International Journal of Herbal Medicine
Available online at www.florajournal.com

IJHM International Journal of Herbal Medicine

E-ISSN: 2321-2187
P-ISSN: 2394-0514
IJHM 2015; 3(4): 49-59
Received: 26-08-2015
Accepted: 30-09-2015

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Flora of Bader Al-Jadida County, western high mountains of Amman city/Jordan

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Abstract
The flora of Bader Al-Jadida County, high mountains, west of the capital Amman /Jordan has been evaluated. The flowering plant specimen have been collected from the area and identified. A number of 259 species and 2 subspecies belong to 179 genera and 44 families are recorded. Photographs of some selected common plant species in the study area as well as photographs for some natural views are demonstrated, with emphasis on the topography of the heights that are dominated by forest stands of typically Mediterranean vegetation elements of mixed ever-green and deciduous oak trees of *Quercus coccifera* and *Q. ithaburensis, Amygdalus communis, Crataegus aronia and Pyrus syriaca,* shrubs and cultivated tress like, grape vines, Olive trees, fig trees (*Ficus indica*), pomegranate trees (*Punica granatum*) and mulberries trees (*Morus alba* and *M. nigra*). The study area is blessed by lots of aromatic plant species like *Lonicera etrusca, Calicotome villosa, Thymus capitatus, Varthemia iphionoides, Narcissus tazetta* and others, orchid species, *Mentha aquatica* and others. Lots of medicinal plants are also recorded in the study area, that are still used in folk medicine by the local people like *Varthemia iphionoides, Arum palaestinum, Vinca herbacea, Dittrichia viscosa,, Achillea santolina, Bongardia chrysogonum, Thymus capitatus* and others. Many recorded species are edible plants like *Cyclamen persicum*, the shrubby raspberry *Rubus sanguineous, Capparis spinosa, Pyrus syriaca, Crataegus aronia, Gundelia tournefortii, Rhus coriaria, Thymus capitatus, Malva sylvestris* and some others. A number of showy, rare and endangered aromatic plant species are recorded like *Orchis antolica, Narcissus tazetta, Sternbergia clusiana, Tulipa agenesis, Styrax officinalis* and *Lonicera etrusca*. Few stands *of Pistacia atlantica and P. palaestina* trees are also recorded.

Keywords: Flora, West Mountains, Forests, *Quercus coccifera, Q. ithaburensis, Crataegus aronia, Styrax officinalis,* Bader Al-Jadida, Amman, Jordan.

1. Introduction
Bader Al-Jadida county is a small geographical mountainous area (Fig A. 2. 26), it is located at about 20 km west of Amman the capital of the Hashemite Kingdom of Jordan. It is considered Mediterranean phytogeographical area that is characterized by cold winter and dry sunny summer, it receives snow fall almost every year. The altitude of the high mountains is 900 m above the sea level, and about the same elevation of the holy city Jerusalem, that is facing the mountainous hills from the west direction (Fig A. 5. 65). The study area is surrounded by the neighborhoods of areas such as Dabouq, Al-Hashemiah, I'raq Al- Ameer, Belal, Zabda, Al-Basa Al-Kashef, Salkada, Um Al-Osood, and Um Al-Khanazeer areas and the eastern side of Wadi Al-seer.
The area is bordered from the west by Fuhais, Mahas and Salt hilly mountainous areas of E'ra and Yarqa (Fig A.5.70); it is also surrounded by Amman seven mountainous hills from the east; Madaba and Marj Al-Hamam and nearby Abu Souss from the south (A. 5.71) and facing the holy Jerusalem city hills and the Palestinian territories from the west (Fig A. 5. 65).
The area is mostly mountainous with some places of lower elevations like Zabda, Al-Basa and I'raq Al Ameer areas; the later area is officially following the capitol Amman municipality authorities. Bader Al-Jadida is dominated by a vegetation cover of mixed evergreen and deciduous old oak trees of *Quercus coccifera* and *Q. ithaburensis, Crataegus aronia,* wild *Pyrus syriaca* as well as the bushy edible and medicinal mulberry *Rubus sanguineus* which is called U'laiq in the local arabic language, and other cultivated trees like olives, mulberries and fig.
At the lower elevation where an area in the southern direction of Bader area named I'raq-Al-Ameer, and having warmer climatic conditions similar to Jordan valley climatic conditions more than the upper Bader Al-Jadida area, few water resources and archaeological sites in I'raq Al-Ameer (Fig A. 5. 72), that makes the area a place of more touristic and receiving many tourists and visitors from the country in the holidays.

The local people of Bader Al-Jadida are cultivating olive, figs, mulberry and pomegranate *Punica granatum* trees for their own consumption, and other edible trees like almonds, peaches, pomes or plums, apricots as well as other domestic crops, they are also planting grapes in large hectares of areas, Cactus (*Opuntia indica)*, mulberries and fig (*Ficus indica*). The area receives rainfall and snow almost every year (500mm/year). The soil is fertile of the type Terra Rosa and in some areas sandstone type; the local people are taking the best care of their lands, and planting cereals like peas, beans, lens, wheat, alfalfa, and annual vegetables like okra (*Hibiscus* sp.), cucumber, lettuce, celery, onions, tomatoes, egg plants and others, these plants are grown for their own consumption and are sold in the market as source of living for many families living in the area. The Bader mountainous area is still considered as urban area and still a large number of farms and cultivated lands are used by the local people for agriculture and for sometimes for grazing by live stalks and other animals (Fig A. 5. 68), particularly the sheep and goats. The land is becoming very expensive from one year to another; relatively few complicated houses are built in the area. The area is seemingly rich in plant biodiversity as shown by this recent study, and historically it is known for its dense evergreen and deciduous Oak forests of *Quercus coccifera* and Q. *ithaburensis* (Fig A.5.63, 69); but in some areas the degradation of tress and other types of plants is getting worse (Fig. A. 5. 66). In Jordan the vascular flowering plants and the vegetation cover have been recorded by [1, 2, 3], other floristic studies related to the diversity of flowering plants in different areas of Jordan has been reported in the following studies; the medicinal plants in Wadi Al-Mujeb biosphere reserve has been reported [4], a taxonomic revisions has been made for some groups of vascular flowering plants in Jordan like the study on the taxonomy of *Iris* in Jordan by [5], a systematic revision of the genus *Haplophyllum* (Rutaceae) in Jordan with emphasis on anatomy has been recorded by [6], the taxonomy of the genus *Crocus* (Iridaceae) in Jordan was studied by [7], the plant biodiversity of the surrounding area of Al-Fuhais cement plant in Jordan has been assessed by [8], a systematic study on the genus *Onopordum* (Asteraceae) in Jordan was prepared by [9], the taxonomy of the genus *Tulipa* (Liliaceae) in Jordan was investigated by [10], systematic study of the genus *Ornithogalum* (Liliaceae) in Jordan was carried out by [11], another systematic studies of *Colchicum* and *Allium* (Liliaceae) genera in Jordan have been investigated by [12, 13], a biosystematic study for the genus *Alyssum* (Brassicaceae) in Jordan was demonstrated by [14], the biosystematics of the genus *Salvia* (Lamiaceae) in Jordan and the neighboring countries was studied by [15], the status of flowering plants of Tafila area south of Jordan has been recorded by [16], the medicinal plants of the northern high mountains in Jordan has been recently evaluated by [17], the status of medicinal plants in Jordan has been also revaluated in [18], a botanical survey for the plant life of Al-Balqa district, has been prepared by [19], a recent ethnobotanical survey of the medicinal plants in the central mountains of Jordan has been carried out by [20], the vegetation cover of the the high mountains of Northern Jordan has been currently surveyed by [21] a study for the flowering plants of Shoubak area, south of Jordan was conducted [22, 23], the diversity of flowering plants in Karak province south of Jordan was reported by [24] and the plant diversity of Petra city south of Jordan has been studied by [25, 26].

In this study the flora of the wild flowering plant species in Bader Al-Jadida county, which is located at west of the capitol Amman city in Jordan, have been studied, collection of plant material has been made, and authenticated by Professor Sawsan Oran, plant taxonomist, University of Jordan; photographs by the author of some selected taxa, and some natural views for selected localities of the study area are demonstrated.

2. Materials and methods

2.1 Plant collection

Plant specimen was collected from the study area and its surroundings, pressed (dried out), poisoned to avoid any insects or microbial infections, and mounted on a paper boards for identification.

2.2 Identification

Plant specimen was identified by plant taxonomist Prof. Dr. Sawsan Oran, and by using the related flora of the area and the region.

2.3 Categorization

Plant specimen was deposited at the herbarium at the Department of Biological Sciences herbarium (AMM!) at the University of Jordan according to the system used at the herbarium.

2.4 Photography

Photographs for the available plant species in the study area were pictured by the author. Photographs are demonstrated in Fig. A 1-5 (1-72).

3. Results

The plant species collected from Bader Al-Jadida area are identified and listed Table 1.

A number of 260 species, 178 genera and 44 families are recorded.

Fig. A 1-5 (1-72) showing photos of some selected plant species of flowering plants and some natural views and local habitats in Badir Al-Jadida area, west of Amman/Jordan.

The taxa of flowering plants recorded in Bader Al-Jadida area are arranged alphabetically according to their families, genera and specific names.

Table 1: showing list of the recorded plant taxa in Bader Al-Jadida County

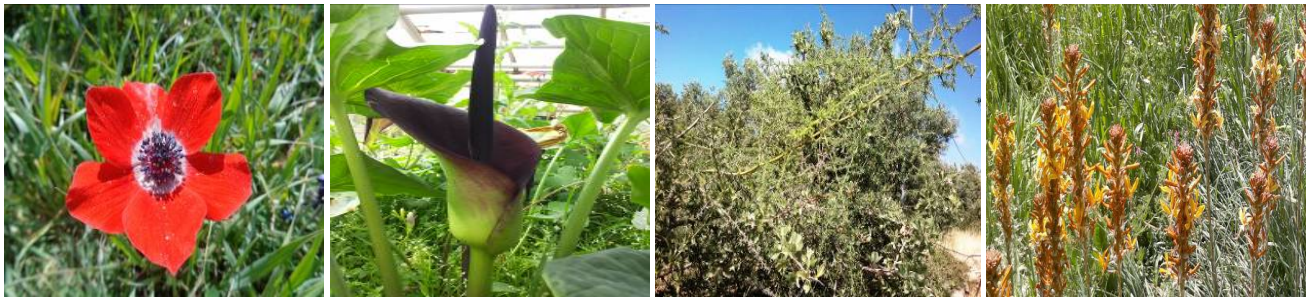
Name of the Plant Taxon	Name of the Family	Photo Number
Blepharis ciliaris (L.) B. L. Burtt	Acanthaceae	Fig. A. 3. 42
Narcissus tazetta L.	Amaryllidaceae	Fig. A. 2. 23
Sternbergia clusiana Ker-Gawler	Amaryllidaceae	Fig. A. 2. 27
Pistacia atlantica Desf.	Anacardiaceae	====
P. palaestina Boiss.	Anacardiaceae	====
Rhus coriaria L.	Anacardiaceae	Fig. A. 4. 57
Apium nodiflorum (L.) Lag.	Apiaceae	====
Artedia squamata L.	Apiaceae	Fig. A. 4. 50
Astoma seselifolium DC.	Apiaceae	====

Chaetosciadium trichospermum (L.) Boiss.	Apiaceae	====
Coriandrum sativum L.	Apiaceae	====
Daucus carota L. subsp. *maximus* (Desf.) Ball.	Apiaceae	====
Eryngium creticum Lam.	Apiaceae	====
Ferula communis L.	Apiaceae	Fig. A. 5. 61
Foeniculum vulgare Miller	Apiaceae	====
Lagoecia cuminoides L.	Apiaceae	====
Malabila sicula Hoffm.	Apiaceae	====
Pimpinella peregrina L.	Apiaceae	====
Tordylium aegyptiacum (L.) Lam.	Apiaceae	====
T. trachycarpum (Boiss.) Al-Eisawi	Apiaceae	====
Torilis arvensis (Hudson) Link	Apiaceae	====
Nerium oleander L.	Apocynaceae	====
Vinca herbacea Waldest. & Kit.	Apocynaceae	====
Arum dioscoridis Sibth. & Sm.	Araceae	====
A. palaestinum Boiss.	Araceae	Fig A. 1. 2
Biarum angustatum (Hooker fil.) N. E. Brown	Araceae	====
Achillea santolina L	Asteraceae	====
A. biebersteinii Afan.	Asteraceae	====
Anthemis palaestina Reuter	Asteraceae	Fig. A. 4. 44
A. tinctoria L.	Asteraceae	====
Calendula arvensis L.	Asteraceae	====
Carthamus tenuis (Boiss. & Blanche) Bornm.	Asteraceae	====
Centaurea iberica Trev. Ex Sprengel	Asteraceae	====
Chrysanthemum coronarium L.	Asteraceae	Fig. A. 2. 24
Cichorium pumilum L.	Asteraceae	Fig. A. 4. 53
Dittrichia viscosa (L.) Greuter	Asteraceae	====
Echinops polyceras Boiss.	Asteraceae	====
Gundelia tournefortii L.	Asteraceae	Fig. A. 3. 37
Notobasis syriaca (L.) Cass.	Asteraceae	====
Onopordum macrocephalum Eig	Asteraceae	====
O. palaestinum Eig	Asteraceae	=====
O. Alexandrium Boiss.	Asteraceae	Fig. A. 3. 40
Phagnalon rupestre (L.) DC.	Asteraceae	=====
Senecio vernalis L.	Asteraceae	Fig. A. 3. 32
Silybum marianum (L.)	Asteraceae	Fig. A. 1. 18
Sonchus oleraceus L.	Asteraceae	====
Varthemia iphionoides Boiss. & Blanche	Asteraceae	====
Xanthium spinosum L.	Asteraceae	====
Bongardia chrysogonum (L.) Griseb	Berberidaceae	Fig A. 1. 6
Alkanna tinctoria (L.) Tausch	Boraginaceae	====
Alkanna strigosa Banks & Sol.	Boraginaceae	====
Anchusa strigosa Banks & Sol.	Boraginaceae	Fig. A. 4. 47
Arnebia decumbens (Vent.) Cossen & Kralik	Boraginaceae	====
Cerinthe palaestina Eig & Sam.	Boraginaceae	====
Cynoglossum creticum Miller	Boraginaceae	====
Echium judaeum Lacaita	Boraginaceae	====
Heliotropium europaeum L.	Boraginaceae	====
Trichodesma boissieri Post	Boraginaceae	====
Alyssum minus (L.) Rothm.	Brassicaceae	====
Arabidopsis pumila (Willd.)	Brassicaceae	====
Biscutella didyma L.	Brassicaceae	====
Cardaria draba (L.) Desv.	Brassicaceae	====
Clypeola aspera (Grauer) Thrrill	Brassicaceae	====
C. jonthlaspi L.	Brassicaceae	====
Erysimum oleifolium J. Gay	Brassicaceae	====
Eruca sativa Miller	Brassicaceae	Fig. A. 1. 12
Hirschfeldia incana (L.) Lagre'ze-Fossat	Brassicaceae	====
Sinapis alba L.	Brassicaceae	Fig. A. 4. 52
S. arvensis L.	Brassicaceae	====
Legousia falcata (Ten) Fritsch	Campanulaceae	====
Capparis spinosa L.	Capparaceae	Fig. A. 4. 54
Lonicera etrusca Santi	Caprifoliaceae	Fig. A. 4. 51

Cerastium dichotomum L.	Caryophyllaceae	====
Dianthus tripunctatus Sibth. et Sm	Caryophyllaceae	====
D. judaicus Boiss.	Caryophyllaceae	====
D. strictus Banks & Sol.	Caryophyllaceae	====
Minuartia globulosa (Labill) Schinz & Thell.	Caryophyllaceae	====
M. picta (Sibth. & Sm.) Bornm	Caryophyllaceae	====
Paronychia argentea Lam.	Caryophyllaceae	====
P. sinaica Fresen	Caryophyllaceae	====
Silene Aegyptiaca (L.) L. fil.	Caryophyllaceae	====
Silene conoidea L.	Caryophyllaceae	====
Cistus creticus L.	Cistaceae	Fig. A. 2. 21
Fumana thymifolia (L.) Webb	Cistaceae	====
Helianthemum aegyptiaca (L.) Miller	Cistaceae	====
H. salicifolium (L.) Miller	Cistaceae	====
Convolvulus arvensis L.	Convolvulaceae	====
C. althaeoides L.	Convolvulaceae	====
C. siculus L.	Convolvulaceae	====
Sedum microcarpum (Sm.) Schonl.	Crassulaceae	====
Bryonia cretica L.	Cucurbitaceae	Fig A. 3. 39
Cucurbita pepo L.	Cucurbitaceae	====
Ecballium elaterium (L.) A. Rich.	Cucurbitaceae	====
Scabiosa palaestina L.	Dipsacaceae	====
Arbutus andrachne L.	Ericaceae	====
Chrozophora tinctoria (L.) Ad. Juss.	Euphorbiaceae	====
Euphorbia helioscopia L.	Euphorbiaceae	====
E. hierosolymitana Boiss.	Euphorbiaceae	====
E. microclada Boiss.	Euphorbiaceae	====
E. petiolata Boiss.& Sol.	Euphorbiaceae	====
Anagyris foetida L.	Fabaceae	====
Calicotome villosa (Poiret) link.	Fabaceae	Fig. A. 1. 16
Lathyrus aphaca L.	Fabaceae	====
L. hierosolymitana Boiss.	Fabaceae	====
L. marmoratus Boiss. & Bl.	Fabaceae	====
L. pseudocicera Pamp.	Fabaceae	====
Lotus collinus (Boiss.) Heldr.	Fabaceae	====
Medicago coronata (L.0 Bart.)	Fabaceae	====
M. laciniata (L.) Mill.	Fabaceae	====
Melilotus indicus (L.) All.	Fabaceae	====
Onobrychis crista-galli (L.) Lam.	Fabaceae	====
Ononis antiquorum L.	Fabaceae	====
O. natrix l.	Fabaceae	Fig. A. 2. 31
Pisum fulvum Sm.	Fabaceae	====
Psoralea bituminosa L.	Fabaceae	====
Retama raetam (Forscal) Webb. & Berth.	Fabaceae	====
Scorpiurus muricatus L.	Fabaceae	====
Tetragonolobus requienii (Maun) Daveau.	Fabaceae	====
Trifolium angustifolium L.	Fabaceae	====
T. campestre Schreb.	Fabaceae	====
T. clypeatum L.	Fabaceae	====
T. purpureum Loisel.	Fabaceae	====
T. resupinatum L.	Fabaceae	====
T. stellatum l.	Fabaceae	====
T. tomentosum L.	Fabaceae	====
Trigonella kostschi Fenzl ex Boiss	Fabaceae	====
Vicia ervilia (L.) Willd.	Fabaceae	====
V. narbonensis Boiss.	Fabaceae	====
V. sativa L.	Fabaceae	====
Quercus coccifera L.	Fagaceae	Fig. A. 5. 63
Q. ithaburensis Decne.	Fagaceae	Fig. A. 5. 69
Fumaria densiflora DC.	Fumaricaceae	Fig. A. 2. 20
Erodium acaule (L.) Becherere Thell	Geraniaceae	====
E. deserti (Eig.) Eig.	Geraniaceae	====
E. gruinum (L.) L'He'r.	Geraniaceae	Fig. A. 3. 36
E. laciniatum (Cav.) Walld.	Geraniaceae	====

E. malacoides (L.) L'He'r	Geraniaceae	====
Geranium columbium L.	Geraniaceae	====
G. rotundifolium L.	Geraniaceae	====
Hypecoum imberbe Sibth. & Sm.	Hypericaceae	Fig. A. 1. 15
Hypericum triquetrifolium Turra	Hypericaceae	====
Gladiolus atroviolaceus Boiss.	Iridaceae	Fig. 1. 13
Gynandriris sisyrinchium (L.) Parl.	Iridaceae	Fig A. 1. 14
Iris germanica L.	Iridaceae	Fig A. 1. 8
I. nigricans Dinsm.	Iridaceae	Fig A. 1. 7, Fig. A. 2. 19
Ajuga chia Schrib.	Lamiaceae	Fig. A. 3. 38
A. orientalis L.	Lamiaceae	====
Ballota undulata (Fresen) Boiss.	Lamiaceae	Fig. A. 4. 49
Eremostachys laciniata (L.) Bunge	Lamiaceae	Fig. A. 3. 41
Lamium amplexicaule L.	Lamiaceae	====
Marrubium cuneatum Banks & Sol.	Lamiaceae	====
M. vulgare L.	Lamiaceae	====
Mentha aquatica L.	Lamiaceae	Fig. A. 4. 58
M. longifolia L.	Lamiaceae	====
Micromeria nervosa (Desf.) Benth.	Lamiaceae	Fig. A. 3. 35
Phlomis syriaca Boiss.	Lamiaceae	Fig. A. 3. 33
Salvia ceratophylla L.	Lamiaceae	Fig. A. 4. 59
S. dominica L.	Lamiaceae	Fig. A. 4. 60
S. hierosolymitana Boiss.	Lamiaceae	Fig. A. 4. 45
S. palaestina Benth.	Lamiaceae	====
S. syriaca L.	Lamiaceae	====
S. verbenaca L.	Lamiaceae	Fig. A. 4. 46
Sideritis pullulans Vent.	Lamiaceae	====
Stachys cretica sub. sp. *vacillans* Rech. Fil.	Lamiaceae	====
Thymus capitatus (L.) Hoffmanns. & Link	Lamiaceae	Fig. A. 3. 34
Allium neapolitanum Cry	Liliaceae	====
Asphodelus aestivus Brot.	Liliaceae	Fig A. 1. 5
Asphodeline lutea (L.) Reichenb.	Liliaceae	Fig A. 1. 4
Asparagus stipularis Forscal	Liliaceae	Fig A. 1. 3
Bellevalia flexuosa Boiss.	Liliaceae	====
Colcicum brachyphyllum Boiss. & Hausskn.	Liliaceae	====
B. macrobotrys Boiss.	Liliaceae	====
Colchicum brachyphyllum Boiss. & Hausskn.	Liliaceae	====
C. hierosolymitana feinbr.	Liliaceae	====
C. stevenii Kunth	Liliaceae	====
C. tauri Siehe ex Stefan off	Liliaceae	====
Fritillaria libanotica (Boiss.) Boiss.	Liliaceae	====
Gagea reticulata (Pallas) Schult. Fil.	Liliaceae	Fig. A. 1. 10
Leopoldia comosa (L.) Parl	Liliaceae	====
Muscari pulchellum Heldr & Start	Liliaceae	Fig. A. 2. 22
M. communicatum Guss.	Liliaceae	====
Ornithogalum montanum Cyr.	Liliaceae	Fig. A. 2. 28
Tulipa agenesis DC.	Liliaceae	Fig. A. 2. 29
T. stylosa Stapf.	Liliaceae	====
Urginea maritima (L.) Baker	Liliaceae	Fig. A. 1. 11
Linum mucronatum Bertol.	Linaceae	====
L. pubescens Banks & Sol.	Linaceae	====
Lythrum junceum Banks & Sol.	Lythraceae	====
Alcea acaulis (Cav.) Alef.	Malvaceae	====
A. apterocarpa (Fenzl) boiss.	Malvaceae	====
A. digitata Boiss. alef.	Malvaceae	====
A. setosa (Boiss.) Alef.	Malvaceae	Fig. A. 4. 48
Malva sylvestris L.	Malvaceae	Fig. A. 2. 30
Ficus indica L.	Moraceae	====
Morus alba L.	Moraceae	====
M. nigra L.	Moraceae	====
Cephalanthera longifolia (L.) Fritsch	Orchidaceae	====
Orchis anatolica Boiss.	Orchidaceae	Fig. A. 2. 25
O. papilionacea L.	Orchidaceae	====
O. punctatus Steven ex Lindley	Orchidaceae	====

Oxalis pes-caprae L.	Oxalidaceae	====
Papaver polytrichum Boiss. & Kotschy	Papaveraceae	Fig. A. 2. 26
Roemeria hybrid (L.) DC.	Papaveraceae	====
Plantago afra L.	Plantaginaceae	====
P. lanceolata L.	Plantaginaceae	====
P. notata Lag.	Plantaginaceae	====
Aegilops biuncialis Vis.	Poaceae	====
Avena sativa Pott ex Link	Poaceae	====
A. longiglumis Pott ex Link	Poaceae	====
Bromus fasciculatus (Presl)	Poaceae	====
B. lanceolatus Roth.	Poaceae	====
B. madritensis L.	Poaceae	====
B. rubens L.	Poaceae	====
B. sterilis L.	Poaceae	====
B. syriacus Boiss. & Bl.	Poaceae	====
B. tectorum L.	Poaceae	====
Cynodon dactylon (L.) Pers.	Poaceae	====
Hordeum bulbosum L.	Poaceae	====
H. glaucum Steud.	Poaceae	====
H. spontaneum C. Koch	Poaceae	====
Lamarckia aurea (L.) Moench	Poaceae	====
Lolium rigidum Gaudin	Poaceae	====
Piptatherum falciforme (Bieb.) Roem. & Schult.	Poaceae	====
P. miliaceum (L.) Coss.	Poaceae	====
Poa bulbosa L.	Poaceae	====
Rostraria cristata (L.) Tzveler	Poaceae	====
Schismus arabicus Nees.	Poaceae	====
Sorghum halepense (L.) Pers.	Poaceae	====
Polygonum aviculare L.	Polygonaceae	====
P. equisetiformis Sibth. & Sm.	Polygonaceae	====
Anagallis arvensis L.	Primulaceae	====
Cyclamen persicum Miller	Primulaceae	Fig. A. 1. 9
Adonis aestivalis L.	Ranunculaceae	====
Anemone coronaria L.	Ranunculaceae	Fig A.1.1
Clematis cirrhosa L.	Ranunculaceae	====
Ranunculus asiaticus L.	Ranunculaceae	====
Reseda lutea L.	Rosaceae	====
Rhamnus dispermus Ehrenb. Ex. Boiss.	Rhamnaceae	====
Amygdalus communis L.	Rosaceae	Fig. A. 1. 17
Crataegus aronia (L.) Bosc. ex. DC.	Rosaceae	Fig. A. 4. 55
Pyrus syriacus Boiss.	Rosaceae	Fig. A. 4. 43
Sarcopoterium spinosum (L.) Spach.	Rosaceae	====
Asperula arvensis L.	Rubiaceae	====
Cruciata articulata (L.) Ehrendf.	Rubiaceae	====
Galium tricornutum Dandy	Rubiaceae	====
Valantia hispida L.	Rubiaceae	====
Anarrhinum forskahlii (J. F. Gmel) Culf.	Scrophulariaceae	====
Kickxia aegyptiaca (L.) Nabelek	Scrophulariaceae	====
Scrophularia deserti Delile	Scrophulariaceae	====
S. xanthoglossa Boiss.	Scrophulariaceae	====
Verbascum fruticulosum Post	Scrophulariaceae	Fig. A. 4. 56
V. galilaeum Boiss.	Scrophulariaceae	====
V. sinuatum L.	Scrophulariaceae	====
Veronica anagallis-aquatica L.	Scrophulariaceae	====
V. cymbalaria Boiss.	Scrophulariaceae	====
Hyoscyamus aureus L.	Solanaceae	====
H. reticulatus L.	Solanaceae	====
Solanum nigrum L.	Solanaceae	====
S. luteum Mill.	Solanaceae	====
Styrax officinalis L.	Styracaceae	====
Valerianella coronata (L.) DC.	Valerianaceae	=====



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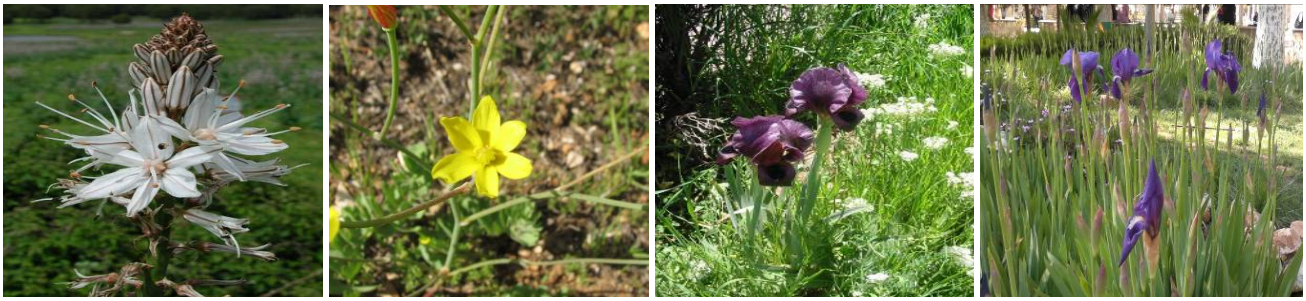

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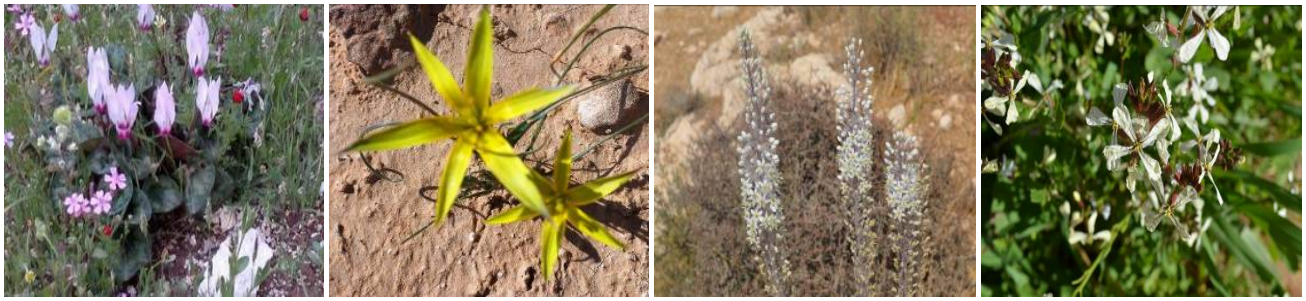

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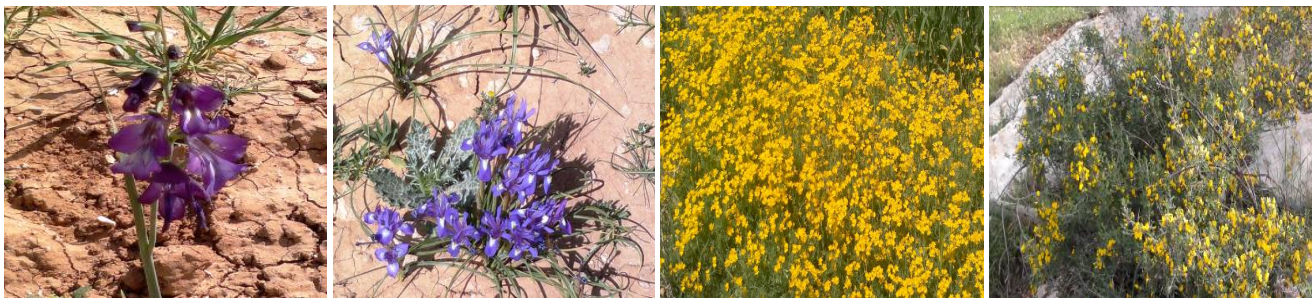

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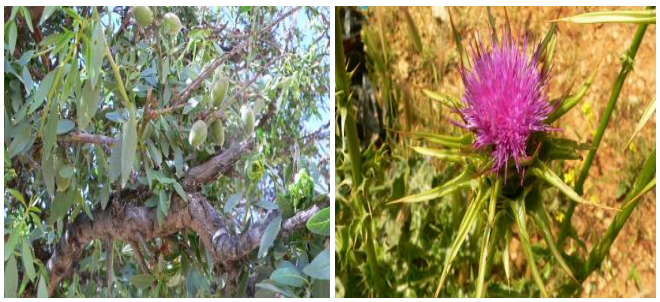

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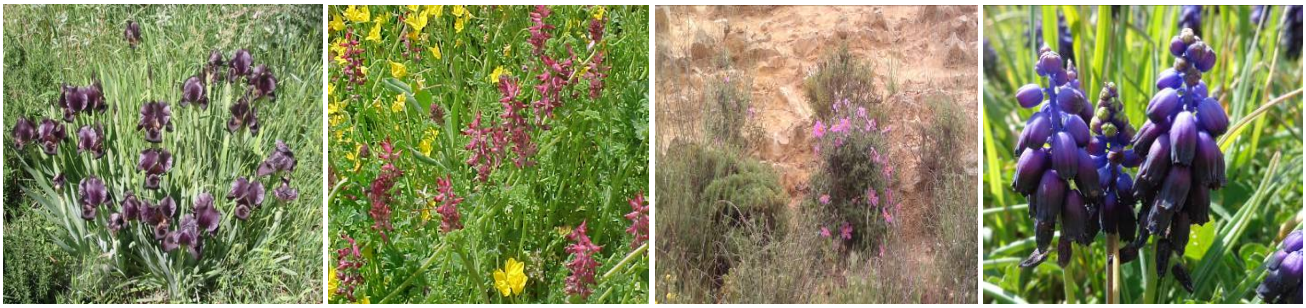
Fig A.1.1: *Anemone coronaria* 2. *Arum palaestinum* 3. *Asparagus stipularis* 4. *Asphodeline lutea* 5. *Asphodelus aestivus* 6. *Bongardia chrysogonum* 7. *Iris nigricans* 8. *Iris germanica* 9. *Cyclamen persicum* 10. *Gagea reticulata* 11. *Urginea maritima* 12. *Eruca sativa* 13. *Gladiolus atroviolaceus* 14. *Gynandriris sisyrinchium* 15. *Hypecoum imberbe* 16. *Calicotome villosa* 17. *Amygdalus communis* 18. *Silybum marianum.* Photographed by the author



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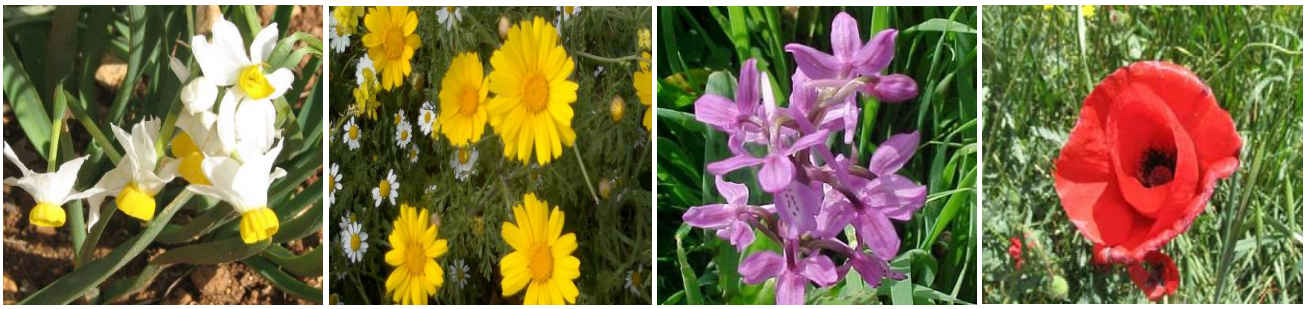

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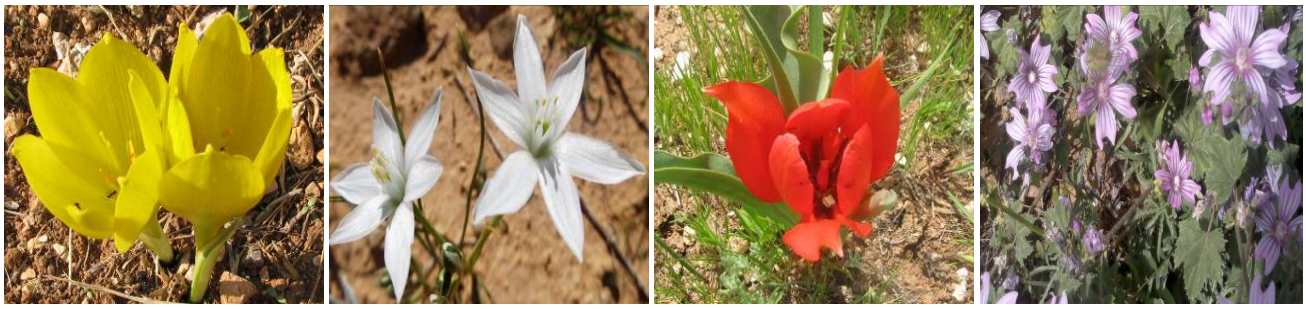

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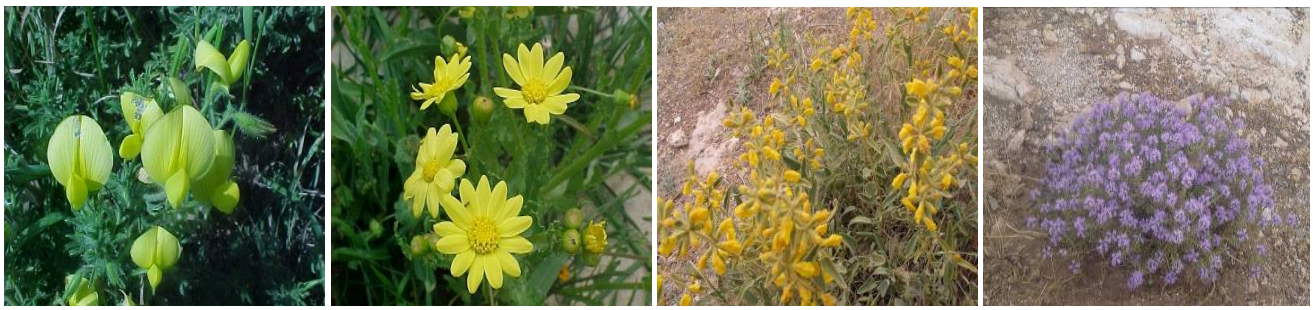
Fig A. 2. 19: *Iris nigricans* 20. *Fumaria densiflora* 21. *Cistus creticus* 22. *Muscari pulchellum* 23. *Narcissus tazetta* 24. *Chrysanthemum coronarium* 25. *Orchis anatolica* 26. *Papaver polytrichum* 27. *Sternbergia clusiana* 28. *Ornithogalum montanum* 29. *Tulipa agenesis* 30. *Malva sylvestris*. Photographed by the author



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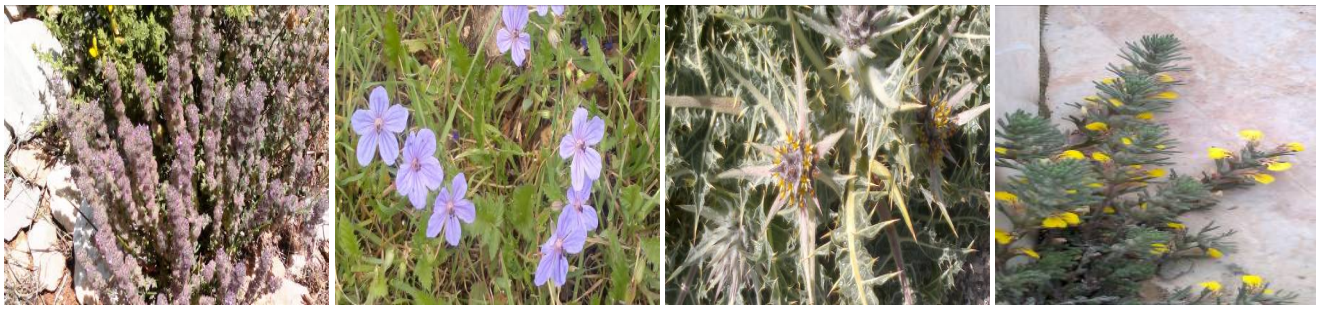

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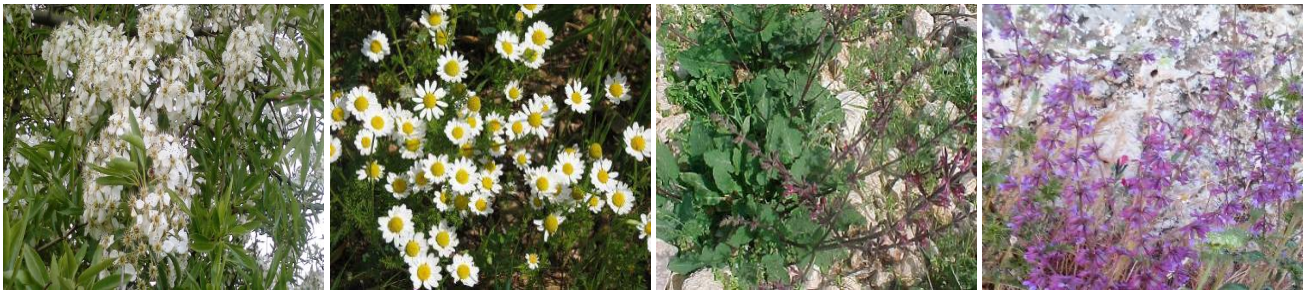
Fig A. 4. 43: *Pyrus syriaca* 44. *Anthemis palaestina* 45. *Salvia hierosolymitana* 46. *Salvia verbenaca* 47. *Anchusa strigosa* 48. *Alcea setosa* 49. *Ballota undulata* 50. *Artedia squamata* 51. *Lonicera etrusca* 52. *Sinapis alba* 53. *Cichorium pumilum* 54. *Capparis spinosa* 55. *Crataegus aronia* 56. *Verbascum fruticulosum* 57. *Rhus coriaria* 58. *Mentha aquatica* 59. *Salvia ceratophylla* 60. *Salvia dominica*. Photographed by the author



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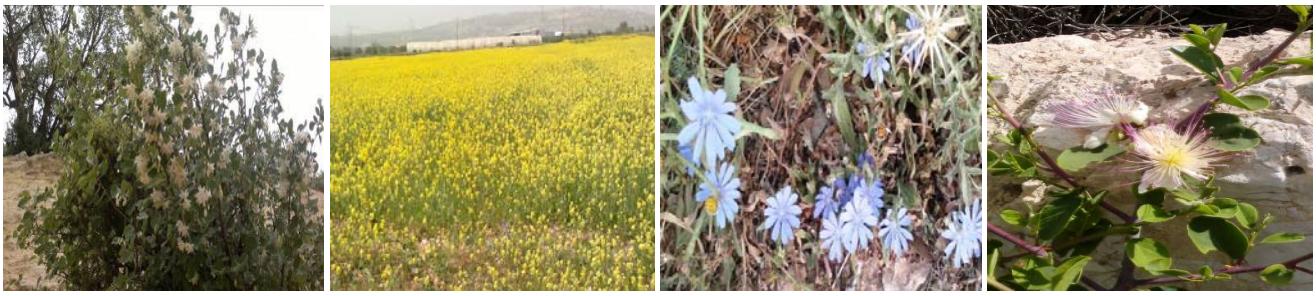

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Fig A. 5. 61: *Ferula communis* 62. Bader mountains and the countryside neighbourhood 63. Evergreen and deciduous oak trees 64. *Quercus* forest with cultivated plums and pears trees 65. Bader Mountains facing west borders 66. Bader Mountains showing beginning of degradation of oak forest and cultivated landscape 67. Bader area with cultivated olive trees 68.Grazing in farm dominated by wild oak trees 69. Old deciduous *Quercus* (oak)tree 70. Bader mountains facing E'ra and Yarqa areas in Salt (north west) 71. Bader mountains facing the south western borders72. I'raq Al- Ameer area, showing archeological touristic site. Photographed by the author.

4. Discussion

Bader Al-Jadida area in the western high mountains of Amman city is characterized by its Mediterranean mountainous climatic conditions and landscape; the area is covered by the dominant mixed oak forests, the ever green and deciduous *Quercus trees* that are interrupted by many stands of olive and some figs trees. The edaphic factors, the altitude and the climatic conditions have all contributed in determining the type of vegetation of the study area. The diversity of flowering plants in Bader Al-Jadida County is very rich in plant biodiversity, a number of 259 species and 2 subspecies have been recorded; many medicinal, aromatic and edible plants are also reported. Commercial wild valued plant crops like olive trees, mulberries, pomegranate, vines and figs; economic shrubs like *Opuntia* and *Crataegus* and other aromatic plant species like *Lonicera*, *Styrax and Calicotome villosa* are also recorded. Some endangered plants are recorded like the orchids and geophytes of *Narcissus*, *Ornithogalum*, *Sternbergia*, *Iris*, *Tulipa*, *Cyclamen and others* are reported; all the above mentioned plants are considered naturally and commercially important wild genetic resources. The natural forests of evergreen and deciduous types are natural historically old and of ecological values.

5. Conclusion

The flora of Bader Al-Jadida county is rich and diversified with regards to vascular flowering plants recorded; however it is unfortunately exposed to many manmade and natural destructive factors, irrational attitudes mainly by the visitors of the forests and the public park located in the neighborhood of Bader Al-Jadida area, such misbehaved attitudes is totally damaging to the rich natural biodiversity heritage of the area. Serious attention particularly by the domestic people as well as the local authorities are probably and hopefully would be rewarding to protect the natural heritage of the area, The control of selling the agricultural landscape and farms for residential use could also helpful to prevent the sustainable damage of the natural forests and the biodiversity of the area. The study area of Bader Al-Jadida is unfortunately exposed to destructive acts like building modern houses in the middle of a forest land, the irrational behavior by the visitors to the area, overgrazing by the locals livestock and the purchasing of lands and the transferring of the agricultural farms into houses or other cement constructions. The area is blessed by large areas of beautiful natural sites dominated by outstanding stands of dense evergreen and deciduous Oak forests, and cultivated farms of olive and figs trees, that are hopefully need the serious attention of the visitors or the community members, as well as the authorities, to sustain the natural resources and conservation of the biodiversity for many generations to come.

6. Acknowledgments

The author is grateful to the University of Jordan for the financial support during my sabbatical year 2014-2015, and for the Missouri Botanical Garden, St. Louis, USA, for the offered technical facilities. I acknowledge the kind invitation of the Department of Biological Sciences at Washington University in St. Louis/ Missouri, USA.

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