natural resources mainly water and soil, and no harm to wildlife on site, all done in a compatible manner with the context of the WHP and incorporated with the setup of the MCP (In line with MCP's objective 11, 20) Strategy 5.2: Regulate solid waste disposal within the WHP, ensuring that no accumulation of random solid waste disposal in nature specifically in conservation areas, no pollution of natural resources mainly water and soil and no harm to wildlife on site, all done in a compatible manner with the context of the WHP and incorporated with the setup of the MCP (In line with MCP's objective 20) Strategy 5.3: Enact legal frameworks in cooperation with relevant stakeholders regarding both wastewater and solid waste management on site and incorporate all set regulations with the setup of MCP (In line with MCP's objective 20)					
Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**

Action 9: Prevent wastewater discharge in natural areas specifically areas of high conservation priority within the WHP (St 5.1), through setting of adequate sewage system upon implementation of objective 20 Actions 96, 97, and 98 of the MCP	No wastewater discharge within the areas of conservation priority; No pollution of natural water resource (mianly springs and pools) available in the conservation areas; No harm to wildlife including birds as a result to water pollution	MoLG, EQA, MoTA, related municipalities and village councils	Medium to long term / 2021-2030	#1	Need to be secured – MDLF
Action 10: Prevent solid waste accumulation in natural areas specifically areas of high conservation priority within WHP (St 5.2), through implementation of solid waste management system upon implementation of objective 20 Actions 98, 99, 100, 101 of MCP	No solid waste accumulation within the areas of conservation priority; No soil or water pollution as a result ot waste accumulation, No harm to wildlife including birds as a result to water pollution	MoLG, EQA, MoTA, JSC, related municipalities and village councils	Medium to long term / 2021-2030	#1	Need to be secured
Action 11: Set cross cutting related regulations to national and local bylaws & regulations to minimize environmental pollution within WHP (St 5.3). This is supported by Objective 20 Action 98 of the MCP	Environmental Pollution problems as reduced to the minium with WHP especially within the areas of high conservation priority	EQA, MoA, MoTA, and related municipalities and village councils	Medium to logn term / 2021-2030	#1	Not needed

Environment and Related Regulations Enhancement Phase					
Objective 6: To ensure the protection and management of water resources in a sustainable way and in accordance to proper environmental and economic principles.					
Strategy 6.1: Maintain, rehabilitate and enhance the status of water resources mainly springs in Battir WHP to enusure their sustainable water flow in terms of quantity and quality; benefiting both nature and people inhabiting the site, all done in a compatible manner with the context of the WHP and incorpatrated with MCP's objective (20). Strategy 6.2: Manage key water resources on site especially those available at conservation areas, in a manner that ensures continuous monitoring measures and reflecting on relevant adapted plans.					
Action	**Indicator**	**Partners**	**Timefram**	**Priority**	**Funding**

			e /years		
Action 12: Conduct necessary studies to assess the status of water resources mainly springs, pools, and aqueducts within the areas of conservaiton value within the WHP. (St 6.1). This is supported by objective 20 Actions 98-101	Water resources that needs rehabilitation, or water purification are identified, The causes behind pollution of resources are identified	EQA, PWA, MoTA, related municipalities and village councils, specialized academic institutions, NGOs or private sector	Medium term / 2021-2025	#1	Need to be Secured
Action 13: Conduct projects to rehabilitate the water resources, including cleaning of the springs, aqueducts and pools in need and to purify the water where appropriate within the areas of high conservation value with the WHP (St 6.1). Supported by Objective 11, Action 49 of the MCP	Number of water sources including springs, pools and aqueducts are well rehabilitated and run clean water.	EQA, PWA, MoTA, related municipalites and village councils, specialized academic institutions, NGOs or private sector	Medium term / 2021-2025	#1	Need to be Secured
Action 14: Periodic monitoring of water resources status and quality and necessary actions are taken in response (St 6.2). Supported by Objective 11, Actions 49, 50 of the MCP	Water resources are well managed, Number of inspection visits to water resource quality and results of water tests, No incidence of wildlife including birds posionning as a result of drinking water from site	EQA, PWA, MoTA, related municipalities and village councils, specialized academic institutions, NGOs and/or private sector	Medium to long term / 2021-2030	#1	Need to be Secured
Environment and Related Regulations Enhancement Phase					
Objective 7: To initiate a programme to protect natural landscapes and biodiversity from adverse affects from utilization of agro-chemcials and changes in cultivation patterns.					
Strategy 7.1: Regulate the utilization of agro-chemicals including chemical pesticides and fertilisers during cultivation processes, the changes in cultivation patterns, where minimum adverse affects on natural landscapes and biodiversity are taking place. All shall be done in cooporation					

with incoopration with MoA and EQA and local farmers and the MCP's objective 10.
Strategy 7.2: Maintain and promote the traditional envrionmental practices, and traditional local cutlivation practices, ensuring the conservation of local agrobiodiversity and a healthy environment that supports the growth of diverse native plants and perform no harm to wildlife on site.
Strategy 7.3: Enhance local communities' livelihoods through opening marketing channels and set new public-private partnerships to ensure better marketing from the site's agro-chemical free products, local native crops and landraces.

Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Action 15: Assess the levels of knowledge, attitude and practices of local farmers regarding the use of agro-chemicals including pesticides and fertilisers within the WHP (St 7.1)	Attitudes and practices of local farmers are assessed and hence an intervention plan is set towards the necessity of adopting environmental and healthy safe practices at WHP	MoA, EQA, MoTA, specialized academic institutions, NGOs and/or private sector	Medium term / 2021-2025	#2	Need to be secured
Action 16: Work on adopting the agro-ecological practices at farm level (including utilization of natural/organic pesticides and fertilisers, diversification in cultivated crops, and utilization of local seed stock) through the support of the activated Agricultural Cooperatives running on site and the extension services provided by MoA or related stakeholders (St 7.1). Suppoted by objective10 Actions 37 and 43 of the MCP	Farmers cultivating their lands within the WHP are using agro-ecological, environment and health safe practices after extensive extension programes and awareness campaigns.	MoA, EQA, MoTA, related municipalities and village councils specialized academic institutions, NGOs and/or private sector	Medium to long term / 2021-2030	#2	Need to be secured
Action 17: Assess and document the traditional knowledge and practices including the cultivation patterns, diversification, type and sources of landraces and local crops, collection of wild relatives and native plants	The traditional knowledge and practices are documents and assessed, while considering them as intellectual rights to the locals of the WHP.	MoA, EQA, MoTA, specialized academic institution,NGOs and/or private sector	Medium to long term / 2021-2030	#1	Need to be secured

and other (St 7.2)					
Action 18: Initiate a program aims to conserve and store the local seeds of landraces and local crops from one season to the other using appropriate measures and techniques; this includes the provision of facilties and necessary equipment and tools (St 7.2)	The local landraces, and native crops are restored, stored and sustained locally through appropriate measures and techniques. Local farmers are provided incentives to store their local native crops and landraces	MoA, EQA, MoTA, specialized academic institutions, NGOs and/or private sector	Medium to long term / 2021-2030	#1	Need to be secured
Action 19: Initiate a marketing programme for enhacement of the WHP local products marketing, while considering the public-private partnerships, and appropriate advocacy and promotion methods / networks (St 7.3)	The farmers and local traders are promoting and/or marketing better their agro-products; especially as typical agro-products of high quality, territorial recognizable and of economic value. Local farmers are provided incentives to continue practicing traditional agranian practices including the cultivation of native crops and landraces	MoA, EQA, MoTA, specialized academic institutions, NGOs, advocacy and market promotion institutions and/or private sector	Medium to long term / 2021-2030	#2	Need to be secured

Environment and Related Regulations Enhancement Phase
Objective 8: To promote nature based eduational programmes that build capacities and awareness in relation to biodiversity, agrobiodiversity conservation and related topics.
Strategy 8.1: Initiate systematic awareness campaigns and capacity building programs for locals, farmers, students and other stakeholders in relation to biodiversity and eco-services valuation, best conservation acts related to natural landscape and biodiversity issues, and monitoring and management methods in the context of this BCP. Strategy 8.2: Initiate systematic awareness campaigns and capacity building programs for local farmers and landowners in relation to protection of traditional knowledge and the intellectual property rights and equitable utilization of resources for both biodiversity and agro-biodiversity. Strategy 8.3: Initiate systematic awareness campaigns and capacity building programs for local farmers and landowners in relation to

protection of local seeds/seedlings of landraces and local crops, water use optimization, alternative organic agriculture practices, and the use of bio-control agents, incorporated with MCP's objectives (10&20).
Strategy 8.4: Promote related studies and research on site in a manner that would offer innovative solutions to key challenges that face biodiversity and agro-biodiversity conservation on site, all done within the context of the WHP and incorporated with this BCP.

Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Action 20: Conduct awareness and out reach campaigns including training sessions, awareness workshops, media and promotion events, and others for local farmers, landowners, youth and women, students and others regarding biodiversity and eco-services valuation, best conservation acts related to natural landscape and biodiversity issues, forest restoration and adaptation themes, and monitoring and management methods in the context of the WHP. (St 8.1)	Locals including farmers, landowners, organizations, cooperatives, clubs etc. are aware and well-educated in terms of biodiversity conservation and monitoring aspects (considering social inclusion)	EQA, MoTA, MoA, specialized academic institutions, NGOs and/or private sector	Medium to long term / 2021-2030	#3	Need to be secured
Action 21: Conduct awareness and out reach campaigns including training sessions, awareness workshops, media and promotion events, and others for local farmers, landowners, youth and women, and others regarding protection of traditional knowledge and the intellectual property rights and equitable utilization of resources for both biodiversity and agro-biodiversity in the context of the WHP. (St 8.2)	Locals including farmers, landowners, organizations, cooperatives, clubs etc. are aware and well-education in terms of Intellectual rights and equitable utilization of resources (considering social inclusion)	EQA, MoTA, MoA, specialized academic institutions, NGOs and/or private sector	Medium to long term / 2021-2030	#3	Need to be secured
Action 22: Conduct awareness and out reach campaigns including training sessions, awareness workshops, media and promotion events, and others for local farmers, landowners, youth and women, students and	Locals including farmers, landowners, organizations, cooperatives, clubs etc. are aware and well-education in terms of conservation of landraces and local crops, and agro-ecological practices	EQA, MoTA, MoA, specialized academic institutions,	Medium to long term / 2021-2030	#3	Need to be secured

others regarding protection of local seeds/seedlings of landraces and local crops, water use optimization, alternative organic agriculture practices, and the use of bio-control agents, all in the context of the WHP (St 8.3)	(considering social inclusion)	NGOs and/or private sector			
Action 23: Encourage the implementation of related studies and scientific research on site (St 8.4)	Innovative solutions to key challenges that face biodiversity and agro-biodiversity conservation on site including forest adaptation to global climate change are concluded based on research and scientific analysis and studies. Feedback on regulating invasive species is provided Feedback for monitoring measures and techniques is provided	EQA, MoTA, MoA, specialized academic institutions, NGOs and/or private sector	Medium to long term / 2021-2030	#3	Need to be secured

Environment and Related Regulations Enhancement Phase					
Objective 9: To Regulate the eco-tourism activities on site giving priority to conservation and protection of natural landscapes and biodiversity					
Strategy 9.1: Develop and observe a visitor management system including visitors' rules and interpretation infrastructure/education for sustainable nature based, sustainable recreation and interpretation at the WHP, all done in the context of this BCP and incorporation with the MCPs' objective (13 to 16).					
Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Action 24: Integrate the objectives of this BCP with the visitor management system that will be set through MCP – Objective 13 Actions 56, 57 (St	Adverse impacts of tourist practices in the WHP especially the areas of high conservation	MoTA, EQA, related municipalities	Medium and long term / 2021-	#1	Need to be secured (Funding

9.1)	value is reduced to the minimum	and village councils, and JSCTDB	2030		sources of MCP)
Action 25: Integrate the natural heritage component with the touristic interpretation panels (rails, boards, information points, picnic areas, signposts etc.), WHP website and promotional materials Objective 15 Actions 69, 70 and objective 16 action 74 (St 9.1)	Natural heritage components including ecology and biodiversity of the site is integrated with all touristic panels used on site, in the website, social media page and others of the site	MoTA, EQA, related municipalities and village councils, JSCTDB, and private sector	Medium and long term / 2021-2030	#3	Need to be secured (Funding sources of MCP)
Action 26: Promote the local traditional and natural products as a brand for the property, as part of the promotion setup of the MCP objective 16 Action 75 (St 9.1)	Local traditional and natural products are protected and promoted for the site	MoTA, EQA, related municipalities and village councils, JSCTDB, and private sector	Medium and long term / 2021-2030	#3	Need to be secured (Funding sources of MCP)

8.3 Action Plan for Conservation strategies for the Biodiversity Conservation and Restoration Phase

The following action plans are related to the objectives and strategies set to fulfil the accomplishment of the *Biodiversity Conservation and Restoration Phase* of this BCP.

Biodiversity Conservation and Restoration Phase					
Objective 10: To conserve and monitor the ecology of the WHP property in a manner that sustain the habitats and their diverse biota					
Strategy 10.1: Safeguarding the natural rejuvenation of existing Mediterranean maquis forest within WHP specifically within the high conservation areas, to ensure a gradual long-term shift towards a dominance of deciduous Mediterranean forest by 20% by 2030.					
Strategy 10.2: Ensure an increase of the proportion and diversity in young native Mediterranean forest species specifically within the high conservation areas as a result of natural forest rejuvenation and forest management.					
Strategy 10.3: Safeguard the natural rejuvenation of existing garrigue and battha associations within WHP specifically within the high conservation areas, to ensure a gradual native natural vegetation succession at forest level by 20% increase by 2030.					
Strategy 10.4: Ensure an increase of the proportion and diversity of grass and shrub lands young species and native young shrubs/subshrubs as a result to natural vegetation succession and shrubland management.					
Strategy 10.5: Safeguard the integrity of olive groves with natural ecosystems within WHP specifically within the high conservation areas, to ensure that olive groves are maintained healthy. This is incorporated with MCP's objective 8.					
Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Ation 27: Stop plantation of coniferous or other wise non-native trees and shrubs/subshrubs within the WHP especially within the areas of high conservation value (St 10.1, 10.3)	Mediterranean native maquis oak forest and garrigue/ baths associations are enhanced and predominant Natural rejuvenation of Mediterranean forest species has increased by at least 20% on average, throughout the WHP conservation areas in comparison to 2020 levels	EQA, MoTA, MoA and related municipalities and village councils	Life time of this BCP / 2021-2030	#1	Not needed
Action 28: Monitor effectiveness of non-intervention forest restoration policy set in action 27 and reflect on by setting relevant adaptable plans	Trend in proportion and density of native tree/shrub rejuvenation is increased Native Med-	EQA, MoTA, MoA and related municipalities	Life time of this BCP / 2021-2030	#1	Need to be secured - Local resources

(St 10.1, 10.3)	Maquis Forest/garrigue is maintained Monitoring reports every year including forest inventory study specifically detailed map of forest/habitat communities, tree species distribution, percentages of seedlings of native tree/shrubs species, and percentages of palatable species coverage, the various threats still affecting the WHP Response plans are set	and village councils			– municipalities /village councils and/or MoA staff
Ation 29: Enhance integrity of maquis forest and garrigue/bath associations through improving forest composition by planting selected native trees and shrubs/subshrubs (of existing vegetation) in mixed stands within the open areas within the areas of high conservation value with support of local communities (St 10.2, 10.4)	Proportion and diversity in young native forest, garrigue/battha species is increased Natural rejuvenation of Mediterranean forest species has increased by at least 20% on average, throughout the WHP conservation areas in comparison to 2020 levels. Natural resilience and eco-balance of the local ecosystem is enhanced Ecosystem services improved Local communities in proximity are encouraged to plant native trees within the WHP Yearly monitoring reports (especially during the implementation of the forest inventory) assessing the plantation inventory on site	EQA, MoTA, MoA, related municipalities and village councils, and local communities	Medium to Long term / 2021-2030	#1	Need to be secured Local resources – MoA's nurseries
Action 30: Study the seasonal use of WHP as a grazing and natural resource (wood, wild plants, wildlife	The natural reources of use at the WHP, their use extent and impacts are well identified and interrelinked to their	EQA, MoTA, MoA, PWA and experts in	Medium term and later on the long term	#1	Need to be secured

resources) collection area, and local resource users in-depth (St 10.1, 10.2, 10.3, and 10.4)	geographical distribution Monitoring reports during two periods medium term (2021-2025) and long term (2025-2030)	related field from public or private organizations	/ 2021-2030		
Action 31: Improve enforcement and thereby suppression of unsustainable resource use based on Action 30, support of local communities, and by enforcing the environmental & agricultural laws (St 10.1, 10.2, 10.3, 10.4)	Mis-utilization, over- grazing and over-exploitation activities are suppressed including all causes of land degradation on site; especially within the areas of high conservation value by the management body set to follow this BCP Local communites are aware of valuation of ecosystem services provided by WHP and best practices for their sustainability – compatible with BCP's objective 8: Action 20. Yearly monitoring reports	EQA, MoTA, MoA, related municipalities and village councils, and local communities	Medium to Long term / 2021-2030	#1	Need to be secured -Local resources
Action 32: Initiate agricultural projects to promote and protect the local & native varieties of olive trees and agricultural terraces within the areas of high conservation value; with support of MCP's Objective 8, Action 18 and objective 11 Action 52 (St 10.5)	Olive groves extent and health are maintained and protected within the areas of high conservation value supporting the growth of wild native species and the dwelling of wildlife. Local communites are aware of valuation of olive groves and their relation to natural ecosystems within the WHP and best practices for their sustainability – compatible with BCP's objective 8: Actions 21 & 22. Yearly Monitoring reports	MoTA, EQA, MoA, related municipalities and village councils, and local communities	Medium to Long term / 2021-2030	#1	Need to be secured -Local resources
Objective 11: To conserve and monitor the population of species of high conservation value; specifically the flora, fauna and avi-fauna species inhabiting the WHP.					

Strategy 11.1: Maintain and systematically assess/monitor the health, size and trend of the viable population of plant species of high conservation value; specifically those key stone, endemic to Palestine, threatened and those of high economic value.					
Strategy 11.2: Maintain and systematically assess/monitor the health, size and trend of viable population of mammal, herpetofauna and invertebrate species of high conservation value; specifically those endemic to Palestine, threatened, and those species that give indication regarding health of the ecosystem.					
Strategy 11.3: Maintain and systematically assess/monitor the health, size and trend of population of breeding bird species of high conservation value; specifically those endemic to Palestine, threatened, and those species that give indication regarding health of the ecosystem.					
Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Action 33: Prevent native trees, shrubs or herbaceous species removal specially those identified among plant species of high conservation value including key stone species, endemic, and threatened plant species (identified under BCP's section 5) by enforcing environmental & agricultural laws and by raising awareness and capacity building of local communities. Supported by BCP's Objective 8: Action 20 (St 11.1, 11.2, and 11.3)	Plant species of high conservation value are maintained and their viable population is sustained. Local communities are aware of and support the protection of plant species of conservation priority Natural rejuvenation of Mediterranean forest species has increased by at least 20% on average, throughout the WHP conservation areas in comparison to 2020 levels Yearly monitoring reports	EQA, MoTA MoA, related municipalities and village councils, and local communities	Medium to Long term / 2021-2030	#1	Need to be secured
Action 34: Regulate poaching or poisoning actions that could cause loss of passing birds, breeding birds, and animals especially those of high conservation value (identified under BCP's section 5) by enforcing environmental & agricultural laws, support of local communities upon	Animal and bird species of high conservation value are maintained and their viable population is sustained Local communities are aware of and support the protection of animal and bird species of conservation priority Yearly monitoring reports	EQA, MoTA, MoA, related municipalities and village councils, and local communities	Medium to Long term / 2021-2030	#1	Need to be secured

raising their awareness and capacity building. Supported by BCP's Objective 8: Action 20 (St 11.2, 11.3)					
Action 35: Conduct systematic monitoring and build response plans specifically for those animals' and/or birds' dependant/sensitive habitats such as rock formations, caves, stone pools, breeding and roosting locations, etc. (St 11.2, 11.3)	Highly dependant and sensitive habitats (rock formations, caves, natural stone pools, breeding and roosting locations, etc.) are well managed and systematically monitored Yearly monitoring reports Response plans set to reflect on status of targeted habitats	EQA, MoTA, MoA, and experts in related fields from public or private organizations	Medium to Long term / 2021-2030	#1	Need to be secured
Action 36: Conduct systematic monitoring assessments supported with research studies targeting native plant, animal, and bird species specifically the targeted species of high conservation value (identified under BCP section 5). Comparison analysis between three assessments are concluded reflecting on relevant adaptable plans (St 11.1, 11.2, and 11.3)	Monitoring assessment reports finalized in 2022, 2025, and 2028 between medium term phase and long term phase and used for setting response action plan to be annexed later to this BCP The viable population, occurrence, distribution, densities conservation status in the different habitats and other indicators for targeted plant (vascular), animal (mammals (small terrestrial), reptiles and amphibians), and bird (breeding, resident, and migrant) species are assessed/monitored Each biotic category is reflected using specific indicators set for each case distinctly.	EQA, MoTA, MoA, and experts in related fields from public or private organizations	Medium to Long term / 2022-2028	#1	Need to be secured
Objective 12: To regulate and monitor the occurrence or the spread out of the invasive and alien species present within the WHP; incorporated with the context of this BCP and MCP's objective 11.					
Strategy 12.1: Set a management programe to halt the expansion of the plant and animal invasive species inhabiting the WHP, all done					

incorporated with this BCP and the MCP's objective 11.					
Action	**Indicator**	**Partners**	**Timeframe /years**	**Priority**	**Funding**
Action 37: Identify and study types and distribution of plant, animal and/or bird invasive species occur at the WHP and set in response proper measures and actions to control them (St 12.1)	Appropriate and well palnned response measures are set in relation to types and distribution of invasive species occur at WHP	EQA, MoTA, MoA, and experts in related fields from public or private organizations	Medium term 2021-2022	#1	Need to be secured
Action 38: Conduct necessary measures to reduce presence of plant invasive species through effective control methods such as mechanical, manual, or cultural control methods or by using organic herbicides or targeted grazing depending on the type of the plant and its expansion. Measures taken depends on the results of Action 37. This action is supported by MCP's objective 11, Action 48 (St 12.1)	Seeds and/or roots and/or rhizomes production of invasive species is controlled through mowing or mechanical cutting or manual pulling or applying organic herbicides or targeted grazing targeting specifically the invasive species (more than once in a growing season) to achieve desired results. Without jeopardizing the non-target species or the environment.	EQA, MoTA, MoA, and experts in related fields from public or private organizations	Medium / long term 2022-2030	#1	Need to be secured
Action 40: Prevent introduction of plant invasive species through implementing prevention measures such as minimizing soil disturbance, use native local seeds for cultivation and if purchased use weed free seed mixes or vegetation, monitor new infestation especially near vehicle or path ways (St 12.1)	The introduction of new invasive species is prevented to the minimum at the WHP	EQA, MoTA, MoA, and experts in related fields from public or private organizations	Medium / long term 2021-2030	#1	Need to be secured
Aciton 41: Conduct necessary measures to reduce presence of animal and bird invasive species through effective control	Each animal and bird invasive species is delt with specifically and reduced its numbers using one of the effective	EQA, MoTA, MoA, and experts in	Medium / long term 2021-2030	#1	Need to be secured

methods such as biological control, mechanical control and/or chemical control. Measures taken depends on the results of Action 37. This action is supported by MCP's objective 11, Action 48 (St 12.1)	control methods depending on its life cycle and dependent parameters without jeopardizing the non-target species or the environment.	related fields from public or private organizations			
Action 42: Conduct monitoring assessments to study the status and expansion of plant, animal, and bird invasive species at WHP. Two assesements will be done in parallal to the assessments done in Action 36 (St 12.1)	Monitoring assessment reports finalized in 2025, and 2028 between medium term phase and long term phase and used for setting response action plan to be annexed later to this BCP Comparisons between the initial study done on site as set in action 37 and the two following assessments is concluded; upon which response plans are set in accordance and for each phase with the aim to reduce the invasive species occurrence to the minimum. Each biotic category is assessed using specific indicators set for each case distinctly.	EQA, MoTA, MoA, and experts in related fields from public or private organizations	Medium to Long term / 2025-2028	#1	Need to be secured

9. MONITORING PLAN

Systematic monitoring for the Biodiversity Conservation Plan (BCP) will start effectively from the BCP's mid-term until the end of the long term phase (2021-2030) of the plan; in an attempt to ensure the proper improvement of the effectiveness and potential for long term success of this BCP. The outcomes of the monitoring plan will be used to set the necessary action to follow after the lifetime of this BCP in a manner that secures the continuation and sustainblity of the BCP.

Monitoring of the state and management effectiveness of Battir WHP shall be based on the conceptual model and results chains developed in the BCP and refer to:

- The vision and conservation goals formulated for each conservation and human wellbeing targets,
- The conservation objectives and strategies,
- The additional attributes of the conservation targets,
- The threat reduction objectives defined for each identified threat to the conservation targets, and
- The actions responding to each conservation strategy set in this BCP

The monitoring system is established to undertake the regular monitoring of the natural components of the World Heritage Property specifically the areas of high conservation value, in conjunction with the Operational Management System responsible for the implementation of the MCP (Management and Conservation Plan). Hence, it takes into account the protection of the natural ecosystems and their biotic and abiotic components within the WHP through conservation and restoration works and in conformity with international standards, and the engagement of the local community in the WHP.
Of the key monitoring action are the following:

BCP Plan Phase	BCP Strategic Action	Monitoring Action	Means	Responsibility	Rate
Planning and Enabling Phase	Strategy 2.2	Monitor the ecology/biodiversity impact assessments mechanism done prior to the implementation of any intervention within the WHP	Revise every intervention / project request prior to its implementation, set recommendation regarding its impact on ecology/biodiversity	Site Manager and SMC (Site Management Committee)	Every time an intervention is going to take place on site
Environment and	Strategy 4.1	Monitor the mechanism for	Revise every requested	Site Manager	Every time a

Related Regulations Enhancenment Phase		granting permissions for activities/projects undertaken within the WHP; specifically within the conservation areas of high priority in a manner that secure no negative impact on ecology/biodiversity of the site	permission and set necessary recommendation regarding its impact on ecology/biodiversity of the site	and SMC	permission for activity/project is going to be granted to take place on site
	Strategy 5.1, and 5.2	Monitor the management system set to reduce all types of pollution including the accumulation of solid waste, the discharge of waste water in natural areas, and the utilization of agro-chemicals.	Conduct visits, field inspection, and revision to implemented regulations and settings regarding sewage system and cleaning mechanisms, in addition to inspection to extension programs and orientation done with local farmers	Site Manager and SMC	Annual
	Strategy 6.2	Monitor the status of water resources	Conduct inspection visits, tests and reporting and set recommendation in accordance	Site Manager and SMC	Annual
	Strategy 7.1-7.3	Monitor the programs set to conserve and store the local seeds, documentation and protection of local agrarian knowledge, and market promotion of local products.	Conduct field visits during harvesting season and to farmers' stores, follow up the documentation and the promotion done by stakeholders	Site Manager and SMC	Annual
	Strategy 8.4	Monitor feedback from research studies done on site to help the operational	Revise outcomes of research studies and refine/abstract findings for	Site Manager and SMC	Biannual

		management system to run the site properly in terms of biodiversity and agro-biodiversity, forest restoration and adaptation, invasive species control and others	the interest of the proper site management		
	Strategy 9.1	Monitor the ouputs of the visitor management system	Inspect the adverse impacts of tourist practices especially in the conservation areas of priority and response plans in accordance	Site Manager and SMC	Annual
Biodiversity Conservation and Restoration Phase	Strategies 10.1 and 10.3	Monitor results of forest inventory studies	Revise the inventory studies in relation to the effectiveness of non-intervention forest restoration policy set in action 27 and set accordingly response plans if necessary (to be annexes to this BCP)	Site Manager and SMC	Annual
	Strategies 10.2 and 10.4	Monitor results of forest inventory studies	Revise the inventory reports in relation to the effectiveness of planting selected native trees and shrubs/subshrubs (of existing vegetation) in mixed stands within the open areas within the areas of high conservation value, especially in relation to the	Site Manager and SMC	Annual

			improvements in forest composition and integrity		
	Strategies 10.1 – 10.4	Monitor the utilization of ecosystem services including grazing, exploitation of resources, hunting, cutting of trees and others	Conduct evaluation mechanisms for outcomes of the enforcement of laws in terms of suppression of unsustainable use of resources the status of shrubs and grasslands, wildlife breeding, migratory sites and paths, density of vegetation cover especially those of economic and cultural value, and others. Several mechanisms can be adopted including field visits for inspecting set of indicators and measurements at targeted sites or species levels	Site Manager and SMC	Annual
		Monitor the extent and health of olive groves and their integrity with natural habitats	Conduct field visits to assess the status of olive groves, and their supporting agricultural terraces and water resources with the areas of high conservation value, etc. using set of indicators reflecting on number of issues such as trees varieties, health of the trees	Site Manager and SMC	Annual

			(pathogens and diseases), soil conditions, extent and diversity of native natural vegetation and wildlife, and others.		
	Strategies 11.2, and 11.3	Monitor those animals' and/or birds' dependant/sensitive habitats such as rock formations, caves, stone pools, breeding and roosting locations, etc.	Conduct field visits and report the status of special habitats of important to animals or birds occuring on site especially those of high conservation value. Set response plans to reflect on status of targeted habitats	Site Manager and SMC	Annually
	Strategies 11.1-11.3	Monitor native plant, animal, and bird species specifically those of high conservation value (identified under BCP section 5).	Conduct comparison assessments reflecting on status of targeted species through field inspection visits using relvant measures and indicators. Respons plans are concluded. Of studied indicators: the viable population, occurrence, distribution, densities conservation status in the different habitats and other indicators for targeted plant (vascular), animal (mammals (small terrestrial), reptiles and	Site Manager and SMC	Three times during the life of this BCP: 2022, 2025, and 2028

			amphibians), and bird (breeding, resident, and migrant) species and others as found appropriate		
	Strategy 12.1	Monitor the status and expansion of plant, animal, and bird invasive species at WHP.	Three assessement shall be done; the first to identify in depth the invasive species and another two to measure the impact of Actions 38-40. Comparisons between the initial study done on site as set in action 37 and the two following assessments is concluded; upon which response plans are set in accordance and for each phase with the aim to monitor the reduction of invasive species occurrence to the minimum.	Site Manager and SMC	Three times during the implementation of this BCP: 2022, 2025, 2028

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Annex 1.1
Multilateral Environmental Agreements and International Conventions to which Palestine seek to Accede or signed as a Matter of Priority

1.Atmosphere:
(i) Convention on Long-Range Transboundary Air Pollution (LRTAP Convention)
http://www.unece.org/fileadmin/DAM/env/lrtap/full%20text/1979.CLRTAP.e.pdf
(ii) Convention for the Protection of the Ozone Layer
http://ozone.unep.org/pdfs/viennaconvention2002.pdf
(iii) Montreal Protocol
http://ozone.unep.org/pdfs/Montreal-Protocol2000.pdf
2. Climate
(i) UN Framework Convention on Climate Change (UNFCCC)
http://unfccc.int/resource/docs/convkp/conveng.pdf
(ii) Kyoto Protocol
http://unfccc.int/resource/docs/convkp/kpeng.pdf
3. Nature Conservation and Biodiversity
(i)(Ramsar) Convention on Wetlands of International Importance especially as Waterfowl Habitat
http://www.ramsar.org/cda/en/ramsar-documents-texts-convention-on/main/ramsar/1-31-38%5E20671_4000_0__
(ii)(UNESCO) Convention Concerning the Protection of the World Cultural and Natural Heritage
http://www.unesco.org.uk/uploads/Cultural%20and%20Natural%20Heritage%20Convention.pdf
(iii) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
http://www.cites.org/eng/disc/E-Text.pdf
(iv) (Bonn) Convention on Migratory Species of Wild Animals
http://www.cms.int/documents/convtxt/cms_convtxt_english.pdf
(v) Convention on Biological Diversity (CBD)
http://www.cbd.int/doc/legal/cbd-en.pdf
4. Chemicals and Wastes
(i) Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and their Disposal
http://www.basel.int/Portals/4/Basel%20Convention/docs/text/BaselConventionText-e.pdf
(ii) Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals *and Pesticides in International Trade*
http://www.pic.int/TheConvention/Overview/TextoftheConvention/tabid/1048/language/en-US/Default.aspx
(iii) (Stockholm) Convention on Persistent Organic Pollutants
http://chm.pops.int/Convention/ConventionText/tabid/2232/Default.aspx
5. Land
(i) United Nations Convention to Combat Desertification
http://www.unccd.int/Lists/SiteDocumentLibrary/conventionText/conv-eng.pdf
6. Marine
(i) Barcelona Convention for the Protection of the Mediterranean
http://195.97.36.231/dbases/webdocs/BCP/bc95_Eng_p.pdf
(ii) Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks
http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N95/274/67/PDF/N9527467.pdf?OpenElement
7. Freshwater
(i) United Nations Convention on the Law of Non-Navigational Uses of International Watercourses
http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf

Annex 3.1:
Battir WHP ECOSYSTEM SHEET[14]

Ecosystem field sheet

1. The studied site Name	Al Makhrour Valley
2. The valley Eco-region	Mediterranean Region (Mountainous Zone Environment) Central Highlands Range of the West Bank Region Series of hills and a valley that flows from Beit Jala city encircling Battir villages towards Husan village
3. The valley plant territory geo-element	Mediterranean plant geo-element
4. The valley typology	A mix between; natural maquis forest and a man-made coniferous forest It is a Mediterranean landscape composed of different interacting vegetation patches. Pine and oak ecosystems form contiguous patches within this landscape, in pure stands, or as mixed pine–oak ecosystems. AL Makhrour landscape typically form a patch mosaic where different vegetation types are intermingled in complex patterns created by the variation in physical, biological, and anthropogenic landscape conditions. Further, the mosaics are a heterogeneous combination of both "natural" and man-made patches interleaved with one another in complex patterns that result from different edaphic conditions, topography, exposure to wind and sun, fire and other disturbances, and land-use histories.
5. The valley density	40-93% plant density
6. The valley ecosystem habitats	-Maquis forest –Sclerophyllous - Broad Leaved - Oak Forest and Maquis, Quercus calliprinos woodland on limestone, with *Quercus calliprinos* dominant species -Man-made Coniferous forest with *Pinus halepensis* dominant species -Garrigue/Batha forest – shrublands and grasslands -Agricultural land – Olive Groves -Fallow land –abundant land -The valley (5-8ms width)– elongated lowland between the hills
7. The Valley's soil	Rendzina and White rendzina especially on the northern series of hills (oriented towards the south), in some areas with patches of Terra Rossa Terra Rossa pure in patches. The Rendzina series comes along with typical Terra Rossa, and under identical climatic conditions. The parent rocks of this series are soft calcareous formations of the Upper Cretaceous and Eocene, including chalks, soft limestones, marls and nari. The humiferous topsoil, which is formed in the advanced stages above the gray subsoil, is a common feature of the entire series. The light – colored Rendzina (White Rendzina) is a variety of this group that is derived chiefly from soft Senonian chalk, nari, and Cenomanian marls. This type of soil occur most commonly in the central highlands/mountain range of the West Bank region, where MKV is located and supports the growth of Pinus halepensis- and its plant associations. Terra Rossa is a fertile soil, on the whole. It contains fairly high proportion of silt and clay. It supports most of the native trees and shrubs, as well as many

[14] Ghattas, R., et-al. May, 2019. Plant Biodiversity Inventory Report at Al Makhrour Valley 2018/2019. Pioneer Consultancy Centre for Sustainable Development (PCC) for Palestine Museum for Natural Heritage/Bethlehem University. Bethlehem Palestine.

	cultivated trees. It was found mainly as patches along the agriculture terraces (*Zohary, M. 1962*).
8. The Valley's water resources	- Number of springs distributed along the valley such as Kabryano spring, Al A'mdan Spring, E'in El Hawieh, and others (to be collected from literature and surveys). -Water collection systems as natural and man-made rainwater harvesting systems (including cisterns and surface stone cistern)
9. The valley Surrounding environment	-Number of Qanateer or Castles (observed: 27 of them) -Cisterns (observed: 4) -Grottos (observed: 2) -Surrounding the valley a buffer area of agricultural lands and terraces, pieces of lands invested for eco-tourism activities such as restaurants, camping areas, etc) -It is surrounded with Palestinian localities such as Battir, Al Walaja, Husan villages and Beit Jala city; the largest Palestinian localities in the Western Bethlehem Area. -It is also surrounded by Israeli settlements such as Har Gilo from northern side and pass road 60 and Betar Illit and Hadar Betar settlements from southern western side which forms part of Gutsh Etzion settlement's bloc. -From an environmental and water perspective, the area west of Bethlehem including Al Makhrour valley and the surrounding area is considered a high water production zone in relation to the lower part of the water aquifer.
10. Conservation programs and authority	-No conservation actions are taken on the ground although it is a WHS, however a management plan was set by MoTA in a participatory approach with relevant stakeholders for the site for protecting the cultural aspect and developing the site. But there is no conservation plan specific for the biodiversity of the site. -Both Battir village council and Beit Jala municipality are the main authorities that the area is demarcated under their jurisdiction according to the Palestinian Local Government classification. Private ownership is prevailing at site. -The area is located in Geopolitical area "C"; under Israel civil and security control, makes up to 61% of West Bank. No development is allowed unless a permit is taken from Israeli side.
11. The valley threats	There are several reasons for the deterioration of the valley, in general, performing pressure on the vegetation cover in this area, in particular, the following: (1)population growth and pressure, where new construction activities and restoration activities were noticed, (2) human interference where new soil is brought to the valley for the newly built terraces, in addition to replacing natural areas with agricultural lands, (3) the small fires (especially during olives' harvesting season), (4) stopping farming practices in certain areas along MKV, hence there are few segetal plants, (5) garbage and litter disposal, (6) ruderal plants are widespread along sides of the paths, (7) grazing activites were found in the valley as we found remainings of the livestock's manure and others.
12. Succession	Different levels of successions in different landscape patches. In general plant succession is most prominent on the series of mountains that face the north, as the slopes of those mountains are deeply steep, hence they face less human interference (no land uses), they have more humus, enjoys higher humidity and hence more dense vegetation cover. Some phenomenae were noticed during the field surveys regarding the presence or absence of some plant species, where the reason behind their

		occurrence status is not clear; as following: Wild thyme - *Majorana syriaca (Origanum syriacum)* was found in low numbers, low frequency and small populations. Carob tree - *Ceratonia silique* was found in low numbers, low frequency and specific locations Greek Sage - *Salvia fruticosa* was found in low numbers and very low frequency. Lentisk - *Pistacia lentiscus* was found growing in the valley from Beit Jala side, on a land of high elevation if compared to the land elevation sutiable for the growth of this plant. Usually the Lentisk shrubs prefer lower elvations (than the place it was found growing in) and warmer climates. However, the area where the shrub was found growing in abundantly is almost 800 meters above sea level but still the Lentisk grows there! Officinal Storax - *Styrax officinalis* was found in few places mainly in (T 9 and T10). *Phragmites australis*, *Arundo donax* was not found at all although there are some places along the valley where water is collected and springs are found! *Cyperus rotundus and Juncus acutus* were also not found while it was expected to find them in the valley especially near springs, and humid areas.
13.	**notes**	- *Quercus calliprinos* forest of high nature conservation value in the Mediterranean region. Sclerophyllous oak forests are an important ecosystem type of the natural vegetation in the Mediterranean region. As a part of the mosaic-like landscape, old-growth oak forests, in particular, provide a wide range of ecosystem functions and services. The site supports different micro-environments that support the growth of diverse plant species of different life forms and distribution at the site

Annex 2.1: Ghattas, R., et-al. May, 2019. Plant Biodiversity Inventory Report at Al Makhrour Valley 2018/2019. Pioneer Consultancy Centre for Sustainable Development (PCC) for Palestine Museum for Natural Heritage/Bethlehem University. Bethlehem Palestine. Add link

Annex 2.2: Handal, E., Qumsyieh, M., 2019. Fauna Inventory Report at Al Makhrour Valley 2018/2019. Palestine Museum for Natural Heritage/Bethlehem University. Bethlehem Palestine. Add link

Annex 2.3: Khalilieh, A., 2019. Avi-Fauna Inventory Report at AL Makhrour Valley 2018/2019. Palestine Nature Society (PNS) for Palestine Museum for Natural Heritage/Bethlehem University. Bethlehem Palestine. Add link

Annex 7.1: The MCP's Operational Management System that the BCP's Management System will follow (MoTA, 2018)

The MCP's Operational Management System meets the requirements of the Ministry of Tourism and Antiquities as the legal entity responsible for all of the World Heritage Sites in Palestine, which is committed to the obligations of international conventions, notably the 1972 World Heritage Convention. In 2018, MoTA proposed a new institutional structure that includes a "General Directorate for Site Management and World Heritage Sites in Palestine," which aims to provide a comprehensive management system for all cultural heritage sites in Palestine. The responsibilities of this proposed directorate are to conserve, manage, valorize, and promote the cultural heritage sites and the inscribed World Heritage Sites, submit new sites to the WHC on the Tentative List, and regularly monitor and report

on Palestinian WHPs for the WHCom. For each WHS in Palestine, designated steering committees and site management committees are appointed, and committee members are selected according to the needs and condition of each Site.

The proposed World Heritage Department has the following strategic objectives:

1. Manage the World Heritage Properties and conserve their OUV, authenticity and integrity.
2. Promote a participatory management approach based on engagement of all related stakeholders to run World Heritage Properties, especially for complex sites, e.g. landscape and historic cities.
3. Strengthen the international partnership to improve the management and conservation capacity of the World Heritage Properties.
4. Identify and promote the World Heritage Properties.
5. Build capacity for Palestinian professionals, site managers, engineers, conservers, and other individuals involved with WHPs.
6. Strengthen community participation and public awareness.

The proposed World Heritage Department has the following responsibilities:

1. Supervise the preparation of nomination files for heritage sites on the Tentative List to be inscribed on UNESCO's World Heritage List.
2. Supervise the preparation of the Management and Conservation Plans for inscribed and nominated sites on the list, in cooperation with other stakeholders.
3. Oversee and monitor Palestinian sites in the Tentative List, updating and developing the list, adding new sites or removing existing ones that do not meet the OUV.
4. Conduct all required periodic technical reports and studies to the World Heritage Committee.
5. Contribute to removing the inscribed sites from the List of World Heritage in Danger by achieving the DSOCR and Corrective Measures.
6. Oversee and monitor the activities and projects that take place in the WHPs and affect their OUV.
7. Prevent the activities that have a significant adverse affect on the OUV.
8. Monitor the implementation of the ratified MCP with the cooperation of the related national and international stakeholders.
9. Develop mechanisms to seek funds to implement the MCP's actions.
10. Implement awareness campaigns and workshops for the local community in the WHPs.
11. Promote and interpret the World Heritage Sites at a national and international level.

In addition to the responsibilities of MoTA's World Heritage Department, it is also important to develop successful mechanisms for coordination between other stakeholders that have statutory or management responsibilities in the WHP. The proposed management system will include the following two main entities:

1. The MCP's Steering Committee
2. The Site Management Committee

These two committees will play an essential role in encouraging, guiding, overseeing and monitoring progress, as well as reviewing and updating the Management and Conservation Plan.