

An updated checklist and quantitative analysis of the Marmarica Plateau flora, in the north-eastern part of Libya

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Abstract

The Marmarica Plateau, which is situated on both sides of the Libyan-Egyptian border, has significant historical and ecological importance. Nevertheless, its botanical components have not been updated or reviewed recently. This paper aims to study the floristic composition of the plateau on the Libyan side by a comprehensive review of the five most detailed studies conducted in the area during the period 1930–2008. The study area covers only 3.4% of the Libyan territory, while the plant inventory at the species level comprises 31% (642/2082) of the National flora. Plant life-form is dominated by therophytes (60.7%) and chamaephytes (23.7%). Seven taxa are new records for the Libyan flora, 14 are alien, 28 were cultivated, and 37 taxa are endemic or near-endemic to the Libyan flora and nearby countries. A total of 225 taxa have not been recorded since 1930, which revealed that they are scarce and may have gone locally extinct due to climatic and unsustainable anthropogenic stresses. Another possibility is that these taxa may be incorrectly identified in the original publications, and this data have never been updated. The present study highlighted the richness and importance of the flora in the Libyan part of the Marmarica Plateau, necessitating conservation intervention, particularly for protecting endemic and rare plants and the biodiversity hotspots.

Keywords: conservation, endemism, floristic composition, historical botanical survey, Libyan Flora, plant life-form

Introduction

Although the Libyan territory covers a vast area (about 1.75 million km²) in North Africa south of the Mediterranean Sea, most of the country is desert (>90%), except for the narrow strip at the seashore (El-Barasi & Saaed 2013). Due to its geographical location near Europe, the exploration history of the Libyan flora was started very early by European scientists. It dates back to 1703, when Lemaire made some observations about the famous extinct plant ‘*Sylphium*’ in Cyrenaica, the eastern province of the country (Saaed *et al.* 2019). Despite this long record of surveys by national and international botanists, Libya’s floristic composition, in comparison to the other Mediterranean countries, is relatively not well known (Pergent *et al.* 2002, Feng *et al.* 2013, Mahklouf & Etayeb 2018), and many areas in Libya have received very little attention.

The Libyan part of the Marmarica Plateau (LMP), as it has been called since antiquity, is an example of a Libyan area where the floristic composition is not fully understood. It is a vast and significant phytogeographical territory under the influence of many other neighbouring phytochoria. The vegetation is made up of three diverse floras from different phytogeographical elements; the Mediterranean, the Irano-Turanian, and the Saharo-Arabian regions (Qaiser & El-Gadi 1984, Le Houérou 2004, El-Mokasabi 2017).

Through close review of the floristic surveys conducted in Libya, it is evident that Tripoli and El-Jabal El-Akhdar areas in the north, and some particular desert areas in the south, have received the most attention (e.g., Gimingham & Walton 1954, Quézel 1958, Keith 1965, Leonard 1966, 1970, 1971, 1997, 1999a,b, 2000a,b, 2001, Boulous 1975, 1982a,b, 1997, Brullo & Furnari 1979a,b,c,d, 1981, Pratov & El-Gadi 1980, Ozenda 1983, Mohamed 2004, Al-Zawey 2008, El-Barasi & Saaed 2012, Mukassabi *et al.* 2017), with little focus on many other areas like the LMP. Moreover, many of the previous surveys in the LMP have not covered the entire region (e.g., Schweinfurth & Ascherson 1883,

Durand & Barratte 1910, Vaccari 1914, Scaetta 1924, Krueger 1928, Pampanini 1930, Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992, Le Houérou 2004). Most of these surveys concentrated only on some parts of the LMP, mainly around Giarabub Oasis in the south, Gulf of Bumba in the north by the seashore, and Daphna area close to the Egyptian border.

Floristic studies provide information about the plants and natural resources of a region, as well as their associations with each other and their relationship with other abiotic and biotic elements. Plants represent important assets and wealth for many nations since they meet all kinds of crucial necessities for people, such as food, fuel, timber, medication, oils, and gums, as well for animals, such as fodder and shelter. It procures knowledge of enormous scientific and commercial importance, i.e., floristic surveys help to identify plant diversity for a scientific and systematic basis (Hazrat *et al.* 2018).

Besides, inventorying of floristic diversity is the baseline in exploration, conservation, sustainable use, and management of the biodiversity elements and monitoring changes over time (Stork & Samways 1995). According to the Convention on Biological Diversity (2012), one of the strategic actions of the Global Taxonomy Initiative is the ‘facilitation of all-taxa inventories in targeted national, regional, and sub-regional priority areas’ (Steyn *et al.* 2013). The LMP is amongst the most important rangeland areas in Libya. The documentation and updating of its biota (fauna and flora) are a key to fulfilling obligations and commitments under the Convention on Biological Diversity. Furthermore, a new phase of floristic research has been launched in Libya during the previous few years. It is aimed at updating the Libyan Flora because of the perception that the knowledge on the flora of Libya is outdated (Gawhari *et al.* 2018).

The current study aimed to document and analyse the floristic composition of the LMP based on previous floristic surveys, with three main goals: (1) collection of all available published and unpublished survey data in the region to build a floristic database, (2) production of the most up-to-date and comprehensive floristic checklist, and (3) description and analysis of the floristic inventories to provide an overview of the plant composition of this important region as a whole. This study is a step forward in updating the Libyan Flora by providing an inclusive and updated floristic inventory and quantitative analysis, with the currently accepted names of families, genera, and species for the recorded plants in the LMP. This is the first new study in Libya, which deals with the presently accepted family classification and taxa nomenclature outside that in the series volumes of the Libyan Flora (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992).

Previous floristic surveys in the LMP

Over the years, many studies by various authors have appeared that focused on the flora and vegetation of Libya in general, and several regional studies have been conducted in different parts of the country, including the study area. However, there has not been any complete classification and documentation of the flora of the LMP, and methods of classification used in this region do not yet include modern technologies, for example, the classification of the Angiosperm Phylogeny Group (2016) for the orders and families of flowering plants (APG IV).

Historically, the first recorded survey in the LMP was conducted by Della-Cella (1819), focusing on the species encountered during his journey with the Libyan army at that time. The trip was launched from Tripoli city in the west, along the Libyan coast, up to the Egyptian border in the east, including the study area. In this study, Della-Cella (1819) classified 260 species. Viviani (1824) reviewed this checklist, described some new species, and published ‘*Florae Libycae Specimen*’. Schweinfurth & Ascherson (1883) specifically investigated the flora of the LMP and collected 240 species of flowering plants. Based on the specimens of many collectors, Durand & Barratte (1910) summarised all the botanical knowledge of Libya known up to that time, including the study area. They published the Flora of Libya under the name of ‘*Florae Libycae Prodrum*’ (Durand & Barratte 1910), which contained a list of 1026 species. During the period 1912–1931, Marcello collected material for microbiological studies, but he also botanised for floristic research (Cuccuini *et al.* 2015). His collection was quite remarkable, with as many as 726 specimens, excluding duplicates, from different parts of Libya, including the LMP. He collected many of these specimens from the Tobruk area during his journey in 1912. Marcello did not identify all of his plant specimens, which he entrusted to Pampanini and Forti (Cuccuini *et al.* 2015). Marcello’s specimens from different Libyan areas comprised 28 new records for Libya and six new taxa of various ranks (Forti *et al.* 1932). In 1922, Amprimo travelled along the Tobruk-Giarabub caravan route and made special collections from the desert (Cuccuini *et al.* 2015).

During the period 1914–1928, Cavara with Grande and Trotter studied the flora in the areas of LMP, Derna, El-Jabal El-Akhdar, and Benghazi (Saaed *et al.* 2019). He published his main work ‘*La Flora Della Libia*’ (Cavara 1926), which included a description of 271 species. The amount of material collected by Cavara and his co-collectors was

huge, but it has never been published as a whole. Cavara, during his work in Libya (1914–1928), limited himself to mention the more significant findings and newly described taxa (Saaed *et al.* 2019; see also Cavara & Trotter 1914, Cavara 1923, 1928, Cavara & Grande 1925). In 1923, Casilli from the Office of Agriculture Services of Cyrenaica in Derna city made his collections at the Gulf of Bomba, Zavia Umm-Rzem, and other areas in the Cyrene region (Cuccuini *et al.* 2015). Countess Bargagli-Petrucci, a noble Florentine lady with a passion for botany and exotic travels, conducted three journeys to Libya (1930, 1932, and 1937). In the third journey, she crossed Cyrenaica and the LMP regions from west to east and arrived at Musaid city at the Egyptian border. Then she continued south for the Giarabub Oasis and collected a total of 235 species (Cuccuini *et al.* 2015).

According to Cuccuini *et al.* (2015) and Saaed *et al.* (2019), the specimens collected by Viviani (in 1824), Schweinfurth & Ascherson (in 1883), Taubert (in 1887), Letourneux (in 1889), Durand & Barratte (in 1910), Béguinot (in 1911), Borzi (in 1912), Andreucci (in 1913), Vaccari (in 1914), Trotter (in 1915), Zanon (in 1915–1918), Maugini (in 1919–1922), Krueger (in 1925–1928), and many other collectors (many did not publish their work), were the basis for the work of Pampanini (1914, 1930). He was the most remarkable of all the European collectors and researchers (Saaed *et al.* 2019). Pampanini visited Libya three times and made his own collection as well; in 1913 to Tripolitania and in 1933 & 1934 to Cyrenaica. In 1914, he published the first volume of the Flora of Libya ‘*Plantae Tripolitanae*’ (Pampanini 1914), and in 1930, he published the second volume ‘*Prodromo Della Flora Cirenaica*’ (Pampanini 1930).

In 1975, Ricceri and Steinberg made their collections in the areas of the LMP, particularly around Zavia Umm-Rjkbah east of Tobruk city and parts of northern Cyrenaica, and collected 350–400 specimens (Cuccuini *et al.* 2015). However, the most notable work of all was the publishing of a series of ‘Flora of Libya’ (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992) by Tripoli University (formerly Al-Fateh University) in cooperation with the Arab Development Institute, contributed to by many Libyan specialists and technicians, and with the collaboration of some national experts and international herbaria. This study was published in a sequence of volumes (152 families in 152 volumes). Al-Habony (1999) studied the vegetation and flora of a sector of the LMP from Tobruk city along the coast to the Egyptian border ‘Daphna area’ and collected 213 taxa. El-Shahary (2002) studied the flora of the LMP with more focus on the areas east and south of Tobruk city and collected 259 taxa. Le Houérou (2004) studied plant diversity in Marmarica (both the Libyan and Egyptian parts) and mentioned 1015 taxa. Unfortunately, this work could not be fully included in the current study because it focused more on the Egyptian part of the Marmarica Plateau and provided a floristic inventory for both sides, without specifying which ones are on the Libyan and which are on the Egyptian sides. Saaed (2008) surveyed the Daphna area east of Tobruk city and southern parts until 30 km from the shoreline and collected 114 taxa.

Despite the above studies, data on the vegetation of the LMP is still incomplete and scattered, and the flora of the region has not been studied thoroughly or information on it recently updated. Moreover, there is an apparent gap in the available information, including a lack of critical literature reviews and more detailed field surveys covering the entire region. Therefore, this current review is the first attempt to collate information from all the previous studies on the different parts of the LMP in one inclusive work and to provide a complete and updated checklist and quantitative analysis of the flora in this historically and ecologically important region.

Materials and methods

Study area

The LMP is a distinguishable region in the north-eastern part of Libya along the Mediterranean Sea and east to El-Jabal El-Akhdar region. It extends inside the border of Egypt to Alexandria city, west of the Nile River. It is a very homogenous region in terms of climate, geology, landscape features, and biota (Le Houérou 2004), with more anthropogenic activities in the Egyptian part. The Marmarica Plateau appears as a self-contained ecological and biogeographical unit, split into two arbitrary and uneven parts by the political border between Libya and Egypt. The present study focuses only on the Libyan part of this plateau (LMP), which encompasses a rectangular shape extending between longitudes 22°90′–25°00′ E and latitudes 29°40′–32°65′ N (Fig. 1). The study area stretches for about 200 km from the Gulf of Bomba in the west, to the Egyptian border in the east, and from the shoreline in the north to the Giarabub Oasis, some 300 km further south in the inland desert (Sahara Desert). It covers an area of about 60 000 km² and comprises 3.4% of the Libyan national territory.

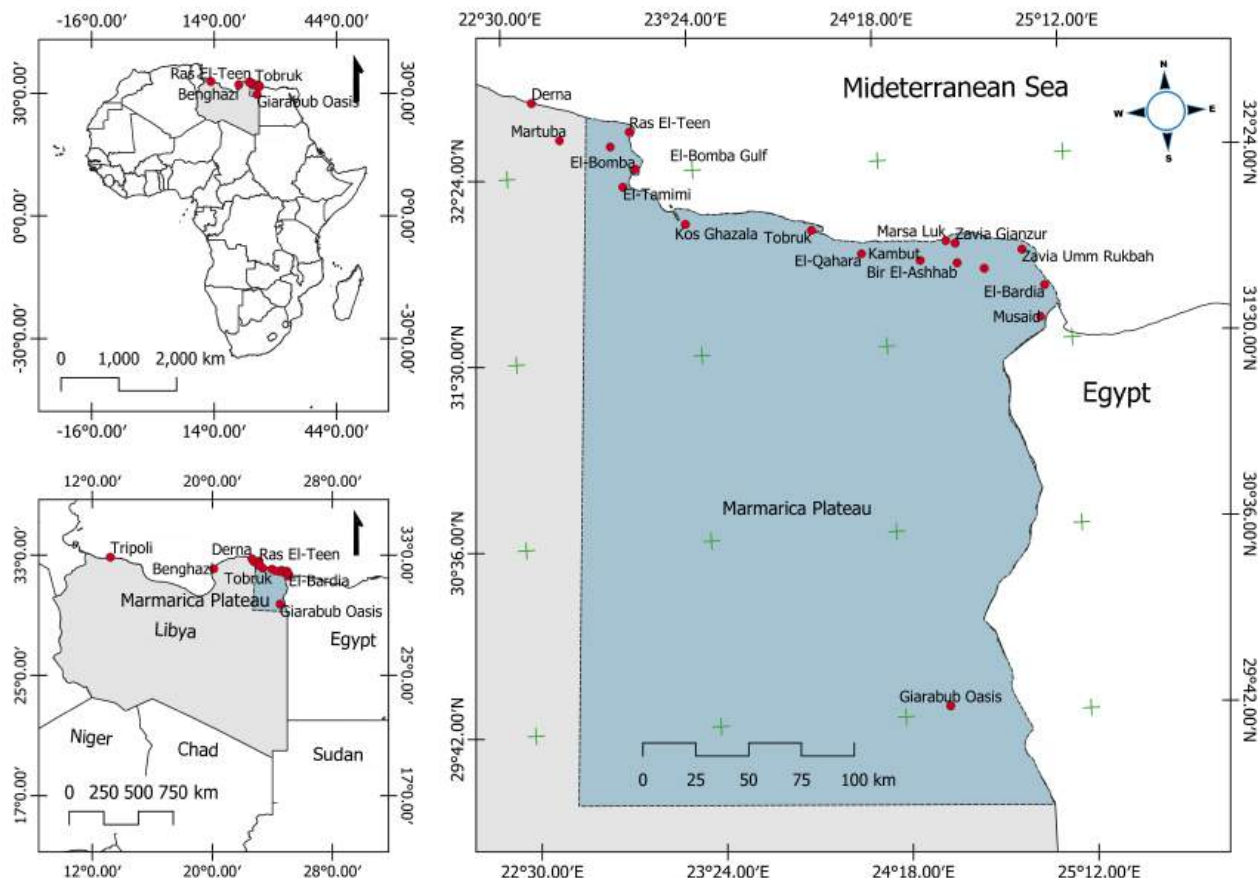


FIGURE 1. Map showing the geographical location of the study area (the Libyan part of the Marmarica Plateau).

The physiography of the study area consists mainly of a narrow coastal plain by the sea in the north and an undulated plateau reaching 220 m above sea level. The plateau softly declines southwards to sea level at the Giarabub Oasis. The plateau is divided by many dry river valleys (Wadiis) that occasionally flow in good rainy seasons, some towards the sea in the north and some southwards to end in the inland. A unique characteristic feature of this plateau is the existence of geological depressions scattered on the plateau's surface and extending as narrow ribbons running in an east-west direction, which is known locally as 'Sakhifas'. Most of these Sakhifas are closed depressions that act as traps for soil particles and runoff water from the plateau's higher surrounding lands. In general, the soil in the study area is dry, shallow soil sediment over a bedrock of calcareous origin, characterised by low organic matter (<2%), high calcium carbonate (17–43%), loamy and sandy textures, and tends to be alkaline (El-Barasi & Saaed 2013).

Extreme summer temperatures and sporadic and unreliable monomodal winter rainfall characterise the climate of Marmarica. The northern part of the plateau is described as an arid area with an irregular rainfall regime (El-Barasi & Saaed 2015). The mean annual rainfall is 184 mm/year at Tobruk city, 117 mm/year at El-Bardia city in the far east, and 89 mm/year at Tobruk airport 'Al-Adaam area' 25 km south of the coast. Mean annual maximum temperature in the northern parts of the plateau is 24°C, mean annual minimum temperature is 16°C, and mean annual relative humidity is 71%. Meanwhile, the southern part of the plateau is described by a hyper-arid climate (Sahara Desert) with a mean annual rainfall of less than 10 mm/year, mean annual maximum temperature of 29°C, mean minimum temperature of 14°C, and a mean relative humidity in the Giarabub Oasis of 50%. Mean annual evaporation rate in the northern part is approximately 2000 mm/year and 3000 mm/year in the Giarabub Oasis (unpublished meteorological data by the Libyan Meteorological Authority 1984–2010).

As a result of the predominate harsh environmental conditions, the vegetation in the area is thermo-xerophilic, dominated by a sparse framework of shrubs and dwarf shrubs constituting the permanent vegetation cover. A mass display of flowering annuals occurs after rainfall in winter and early spring, often on degraded or fallow lands (El-Barasi & Saaed 2015). The Marmarica Plateau is described as a typical arid rangeland area.

The vegetation belongs mainly to the Ibero-Maghribian sub-province of the Mediterraneo-steppic province within the Mediterranean phytogeographic region (Le Houérou 2004). Some Saharo-Arabian and Irano-Turanian elements

are also present, because of the vicinity of these two phytogeographic entities (Qaiser & El-Gadi 1984, El-Mokasabi 2017). However, each of the last two elements represents less than 10% of the flora, while the tropical one is almost absent (Le Houérou 2004). As in most arid and hyper-arid environments, the perennial vegetation cover in the study area is mainly restricted to the lowlands in the valleys, runnels, and depressions with deeper and finer sediments, which receive more water supply through runoff after rainfall.

The various morphological features and different climate regimes in the LMP create diverse habitat types. The strip in the north at the coast has relatively higher vegetation cover and biodiversity, while the valleys on the plateau shelter many wild biotas, especially rare and endemic taxa that disappeared from the open areas. Furthermore, the southern desert area is entirely different in terms of lower vegetation cover, density, and biodiversity (El-Barasi & Saaed 2013). However, xerophytic plants in the southern desert area are rare and extraordinary in terms of their adaptations, unique growth forms, special physiological features, and exceptional metabolic products.

Data resources and analysis

The present work is a compiled, comprehensive, and updated plant checklist with quantitative analysis based on a detailed review of an extensive database of specimen records mainly from five floristic studies in the LMP. These five studies were considered the most important surveys conducted in the study area, because each one is a complete study comprised of specimen collections, identification, and publication, which is not the case in most of the other surveys conducted in the LMP. The first survey is the *Flora of Libya* (vol. 2) by the Italian scientist Renato Pampanini ‘*Prodromo Della Flora Cirenaica*’ (Pampanini 1930). This is a general review and documentation of the collections of plant specimens by Pampanini himself and many other European scientists, carried out in the eastern province of Libya ‘Cyrenaica’ until the year 1930. The second survey is the ‘*Flora of Libya*’ (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992) published in volumes covering 152 families.

The third survey, carried out by Al-Habony (1999), cooperated with the Department of Botany, Faculty of Science, Benghazi University. This study comprised numerous field trips and detailed floristic surveys for more than two years, focusing on the area between Tobruk city and the Egyptian border. In this study, many new records and endemic species were documented. The fourth survey, carried out by El-Shahary (2002), is a detailed study covering most parts of the LMP, in cooperation with the Tripoli University Herbarium (ULT) at the Department of Botany, Faculty of Science, Tripoli University. This survey documented many new records and endemic species and was published in a book by Tobruk District’s local authority (Saaed *et al.* 2019). Saaed (2008) carried out the fifth survey with a particular focus on cultivated species and was conducted in cooperation with the Benghazi University and Libyan Academy of Post Graduate, Benghazi Branch. The last three surveys have a special significance in that: (1) the researchers were citizens of the study area, (2) they focused only on the LMP region, and (3) the surveys were conducted during intensive fieldwork and for an extended time (between 2–4 years) comparable to the first two surveys.

The current study virtually complements these five studies, taking into account the work of Le Houérou (2004) for plants whose locations are reported within the LMP. Initially, a comprehensive inventory of all recorded taxa within the boundaries of the LMP was compiled. Then, family, genus, and taxon identification were verified, and nomenclatures updated according to available literature: (1) *Flora of Libya* by Ali & Jafri (1976–1977), Jafri & El-Gadi (1977–1988), El-Gadi (1988–1992), (2) *Flora of Israel* by Danin & Fragman-Sapir (2016), and (3) *Flora of Egypt* by Boulos, eds. (1999, 2000, 2002, 2005, 2009). Currently accepted scientific names at the specific, generic, and family levels were updated according to the latest checklist of the Plants of the World Online (POWO 2020), African Plant Database (APD 2020), Global Biodiversity Information Facility (GBIF Secretariat 2020), and Roskov *et al.* (2020) ‘Species 2000 and ITIS Catalogue of Life’ as they appeared in April 2020. In cases where there were differences in nomenclature or classification between these resources, the names as in the POWO (2020) were accepted first, second as in APD (2020). If the taxon was not found in any of these two references, the names as in GBIF Secretariat (2020) were accepted. Many other bibliographical citations from recent floras and revisions of various groups for North Africa, or other neighbouring areas, which covered and clearly indicated the study specimens, were also consulted (Zahran 1972, Dobignard & Chatelain 2010–2013, El-Saied *et al.* 2015, WCSP 2020).

In the checklist (Appendix A), plants are arranged in major groups as they appear in the study area, namely Pteridophytes, Gymnosperms, and Angiosperms (Monocotyledons and Dicotyledons). Plant families are arranged alphabetically within each major plant group, followed by genera and species (also alphabetically) within each family. Each species includes a reference for the collection and identification. To facilitate referencing and tracking the old scientific nomenclature, the currently accepted name for the species is first provided and then the synonym (usually the old name). The importance of each family and genus was measured by the proportion of its species and genera

to the total number of recorded species, genera, and families in the study area (species/genera, species/families, and genera/families ratios).

Cultivated taxa are listed according to observations in the field during this study. Most cultivated plants are introduced from many parts of the world, and some are natives (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992, POWO 2020, APD 2020). Alien taxa are listed according to Mahklouf (2019) and our own observations and extensive work and experience in the field within the study area. Endemic and near-endemic plants, which are only found in Libya or in Libya and nearby countries and new records that were not recorded in the Flora of Libya (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992) were recognised with the help of several resources (Pampanini 1930, Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992, Boulos 1997, 1999, 2000, 2002, 2005, 2009, Al-Habony 1999, El-Shahary 2002, Le Houérou 2004, Saaed 2008, El-Mokasabi 2017, POWO 2020). To assess the variation in plant life-form, each plant species was assigned to a life-form category defined by Raunkiaer (1934) modified by Mueller-Dombois & Ellenberg (1974). After classifying these species within their life form categories, the number of species within each life form was expressed as a percentage value of the total number of species in all the vegetation groups.

In Appendix A, the alien species are indicated by (*Aln.*), cultivated species by (*Cul.*), doubtful identified species by (*Dou.*), endemic species by (*End.*), near-endemic species by (*Near*), and new record species for the Libyan flora after the production of the volumes of Flora of Libya (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992) by (*New*).

Results and discussion

Floristic composition

A critical review and analysis of the floristic records are of prime importance for a precise understanding of the vegetation and flora in any region. Biological assessments like floral composition, species diversity, and vegetation structural analysis help identify ecological characteristics, understanding ecosystem functions, and necessary for ecosystem management (Ali *et al.* 2017). From the current detailed review of the studied resources, the current floral catalogue of the LMP identified a total of ca. 642 species (647 taxa), taxonomically distributed among 342 genera and 75 families (Table 1). This represents 31% (642/2082) of the total national flora at the species level, 42% (342/819) at the generic level, and 49% (75/152) at the family level (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992, Saaed *et al.*, 2019). Of these, a total of ca. 620 taxa were wild, and ca. 28 taxa were cultivated plants, however many introduced from many parts of the world and some are indigenous to Libya. The low proportion of cultivated taxa reflects the unavailability of water resources, leading to minimal agricultural practices.

TABLE 1. The floristic richness of the different plant groups in the Libyan part of the Marmarica Plateau.

Plant groups	Families	Genera	Species	Subspecies	Varieties	Forma	Total taxa
Pteridophytes	1	2	2	-	-	-	2
Gymnosperms	2	2	4	1	-	-	4
Angiosperms (Monocotyledons)	12	62	108	7	-	-	108
Angiosperms (Dicotyledons)	60	276	528	48	5	1	533
Total	75	342	642	56	5	1	647

Pampanini (1930) recorded 422 taxa, Ali & Jafri (1976–1977), Jafri & El-Gadi (1977–1988) and El-Gadi (1988–1992) recorded 125, Al-Habony (1999) 213, El-Shahary (2002) 259, and Saaed (2008) 114. A total of 241 taxa were shared amongst the five surveys (Fig. 2). In comparison, 225 taxa were only recorded by Pampanini (1930), 18 only

by Ali & Jafri (1976–1977), Jafri & El-Gadi (1977–1988) and El-Gadi (1988–1992), 59 only by Al-Habony (1999), 64 only by El-Shahary (2002), 21 only by Saaed (2008), and 19 only by Le Houérou (2004) (Fig. 3).

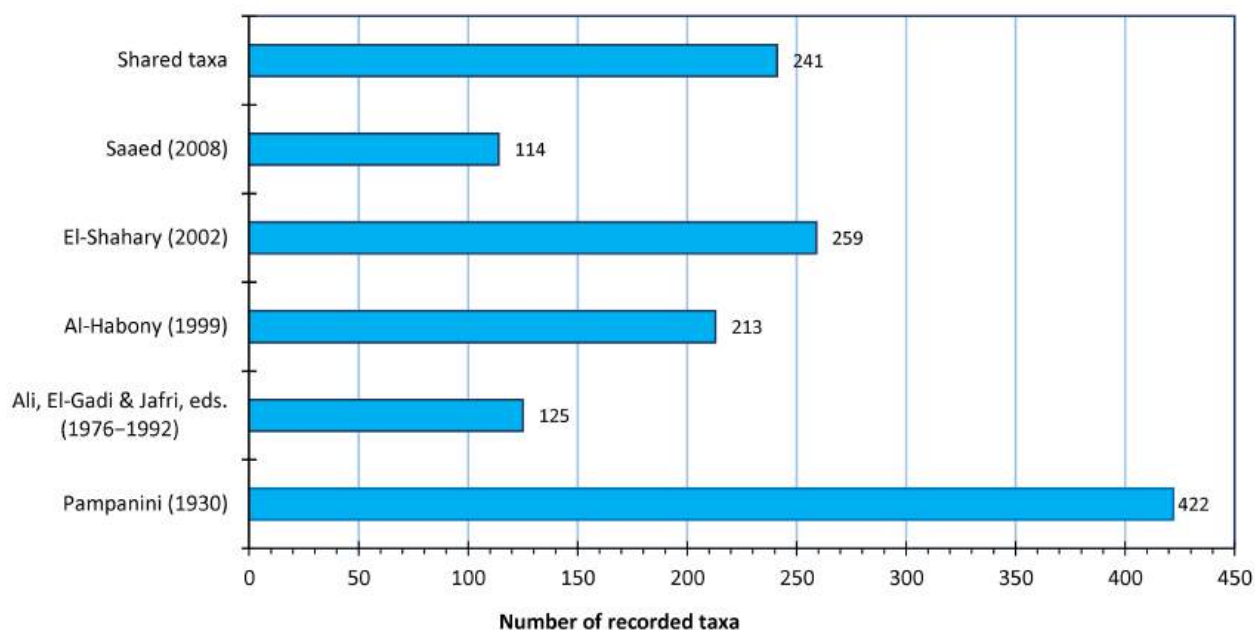


FIGURE 2. The number of recorded taxa by each study (Pampanini 1930, Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992, Al-Habony 1999, El-Shahary 2002, Saaed 2008) in the Libyan part of the Marmarica Plateau. There were 241 taxa mentioned in more than one study.

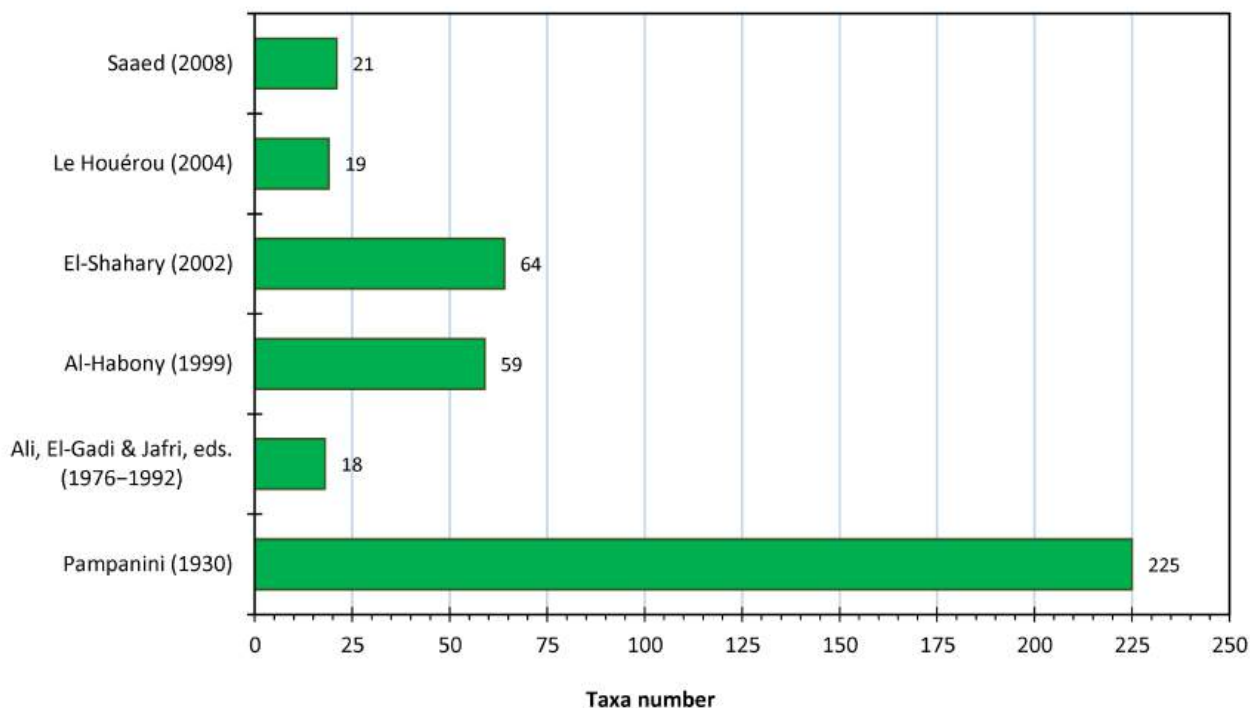


FIGURE 3. The number of taxa that were only recorded by one of the five surveys considered in this study (Pampanini 1930, Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992, Al-Habony 1999, El-Shahary 2002, Saaed 2008) in the Libyan part of the Marmarica Plateau.

The floristic composition revealed that the Pteridophytes were represented by one family, two genera, and two taxa; Gymnosperms by two families, two genera, and four taxa; Monocotyledons by 12 families, 62 genera, and 108 taxa; and Dicotyledons by 60 families, 276 genera, and 533 taxa (Table 1).

Species richness in the study area tends to be concentrated in numerous local centres of diversity. These diversity

centres are mainly found in the salt marshes at the seashore, valleys and Sakhifas on the plateau, the depressions south of the plateau, and the wet areas around the Giarabub Oasis (Fig. 4). These local centres have higher species diversity relative to the surrounding lands. Taxonomic diversity in the LMP was 1.9 for species/genera, 8.6 for species/families, and 4.6 for genera/families ratios.

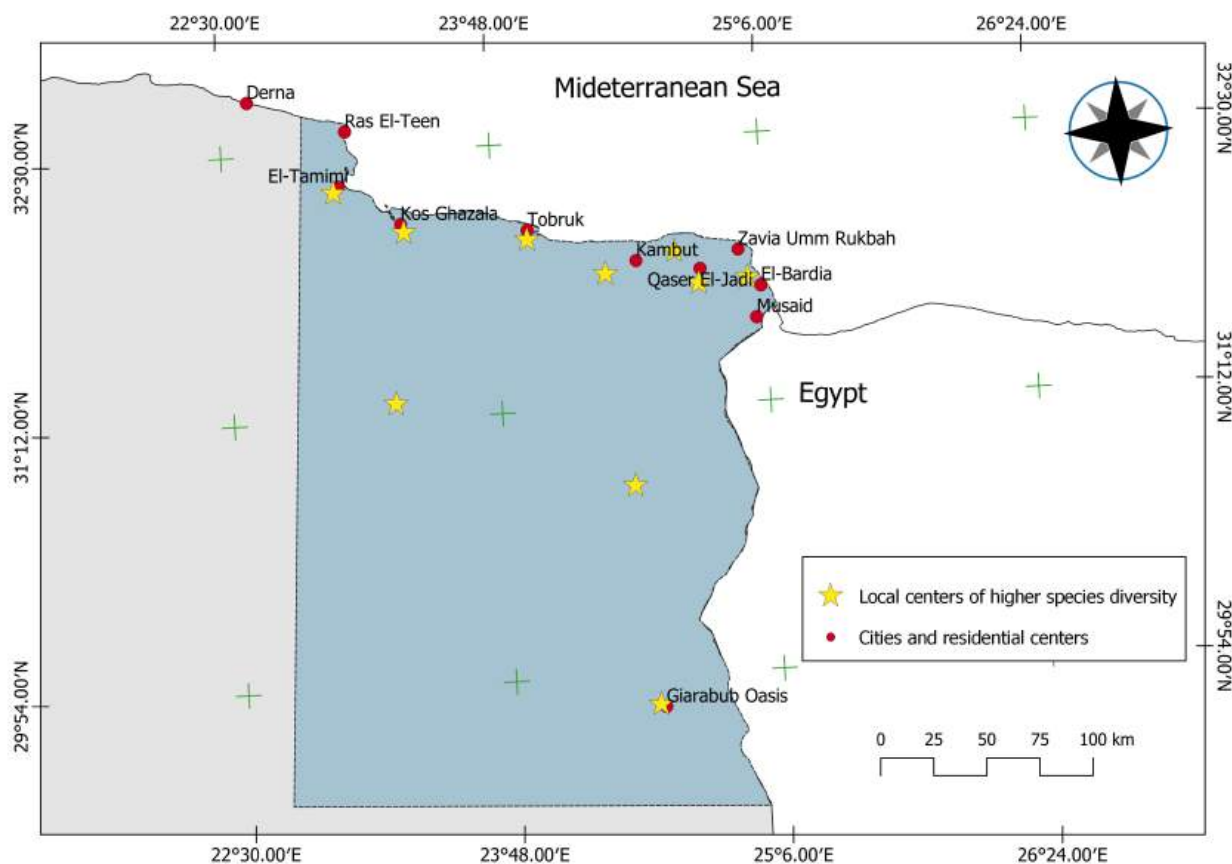


FIGURE 4. Local centres of higher species diversity in the Libyan part of the Marmarica Plateau relative to the surrounding areas.

In terms of species richness within plant families, the most prominent families, with the highest number of recorded species, were Asteraceae comprising 12.6% (81 species and 13 subspecies), followed by Fabaceae comprising 11.8% (76 species, six subspecies, and one variety), Poaceae 10.7% (69 species and five subspecies), Brassicaceae 6.1% (39 species, seven subspecies, and one variety), Amaranthaceae 5.8% (37 species and one subspecies), and Caryophyllaceae 4.4% (28 species and three subspecies) (Table 2 and Appendix A). Species distribution across the 75 families in the LMP was disproportionate. The six families mentioned above constitute 51.3% of the total flora at the species level and 50% at the generic level. Asteraceae, Poaceae, Fabaceae, and Brassicaceae are also the most prominent families in the flora of Libya and most other parts of the world (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992). They are distributed over a diverse range of micro-habitats in the study area and worldwide (Born *et al.* 2007, Ali *et al.* 2016). Despite mismanagement of the natural resources of the LMP over decades, the existence of Fabaceae and Poaceae amongst the leading families indicates the potential of LMP as a rangeland area, since the species belonging to these families are often very palatable (Le Houérou 2004). The minor families in the area consisted of two families, each represented by four species, seven families by three species, eight families by two species. Finally, 27 families each possessed only a single species (Appendix A).

Table 3 shows the twenty-three largest genera based on the number of recorded species, which comprise 25.4% of the total species in the LMP. Of these, 7.8% belong to Fabaceae, 2.2% Amaryllidaceae, 1.9% Euphorbiaceae, 1.6% Plantaginaceae, 1.4% Caryophyllaceae, and 1.2% to Cistaceae. The largest genera were *Allium* Linnaeus (1753: 294), represented by 2.2% of the total species, followed by *Euphorbia* Linnaeus (1753: 450) by 1.9%, *Astragalus* Linnaeus (1753: 755) and *Plantago* Linnaeus (1753: 112) represented by 1.6% each, *Silene* Linnaeus (1753: 416) by 1.4%, *Lotus* Linnaeus (1753: 773), *Medicago* Linnaeus (1753: 778), and *Helianthemum* Miller (1754: 432) represented by 1.2% each, and finally *Convolvulus* Linnaeus (1753: 153), *Vicia* Linnaeus (1753: 734), and *Erodium* L'Hér. ex Aiton (1789:

414) each represented by 1.1%. The trend of these genera is virtually the same as that in the flora of Libya (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992). These genera are large and widespread in arid zones worldwide (Feng *et al.* 2013).

TABLE 2. The richness of the 15 most prominent plant families (major families) in the Libyan part of the Marmarica Plateau flora, based on the number of species. These families comprise 73% of the flora in the study area at the species level. Families, genera, and species are presented according to the currently accepted classification by POWO (2020), APD (2020), and GBIF Secretariat (2020), which in some cases are different from the classification in the volumes of ‘Flora of Libya’ (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992).

Family	Number of genera in LMP	Number of species in LMP	% of genera from the total number of genera in LMP	% of genera in LMP from the same genera in Flora of Libya	% of species to the total number of species in LMP	% of species in LMP from species in the same family in Flora of Libya
Asteraceae	45	81	13.2%	46.4%	12.6%	33.8%
Fabaceae	26	76	7.6%	61.9%	11.8%	38.0%
Poaceae	46	69	13.5%	49.5%	10.7%	30.3%
Brassicaceae	24	39	7.0%	41%	6.1%	39.0%
Amaranthaceae	19	37	5.6%	70.4%	5.8%	54.5%
Caryophyllaceae	11	28	3.2%	61.1%	4.4%	45.2%
Lamiaceae	13	22	3.8%	59.1%	3.4%	33.8%
Apiaceae	14	20	4.1%	35.9%	3.1%	26.7%
Boraginaceae	12	18	3.5%	48%	2.8%	34%
Plantaginaceae	5	16	1.5%	100%	2.5%	100%
Amaryllidaceae	2	16	0.6%	100%	2.5%	100%
Euphorbiaceae	4	15	1.2%	80%	2.3%	44.1%
Convolvulaceae	3	11	0.9%	100%	1.7%	58.8%
Geraniaceae	3	10	0.9%	75%	1.6%	35.7%
Cistaceae	2	10	0.6%	50% 4	1.6%	43.5% 23

Amongst the recorded native flora in the LMP, seven species were considered new records after the publication of the Flora of Libya (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992). They are probably rare species. This indicates the need for more investigation in the area, as many other species may still be overlooked. Of these, two species belonged to Asteraceae, two to Caryophyllaceae, one to Amaranthaceae, one to Salicaceae, and one to Fabaceae (Table 4).

Alien plants in the area comprised 14 species (Table 5), most of which were confined to watercourses, disturbed sites, roadsides, and around dwelling areas and water points. Some of these alien species were annual weeds, which are likely present due to livestock intensification, agricultural practices, and the construction of new roads over the previous 80 years. Some of these plants were introduced during the Italian occupation (1911–1945), and others later during the second half of the 20th century. Alien plants dramatically affect the distribution, abundance, and reproduction of many native plants (Mahklouf 2019). Thus, they pose serious management challenges and major ecological concerns at local and regional levels, because of their increased competitive ability. They can often invade agricultural and natural lands and colonise disturbed lands more efficiently than native plants [e.g., *Nicotiana glauca* Graham (1828: 175), *Chenopodium murale* (Linnaeus 1753: 219) Fuentes, Uotila & Borsch (2012: 14), and *Ricinus communis* Linnaeus

(1753: 1007)]. Therefore, data on their identity is essential and considered the first step towards their monitoring and eradicating (Steyn *et al.* 2013).

Table 6 shows that cultivated plants constituted 27 taxa (27 species and three subspecies). Most of these were recorded only in the last survey (Saaed 2008) due to the slight increase in agricultural activity over the previous three decades.

TABLE 3. The 23 most prominent plant genera (major genera) in the Libyan part of the Marmarica Plateau flora, based on the number of species. Families, genera, and species are presented according to the currently accepted classification by POWO (2020), APD (2020), and GBIF Secretariat (2020), which in some cases are different from the family classification in the volumes of ‘Flora of Libya’ (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992).

Genus	Family	Number of species	Number of subspecies	Number of varieties	Total number of taxa	% from the total number of species in LMP	% from the total number of species in the same genus in Flora of Libya
<i>Allium</i> L.	Amaryllidaceae	14	1	-	14	2.2%	77.8%
<i>Euphorbia</i> L.	Euphorbiaceae	12	-	1	12	1.9%	44.4%
<i>Astragalus</i> L.	Fabaceae	10	1	-	10	1.6%	40.0%
<i>Plantago</i> L.	Plantaginaceae	10	-	-	10	1.6%	62.5%
<i>Silene</i> L.	Caryophyllaceae	9	2	-	9	1.4%	39.1%
<i>Lotus</i> L.	Fabaceae	8	-	-	8	1.2%	53.3%
<i>Medicago</i> L.	Fabaceae	8	-	-	8	1.2%	40.0%
<i>Helianthemum</i> Mill.	Cistaceae	8	2	-	8	1.2%	53.3%
<i>Convolvulus</i> L.	Convolvulaceae	7	-	-	7	1.1%	50.0%
<i>Vicia</i> L.	Fabaceae	7	3	-	9	1.1%	53.8%
<i>Erodium</i> L’Hér. ex Aiton	Geraniaceae	7	-	-	7	1.1%	46.7%
<i>Lathyrus</i> L.	Fabaceae	6	-	1	6	0.9%	50.0%
<i>Ononis</i> L.	Fabaceae	6	-	-	6	0.9%	50.0%
<i>Trifolium</i> Tourn. ex L.	Fabaceae	6	-	-	6	0.9%	27.3%
<i>Matthiola</i> W.T.Aiton	Brassicaceae	5	1	1	5	0.8%	62.5%
<i>Reseda</i> Tourn. ex L.	Resedaceae	5	1	-	5	0.8%	55.6%
<i>Limonium</i> Mill.	Plumbaginaceae	5	-	-	5	0.8%	41.7%
<i>Rumex</i> L.	Polygonaceae	5	-	-	5	0.8%	50.0%
<i>Anthemis</i> L.	Asteraceae	5	-	-	5	0.8%	45.5%
<i>Avena</i> L.	Poaceae	5	-	-	5	0.8%	71.4%
<i>Atriplex</i> L.	Amaranthaceae	5	-	-	5	0.8%	38.5%
<i>Teucrium</i> L.	Lamiaceae	5	-	-	5	0.8%	38.5%
<i>Herniaria</i> Tourn. ex L.	Caryophyllaceae	5	-	-	5	0.8%	83.3%

TABLE 4. Newly recorded native species to the Libyan flora that have been documented in the Libyan part of the Marmarica Plateau after the publication of the ‘Flora of Libya’ by Ali & Jafri (1976–1977), Jafri & El-Gadi (1977–1988), and El-Gadi (1988–1992). Species nomenclature is provided as the currently accepted name (not as in the original references). For old and current nomenclature, see Appendix A.

Species	Family	Recorded by
<i>Agathophora alopecuroides</i> (Delile) Fenzl ex Bunge	Amaranthaceae	Al-Habony (1999)
<i>Carthamus nitidus</i> Boiss.	Asteraceae	Al-Habony (1999)
<i>Chiliadenus iphionoides</i> (Boiss. & C.I.Blanche) Brullo	Asteraceae	El-Shahary (2002)
<i>Herniaria hirsuta</i> L.	Caryophyllaceae	Al-Habony (1999)
<i>Populus euphratica</i> Olivier	Salicaceae	El-Shahary (2002)
<i>Spergula arvensis</i> L.	Caryophyllaceae	Al-Habony (1999)
<i>Vicia hirsuta</i> (L.) Gray	Fabaceae	Al-Habony (1999)

Plant life-form

Based on plant morphology (life-form), the recorded plant species in the LMP can be divided into five groups (Fig. 5). The most frequent life-forms were therophytes (comprising 390 species; 60.7% of the total species), followed by chamaephytes (152 species; 23.7%), cryptophytes (57 species; 8.8%), phanerophytes (42 species; 6.6%), and hemi-cryptophytes (one species; < 1%). This life-form spectrum is similar to that in the flora of Libya, arid areas in the Middle East, and elsewhere worldwide (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992, Desmet 2007, Feng *et al.* 2013, Osman *et al.* 2014, Hatim *et al.* 2015, Ali *et al.* 2016, El-Mograby *et al.* 2018, Salama *et al.* 2018).

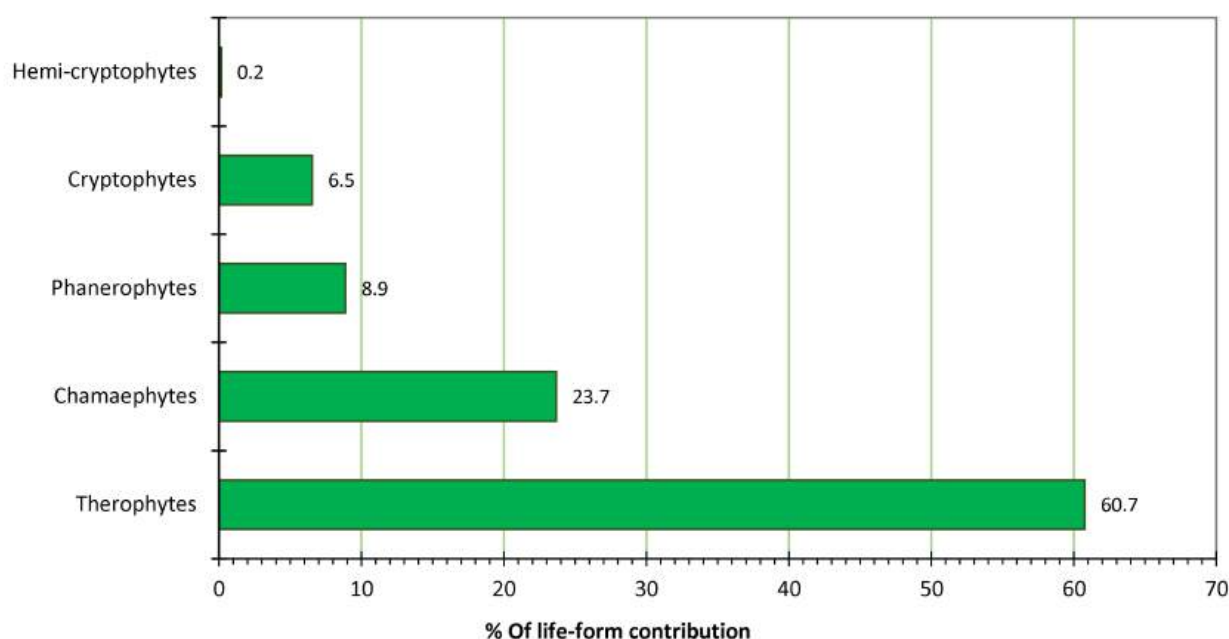


FIGURE 5. The percentage value of the contribution of life-form for plant species recorded in the Libyan part of the Marmarica Plateau. Species were assigned to a life-form category as defined by Raunkiær (1934) and modified by Mueller-Dombois & Ellenberg (1974).

TABLE 5. Alien plants recorded in the Libyan part of the Marmarica Plateau. Species nomenclature is provided as the currently accepted name (not as in the original references). For old and current nomenclature, see Appendix A.

Species	Family	Recorded by
<i>Acacia saligna</i> (Labill.) H.L.Wendl.	Fabaceae	Al-Habony (1999)
<i>Amaranthus blitoides</i> S.Watson	Amaranthaceae	El-Shahary (2002), Saaed (2008)
<i>Casuarina equisetifolia</i> L.	Casuarinaceae	Al-Habony (1999)
<i>Chenopodium murale</i> (L.) S.Fuentes, Uotila & Borsch	Amaranthaceae	Pampanini (1930), Al-Habony (1999), El-Shahary (2002), Saaed (2008)
<i>Erythrostemon gilliesii</i> (Hook.) Klotzsch	Fabaceae	Al-Habony (1999)
<i>Eucalyptus</i> sp.	Myrtaceae	Saaed (2008)
<i>Eucalyptus gomphocephala</i> A.Cunn. ex DC.	Myrtaceae	Al-Habony (1999), Saaed (2008)
<i>Heliotropium curassavicum</i> L.	Boraginaceae	Jafri & El-Gadi (1979), Al-Habony (1999), El-Shahary (2002)
<i>Nerium oleander</i> L.	Apocynaceae	Pampanini (1930), Al-Habony (1999), Saaed (2008)
<i>Nicotiana glauca</i> Graham	Solanaceae	Al-Habony (1999), El-Shahary (2002), Saaed (2008)
<i>Opuntia ficus-indica</i> (L.) Mill.	Cactaceae	Saaed (2008)
<i>Ricinus communis</i> L.	Euphorbiaceae	Al-Habony (1999)
<i>Vachellia nilotica</i> (L.) P.J.H.Hurter & Mabb.	Fabaceae	Al-Habony (1999)
<i>Volkameria inermis</i> L.	Lamiaceae	Al-Habony (1999), El-Shahary (2002)

The dominant life-forms represent the environmental conditions prevailing in the region and the way plants have evolved. Thus, life-form spectra can be used as a robust indicator for assessing the ecological health of a particular ecosystem (Hussian *et al.* 2015). The preponderance of therophytes and chamaephytes in the LMP indicates ecosystems shaped by extreme aridity and intense disturbance. The latter include long mis-utilisation of natural resources, mainly by overgrazing, rain-fed agriculture, and wood and species gathering for different purposes (El-Barasi & Saaed 2013, 2015). It also reflects the existence of active evolutionary processes, such as highly adapted and drought-resistant species, with a large component of the flora explicitly adapted to take advantage of drought conditions and disturbances by herbivores. In particular, the life-form structure in the LMP demonstrated the therophytic nature of plants and the opportunistic life strategies required to resist the ecosystem's instability and survive in such an extreme environment. Therophytes are more capable of survival under such harsh circumstances, i.e., desert climate and extended overgrazing, than perennial plants. The role of drought and disturbance mechanisms can be viewed as a cornerstone in the evolutionary and ecological processes driving and maintaining the floristic composition and overall diversity of ecosystems in the LMP.

TABLE 6. Cultivated plants recorded in the Libyan part of the Marmarica Plateau. Although most of these were introduced from many parts of the world (indicated by *), some are natives to Libya. Species nomenclature is provided as the currently accepted name (not as in the original references). For old and current nomenclature, see Appendix A.

Species	Family	Recorded by
* <i>Capsicum annuum</i> L.	Solanaceae	Saaed (2008)
* <i>Cicer arietinum</i> L.	Fabaceae	Pampanini (1930)
* <i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	Cucurbitaceae	Saaed (2008)
<i>Corchorus olitorius</i> L.	Malvaceae	Saaed (2008)
* <i>Coriandrum sativum</i> L.	Apiaceae	Pampanini (1930), Saaed (2008)
* <i>Cucumis melo</i> L.	Cucurbitaceae	Saaed (2008)
* <i>Cucumis melo</i> L. subsp. <i>melo</i>	Cucurbitaceae	Saaed (2008)
<i>Eruca vesicaria</i> (L.) Cav.	Brassicaceae	Al-Habony (1999), Saaed (2008)
<i>Ficus carica</i> L.	Moraceae	Al-Habony (1999), Saaed (2008)
* <i>Hordeum vulgare</i> L.	Poaceae	Al-Habony (1999), El-Shahary (2002), Saaed (008)
* <i>Lagunaria patersonia</i> (Andrews) G.Don.	Malvaceae	Al-Habony (1999)
<i>Mentha spicata</i> L.	Lamiaceae	Saaed (2008)
<i>Olea europaea</i> L.	Oleaceae	Al-Habony (1999), Saaed 2008)
<i>Olea europaea</i> L. subsp. <i>europaea</i>	Oleaceae	Pampanini (1930)
* <i>Opuntia ficus-indica</i> (L.) Mill.	Cactaceae	Saaed (2008)
* <i>Petroselinum crispum</i> (Mill.) Fuss	Apiaceae	Saaed (2008)
* <i>Phoenix dactylifera</i> L.	Arecaceae	Al-Habony (1999), Saaed (2008)
<i>Lathyrus oleraceus</i> Lam.	Fabaceae	Al-Habony (1999)
<i>Portulaca oleracea</i> L.	Portulacaceae	Pampanini (1930)
* <i>Prunus armeniaca</i> L.	Rosaceae	Saaed (2008)
<i>Prunus amygdalus</i> Batsch	Rosaceae	Al-Habony (1999), Saaed (2008)
* <i>Prunus persica</i> (L.) Batsch	Rosaceae	Saaed (2008)
* <i>Psidium guajava</i> L.	Myrtaceae	Saaed (2008)
* <i>Punica granatum</i> L.	Lythraceae	Saaed (2008)
* <i>Pyrus communis</i> L.	Rosaceae	Jafri & El-Gadi (1977)
<i>Raphanus raphanistrum</i> subsp. <i>sativus</i> (L.) Domin	Brassicaceae	Pampanini (1930)
<i>Solanum lycopersicum</i> L.	Solanaceae	Saaed (2008)
* <i>Solanum melongena</i> L.	Solanaceae	Saaed (2008)
* <i>Triticum aestivum</i> L.	Poaceae	Saaed (2008)
* <i>Vitis</i> sp.	Vitaceae	Saaed (2008)

Endemism

Amongst the recorded taxa in the LMP, 37 species were flagged as endemic or near-endemic to Libya (11 endemics and 26 near-endemics) (Fig. 6), belonging to 27 genera and 17 families (Table 7). This comprised 5.8% (37/642) of the flora in the LMP, 1.8% (37/2082) of the national flora, and 38.1% (37/97) of the endemic and near-endemic taxa in Libyan flora at the species level (Saaed *et al.* 2019). This relatively high proportion of endemic and near-endemic species in the region reflects its richness and the various distinctive habitats that function as a unique refuge, with certain micro-environmental factors (Le Houérou 2004). Endemics are usually rare and restricted to relatively small geographical regions, thus deserving special attention for their conservation (Boulos 1997, Hatim *et al.* 2015).

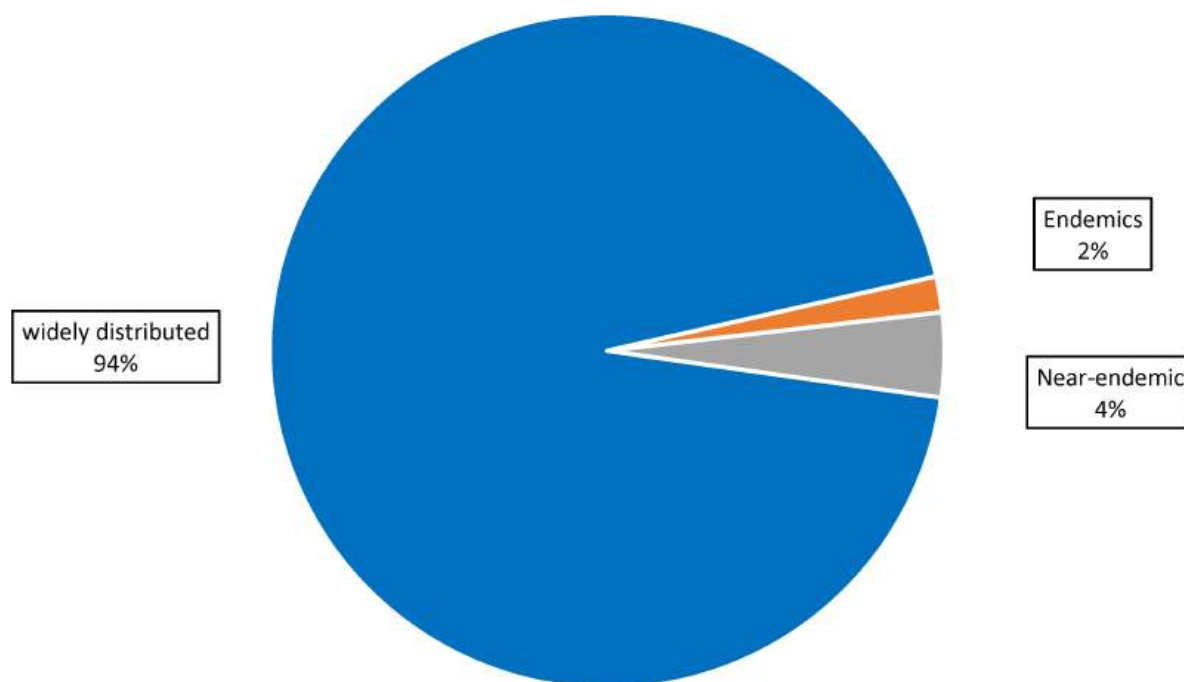


FIGURE 6. The percentage value of the contribution of the endemic and near-endemic plant species to Libya and neighbouring countries recorded in the Libyan part of the Marmarica Plateau.

TABLE 7. Endemic and near-endemic plants recorded in the Libyan part of the Marmarica Plateau. Species nomenclature is provided as the currently accepted name (not as in the original references). For old and current nomenclature, see Appendix A.

Species	Family	Recorded by	Distribution	Reference
<i>Allium blomfieldianum</i> Asch. & Schweinf.	Amaryllidaceae	Pampanini (1930)	NE Libya, N Egypt	Le Houérou (2004), POWO (2020)
<i>Allium desertorum</i> Forssk.	Amaryllidaceae	Le Houérou (2004)	Jordan, Egypt, Libya	Le Houérou (2004), POWO (2020)
<i>Allium longanum</i> Pamp.	Amaryllidaceae	Al-Habony (1999), El-Shahary (2002)	NE Libya, NW Egypt, Crete	Jafri & El-Gadi (1977), POWO (2020)
<i>Allium mareoticum</i> Bornm. & Gauba	Amaryllidaceae	Le Houérou (2004)	N Egypt, NE Libya	Le Houérou (2004), POWO (2020)
<i>Anthemis glareosa</i> E.A.Durand & Barratte	Asteraceae	Pampanini (1930)	Libya, Tunisia	Jafri & El-Gadi (1983) El-Mokasabi (2017), POWO (2020)

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TABLE 7. (Continued)

Species	Family	Recorded by	Distribution	Reference
<i>Anthemis taubertii</i> E.A.Durand & Barratte	Asteraceae	Pampanini (1930)	Libya	Jafri & El-Gadi (1983), El-Mokasabi (2017), POWO (2020)
<i>Arum cyrenaicum</i> Hruby	Araceae	El-Shahary (2002)	NE Libya, SW Crete	Jafri & El-Gadi (1977), El-Mokasabi (2017), POWO (2020)
<i>Bellevallia sessiliflora</i> (Viv.) Kunth	Asparagaceae	Pampanini (1930), Jafri & El-Gadi (1978), El-Shahary (2002)	N Libya, N Egypt	Jafri & El-Gadi (1978), El-Mokasabi (2017), POWO (2020)
<i>Carthamus mareoticus</i> Delile	Asteraceae	Pampanini (1930), Jafri, & El-Gadi (1983)	Libya, Egypt	Boulos (2002), Le Hou��rou (2004), El-Mokasabi (2017), POWO (2020)
<i>Centaurea glomerata</i> Vahl	Asteraceae	El-Shahary (2002)	Libya, Tunisia, N Egypt and Sinai	Jafri & El-Gadi (1983) Boulos (2002), POWO (2020)
<i>Crepis filiformis</i> Aiton	Asteraceae	Al-Habony (1999)	Libya	Jafri & El-Gadi (1983) Al-Habony (1999), El-Mokasabi (2017), POWO (2020)
<i>Ebenus armitagei</i> Schweinf. & Taub. ex Schweinf. & Asch.	Fabaceae	Pampanini (1930)	N Libya, NW Egypt	Jafri & El-Gadi (1980) Le Hou��rou (2004), POWO (2020)
<i>Echinops cyrenaicus</i> E.A.Durand & Barratte	Asteraceae	El-Shahary (2002)	Libya	Jafri & El-Gadi (1983) El-Mokasabi (2017), POWO (2020)
<i>Echinops galalensis</i> Schweinf.	Asteraceae	Al-Habony (1999)	N Libya to Arabian Peninsula	Jafri & El-Gadi (1980) Le Hou��rou (2004), POWO (2020)
<i>Enarthrocarpus pterocarpus</i> (Pers.) DC.	Brassicaceae	Pampanini (1930), Al-Habony (1999), El-Shahary (2002), Saaed (2008)	Libya, Egypt	Jafri & El-Gadi (1977), El-Mokasabi (2017), POWO (2020)
<i>Euphorbia parvula</i> Delile	Euphorbiaceae	Pampanini (1930)	Libya, Egypt	Jafri & El-Gadi (1982), Boulos (2000), POWO (2020)
<i>Ferula marmarica</i> Asch. & Taub. ex Asch. & Schweinf.	Apiaceae	Pampanini (1930)	NE Libya, Egypt	Jafri & El-Gadi (1985), Boulos (2000), Le Hou��rou (2004), POWO (2020)
<i>Herniaria cyrenaica</i> F.Herm.	Caryophyllaceae	Le Hou��rou (2004)	NE Libya, N Egypt	Le Hou��rou (2004), POWO (2020)
<i>Limonium cyrenaicum</i> (Rouy) Brullo	Plumbaginaceae	El-Shahary (2002)	NE Libya	Jafri & El-Gadi (1984), El-Mokasabi (2017), POWO (2020)

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TABLE 7. (Continued)

Species	Family	Recorded by	Distribution	Reference
<i>Limonium tubiflorum</i> (Delile) Kuntze	Plumbaginaceae	Pampanini (1930), Jafri & El-Gadi (1984a), Al-Habony (1999), El-Shahary (2002)	Libya, Egypt	POWO (2020)
<i>Linaria laxiflora</i> subsp. <i>calcarlongum</i> Qaiser	Plantaginaceae	Al-Habony (1999)	Libya	Jafri & El-Gadi (1982), Al-Habony (1999), El-Mokasabi (2017), POWO (2020)
<i>Nigella arvensis</i> subsp. <i>taubertii</i> (Brand) Maire	Ranunculaceae	Pampanini (1930)	Libya, Egypt	Le Houérou (2004)
<i>Onopordum cyrenaicum</i> Maire & Weiller	Asteraceae	Al-Habony (1999)	NE Libya	Jafri & El-Gadi (1983), Al-Habony (1999), El-Mokasabi (2017), POWO (2020)
<i>Pancratium arabicum</i> Sickenb.	Amaryllidaceae	Le Houérou (2004)	N Egypt to Sinai, NE Libya	Le Houérou (2004), POWO (2020)
<i>Plantago cyrenaica</i> E.A.Durand & Barratte	Plantaginaceae	Pampanini, (1930)	NE Libya	Jafri & El-Gadi (1979), POWO (2020)
<i>Ranunculus cyclocarpus</i> Pamp.	Ranunculaceae	El-Shahary (2002)	NE Libya	Jafri & El-Gadi (1984), El-Mokasabi (2017), POWO (2020)
<i>Silene biappendiculata</i> Ehrh. ex Rohrb.	Caryophyllaceae	Pampanini (1930)	Libya to Sinai	Jafri & El-Gadi (1978), Le Houérou (2004), POWO (2020)
<i>Silene fruticosa</i> L.	Caryophyllaceae	Le Houérou (2004)	Sicilia to Cyprus, Egypt, Libya	Le Houérou (2004), POWO (2020)
<i>Silene marmarica</i> Bég. & A.Vacc.	Caryophyllaceae	Jafri & El-Gadi (1978)	Libya	Jafri & El-Gadi (1978), El-Mokasabi (2017), POWO (2020)
<i>Teucrium barbeyanum</i> Asch. & Taub. ex E.A.Durand & Barratte	Lamiaceae	Pampanini (1930)	Libya	Jafri & El-Gadi (1985), El-Mokasabi (2017), POWO (2020)
<i>Teucrium brevifolium</i> Schreb.	Lamiaceae	Pampanini (1930), Al-Habony (1999)	S & E Mediterranean	Jafri & El-Gadi (1985), Le Houérou (2004), POWO (2020)
<i>Teucrium davaeanum</i> Coss.	Lamiaceae	Pampanini (1930)	NE Libya	Jafri & El-Gadi (1985), El-Mokasabi (2017), POWO (2020)
<i>Valantia columella</i> (Ehrenb. ex Boiss.) Bald.	Rubiaceae	Al-Habony (1999)	N Libya, Egypt	Jafri & El-Gadi (1979), Boulos (2000), El-Mokasabi (2017), POWO (2020)

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TABLE 7. (Continued)

Species	Family	Recorded by	Distribution	Reference
<i>Valerianella petrovichii</i> Asch.	Caprifoliaceae	Pampanini (1930), Jafri & El-Gadi (1977)	Libya, N Egypt	Jafri & El-Gadi (1977), Boulos (2002), El-Mokasabi (2017), POWO (2020)
<i>Verbascum letourneuxii</i> Asch.	Scrophulariaceae	Pampanini (1930), Al-Habony (1999), El-Shahary (2002)	Libya, N Egypt	Jafri & El-Gadi (1982), Boulos (2002), Le Houérou (2004), El-Mokasabi (2017), POWO (2020)
<i>Viola scorpiuroides</i> Coss.	Violaceae	Al-Habony (1999), El-Shahary (2002)	Libya to Egypt, South Greece, Crete	Ali & Jafri (1977), Le Houérou (2004), POWO (2020)
<i>Zilla spinosa</i> subsp. <i>biparmata</i> (O.E.Schulz) Maire & Weiller	Brassicaceae	Le Houérou (2004)	Egypt, Libya	Le Houérou (2004), POWO (2020)

Plants not recorded from the LMP since 1930 or before

A total of 221 species (223 taxa) belonging to 40 families, and 155 genera have not been re-recorded in all the surveys conducted in the LMP after the work of Pampanini in 1930 (Table 8). This comprised 34.4% (221/642) of the recorded species in the LMP. The most significant percentage of disappeared species were in the areas around Tobruk city (67%), then around El-Bardia village (33%), around Giarabub oasis (13%), around Ain El-Ghazala village (3%), around Marsa Luk village (3%), and $\leq 1\%$ in the other areas (Table 8). Many of these plants existed in more than one location in the LMP. The previously mentioned areas should be subject to future extensive and detailed floristic surveys. Most of these species belong to Asteraceae (36 species), Poaceae (36 species), Fabaceae (30 species), Brassicaceae (17 species), Boraginaceae (11 species), Caryophyllaceae (11 species), and Cistaceae (10 species).

TABLE 8. Plant taxa that have not been recorded in the LMP since the work of Pampanini (1930). Taxa nomenclature is provided as the currently accepted names (not as in the original references). For old and current nomenclature, see Appendix A.

Family	Species	Location and last reference as in Pampanini (1930)
Pteridaceae	<i>Anogramma leptophylla</i> (L.) Link	Tobruk by Schweinfurth in 1883
Ephedraceae	<i>Ephedra foliata</i> Boiss. ex C.A.Mey.	El-Bardia by Schweinfurth in 1890
Ephedraceae	<i>Ephedra</i> sp.	Giarabub Oasis by Confalonieri in 1926–1927
Amaryllidaceae	<i>Allium aschersonianum</i> Barbey	Tobruk by Schweinfurth in 1883
Amaryllidaceae	<i>Allium blomfieldianum</i> Asch. & Schweinf.	Zavia Giansur by Cavara in 1924
Amaryllidaceae	<i>Allium paniculatum</i> subsp. <i>pallens</i> (L.) K.Richt.	Tobruk by Cavara in 1924
Amaryllidaceae	<i>Allium subvillosum</i> Salzm. ex Schult. & Schult.f.	Tobruk by Vaccari in 1914
Asparagaceae	<i>Drimia pancration</i> (Steinh.) J.C.Manning & Goldblatt	El-Bardia by Schweinfurth in 1890
Asparagaceae	<i>Prospero autumnale</i> (L.) Speta	Tobruk by Cavara in 1924
Colchicaceae	<i>Colchicum capense</i> (L.) J.C.Manning & Vinn. subsp. <i>capense</i>	Libyan part of Marmarica by Pacho in 1824 Tobruk by Vaccari in 1912

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Juncaceae	<i>Juncus bufonius</i> L.	El-Bardia by Schweinfurth in 1890
Juncaceae	<i>Juncus rigidus</i> Desf.	Giarabub Oasis by Petrovich in 1880
Poaceae	<i>Aegilops bicornis</i> (Forssk.) Jaub. & Spach	El-Bardia by Schweinfurth in 1890
Poaceae	<i>Ammochloa palaestina</i> Boiss.	El-Bardia by Schweinfurth in 1890
Poaceae	<i>Ampelodesmos mauritanicus</i> (Poir.) T.Durand & Schinz	Gulf of Bomba by Scaetta in 1921
Poaceae	<i>Avena barbata</i> Pott ex Link	Gulf of Bomba by Scaetta in 1921 Tobruk by Vaccari in 1912
Poaceae	<i>Briza maxima</i> L.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Poaceae	<i>Bromus fasciculatus</i> C.Presl	Tobruk by Vaccari in 1912
Poaceae	<i>Bromus rubens</i> L.	Tobruk by Schweinfurth in 1883
Poaceae	<i>Calamagrostis arenaria</i> (L.) Roth	Marsa Luk by Cavara in 1925
Poaceae	<i>Castellia tuberculosa</i> (Moris) Bor	El-Bardia by Schweinfurth in 1890
Poaceae	<i>Cenchrus ciliaris</i> L.	Tobruk by Schweinfurth in 1883
Poaceae	<i>Cutandia dichotoma</i> (Forssk.) Trab.	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918
Poaceae	<i>Cutandia maritima</i> (L.) Barbey	Tobruk by Vaccari in 1912
Poaceae	<i>Cynosurus coloratus</i> Lehm. ex Steud.	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918
Poaceae	<i>Dactylis glomerata</i> subsp. <i>hispanica</i> (Roth) Nyman	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918
Poaceae	<i>Desmazeria philistaea</i> (Boiss.) H.Scholz	Tobruk Coast by Vaccari in 1914
Poaceae	<i>Desmazeria sicula</i> (Jacq.) Dumort.	Tobruk by Vaccari in 1912
Poaceae	<i>Festuca ligustica</i> (All.) Bertol.	Tobruk by Cassinera in 1918
Poaceae	<i>Festuca myuros</i> L.	El-Bardia by Schweinfurth in 1890
Poaceae	<i>Hordeum spontaneum</i> K.Koch	Tobruk by Vaccari in 1912 El-Bardia by Schweinfurth in 1890
Poaceae	<i>Hordeum murinum</i> subsp. <i>leporinum</i> (Link) Arcang.	Tobruk by Vaccari in 1912
Poaceae	<i>Hyparrhenia hirta</i> (L.) Stapf	Tobruk by Schweinfurth in 1883 & Cassinera in 1918
Poaceae	<i>Imperata cylindrica</i> (L.) Raeusch.	Giarabub Oasis by Confalonieri in 1926–1927 & Krüger in 1926
Poaceae	<i>Melica minuta</i> L.	El-Bardia by Schweinfurth 1890

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Poaceae	<i>Parapholis incurva</i> (L.) C.E.Hubb.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Poaceae	<i>Phalaris minor</i> Retz.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Poaceae	<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918 El-Bardia by Schweinfurth in 1890 Giarabub Oasis by Confalonieri in 1926-1927
Poaceae	<i>Rostraria cristata</i> (L.) Tzvelev	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Poaceae	<i>Schismus barbatus</i> (L.) Thell.	Tobruk by Schweinfurth in 1883
Poaceae	<i>Setaria verticillata</i> (L.) P.Beauv.	Giarabub Oasis by Krüger in 1926
Poaceae	<i>Sphenopus divaricatus</i> (Gouan) Rchb.	Tobruk by Vaccari in 1912, Cassinera in 1918 & Schweinfurth in 1883
Poaceae	<i>Sporobolus pungens</i> (Schreb.) Kunth	Tobruk by Vaccari in 1912, Cassinera in 1918 & Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890 Giarabub Oasis by Krüger in 1927
Poaceae	<i>Stipa lagascae</i> Roem. & Schult.	Tobruk by Vaccari in 1912
Poaceae	<i>Stipagrostis plumosa</i> subsp. <i>seminuda</i> (Trin. & Rupr.) H.Scholz	Way to Giarabub Oasis by Krüger in 1925 Giarabub Oasis by Confalonieri in 1926–1927
Poaceae	<i>Stipellula parviflora</i> (Desf.) Röser & Hamasha	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918
Poaceae	<i>Tetrapogon villosus</i> Desf.	El-Bardia by Schweinfurth in 1890
Poaceae	<i>Thinopyrum junceum</i> (L.) Á.Löve	Gulf of Bomba by Taubert in 1875 Tobruk by Vaccari in 1912
Amaranthaceae	<i>Beta vulgaris</i> subsp. <i>maritima</i> (L.) Arcang.	Tobruk by Vaccari in 1912
Amaranthaceae	<i>Chenopodium</i> sp.	Giarabub Oasis by Confalonieri in 1926–1927
Amaranthaceae	<i>Haloxylon tamariscifolium</i> (L.) Pau	Gulf of Bomba by Taubert in 1887 Tobruk by Schweinfurth in 1883 & Vaccari in 1913 The way to Giarabub Oasis by Krüger in 1925
Amaranthaceae	<i>Suaeda pruinosa</i> Lange	El-Bardia by Krüger in 1926
Apiaceae	<i>Ammi majus</i> L.	Giarabub Oasis by Krüger 1926
Apiaceae	<i>Cuminum cyminum</i> L.	Libyan part of Marmarica by Pacho in 1826
Apiaceae	<i>Ferula marmarica</i> Asch. & Taub. ex Asch. & Schweinf.	Gulf of Bomba by Taubert in 1887 Tobruk by Cassinera in 1918 El-Bardia by Schweinfurth in 1890
Apiaceae	<i>Foeniculum vulgare</i> Mill.	Tobruk by Schweinfurth in 1883 Giarabub Oasis by Krüger 1927
Apiaceae	<i>Scaligeria napiformis</i> (Willd. ex Spreng.) Grande	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Asteraceae	<i>Achillea maritima</i> (L.) Ehrend. & Y.P.Guo	Tobruk by Cavara and Grande in 1924
Asteraceae	<i>Anacyclus monanthos</i> (L.) Thell. subsp. <i>monanthos</i>	Tobruk by Vaccari in 1912, Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Asteraceae	<i>Anthemis cotula</i> L.	Tobruk by Vaccari in 1912
Asteraceae	<i>Anthemis glareosa</i> E.A.Durand & Barratte	Tobruk by Cassinera in 1918
Asteraceae	<i>Anthemis pseudocotula</i> Boiss.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912 Bardia by Schweinfurth in 1890
Asteraceae	<i>Anthemis taubertii</i> E.A.Durand & Barratte	Tobruk by Cavara and Grande in 1924
Asteraceae	<i>Atractylis carduus</i> (Forssk.) C.Chr.	Gulf of Bomba and Ain El-Ghazala by Taubert in 1887 Tobruk by Vaccari in 1912
Asteraceae	<i>Calendula palaestina</i> Boiss.	Tobruk by Vaccari in 1914 & Cassinera in 1918
Asteraceae	<i>Carduus pycnocephalus</i> L.	Tobruk by Schweinfurth in 1883 Bardia by Schweinfurth in 1890
Asteraceae	<i>Carlina involucrata</i> Poir.	Tobruk by Schweinfurth in 1883 Bardia by Schweinfurth in 1890
Asteraceae	<i>Carlina sicula</i> subsp. <i>mareotica</i> (Asch. & Schweinf.) Greuter	Tobruk by Vaccari in 1912, in 1913 El-Bardia by Krüger in 1926
Asteraceae	<i>Carthamus glaucus</i> M.Bieb.	Tobruk by Vaccari in 1912
Asteraceae	<i>Chiliadenus candicans</i> (Delile) Brullo	Tobruk by Vaccari in 1912 El-Bardia by Schweinfurth in 1890
Asteraceae	<i>Chiliadenus glutinosus</i> (L.) Fourr.	Tobruk by Cassinera in 1918
Asteraceae	<i>Chlamydomphora tridentata</i> Ehrenb. ex Less.	Tobruk by Vaccari in 1912 & Schweinfurth in 1883 El-Bardia (Schweinfurth in 1890
Asteraceae	<i>Crepis vesicaria</i> L.	El-Bardia by Schweinfurth in 1890
Asteraceae	<i>Crocodylium pumilio</i> (L.) N.Garcia & Susanna	Gulf of Bomba and Ain El-Ghazala by Taubert in 1887
Asteraceae	<i>Cynara cornigera</i> Lindl.	Tobruk by Vaccari in 1913
Asteraceae	<i>Echinops spinosissimus</i> Turra subsp. <i>spinosissimus</i>	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Asteraceae	<i>Filago contracta</i> (Boiss.) Chrtk & Holub	Tobruk by Vaccari in 1914 El-Bardia by Schweinfurth in 1890
Asteraceae	<i>Filago mareotica</i> Delile	Marsa Luk by Cavara in 1924
Asteraceae	<i>Filago pyramidata</i> L.	Gulf of Bomba and Ain El-Ghazala by Tauber in 1887 Tobruk by Schweinfurth in 1883 & Vaccari in 1912 El-Bardia by Schweinfurth in 1890
Asteraceae	<i>Helichrysum stoechas</i> subsp. <i>barrelieri</i> (Ten.) Nym.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Asteraceae	<i>Hyoseris lucida</i> L.	Libyan part of Marmarica by Schweinfurth in 1883, 1890 Tobruk by Vaccari in 1912 & Cassinera in 1918 El-Bardia by Schweinfurth in 1890

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Asteraceae	<i>Hypochaeris achyrophorus</i> L.	Tobruk by Cavara 1924
Asteraceae	<i>Ifloga spicata</i> subsp. <i>labillardierei</i> (Pamp.) Chrtk	Tobruk by Vaccari in 1912 & Cavara and Grande in 1924
Asteraceae	<i>Launaea fragilis</i> (Asso) Pau subsp. <i>fragilis</i>	Gulf of Bomba by Taubert in 1887 Tobruk by Schweinfurth in 1883 & Vaccari in 1912 El-Bardia and Marsa Luk by Cavara in 1924
Asteraceae	<i>Limbarda crithmoides</i> (L.) Dumort.	Gulf of Bomba by Taubert in 1887 Tobruk by Vaccari in 1912 Giarabub Oasis by Confalonieri in 1926, 1927
Asteraceae	<i>Pallenis spinosa</i> subsp. <i>asteroidea</i> (Viv.) Greuter	Tobruk by Vaccari in 1912 & Cassinera in 1918
Asteraceae	<i>Phagnalon graecum</i> Boiss. & Heldr	Gulf of Bomba by Casilli in 1923
Asteraceae	<i>Picris asplenoides</i> L. subsp. <i>asplenoides</i>	Tobruk by Cavara in 1924
Asteraceae	<i>Reichardia tingitana</i> (L.) Roth subsp. <i>tingitana</i>	Tobruk (Schweinfurth in 1890 & Vaccari in 1912)
Asteraceae	<i>Scorzonera undulata</i> Vahl subsp. <i>undulata</i>	Tobruk by Vaccari in 1912, 1914 El-Bardia by Schweinfurth in 1890
Asteraceae	<i>Senecio glaucus</i> subsp. <i>coronopifolius</i> (Maire) C.Alexander	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cavara in 1924
Asteraceae	<i>Sonchus tenerrimus</i> L.	Tobruk by Vaccari in 1912
Asteraceae	<i>Volutaria crupinoides</i> (Desf.) Maire	Tobruk by Vaccari in 1912
Boraginaceae	<i>Alkanna tinctoria</i> (L.) Tausch	Libyan part of Marmarica by Pacho in 1824
Boraginaceae	<i>Anchusa hybrida</i> Ten.	Ain El-Ghazala by Taubert in 1887
Boraginaceae	<i>Buglossoides tenuiflora</i> (L.f.) I.M.Johnst.	Tobruk by Vaccari in 1913
Boraginaceae	<i>Echiochilon fruticosum</i> Desf.	El-Bardia by Schweinfurth in 1890
Boraginaceae	<i>Echium angustifolium</i> subsp. <i>sericeum</i> (Vahl) G.Klotz	Tobruk by Vaccari in 1914
Boraginaceae	<i>Echium rubrum</i> Forssk.	Gulf of Bomba and Ain El-Ghazala by Taubert in 1887 Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Boraginaceae	<i>Heliotropium bacciferum</i> Forssk. subsp. <i>bacciferum</i>	Giarabub Oasis by Confalonieri in 1926, 1927
Boraginaceae	<i>Heliotropium europaeum</i> L.	El-Bardia by Krüger in 1926
Boraginaceae	<i>Lappula spinocarpus</i> (Forssk.) Asch. ex Kuntze subsp. <i>spinocarpus</i>	Tobruk by Schweinfurth in 1883
Boraginaceae	<i>Moltkiopsis ciliata</i> (Forssk.) I.M.Johnst.	Libyan part of Marmarica by Pacho in 1924
Boraginaceae	<i>Nonea vesicaria</i> (L.) Rchb.	Tobruk by Vaccari in 1914
Brassicaceae	<i>Biscutella didyma</i> var. <i>ciliata</i> (DC.) Vis	Tobruk by Schweinfurth in 1883
Brassicaceae	<i>Biscutella didyma</i> L. subsp. <i>didyma</i>	Tobruk by Vaccari in 1912
Brassicaceae	<i>Coincya tournefortii</i> (Gouan) Alcaraz, T.E.Díaz, Rivas Mart. & Sánchez-Gómez	Tobruk by Vaccari 1912 El-Bardia by Schweinfurth 1890

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Brassicaceae	<i>Cakile maritima</i> Scop.	Tobruk by Vaccari in 1912 El-Bardia by Schweinfurth in 1890
Brassicaceae	<i>Conringia orientalis</i> (L.) C.Presl	Giarabub Oasis by Confalonieri in 1926, 1927
Brassicaceae	<i>Didesmus aegyptius</i> (L.) Desv.	Tobruk by Schweinfurth in 1883
Brassicaceae	<i>Diploaxis simplex</i> (Viv.) Spreng.	Gulf of Bomba and Ain El-Ghazala by Taubert in 1887 Tobruk by Schweinfurth in 1883 & Vaccari in 1913, 1914 El- Bardia by Schweinfurth in 1890 & Krüger in 1927
Brassicaceae	<i>Enarthrocarpus strangulatus</i> Boiss	Tobruk by Schweinfurth in 1883 & Vaccari in 1912 El- Bardia by Schweinfurth in 1890
Brassicaceae	<i>Erucaria pinnata</i> (Viv.) Täckh. & Boulos	Tobruk by Schweinfurth in 1883
Brassicaceae	<i>Eruca sativa</i> Garsault.	Giarabub Oasis by Confalonieri in 1926, 1927
Brassicaceae	<i>Hornungia procumbens</i> (L.) Hayek	Tobruk by Cavara and Grande in 1924
Brassicaceae	<i>Lepidium sativum</i> L.	Giarabub Oasis by Confalonieri in 1926, 1927 & Krüger in 1927
Brassicaceae	<i>Lepidium villarsii</i> Gren. & Godr. subsp. <i>villarsii</i>	Tobruk (?) by Cassinera in 1918 El-Bardia by Schweinfurth in 1890 & Krüger in 1927
Brassicaceae	<i>Maresia nana</i> (DC.) Batt.	Tobruk by Vaccari in 1914 Marsa Luk by Cavara and Grande in 1924
Brassicaceae	<i>Matthiola longipetala</i> subsp. <i>hirta</i> (Conti) Greuter & Burdet	Tobruk by Vaccari in 1912, 1914
Brassicaceae	<i>Matthiola longipetala</i> subsp. <i>hirta</i> (Conti) Greuter & Burdet	Tobruk by Schweinfurth in 1883 & Vaccari in 1914
Brassicaceae	<i>Raphanus raphanistrum</i> subsp. <i>sativus</i> (L.) Domin	Giarabub Oasis by Confalonieri in in 1926, 1927
Campanulaceae	<i>Campanula erinus</i> L.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Capparaceae	<i>Capparis spinosa</i> var. <i>aegyptia</i> (Lam.) Boiss.	The way to Giarabub Oasis by Krüger in 1925
Capparaceae	<i>Capparis spinosa</i> subsp. <i>rupestris</i> (Sm.) Nyman	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918 El-Bardia by Schweinfurth in 1890
Caprifoliaceae	<i>Pterocephalus plumosus</i> (L.) Coult.	Tobruk by Schweinfurth in 1883
Caryophyllaceae	<i>Herniaria glabra</i> L.	Tobruk by Vaccari in 1912
Caryophyllaceae	<i>Paronychia arabica</i> subsp. <i>longiseta</i> (Batt.) Batt.	Tobruk by Cassinera in 1918
Caryophyllaceae	<i>Paronychia capitata</i> (L.) Lam.	Tobruk by Schweinfurth in 1883 & Cassinera in 1918 El-Bardia by Schweinfurth in 1890
Caryophyllaceae	<i>Polycarpon alsinifolium</i> (Biv.) DC.	El-Bardia by Schweinfurth in 1890
Caryophyllaceae	<i>Silene apetala</i> Willd.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Caryophyllaceae	<i>Silene apetala</i> Willd. subsp. <i>apetala</i>	Tobruk by Vaccari 1914
Caryophyllaceae	<i>Silene biappendiculata</i> Ehrh. ex Rohrb.	El-Bardia by Schweinfurth in 1890

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Caryophyllaceae	<i>Silene gallica</i> L.	El-Bardia by Schweinfurth in 1890
Caryophyllaceae	<i>Silene colorata</i> Poir.	Tobruk by Vaccari in 1914
Caryophyllaceae	<i>Silene vivianii</i> Steud. subsp. <i>vivianii</i>	Tobruk by Vaccari in 1912
Caryophyllaceae	<i>Spergularia marina</i> (L.) Besser	Giarabub Oasis by Confalonieri in 1920–1927
Cistaceae	<i>Fumana laevis</i> (Cav.) Pau	Tobruk by Cassinera in 1918
Cistaceae	<i>Fumana thymifolia</i> (L.) Webb.	Tobruk by Cassinera in 1918
Cistaceae	<i>Helianthemum ellipticum</i> (Desf.) Pers.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912 El-Bardia by Schweinfurth in 1890
Cistaceae	<i>Helianthemum kahiricum</i> Delile	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918 El-Bardia by Schweinfurth in 1890 & Krüger in 1926 Giarabub Oasis (Confalonieri in 1926–1927)
Cistaceae	<i>Helianthemum ledifolium</i> (L.) Mill.	El-Bardia by Schweinfurth in 1890
Cistaceae	<i>Helianthemum ledifolium</i> (L.) Mill. subsp. <i>ledifolium</i>	El-Bardia by Schweinfurth in 1890
Cistaceae	<i>Helianthemum lippii</i> (L.) Dum.Cours.	Giarabub Oasis by Confalonieri in 1926–1927
Cistaceae	<i>Helianthemum salicifolium</i> (L.) Mill.	El-Bardia by Schweinfurth in 1890
Cistaceae	<i>Helianthemum vesicarium</i> Boiss.	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918 El-Bardia by Schweinfurth in 1890 & Krüger in 1927
Cistaceae	<i>Helianthemum virgatum</i> subsp. <i>ciliatum</i> (Desf.) Murb.	Tobruk by Vaccari in 1911–1912 El-Bardia by Schweinfurth in 1890
Convolvulaceae	<i>Cuscuta epithymum</i> Murray	Tobruk by Vaccari in 1912
Crassulaceae	<i>Crassula alata</i> (Viv.) A.Berger subsp. <i>alata</i>	Tobruk by Vaccari in 1914
Crassulaceae	<i>Sedum laconicum</i> Boiss. & Heldr.	Gulf of Bomba by Casilli in 1924
Cucurbitaceae	<i>Bryonia cretica</i> L.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Euphorbiaceae	<i>Euphorbia papillaris</i> (Boiss.) Raffaelli & Ricceri	Tobruk by Cassinera in 1918
Euphorbiaceae	<i>Euphorbia parvula</i> Delile	Tobruk by Vaccari in 1912 El-Bardia by Schweinfurth in 1890
Euphorbiaceae	<i>Euphorbia peplus</i> var. <i>minima</i> DC.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Euphorbiaceae	<i>Euphorbia terracina</i> L.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Alhagi maurorum</i> Medik.	Giarabub Oasis by Krüger in 1926 & Confalonieri in 1926, 1927
Fabaceae	<i>Anthyllis circinnata</i> (L.) D.D.Sokoloff	Tobruk by Vaccari in 1914
Fabaceae	<i>Astragalus annularis</i> Forssk.	Tobruk by Vaccari in 1914 El-Bardia by Schweinfurth in 1890

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Fabaceae	<i>Astragalus asterias</i> Steven	Tobruk by Vaccari 1914 El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Astragalus caprinus</i> L. subsp. <i>caprinus</i>	Marsa Luk by Cavara in 1924
Fabaceae	<i>Astragalus hamosus</i> L.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Fabaceae	<i>Cicer arietinum</i> L.	Tobruk by Cassinera in 1918
Fabaceae	<i>Ebenus armitagei</i> Schweinf. & Taub. ex Schweinf. & Asch.	El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Hippocrepis areolata</i> Desv.	El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Lathyrus cicera</i> L.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Lathyrus cicera</i> var. <i>tenuifolius</i> Fouc. & Sim.	Tobruk by Vaccari in 1912, 1914
Fabaceae	<i>Lathyrus clymenum</i> L.	Tobruk by Vaccari in 1914
Fabaceae	<i>Lathyrus hierosolymitanus</i> Boiss.	El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Lathyrus saxatilis</i> (Vent.) Vis.	El-Auda Valley by Cavara in 1924
Fabaceae	<i>Lotus peregrinus</i> L.	The way to Giarabub Oasis by Krüger in 1925
Fabaceae	<i>Medicago coronata</i> Desr.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Fabaceae	<i>Medicago minima</i> (L.) Bartal.	Tobruk by Schweinfurth in 1883
Fabaceae	<i>Medicago monspeliaca</i> (L.) Trautv.	El-Bardia by Schweinfurth in 1899
Fabaceae	<i>Melilotus messanensis</i> (L.) All.	Giarabub Oasis by Krüger in 1927
Fabaceae	<i>Melilotus italicus</i> (L.) Lam.	Giarabub Oasis by Krüger in 1927
Fabaceae	<i>Ononis mollis</i> Savi	Tobruk by Schweinfurth in 1883, Vaccari in 1912, 1914 & Cassinera in 1918 El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Ononis serrata</i> Forssk.	El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Ononis sicula</i> Guss.	Tobruk by Schweinfurth in 1883 & Vaccari in 1914 El-Bardia by Schweinfurth in 1890
Fabaceae	<i>Trifolium campestre</i> Schreb.	Tobruk by Schweinfurth in 1883 & Vaccari in 1914
Fabaceae	<i>Trifolium resupinatum</i> L.	Tobruk by Cassinera in 1918
Fabaceae	<i>Trifolium scabrum</i> L.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Fabaceae	<i>Trifolium stellatum</i> L.	Tobruk by Schweinfurth in 1883
Fabaceae	<i>Vicia lutea</i> L.	Tobruk by Schweinfurth in 1883
Fabaceae	<i>Vicia monantha</i> Retz. subsp. <i>monantha</i>	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Fabaceae	<i>Vicia peregrina</i> L.	Tobruk by Schweinfurth in 1883 & Vaccari in 1913

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Frankeniaceae	<i>Frankenia pulverulenta</i> L.	Giarabub Oasis by Krüger in 1926 & Confalonieri in 1926, 1927
Geraniaceae	<i>Erodium gruinum</i> (L.) L'Hér.	Tobruk by Schweinfurth in 1883
Geraniaceae	<i>Geranium molle</i> L.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Lamiaceae	<i>Ajuga iva</i> (L.) Schreb.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Lamiaceae	<i>Lamium amplexicaule</i> L.	Tobruk by Schweinfurth in 1883
Lamiaceae	<i>Prasium majus</i> L.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Lamiaceae	<i>Teucrium barbeyanum</i> Asch. & Taub. ex E.A.Durand & Barratte	Tobruk by Cassinera in 1918
Lamiaceae	<i>Teucrium davaeanum</i> Coss.	Marsa Luk by Cavara and Grande in 1924 El-Bardia by Cavara and Grande in 1924
Lauraceae	<i>Laurus nobilis</i> L.	Gulf of Bomba by Della Cella in 1817
Linaceae	<i>Linum strictum</i> L.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Linaceae	<i>Linum nodiflorum</i> L.	Gulf of Bomba by Casilli in 1923
Malvaceae	<i>Malva aegyptia</i> L. subsp. <i>aegyptia</i>	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918
Malvaceae	<i>Malva sylvestris</i> var. <i>ambigua</i> Schweinf. & Asch.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912, 1913, 1914 El-Bardia by Schweinfurth in 1890
Oleaceae	<i>Olea europaea</i> L. subsp. <i>europaea</i>	Libyan part of Marmarica by Duran and Barratte in 1910
Orobanchaceae	<i>Cistanche compacta</i> (Viv.) Bég. & A. Vacc.	Tobruk by Vaccari in 1912
Orobanchaceae	<i>Orobanche mutelii</i> F.W.Schultz	El-Bardia by Schweinfurth in 1890
Orobanchaceae	<i>Phelipanche portollicitana</i> (A.Pujadas & M.B.Crespo) Carlón, G.Gómez, M.Laínz, Moreno Mor., Ó.Sánchez & Schneew.	Tobruk by Vaccari in 1912
Papaveraceae	<i>Papaver dodecandrum</i> (Forssk.) Medik.	Tobruk by Vaccari in 1914 El-Bardia by Schweinfurth in 1890
Plantaginaceae	<i>Kickxia aegyptiaca</i> (L.) Nábelek subsp. <i>aegyptiaca</i>	Tobruk by Cassinera in 1918
Plantaginaceae	<i>Linaria haelava</i> (Forssk.) F.Dietr.	Tobruk by Vaccari in 1914
Plantaginaceae	<i>Linaria virgata</i> subsp. <i>syrtica</i> Murb.	Tobruk by Vaccari in 1912
Plantaginaceae	<i>Misopates orontium</i> (L.) Raf. subsp. <i>orontium</i>	Tobruk by Schweinfurth in 1883 & Vaccari in 1912 El-Bardia by Schweinfurth in 1890
Plantaginaceae	<i>Plantago amplexicaulis</i> Cav.	Libyan part of Marmarica by Pacho in 1824
Plantaginaceae	<i>Plantago cyrenaica</i> E.A.Durand & Barratte	Tobruk by Vaccari in 1912
Plumbaginaceae	<i>Limonium delicatulum</i> (Girard) Kuntze	Gulf of Bomba by Taubert in 1887

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TABLE 8. (Continued)

Family	Species	Location and last reference as in Pampanini (1930)
Polygonaceae	<i>Rumex bucephalophorus</i> L.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Polygonaceae	<i>Rumex simpliciflorus</i> Murb.	El-Bardia by Schweinfurth in 1890
Portulacaceae	<i>Portulaca oleracea</i> L.	Giarabub Oasis by Krüger in 1926
Primulaceae	<i>Lysimachia arvensis</i> f. <i>latifolia</i> (L.) B.Bock	Giarabub Oasis by Confalonieri in 1926, 1927 & Krüger in 1927
Primulaceae	<i>Lysimachia arvensis</i> var. <i>caerulea</i> (L.) Turland & Bergmeier	Tobruk by Schweinfurth in 1883 & Vaccari in 1912
Primulaceae	<i>Lysimachia linum-stellatum</i> L.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Ranunculaceae	<i>Nigella arvensis</i> subsp. <i>taubertii</i> (Brand) Maire	Ain El-Ghazala by Taubert in 1887
Resedaceae	<i>Reseda arabica</i> Boiss.	El-Bardia by Schweinfurth in 1890
Resedaceae	<i>Reseda decursiva</i> Forssk.	Tobruk by Schweinfurth in 1883 & Vaccari in 1912 El-Bardia by Schweinfurth in 1890 & Krüger in 1928
Resedaceae	<i>Reseda odorata</i> L.	Gulf of Bomba by Casilli in 1923
Rubiaceae	<i>Crucianella maritima</i> L.	Tobruk by Schweinfurth in 1883, Vaccari in 1912 & Cassinera in 1918 El-Bardia by Schweinfurth in 1890
Rubiaceae	<i>Galium murale</i> (L.) All.	Tobruk by Schweinfurth in 1883 El-Bardia by Schweinfurth in 1890
Rubiaceae	<i>Galium spurium</i> L. subsp. <i>spurium</i>	El-Bardia by Schweinfurth in 1890
Rubiaceae	<i>Rubia tenuifolia</i> d'Urv.	El-Bardia by Schweinfurth in 1899
Tamaricaceae	<i>Tamarix boveana</i> Bunge	Tobruk by Cassinera in 1918 Giarabub Oasis by Confalonieri in 1926, 1927
Tamaricaceae	<i>Tamarix macrocarpa</i> (Ehrenb.) Bunge	Giarabub Oasis by Confalonieri in 1926, 1927 & Krüger in 1927

It should be stated here that many of these plant taxa were collected and identified by various scientists long before the review and documentation of Pampanini (1930), which may indicate that they disappeared even before the year 1930. The absence of these taxa in the studies reviewed in this comparison, viz. one national flora (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992) and three regional works performed in the study area especially: Al-Habony (1999), El-Shahary (2002), and Saaed (2008), highlighted the fact that these plants are scarce and poorly known, and perhaps some of them have gone locally extinct. Another possibility is that these taxa may be incorrectly identified in the original publication (Pampanini 1930), and this data has never been updated. These taxa should be investigated in more detail to try and resolve why they have not been found again.

Although this proportion of rare taxa is high, slightly higher than one-third of the recorded taxa in the LMP, this was in some way expected because of the intensive anthropisation of the Marmarica Plateau during the previous century. This phenomenon was also reported previously by Le Houérou (2004), who studied both sides of the Marmarica Plateau (the Libyan and Egyptian parts), and stated that rare taxa are slightly more numerous in this region. The inventory of rare plants in this study should be of particular concern in any future conservation intervention in the LMP.

Conclusion

This study provided a detailed and critical analysis of the flora of the LMP and has significantly improved our knowledge about the flora of the LMP in particular, and Libya in general, and increased our awareness of the diversity and threats to the flora in the study area. A comprehensive inventory of the flora, with the currently accepted nomenclature at specific, generic, and family levels, is provided, which significantly increases the known number of plant species believed to exist in the LMP.

Although the region is characterised by an arid climate in the north and a hyper-arid climate in the south, the present study illustrated that the LMP is a botanically rich and unique area in terms of taxa richness, high diversity, and abundant endemism relative to its territory size. Its flora comprises 31% of the national flora and 38% of the taxa that are endemic and near-endemic to Libya, in just 3.4% of the national territory. However, the absence of 34.4% of the recorded taxa in all the surveys conducted in the LMP after the work of Pampanini (1930) should stimulate further taxonomic, floristic, and biogeographic research of this important historical and ecological region. Furthermore, this study emphasised the importance of updating the database of the Flora of Libya. The LMP should be declared a hotspot on the national scale, since it is a relevant conservation region that maintains biological diversity in this unique part of Libya.

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Appendix A: Plant checklist of the Libyan part of Marmarica Plateau

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Appendix A: Plant checklist of the Libyan part of Marmarica Plateau

In this checklist, plants are arranged in major groups, namely Pteridophytes, Gymnosperms, and Angiosperms (Monocotyledons and Dicotyledons). Families are arranged alphabetically within each major plant group, followed by genera and species (also alphabetically) within each family. Each species includes a reference for the collection and identification. To facilitate referencing and tracking the old scientific nomenclature, the currently accepted name for the species is first provided, and then the synonym (usually the old name).

Aln. = Alien taxa

Cul. = Cultivated taxa

Dou. = Doubtful identification

End. = Endemic to Libya

Near = (Near endemic) Endemic to Libya and neighbouring countries

New = New record for Libyan flora after production of the volumes of Flora of Libya (Ali & Jafri 1976–1977, Jafri & El-Gadi 1977–1988, El-Gadi 1988–1992).

A. PTERIDOPHYTES

PTERIDACEAE

- Adiantum capillus-veneris* L. (Saaed 2008)
Anogramma leptophylla (L.) Link; Syn. *Gymnogramma leptophylla* (L.) Desv. (Pampanini 1930)

B. GYMNOSPERMS

EPHEDRACEAE

- Ephedra alata* Decne. (El-Shahary 2002)
Ephedra foliata Boiss. ex C.A.Mey.; Syn. *Ephedra alte* C.A.Mey. (Pampanini 1930)
Ephedra sp. (Pampanini 1930)

CUPRESSACEAE

- Juniperus phoenicea* subsp. *turbinata* (Guss.) Nyman; Basionym *Juniperus turbinata* Guss. (Le Houérou 2004)

C. ANGIOSPERMS

1. MONOCOTYLEDONS

AMARYLLIDACEAE

- Allium ampeloprasum* L. (Pampanini 1930, Jafri & El-Gadi 1977a, Al-Habony 1999)
Allium aschersonianum Barbey (Pampanini 1930)
Allium barthianum Asch. & Schweinf. (Pampanini 1930, Jafri & El-Gadi 1977a)
Near Allium blomfieldianum Asch. & Schweinf. (Pampanini 1930)
Allium desertorum Forssk. (Le Houérou 2004)
Allium erdelii Zucc. (Pampanini 1930, El-Shahary 2002)
Near Allium longanum Pamp. (Al-Habony 1999, El-Shahary 2002)
Allium mareoticum Bornm. & Gauba (Le Houérou 2004)
Allium nigrum L. (El-Shahary 2002)
Allium orientale Boiss; Syn. *Allium aschersonianum* var. *ambiguum* (Bég. & A.Vacc.) Maire & Weiller (Pampanini 1930, Jafri & El-Gadi 1977a)
Allium PANICULATUM L. (Jafri & El-Gadi 1977a)
Allium paniculatum subsp. *pallens* (L.) K.Richt.; Basionym *Allium pallens* L.;
Syn. *Allium coppoleri* Tineo (Pampanini 1930)
Allium roseum L. (Pampanini 1930, Jafri & El-Gadi 1977a, Al-Habony 1999, El-Shahary 2002)
Allium subhirsutum L. (Al-Habony 1999)

Allium subvillosum Salzm. ex Schult. & Schult.f.;

Syn. *Allium subhirsutum* var. *vernale* (Tineo) Bonnet & Barratte(Pampanini 1930)

Pancratium arabicum Sickenb. (Le Houérou 2004)

Pancratium maritimum L. (Pampanini 1930, Jafri & El-Gadi 1978a, Al-Habony 1999, El-Shahary 2002)

ARACEAE

Arisarum vulgare O.Targ.Tozz.(Pampanini 1930, Jafri & El-Gadi 1977b, Al-Habony 1999)

Near *Arum cyrenaicum* Hruby(El-Shahary 2002)

ARECACEAE

Cul. *Phoenix dactylifera* L. (Al-Habony 1999, Saaed 2008)

ASPARAGACEAE

Asparagus aphyllus L.(Pampanini 1930, El-Shahary 2002)

Asparagus horridus L.; Syn. *Asparagus stipularis* Forssk
.....(Pampanini 1930, Jafri & El-Gadi 1978b, Al-Habony 1999, El-Shahary 2002)

Near *Bellevalia sessiliflora* (Viv.) Kunth(Pampanini 1930, Jafri & El-Gadi 1978b, El-Shahary 2002)

Drimia maritima (L.) Stearn; Syn. *Urginea maritima* (L.) Baker (Pampanini 1930, Saaed 2008)

Drimia pancration (Steinh.) J.C.Manning & Goldblatt;

Syn. *Urginea maritima* var. *pancratium* (Steinh.) Baker(Pampanini 1930)

Prospero autumnale (L.) Speta; Basionym *Scilla autumnalis* L.(Pampanini 1930)

ASPHODELACEAE

Asphodelus aestivus Brot.; Syn. *Asphodelus microcarpus* var. *aestivus* (Brot.) Nyman(Jafri & El-Gadi 1978b)

Asphodelus fistulosus L.....(Al-Habony 1999, El-Shahary 2002)

Asphodelus ramosus L.; Syn. *Asphodelus ramosus* L. subsp. *ramosus*; *Asphodelus microcarpus* Viv.....
..... (Pampanini 1930, Jafri & El-Gadi 1978b, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

Asphodelus tenuifolius Cav.; Syn. *Asphodelus tenuifolius* var.

micranthus Boiss.(Pampanini 1930, Jafri & El-Gadi 1978b)

COLCHICACEAE

Dou. *Colchicum capense* (L.) J.C.Manning & Vinn. subsp. *capense*;

Syn. *Androcymbium punctatum* (Schltdl.) Baker(Pampanini 1930)

Colchicum gramineum (Cav.) J.C.Manning & Vinn.;

Syn. *Androcymbium gramineum* (Cav.) J.F.Macbr.(Jafri & El-Gadi 1978b, El-Shahary 2002)

CYPERACEAE

Cyperus capitatus Vand.; Syn. *Cyperus kalli* (Forssk.) Murb.;

Cyperus mucronatus (L.) Mabilie(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)

IRIDACEAE

Moraea sisyrinchium (L.) Ker Gawl.; Basionym *Iris sisyrinchium* L.(Pampanini 1930, El-Shahary 2002)

JUNCACEAE

- Juncus bufonius* L.(Pampanini 1930)
Juncus maritimus Lam.(Pampanini 1930, El-Shahary 2002, Saaed 2008)
Juncus rigidus Desf.; Syn. *Juncus maritimus* var. *arabicus* Asch. & Buchenau(Pampanini 1930)
Juncus subulatus Forssk.(Al-Habony 1999)

LILIACEAE

- Gagea reticulata* (Pall.) Schult. & Schult.f.(Pampanini 1930, Jafri & El-Gadi 1978b, El-Shahary 2002)

POACEAE

- Aegilops bicornis* (Forssk.) Jaub. & Spach.....(Pampanini 1930)
Aegilops kotschy Boiss.....(El-Shahary 2002)
Aegilops triuncialis L.....(Pampanini 1930, Al-Habony 1999)
Aegilops ventricosa Tausch.....(Al-Habony 1999)
Aeluropus lagopoides (L.) Thwaites; Syn. *Aeluropus repens* (Desf.) Parl.(Pampanini 1930, El-Shahary 2002)
Ammochloa palaestina Boiss.; Syn. *Ammochloa subacaulis* Balansa ex Coss. & Durieu.....(Pampanini 1930)
Ampelodesmos mauritanicus (Poir.) T.Durand & Schinz; Basionym *Arundo mauritanica* Poir.....(Pampanini 1930)
Arundo donax L.(El-Gadi 1988, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Avena barbata Pott ex Link; Syn. *Avena barbata* Brot.....(Pampanini 1930)
Avena fatua L.(Pampanini 1930, El-Shahary 2002, Saaed 2008)
Avena sativa L.....(Al-Habony 1999)
Avena sterilis L.; Syn. *Avena fatua* var. *sterilis* (L.) Fiori & Paol.(Pampanini 1930, El-Shahary 2002)
Avena ventricosa Balansa(El-Gadi 1988)
Brachypodium distachyon (L.) P.Beauv.; Syn. *Trachynia distachya* (L.) Link(Pampanini 1930, Al-Habony 1999)
Briza maxima L.....(Pampanini 1930)
Bromus fasciculatus C.Presl(Pampanini 1930)
Bromus madritensis L.(El-Shahary 2002)
Bromus rigidus Roth;
 Syn. *Bromus villosus* var. *rigidus* (Roth) Asch. & Graebn.....(Pampanini 1930, El-Shahary 2002, Saaed 2008)
Bromus rubens L.....(Pampanini 1930)
Calamagrostis arenaria (L.) Roth; Syn. *Ammophila arenaria* (L.) Link.....(Pampanini 1930)
Calamagrostis arenaria subsp. *australis* (Mabille) Asch. & Graebn.;
 Syn. *Ammophila australis* (Mabille) Porta & Rigo.....(Al-Habony 1999)
Catapodium rigidum (L.) C.E.Hubb.....(El-Gadi 1988)
Castellia tuberculosa (Moris) Bor; Syn. *Desmazeria tuberculosa* (Moris) Batt. & Trab.;
Castellia tuberculata Tineo.....(Pampanini 1930)
Cenchrus ciliaris L.; Syn. *Pennisetum ciliare* (L.) Link(Pampanini 1930)
Crithopsis delileana (Schult.) Roshev.; Basionym *Elymus delileanus* Schult.....(Pampanini 1930, El-Gadi 1988)
Cutandia dichotoma (Forssk.) Trab.;
 Syn. *Scleropoa memphitica* var. *dichotoma* (Forssk.) Bonnier & Bour.(Pampanini 1930)
Cutandia maritima (L.) Barbey; Syn. *Scleropoa maritima* (L.) Parl.....(Pampanini 1930)
Cutandia memphitica (Spreng.) Benth.(El-Shahary 2002)
Cynodon dactylon (L.) Pers.(Pampanini 1930, El-Gadi 1988 El-Shahary 2002, Saaed 2008)
Cynosurus coloratus Lehm. ex Steud.; Syn. *Cynosurus coloratus* Lehm.(Pampanini 1930)
Dactylis glomerata L.(Al-Habony 1999)
Dactylis glomerata subsp. *hispanica* (Roth) Nyman;
 Syn. *Dactylis glomerata* var. *hispanica* (Roth) Desv.....(Pampanini 1930)
Desmazeria philistaea (Boiss.) H.Scholz; Basionym *Scleropoa philistaea* Boiss.(Pampanini 1930)
Desmazeria sicula (Jacq.) Dumort.....(Pampanini 1930)

- Elytrigia juncea* (L.) Nevski; Basionym *Triticum junceum* L. (Le Houérou 2004)
- Festuca brevis* (Boiss. & Kotschy) Asch., Schweinf. & Muschl.;
 Syn. *Vulpia inops* Hack. (Pampanini 1930, El-Gadi 1988)
- Festuca incurva* (Gouan) Gutermann; Syn. *Psilurus incurvus* (Gouan) Schinz & Thell. (Al-Habony 1999)
- Festuca ligustica* (All.) Bertol.; Syn. *Vulpia ligustica* (All.) Link. (Pampanini 1930)
- Festuca myuros* L. (Pampanini 1930)
- Hordeum spontaneum* K.Koch;
 Syn. *Hordeum distichon* var. *spontaneum* (K.Koch) Asch. & Schweinf. (Pampanini 1930)
- Hordeum murinum* L. (Pampanini 1930, Al-Habony 1999)
- Hordeum murinum* subsp. *leporinum* (Link) Arcang.;
 Syn. *Hordeum murinum* var. *leporinum* (Link) K.Richt. (Pampanini 1930)
- ^{Cul.} *Hordeum vulgare* L. (Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Hyparrhenia hirta* (L.) Stapf; Syn. *Andropogon hirtus* var. *pubescens* (Vis.) Vis. (Pampanini 1930)
- Imperata cylindrica* (L.) Raeusch.; Syn. *Imperata cylindrica* (L.) P.Beauv. (Pampanini 1930)
- Lamarckia aurea* (L.) Moench; Basionym *Cynosurus aureus* L. (Pampanini 1930, Al-Habony 1999)
- Lolium perenne* L. (El-Shahary 2002)
- Lolium rigidum* Gaudin; Syn. *Lolium loliaceum* (Bory & Chaub.) Hand.-Mazz.
 (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
- Lygeum spartum* Loefl. ex L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Melica minuta* L. (Pampanini 1930)
- Oloptum miliaceum* (L.) Röser & Hamasha; Syn. *Piptatherum miliaceum* (L.) Coss.;
Oryzopsis miliacea (L.) Asch. & Schweinf. (Pampanini 1930, Al-Habony 1999)
- Parapholis incurva* (L.) C.E.Hubb.; Syn. *Lepturus incurvatus* (L.) Trin. (Pampanini 1930)
- Phalaris brachystachys* Link. (Al-Habony 1999)
- Phalaris minor* Retz. (Pampanini 1930)
- Phragmites australis* (Cav.) Trin. ex Steud. subsp. *australis*;
 Syn. *Phragmites vulgaris* (Lam.) Crép. (Pampanini 1930)
- Piptatherum coeruleascens* (Desf.) P.Beauv. (El-Shahary 2002)
- Polypogon monspeliensis* (L.) Desf. (Pampanini 1930, El-Shahary 2002)
- Rostraria cristata* (L.) Tzvelev; Syn. *Koeleria phleoides* (Vill.) Pers. (Pampanini 1930)
- Rostraria pumila* (Lam.) Tzvelev; Syn. *Lophochloa pumila* (Lam.) Bor. (Al-Habony 1999)
- Schismus barbatus* (L.) Thell.; Syn. *Schismus calycinus* (Loefl.) K.Koch. (Pampanini 1930)
- Setaria verticillata* (L.) P.Beauv. (Pampanini 1930)
- Sphenopus divaricatus* (Gouan) Rchb. (Pampanini 1930)
- Sporobolus pungens* (Schreb.) Kunth; Syn. *Sporobolus arenarius* (Gouan) Duval-Jouve. (Pampanini 1930)
- Stipa barbata* Desf. (Al-Habony 1999)
- Stipa lagascae* Roem. & Schult.; Syn. *Stipa gigantea* Lag. (Pampanini 1930)
- Stipagrostis plumosa* subsp. *seminuda* (Trin. & Rupr.) H.Scholz;
 Syn. *Aristida plumosa* var. *floccosa* (Coss. & Durieu) T.Durand & Schinz. (Pampanini 1930)
- Stipellula capensis* (Thunb.) Röser & Hamasha; Basionym *Stipa capensis* Thunb. (El-Gadi 1988)
- Stipellula parviflora* (Desf.) Röser & Hamasha; Basionym *Stipa parviflora* Desf. (Pampanini 1930)
- Tetrapogon villosus* Desf. (Pampanini 1930)
- Thinopyrum junceum* (L.) Á.Löve; Syn. *Agropyron junceum* (L.) P.Beauv. (Pampanini 1930)
- Trisetaria macrochaeta* (Boiss.) Maire; Basionym *Trisetum macrochaetum* Boiss. Pampanini 1930, El-Gadi 1988)
- ^{Cul.} *Triticum aestivum* L. (Saaed 2008)

POSIDONIACEAE

- Posidonia oceanica* (L.) Delile (Pampanini 1930, Al-Habony 1999)

2. DICOTYLEDONS

AIZOACEAE

- Aizoanthemopsis hispanica* (L.) Klak; Basionym *Aizoon hispanicum* L. (Pampanini 1930, Al-Habony 1999)
Mesembryanthemum crystallinum L.;
 Syn. *Cryophytum crystallinum* (L.) N.E.Br. (Al-Habony 1999, El-Shahary 2002)
Mesembryanthemum nodiflorum L. (Pampanini 1930, Jafri & El-Gadi 1977c, El-Shahary 2002, Saaed 2008)

AMARANTHACEAE

- New* *Agathophora alopecuroides* (Delile) Fenzl ex Bunge;
 Syn. *Halogeton alopecuroides* (Delile) Moq. (Al-Habony 1999)
New & Aln. *Amaranthus blitoides* S.Watson (El-Shahary 2002, Saaed 2008)
Amaranthus graecizans L. (Al-Habony 1999)
Amaranthus viridis L. (Al-Habony 1999, El-Shahary 2002)
Anabasis articulata (Forssk.) Moq.
 (Pampanini 1930, Jafri & El-Gadi 1978c, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Arthrocaulon macrostachyum (Moric.) Piirainen & G.Kadereit; Syn. *Arthrocnemum macrostachyum* (Moric.)
 K.Koch. (Pampanini 1930, Jafri & El-Gadi 1978c, Al-Habony 1999, El-Shahary 2002)
Atriplex coriacea Forssk. (Jafri & El-Gadi 1978c, Al-Habony 1999)
Atriplex glauca L.; Syn. *Atriplex stylosa* Viv. (Jafri & El-Gadi 1978c, Al-Habony 1999, El-Shahary 2002)
Atriplex halimus L. (Pampanini 1930, Jafri & El-Gadi 1978c, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Atriplex mollis Desf. (Pampanini 1930, Jafri & El-Gadi 1978c, El-Shahary 2002, Saaed 2008)
Atriplex portulacoides L.; Syn. *Halimione portulacoides* (L.) Aellen (Pampanini 1930, Al-Habony 1999)
Bassia arabica (Boiss.) Maire & Weiller;
 Basionym *Chenolea arabica* Boiss. (Pampanini 1930, Jafri & El-Gadi 1978c)
Bassia indica (Wight) A.J.Scott; Basionym *Kochia indica* Wight (Jafri & El-Gadi 1978c, El-Shahary 2002)
Bassia muricata (L.) Asch. (Al-Habony 1999, El-Shahary 2002)
Aln. *Beta vulgaris* L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Beta vulgaris subsp. *maritima* (L.) Arcang.; Syn. *Beta vulgaris* var. *perennis* L. (Pampanini 1930)
Blitum virgatum L. (Le Houérou 2004)
Camphorosma monspeliaca L. (Al-Habony 1999)
Caroxylon imbricatum (Forssk.) Moq.; Syn. *Salsola baryosma* (Schult.) Dandy (El-Shahary 2002)
Caroxylon tetragonum (Delile) Moq.;
 Basionym *Salsola tetragona* Delile.... (Pampanini 1930, Jafri & El-Gadi 1978c, El-Shahary 2002, Saaed 2008)
Caroxylon tetrandrum (Forssk.) Akhani & Roalson;
 Basionym *Salsola tetrandra* Forssk. (Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Caroxylon vermiculatum (L.) Akhani & Roalson;
 Basionym *Salsola vermiculata* L. (Pampanini 1930, Jafri & El-Gadi 1978c)
Aln. *Chenopodiastrum murale* (L.) S.Fuentes, Uotila & Borsch;
 Basionym *Chenopodium murale* L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Chenopodium sp. (Pampanini 1930)
Cornulaca monacantha Delile (Pampanini 1930, El-Shahary 2002)
Halocnemum strobilaceum (Pall.) M.Bieb. (Pampanini 1930, El-Shahary 2002, Saaed 2008)
Haloxylon scoparium Pomel; Syn. *Hammada scoparia* (Pomel) Iljin
 (Jafri & El-Gadi 1978c, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Haloxylon salicornicum (Moq.) Bunge ex Boiss.; Syn. *Haloxylon articulatum* (Moq.) Bunge (Pampanini 1930)
Noaea mucronata (Forssk.) Asch. & Schweinf.;
 Syn. *Noaea spinosissima* (L.f.) Moq. (Pampanini 1930, El-Shahary 2002)
Salicornia fruticosa (L.) L.; Syn. *Arthrocnemum fruticosum* (L.) Moq.
 (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Salsola kali L. (Jafri & El-Gadi 1978c, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

- Salsola longifolia* Forssk.....(Pampanini 1930, Jafri & El-Gadi 1978c, El-Shahary 2002)
Salsola schweinfurthii Solms.....(Jafri & El-Gadi 1978c)
Suaeda palaestina Eig & Zohary.....(Jafri & El-Gadi 1978c)
Suaeda pruinosa Lange.....(Pampanini 1930)
Suaeda vera Forssk. ex J.F.Gmel.; Syn. *Suaeda fruticosa* (L.) Forssk.....
.....(Pampanini 1930, Jafri & El-Gadi 1978c, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Suaeda vermiculata Forssk. ex J.F.Gmel.....(Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Traganum nudatum Delile.....(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)

ANACARDIACEAE

- Searsia tripartita* (Ucria) Moffett; Syn. *Rhus tripartita* (Ucria) Grande(El-Shahary 2002, Saaed 2008)

APIACEAE

- Ammi majus* L.(Pampanini 1930)
Anethum graveolens L.(Al-Habony 1999)
Bupleurum lancifolium Hornem.; Syn. *Bupleurum subovatum* var. *heterophyllum* (Link) H.Wolff.....
.....(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Bupleurum nanum Poir.;
Syn. *Bupleurum nodiflorum* subsp. *nanum* (Poir.) Jafri.....(Jafri & El-Gadi 1985a, El-Shahary 2002)
Bupleurum semicompositum L.; Syn. *Bupleurum semicompositum* var. *pseudodontites* (Rouy & E.G.Camus)
H.Wolff.....(Pampanini 1930, Jafri & El-Gadi 1985a)
^{Cul.} *Coriandrum sativum* L.(Pampanini 1930, Saaed 2008)
Cuminum cyminum L.(Pampanini 1930)
Daucus pumilus (L.) Hoffmanns. & Link;
Syn. *Pseudorlaya pumila* (L.) Grande; *Orlaya maritima* var. *breviaculeata* Boiss.(El-Shahary 2002)
Deverra tortuosa (Desf.) DC.; Syn. *Pituranthos tortuosus* (Desf.) Benth. & Hook.f. ex Asch. & Schweinf.....
.....(Pampanini 1930, Jafri & El-Gadi 1985a, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Eryngium campestre L.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Eryngium maritimum L.....(El-Shahary 2002, Saaed 2008)
^{Near} *Ferula marmarica* Asch. & Taub. ex Asch. & Schweinf.....(Pampanini 1930)
Ferula tingitana L.....(Jafri & El-Gadi 1985a, Saaed 2008)
Foeniculum vulgare Mill.; Syn. *Foeniculum vulgare* var. *capillaceum* (Gilib.) Burnat.....(Pampanini 1930)
^{Cul.} *Petroselinum crispum* (Mill.) Fuss(Saaed 2008)
Scaligeria napiformis (Willd. ex Spreng.) Grande; Syn. *Scaligeria cretica* (Mill.) Boiss.(Pampanini 1930)
Scandix australis L.(Al-Habony 1999)
Scandix pecten-veneris L.(Pampanini 1930, Jafri & El-Gadi 1985a)
Torilis leptophylla (L.) Rchb.f.(El-Shahary 2002)
Torilis nodosa (L.) Gaertn.....(Pampanini 1930, Jafri & El-Gadi 1985a)

APOCYNACEAE

- Calotropis procera* (Aiton) W.T.Aiton.....(Le Houérou 2004)
Ceropegia europaea (Guss.) Murb.;
Syn. *Caralluma europaea* (Guss.) N.E.Br.....(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Cynanchum acutum L.(Pampanini 1930, Ali & Jafri 1977a)
^{Aln.} *Nerium oleander* L.(Pampanini 1930, Al-Habony 1999, Saaed 2008)
Pergularia tomentosa L.(El-Shahary 2002)
Periploca angustifolia Labill.
.....(Pampanini 1930, Ali & Jafri 1977a, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

ASTERACEAE

- Aaronsohnia pubescens* (Desf.) K.Bremer & Humph. subsp. *pubescens*;
 Syn. *Chamomilla pubescens* (Desf.) Alavi (El-Shahary 2002, Saaed 2008)
- Achillea maritima* (L.) Ehrend. & Y.P.Guo; Syn. *Diotis maritima* (L.) Sm. (Pampanini 1930)
- Achillea tenuifolia* Lam.;
 Syn. *Achillea santolina* L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Anacyclus clavatus* (Desf.) Pers. (Al-Habony 1999)
- Anacyclus monanthos* (L.) Thell. (Al-Habony 1999, El-Shahary 2002)
- Anacyclus monanthos* (L.) Thell. subsp. *monanthos*; Syn. *Anacyclus alexandrinus* Willd. (Pampanini 1930)
- Anthemis cotula* L. (Pampanini 1930)
- Near *Anthemis glareosa* E.A.Durand & Barratte (Pampanini 1930)
- Anthemis pseudocotula* Boiss.; Syn. *Anthemis rotata* Boiss. (Pampanini 1930)
- Anthemis secundiramea* Biv. (El-Shahary 2002)
- Near *Anthemis taubertii* E.A.Durand & Barratte; Syn. *Anthemis scaettae* Pamp. (Pampanini 1930)
- Atractylis cancellata* L. (Pampanini 1930, El-Shahary 2002)
- Atractylis carduus* (Forssk.) C.Chr.; Syn. *Atractylis flava* Desf. (Pampanini 1930)
- Artemisia herba-alba* Asso (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Calendula arvensis* L.; Syn. *Calendula aegyptiaca* var. *crista-galli* (Viv.) Bég. & A.Vacc.
 (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
- Calendula palaestina* Boiss.; Syn. *Calendula aegyptiaca* subsp. *ceratosperma* (Viv.) Murb. (Pampanini 1930)
- Carduus argentatus* L. (Pampanini 1930, Al-Habony 1999)
- Carduus getulus* Pomel (Pampanini 1930, Al-Habony 1999)
- Carduus pycnocephalus* L. (Pampanini 1930)
- Carlina involucrata* Poir. (Pampanini 1930)
- Carlina sicula* subsp. *mareotica* (Asch. & Schweinf.) Greuter;
 Syn. *Carlina sicula* var. *libyca* Pamp. (Pampanini 1930)
- Carthamus glaucus* M.Bieb.; Syn. *Carthamus glaucus* var. *alexandrinus* (Boiss. & Heldr.) Boiss. (Pampanini 1930)
- Carthamus lanatus* L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Near *Carthamus mareoticus* Delile;
 Syn. *Carduncellus mareoticus* (Delile) Hanelt (Pampanini 1930, Jafri & El-Gadi 1983a)
- New *Carthamus nitidus* Boiss. (Al-Habony 1999)
- Near *Centaurea alexandrina* Delile (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Near *Centaurea glomerata* Vahl; Syn. *Centaurea glomerata* var. *glabriceps* Asch. & Schweinf. (El-Shahary 2002)
- Centaurea melitensis* L. (Pampanini 1930, Al-Habony 1999)
- Chiliadenus candicans* (Delile) Brullo; Syn. *Varthemia candicans* (Delile) Boiss. (Pampanini 1930)
- Chiliadenus glutinosus* (L.) Fourr.; Syn. *Jasonia glutinosa* (L.) DC. (Pampanini 1930)
- New *Chiliadenus iphionoides* (Boiss. & C.I.Blanche) Brullo;
 Basionym *Varthemia iphionoides* Boiss. & C.I.Blanche (El-Shahary 2002)
- Chlamydophora tridentata* Ehrenb. ex Less.; Syn. *Chlamydophora tridentata* Ehrenb. (Pampanini 1930)
- Cichorium pumilum* Jacq. (Pampanini 1930, Al-Habony 1999)
- End. *Crepis filiformis* Aiton; Syn. *Crepis senecioides* subsp. *filiformis* (Viv.) Alavi (Al-Habony 1999)
- Crepis vesicaria* L. (Pampanini 1930)
- Crocodylium pumilio* (L.) N.Garcia & Susanna; Syn. *Aegialophila pumilio* (L.) Boiss. (Pampanini 1930)
- Cynara cornigera* Lindl.; Syn. *Cynara sibthorpiana* var. *elata* Bég. & A.Vacc. (Pampanini 1930)
- End. *Echinops cyrenaicus* E.A.Durand & Barratte. (El-Shahary 2002)
- Near *Echinops galalensis* Schweinf. (Al-Habony 1999)
- Echinops spinosissimus* Turra subsp. *spinosissimus*; Syn. *Echinops spinosus* L. (Pampanini 1930)
- Filago contracta* (Boiss.) Chrtek & Holub; Basionym *Evax contracta* Boiss. (Pampanini 1930)
- Filago desertorum* Pomel (Jafri & El-Gadi 1983a, El-Shahary 2002)
- Filago mareotica* Delile (Pampanini 1930)
- Filago pyramidata* L.; Syn. *Filago spathulata* var. *prostrata* (Boiss.) Batt. (Pampanini 1930)

- Glebionis coronaria* (L.) Cass. ex Spach; Basionym *Chrysanthemum coronarium* L.;
 Syn. *Chrysanthemum coronarium* var. *discolor* d'Urv.(Pampanini 1930, El-Shahary 2002)
Gymnarrhena micrantha Desf.(El-Shahary 2002)
Hedypnois rhagadioloides (L.) F.W.Schmidt; Syn. *Hedypnois globulifera* var. *cretica* (L.) Fiori;
Hedypnois cretica (L.) Dum.Cours.(Al-Habony 1999, El-Shahary 2002)
Helichrysum stoechas subsp. *barrelieri* (Ten.) Nym.;
 Syn. *Helichrysum conglobatum* (Viv.) Steud.(Pampanini 1930)
Hyoseris lucida L.; Syn. *Hyoseris radiata* var. *lucida* (L.) E.A.Durand & Barratte(Pampanini 1930)
Hyoseris radiata L.(Al-Habony 1999)
Hypochaeris achyrophorus L.; Syn. *Seriola aetnensis* L.(Pampanini 1930)
Ifloga spicata subsp. *labillardierei* (Pamp.) Chrtek;
 Basionym *Ifloga spicata* var. *labillardieri* Pamp.(Pampanini 1930)
Ismelia carinata (Schousb.) Sch.Bip.;
 Syn. *Chrysanthemum carinatum* Schousb. (Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Launaea fragilis (Asso) Pau subsp. *fragilis*; Syn. *Launaea resedifolia* (L.) Kuntze(Pampanini 1930)
Launaea nudicaulis (L.) Hook.f. (Pampanini 1930, Jafri & El-Gadi 1983a, Al-Habony 1999, El-Shahary 2002)
Limbarda crithmoides (L.) Dumort.(Pampanini 1930)
Limbarda crithmoides (L.) Dumort. subsp. *crithmoides*; Basionym *Inula crithmoides* L.(El-Shahary 2002)
Matricaria aurea (Loefl.) Sch.Bip.; Syn. *Matricaria aurea* (Loefl.) Sch.Bip.;
Chamomilla aurea (Loefl.) J.Gay ex Coss. & Kralik(Pampanini 1930, Al-Habony 1999)
Nidorella aegyptiaca (L.) J.C.Manning & Goldblatt;
 Syn. *Conyza aegyptiaca* (L.) Dryand. ex Aiton(El-Shahary 2002)
Notobasis syriaca (L.) Cass.(El-Shahary 2002)
^{End.} *Onopordum cyrenaicum* Maire & Weiller(Al-Habony 1999)
Onopordum platylepis (Murb.) Murb.; Syn. *Onopordum confusum* Pamp.(Al-Habony 1999)
Pallenis hierochuntica (Michon) Greuter;
 Syn. *Asteriscus pygmaeus* (DC.) Coss. & Durieu(Pampanini 1930, El-Shahary 2002)
Pallenis spinosa (L.) Cass.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Pallenis spinosa subsp. *asteroidea* (Viv.) Greuter;
 Syn. *Pallenis spinosa* var. *asteroidea* (Viv.) Asch.(Pampanini 1930)
Phagnalon graecum Boiss. & Heldr.;
 Syn. *Phagnalon rupestre* var. *graecum* (Boiss. & Heldr.) Fiori(Pampanini 1930)
Phagnalon rupestre (L.) DC.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Picris asplenoides L. subsp. *asplenoides*; Syn. *Spitzelia coronopifolia* (Desf.) Sch.Bip.;
Crepis radicata Forsk.(Pampanini 1930)
Pulicaria undulata (L.) C.A.Mey.(El-Shahary 2002)
Reichardia tingitana (L.) Roth(Jafri & El-Gadi 1983a)
Reichardia tingitana (L.) Roth var. *tingitana*;
 Syn. *Reichardia tingitana* var. *orientalis* (L.) Pamp.(Pampanini 1930)
Rhanterium suaveolens Desf.(Le Houérou 2004)
Scorzonera undulata Vahl(Al-Habony 1999, El-Shahary 2002)
Scorzonera undulata Vahl subsp. *undulata*;
 Syn. *Scorzonera undulata* var. *alexandrina* (Boiss.) Bonnet & Baratte(Pampanini 1930)
Scorzoneroideis hispidula (Delile) Greuter & Talavera; Syn. *Leontodon hispidulus* (Delile) Boiss.;
Kalbfussia hispidula (Delile) Beg. & A.Vacc.(Saaed 2008)
Scorzoneroideis simplex (Viv.) Greuter & Talavera; Syn. *Leontodon simplex* (Viv.) Widder(El-Shahary 2002)
Senecio gallicus Vill. ex Chaix(Pampanini 1930, Al-Habony 1999)
Senecio glaucus subsp. *coronopifolius* (Maire) C.Alexander; Syn. *Senecio coronopifolius* Desf.;
Senecio gallicus var. *laxiflorus* (Viv.) DC.(Pampanini 1930)
Senecio vulgaris L.(El-Shahary 2002)
Sonchus asper (L.) Hill(Al-Habony 1999)
^{Aln.} *Sonchus oleraceus* L.(Pampanini 1930, Al-Habony 1999)
Sonchus tenerrimus L.(Pampanini 1930)
Urospermum picroides (L.) Scop. ex F.W.Schmidt;

- Basionym *Tragopogon picroides* L. (Pampanini 1930, El-Shahary 2002)
Voluntaria crupinoides (Desf.) Maire; Syn. *Amberboa crupinoides* var. *libyca* (Viv.) Pamp. (Pampanini 1930)
Voluntaria tubuliflora (Murb.) Sennen;
 Basionym *Amberboa tubuliflora* Murb. (Pampanini 1930, Jafri & El-Gadi 1983a)
Xanthium spinosum L. (Al-Habony 1999)

BERBERIDACEAE

- Dou. Leontice leontopetalum* L. (Saaed 2008)

BORAGINACEAE

- Alkanna tinctoria* (L.) Tausch (Pampanini 1930)
Anchusa aegyptiaca (L.) A.DC. (Pampanini 1930, Jafri & El-Gadi 1979a, Al-Habony 1999, El-Shahary 2002)
Anchusa hybrida Ten. (Pampanini 1930)
Borago officinalis L. (Le Houérou 2004)
Buglossoides tenuiflora (L.f.) I.M.Johnst.; Basionym *Lithospermum tenuiflorum* L.f. (Pampanini 1930)
Echiochilon fruticosum Desf. (Pampanini 1930)
Echium angustifolium Mill. (Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Echium angustifolium subsp. *sericeum* (Vahl) G.Klotz; Basionym *Echium sericeum* Vahl (Pampanini 1930)
Echium humile Desf. (Jafri & El-Gadi 1979a)
Echium sabulicola Pomel (El-Shahary 2002)
Echium rubrum Forssk.; Syn. *Echium setosum* Vahl; *Pontechium maculatum* (L.) Böhle & Hilger
 (Pampanini 1930)
Gastrocotyle hispida (Forssk.) Bunge; Basionym *Anchusa hispida* Forsk.
 (Jafri & El-Gadi 1979a, El-Shahary 2002)
Heliotropium bacciferum Forssk. (Jafri & El-Gadi 1979a, El-Shahary 2002)
Heliotropium bacciferum Forssk subsp. *bacciferum*; Syn. *Heliotropium undulatum* Vahl (Pampanini 1930)
^{Aln} *Heliotropium curassavicum* L. (Jafri & El-Gadi 1979a, Al-Habony 1999, El-Shahary 2002)
Heliotropium europaeum L. (Pampanini 1930)
Lappula spinocarpus (Forssk.) Asch. ex Kuntze;
 Syn. *Lappula spinocarpus* (Forssk.) Asch. (Jafri & El-Gadi 1979a, El-Shahary 2002)
Lappula spinocarpus (Forssk.) Asch. ex Kuntze subsp. *spinocarpus*;
 Syn. *Echinosperrum spinocarpus* (Forsk.) Boiss. (Pampanini 1930)
Moltkiopsis ciliata (Forssk.) I.M.Johnst.; Syn. *Lithospermum callosum* Vahl (Pampanini 1930)
Nonea vesicaria (L.) Rchb.; Syn. *Anchusa nigricans* (Desf.) Brot. (Pampanini 1930)
Pardoglossum cheirifolium (L.) E.Barbier & Mathez;
 Basionym *Cynoglossum cheirifolium* L. (Jafri & El-Gadi 1979a)

BRASSICACEAE

- Biscutella didyma* L. (Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Biscutella didyma L. subsp. *didyma*; Syn. *Biscutella didyma* var. *columnae* (Ten.) Halácsy (Pampanini 1930)
Biscutella didyma var. *ciliata* (DC.) Vis; Syn. *Biscutella didyma* subsp. *apula* (L.) Nyman;
Biscutella didyma var. *apula* (L.) Coss. (Pampanini 1930)
Brassica gravinae Ten. (Pampanini 1930, Ali & Jafri 1977b)
Cakile maritima Scop. (Pampanini 1930)
Cakile maritima Scop subsp. *maritima*;
 Syn. *Cakile aegyptiaca* (L.) Willd. (Pampanini 1930, El-Shahary 2002, Saaed 2008)
Capsella bursa-pastoris (L.) Medik. (El-Shahary 2002)

- Carrichtera annua* (L.) DC..... (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Coincya tournefortii* (Gouan) Alcaraz, T.E.Díaz, Rivas Mart. & Sánchez-Gómez;
 Basionym *Brassica tournefortii* Gouan.....(Pampanini 1930)
- Conringia orientalis* (L.) C.Presl.....(Pampanini 1930)
- Didesmus aegyptius* (L.) Desv.; Syn. *Didesmus aegyptius* var. *tenuifolius* (Sibth. & Sm.) Heldr. (Pampanini 1930)
- Didesmus bipinnatus* (Desf.) DC..... (Pampanini 1930, El-Shahary 2002, Saaed 2008)
- Diplotaxis harra* (Forssk.) Boiss..... (El-Shahary 2002, Saaed 2008)
- Diplotaxis harra* (Forssk.) Boiss. subsp. *harra*;
 Syn. *Diplotaxis harra* var. *subglabra* (DC.) O.E.Schulz(Pampanini 1930)
- Diplotaxis muralis* (L.) DC..... (El-Shahary 2002, Saaed 2008)
- Diplotaxis simplex* (Viv.) Spreng.....(Pampanini 1930)
- ^{Near} *Enarthrocarpus pterocarpus* (Pers.) DC..... (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Enarthrocarpus strangulatus* Boiss.(Pampanini 1930)
- Erucaria microcarpa* Boiss..... (Ali & Jafri 1977b, Al-Habony 1999, Saaed 2008)
- Erucaria pinnata* (Viv.) Täckh. & Boulos; Syn. *Reboudia pinnata* (Viv.) O.E.Schulz.....(Pampanini 1930)
- Eruca sativa* Garsault.....(Pampanini 1930)
- ^{Cul} *Eruca vesicaria* (L.) Cav.; Syn. *Eruca longirostris* Uechtr.(Al-Habony 1999, Saaed 2008)
- Farsetia aegyptia* Turra.....(Pampanini 1930, El-Shahary 2002)
- Hornungia procumbens* (L.) Hayek; Syn. *Capsella procumbens* (L.) Fr.....(Pampanini 1930)
- Lepidium aucheri* Boiss. (Le Houérou 2004)
- Lepidium draba* L.; Syn. *Cardaria draba* (L.) Desv.(Al-Habony 1999)
- Lepidium sativum* L.....(Pampanini 1930)
- Lobularia libyca* (Viv.) Meisn..... (El-Shahary 2002, Saaed 2008)
- Maresia nana* (DC.) Batt.....(Pampanini 1930)
- Matthiola fruticulosa* (L.) Maire.....(Al-Habony 1999)
- Matthiola kralikii* Pomel; Syn. *Lonchophora kralikii* (Pomel) Jafri.....(Al-Habony 1999)
- Matthiola longipetala* subsp. *hirta* (Conti) Greuter & Burdet; Syn. *Matthiola pumilio* (Sm.) DC.....
(Pampanini 1930)
- Matthiola longipetala* subsp. *hirta* (Conti) Greuter & Burdet;
 Syn. *Matthiola pumilio* var. *pusilla* Pamp.....(Pampanini 1930)
- Matthiola tricuspidata* (L.) R.Br.(Ali & Jafri 1977b, El-Shahary 2002, Saaed 2008)
- Moricandia arvensis* (L.) DC..... (El-Shahary 2002, Saaed 2008)
- Moricandia nitens* (Viv.) E.A.Durand & Barratte.....(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
- Rapistrum rugosum* (L.) All.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- ^{Cul} *Raphanus raphanistrum* subsp. *sativus* (L.) Domin; Basionym *Raphanus sativus* L.(Pampanini 1930)
- Sinapis alba* L.(Al-Habony 1999)
- Sinapis pubescens* L..... (Le Houérou 2004)
- Sisymbrium irio* L.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Zilla spinosa* (L.) Prantl (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Zilla spinosa* subsp. *biparmata* (O.E.Schulz) Maire & Weiller..... (Le Houérou 2004)

CACTACEAE

- ^{Cul} *Opuntia ficus-indica* (L.) Mill. (Saaed 2008)

CAMPANULACEAE

- Campanula erinus* L.(Pampanini 1930)

CAPPARACEAE

- Capparis spinosa* L. (Al-Habony 1999, El-Shahary 2002, Saeed 2008)
Capparis spinosa var. *aegyptia* (Lam.) Boiss. (Pampanini 1930)
Capparis spinosa subsp. *rupestris* (Sm.) Nyman;
Syn. *Capparis spinosa* var. *rupestris* (Sm.) Viv; *Capparis orientalis* Veill. (Pampanini 1930)

CAPRIFOLIACEAE

- Lomelosia stellata* (L.) Raf.; Syn. *Scabiosa monspeliensis* Jacq. (El-Shahary 2002)
Pterocephalus plumosus (L.) Coult.; Syn. *Pterocephalus papposus* (L.) Coult. (Pampanini 1930)
^{Near} *Valerianella petrovichii* Asch. (Pampanini 1930, Jafri & El-Gadi 1977d)

CARYOPHYLLACEAE

- Gymnocarpus decander* Forssk.; Syn. *Gymnocarpus fruticosus* (Vahl) Pers. (Pampanini 1930, El-Shahary 2002)
Herniaria cyrenaica F.Herm. (Le Houérou 2004)
Herniaria cinerea DC. (Pampanini 1930, Jafri & El-Gadi 1977e)
Herniaria glabra L. (Pampanini 1930)
Herniaria hemistemon J.Gay (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
^{New} *Herniaria hirsuta* L. (Al-Habony 1999)
Paronychia arabica (L.) DC. (Pampanini 1930, El-Shahary 2002, Jafri & El-Gadi 1977e)
Paronychia arabica subsp. *longiseta* (Batt.) Batt.;
Syn. *Paronychia arabica* var. *tripolitana* E.A.Durand & Barratte (Pampanini 1930)
Paronychia capitata (L.) Lam. (Pampanini 1930)
Paronychia chlorothyrsa Murb. (Jafri & El-Gadi 1977e, El-Shahary 2002)
Polycarpon alsinifolium (Biv.) DC. (Pampanini 1930)
Polycarpon prostratum (Forssk.) Asch. & Schweinf. (Jafri & El-Gadi 1978d)
Pteranthus dichotomus Forssk. (El-Shahary 2002)
Rhodalsine geniculata (Poir.) F.N.Williams; Syn. *Minuartia geniculata* (Poir.) Thell;
Minuartia procumbens (Vahl) Graebn. (Pampanini 1930, El-Shahary 2002)
Sagina apetala Ard. (Al-Habony 1999)
Silene apetala Willd. (Pampanini 1930)
Silene apetala Willd. subsp. *apetala*; Syn. *Silene apetala* var. *grandiflora* Boiss. (Pampanini 1930)
^{Near} *Silene biappendiculata* Ehrh. ex Rohrb. (Pampanini 1930)
Silene colorata Poir. (Pampanini 1930)
^{End.} *Silene fruticosa* L. (Le Houérou 2004)
Silene gallica L.; Syn. *Silene cerastoides* L. (Pampanini 1930)
^{End.} *Silene marmarica* Bég. & A.Vacc. (Jafri & El-Gadi 1978d)
Silene succulenta Forssk. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Silene villosa Forssk. (El-Shahary 2002)
Silene vivianii Steud. (Al-Habony 1999, El-Shahary 2002)
Silene vivianii Steud. subsp. *vivianii*; Syn. *Silene setacea* Viv. (Pampanini 1930)
^{New} *Spergula arvensis* L. (Al-Habony 1999)
Spergularia diandra (Guss.) Boiss.;
Syn. *Spergularia diandra* (Guss.) Heldr. (Pampanini 1930, Jafri & El-Gadi 1978d)
Spergularia flaccida (Madden) I.M.Turner; Syn. *Spergula fallax* (Lowe) E.H.L.Krause (El-Shahary 2002)
Spergularia marina (L.) Besser; Syn. *Spergularia salina* J.Presl & C.Presl (Pampanini 1930)
Vaccaria hispanica (Miller) Rauschert; Syn. *Vaccaria pyramidata* Medik. (El-Shahary 2002)

CASUARINACEAE

Aln. *Casuarina equisetifolia* L.; Syn. *Casuarina equisetifolia* J.R.Forst. & G.Forst.(Al-Habony 1999)

CISTACEAE

- Fumana laevis* (Cav.) Pau; Syn. *Fumana thymifolia* var. *laevis* (Cav.) Grosser(Pampanini 1930)
Fumana thymifolia (L.) Webb.....(Pampanini 1930)
Helianthemum ellipticum (Desf.) Pers.....(Pampanini 1930)
Helianthemum getulum Pomel.....(El-Shahary 2002)
Helianthemum kahiricum Delile.....(Pampanini 1930)
Helianthemum ledifolium (L.) Mill.....(Pampanini 1930)
Helianthemum ledifolium (L.) Mill. subsp. *ledifolium*;
 Syn. *Helianthemum ledifolium* var. *macrocarpum* Willk.....(Pampanini 1930)
Helianthemum lippii (L.) Dum.Cours.; Syn. *Helianthemum lippii* (L.) Pers.....(Pampanini 1930)
Helianthemum salicifolium (L.) Mill.; Syn. *Helianthemum salicifolium* var. *microcarpum* Willk.(Pampanini 1930)
Helianthemum vesicarium Boiss.;
 Syn. *Helianthemum virgatum* var. *vesicarium* (Boiss.) E.A.Durand & Barratte(Pampanini 1930)
Helianthemum virgatum subsp. *ciliatum* (Desf.) Murb.; Syn. *Helianthemum virgatum* var. *ciliatum* (Desf.) Batt.;
 Helianthemum virgatum var. *marmaricum* Bég. & A.Vacc.(Pampanini 1930)

CONVOLVULACEAE

- Convolvulus althaeoides* L.(Pampanini 1930, Jafri & El-Gadi 1977f, Al-Habony 1999, El-Shahary 2002)
Convolvulus arvensis L.(Al-Habony 1999, El-Shahary 2002)
Convolvulus dorycnium L.(Al-Habony 1999)
Convolvulus oleifolius Desr.(Pampanini 1930, El-Shahary 2002)
Convolvulus siculus L.(Jafri & El-Gadi 1977f)
Convolvulus supinus Coss. & Kralik(Le Houérou 2004)
Convolvulus tricolor L.(Le Houérou 2004)
Cressa cretica L.(Pampanini 1930, El-Shahary 2002)
Cuscuta epithymum Murray(Pampanini 1930)
Cuscuta europaea L.(Le Houérou 2004)
Cuscuta planiflora Ten.(Pampanini 1930, El-Shahary 2002)

CRASSULACEAE

- Crassula alata* (Viv.) A.Berger subsp. *alata*; Syn. *Tillaea trichopoda* Fenzl ex Boiss.(Pampanini 1930)
Sedum laconicum Boiss. & Heldr.(Pampanini 1930)
Umbilicus intermedius Boiss.; Syn. *Cotyledon intermedia* (Boiss.) Bornm.....(Pampanini 1930, El-Shahary 2002)

CUCURBITACEAE

- Bryonia cretica* L.(Pampanini 1930)
Citrullus colocynthis (L.) Schrad.(El-Shahary 2002; Saaed 2008)
Cul. *Citrullus lanatus* (Thunb.) Matsum. & Nakai(Saaed 2008)
Cul. *Cucumis melo* L.(Saaed 2008)
Cul. *Cucumis melo* L. subsp. *melo*(Saaed 2008)

Ecballium elaterium (L.) A.Rich.(El-Shahary 2002)

CYNOMORIACEAE

Cynomorium coccineum L.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)

ERICACEAE

Erica multiflora L.(Al-Habony 1999)

EUPHORBIACEAE

Chrozophora tinctoria (L.) A.Juss.; Syn. *Chrozophora obliqua* (Vahl) A.Juss. ex Spreng.(El-Shahary 2002)

Euphorbia bivonae Steud. (Le Houérou 2004)

Euphorbia chamaesyce L.(El-Shahary 2002)

Euphorbia dendroides L. (Jafri & El-Gadi 1982, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

Euphorbia falcata L.(Jafri & El-Gadi 1982)

Euphorbia helioscopia L.(Pampanini 1930, Jafri & El-Gadi 1982)

Euphorbia papillaris (Boiss.) Raffaelli & Ricceri;
Basionym *Euphorbia bivonae* var. *papillaris* Boiss.(Pampanini 1930)

Euphorbia paralias L.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)

^{Near} *Euphorbia parvula* Delile(Pampanini 1930)

Euphorbia peplus L.(El-Shahary 2002)

Euphorbia peplus var. *minima* DC.; Syn. *Euphorbia peplus* var. *peplodes* (Gouan) Vis.(Pampanini 1930)

Euphorbia retusa Forssk.(El-Shahary 2002)

Euphorbia sulcata Lens ex Loisel.(Pampanini 1930, Jafri & El-Gadi 1982)

Euphorbia terracina L.; Syn. *Euphorbia terracina* var. *leiosperma* (Sibth. & Sm.) Halácsy(Pampanini 1930)

Mercurialis annua L.(Pampanini 1930, El-Shahary 2002)

^{Aln.} *Ricinus communis* L.(Al-Habony 1999)

FABACEAE

^{Aln.} *Acacia saligna* (Labill.) H.L.Wendl.; Syn. *Acacia cyanophylla* Lindl.(Al-Habony 1999)

Alhagi maurorum Medik.(Pampanini 1930)

Alhagi maurorum subsp. *graecorum* (Boiss.) Awmack & Lock;
Basionym *Alhagi graecorum* Boiss.(Jafri & El-Gadi 1980a, El-Shahary 2002)

Anagyris foetida L.(Al-Habony 1999)

Anthyllis circinnata (L.) D.D.Sokoloff; Syn. *Hymenocarpus nummularius* Willd.;
Hymenocarpus circinnatus (L.) Savi.(Pampanini 1930)

Astragalus annularis Forssk.(Pampanini 1930)

Astragalus asterias Steven; Syn. *Astragalus radiatus* Ehrenb. ex Bunge(Pampanini 1930)

Astragalus boeticus L.(El-Shahary 2002)

Astragalus caprinus L.(Al-Habony 1999, El-Shahary 2002)

Astragalus caprinus L. subsp. *caprinus*; Syn. *Astragalus lanigerus* Desf.(Pampanini 1930)

Astragalus hamosus L.(Pampanini 1930)

Astragalus hispidulus DC.(Pampanini 1930, Jafri & El-Gadi 1980a)

Astragalus peregrinus Vahl(Pampanini 1930, El-Shahary 2002)

Astragalus schimperi Boiss.(El-Shahary 2002)

Astragalus tribuloides Delile(Pampanini 1930, Jafri & El-Gadi 1980a, Al-Habony 1999)

- Astragalus trigonus* DC. (Pampanini 1930, Jafri & El-Gadi 1980a, Al-Habony 1999, El-Shahary 2002)
- Bituminaria bituminosa* (L.) C.H.Stirt.; Basionym *Psoralea bituminosa* L. (El-Shahary 2002)
- Ceratonia siliqua* L. (Pampanini 1930, Jafri & El-Gadi 1978e, Al-Habony 1999, Saaed 2008)
- ^{Cul.} *Cicer arietinum* L. (Pampanini 1930)
- ^{Near} *Ebenus armitagei* Schweinf. & Taub. ex Schweinf. & Asch. (Pampanini 1930)
- ^{Aln.} *Erythrostemon gilliesii* (Hook.) Klotzsch; Syn. *Caesalpinia gilliesii* (Hook.) D.Dietr. (Al-Habony 1999)
- Hedysarum spinosissimum* L.; Syn. *Hedysarum spinosissimum* var. *pallens* (Moris) Rouy;
Sulla spinosissima (L.) B.H.Choi & H.Ohashi (Pampanini 1930, Al-Habony 1999)
- Hippocrepis areolata* Desv.; Syn. *Hippocrepis bicontorta* Loisel.;
Hippocrepis bicontorta var. *glabra* Pamp. (Pampanini 1930)
- Hippocrepis cyclocarpa* Murb.; Syn. *Hippocrepis cyclocarpa*
var. *leiocarpa* Pamp. (Pampanini 1930, Jafri & El-Gadi 1980a, El-Shahary 2002)
- Lathyrus aphaca* L. (Pampanini 1930, Jafri & El-Gadi 1980a, Al-Habony 1999, El-Shahary 2002)
- Lathyrus cicera* L. (Pampanini 1930)
- Lathyrus cicera* var. *tenuifolius* Fouc. & Sim. (Pampanini 1930)
- Lathyrus clymenum* L.; Syn. *Lathyrus clymenum* var. *articulatus* (L.) Arcang. (Pampanini 1930)
- Lathyrus gorgoni* Parl. (El-Shahary 2002)
- Lathyrus hierosolymitanus* Boiss. (Pampanini 1930)
- ^{Cul.} *Lathyrus oleraceus* Lam.; Syn. *Pisum sativum* L. (Al-Habony 1999)
- Lathyrus saxatilis* (Vent.) Vis. (Pampanini 1930)
- Lotus corniculatus* L. (Al-Habony 1999, El-Shahary 2002)
- Lotus creticus* L. (Pampanini 1930, Jafri & El-Gadi 1980a)
- Lotus cytisoides* L. (El-Shahary 2002)
- Lotus glinoides* Delile (El-Shahary 2002)
- Lotus halophilus* Boiss. & Spruner;
Syn. *Lotus pusillus* Medik. (Pampanini 1930, Jafri & El-Gadi 1980a, Al-Habony 1999)
- Lotus peregrinus* L. (Pampanini 1930)
- Lotus polyphyllus* E.D.Clarke (Pampanini 1930, El-Shahary 2002)
- Lotus tenuis* Waldst. & Kit. ex Willd.; Syn. *Lotus glaber* Mill. (Jafri & El-Gadi 1980a)
- Medicago coronata* Desr. (Pampanini 1930)
- Medicago laciniata* (L.) Mill. (Pampanini 1930, El-Shahary 2002)
- Medicago littoralis* Rohde ex Loisel. (Pampanini 1930, Jafri & El-Gadi 1980a, El-Shahary 2002)
- Medicago minima* (L.) Bartal.; Basionym *Medicago polymorpha* var. *minima* L. (Pampanini 1930)
- Medicago monspeliaca* (L.) Trautv.; Basionym *Trigonella monspeliaca* L. (Pampanini 1930)
- Medicago orbicularis* (L.) Bartal. (El-Shahary 2002, Saaed 2008)
- Medicago polymorpha* L. (Al-Habony 1999)
- Medicago truncatula* Gaertn.;
Syn. *Medicago tribuloides* Desr. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Melilotus indicus* (L.) All. (Al-Habony 1999)
- Melilotus italicus* (L.) Lam.; Syn. *Medicago italica* (L.) E.H.L.Krause (Pampanini 1930)
- Melilotus messanensis* (L.) All.; Syn. *Melilotus siculus* (Turra) B.D.Jacks. (Pampanini 1930)
- Melilotus sulcatus* Desf. (Pampanini 1930, El-Shahary 2002)
- Onobrychis crista-galli* (L.) Lam. (Pampanini 1930, Jafri & El-Gadi 1980a, El-Shahary 2002, Saaed 2008)
- Ononis reclinata* L. (El-Shahary 2002)
- Ononis mollis* Savi; Syn. *Ononis reclinata* subsp. *mollis* (Savi) Bég. (Pampanini 1930)
- Ononis serrata* Forssk. (Pampanini 1930)
- Ononis sicula* Guss. (Pampanini 1930)
- Ononis vaginalis* Vahl;
Syn. *Ononis vaginalis* var. *vivianii* Bég. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
- Ononis viscosa* L. (Al-Habony 1999)
- Retama raetam* (Forssk.) Webb & Berthel.;
Syn. *Retama raetum* (Forssk.) Webb. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
- Scorpiurus muricatus* L.; Syn. *Scorpiurus subvillosus* L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
- Trifolium campestre* Schreb. (Pampanini 1930)

- Trifolium purpureum* Loisel. (Pampanini 1930, Al-Habony 1999)
Trifolium resupinatum L. (Pampanini 1930)
Trifolium scabrum L. (Pampanini 1930)
Trifolium stellatum L. (Pampanini 1930)
Trifolium tomentosum L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Trigonella coerulescens (M.Bieb.) Halácsy (Al-Habony 1999)
Trigonella maritima Delile ex Poir. (Pampanini 1930, Jafri & El-Gadi 1980a)
Trigonella stellata Forssk. (Pampanini 1930, El-Shahary 2002)
Tripodion tetraphyllum (L.) Fourr.; Basionym *Anthyllis tetraphylla* L. (Pampanini 1930, El-Shahary 2002)
^{Aln.} *Vachellia nilotica* (L.) P.J.H.Hurter & Mabb.; Syn. *Acacia nilotica* (L.) Willd. ex Delile (Al-Habony 1999)
^{New} *Vicia hirsuta* (L.) Gray (Al-Habony 1999)
Vicia lutea L. (Pampanini 1930)
Vicia monantha Retz. (Al-Habony 1999, Saaed 2008)
Vicia monantha Retz. subsp. *monantha*; Syn. *Vicia calcarata* Desf. (Pampanini 1930)
Vicia parviflora Cav.; Syn. *Vicia laxiflora* Brot. (El-Shahary 2002)
Vicia peregrina L. (Pampanini 1930)
Vicia sativa L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Vicia sativa L. subsp. (unknown) (El-Shahary 2002)
Vicia sativa subsp. *cordata* (Hoppe) Batt.; Syn. *Vicia sativa* var. *cordata* (Hoppe) Boiss. (El-Shahary 2002)
Vicia sativa subsp. *nigra* Ehrh.; Syn. *Vicia angustifolia* L. (Pampanini 1930, Saaed 2008)
Vicia villosa Roth (El-Shahary 2002)

FRANKENIACEAE

- Frankenia hirsuta* L.; Syn. *Frankenia laevis* var. *intermedia* (DC.) Bonnet;
Frankenia laevis var. *revoluta* (Forsk.) E.A.Durand & Barratte (Pampanini 1930, El-Shahary 2002)
Frankenia pulverulenta L. (Pampanini 1930)

GERANIACEAE

- Erodium ciconium* (L.) L'Hér. (Jafri & El-Gadi 1978f, Al-Habony 1999)
Erodium crassifolium L'Hér.;
 Syn. *Erodium hirtum* (Forssk.) Willd. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Erodium glaucophyllum (L.) L'Hér. (Pampanini 1930, El-Shahary 2002)
Erodium gruinum (L.) L'Hér.; Basionym *Geranium gruinum* L. (Pampanini 1930)
Erodium laciniatum (Cav.) Willd. (Pampanini 1930, El-Shahary 2002)
Erodium malacoides (L.) L'Hér. (Pampanini 1930, Al-Habony 1999)
Erodium neuradifolium Delile ex Godr.;
 Syn. *Erodium neuradifolium* Delile (Jafri & El-Gadi 1978f, Al-Habony 1999)
Geranium molle L. (Pampanini 1930)
Geranium rotundifolium L. (Al-Habony 1999, El-Shahary 2002)
Monsonia nivea (Decne.) Boiss. (El-Shahary 2002)

LAMIACEAE

- Ajuga iva* (L.) Schreb. (Pampanini 1930)
Ballota pseudodictamnus (L.) Benth. (Pampanini 1930, Jafri & El-Gadi 1985b, El-Shahary 2002, Saaed 2008)
Lamium amplexicaule L. (Pampanini 1930)
Marrubium alysson L.
 (Pampanini 1930, Jafri & El-Gadi 1985b, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Marrubium vulgare L. (Pampanini 1930, Jafri & El-Gadi 1985b, Al-Habony 1999)

- Cul. Mentha spicata* L..... (Saaed 2008)
Micromeria microphylla (d'Urv.) Benth.;
 Syn. *Satureja microphylla* (d'Urv.) Guss. (Pampanini 1930, Jafri & El-Gadi 1985b, El-Shahary 2002)
Micromeria nervosa (Desf.) Benth.; Basionym *Satureja nervosa* Desf. (Pampanini 1930, Al-Habony 1999)
Phlomis floccosa D.Don; Syn. *Phlomis bicolor* (Viv.) Benth.....
 (Pampanini 1930, Jafri & El-Gadi 1985b, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Prasium majus L. (Pampanini 1930)
Pseudodictamnus hirsutus (Willd.) Salmaki & Siadati; Syn. *Ballota hirsuta* Benth..... (Al-Habony 1999)
Salvia aegyptiaca L..... (Pampanini 1930, El-Shahary 2002)
Salvia lanigera Poir..... (Pampanini 1930, Jafri & El-Gadi 1985b, Al-Habony 1999, El-Shahary 2002)
Salvia spinosa L. (Jafri & El-Gadi 1985b, El-Shahary 2002)
Salvia verbenaca L. (Jafri & El-Gadi 1985b, Al-Habony 1999, El-Shahary 2002)
End. Teucrium barbeyanum Asch. & Taub. ex E.A.Durand & Barratte (Pampanini 1930)
Near Teucrium brevifolium Schreb. (Pampanini 1930, Al-Habony 1999)
End. Teucrium davaeanum Coss. (Pampanini 1930)
Teucrium fruticans L. (El-Shahary 2002)
Teucrium polium L. (Pampanini 1930, El-Shahary 2002)
Thymbra capitata (L.) Cav.;
 Syn. *Thymus capitatus* (L.) Hoffmanns. & Link (Pampanini 1930, El-Shahary 2002, Saaed 2008)
Aln. Volkameria inermis L.; Syn. *Clerodendrum inerme* (L.) Gaertn. (Al-Habony 1999)

LAURACEAE

- Laurus nobilis* L..... (Pampanini 1930)

LINACEAE

- Linum nodiflorum* L. (Pampanini 1930)
Linum strictum L.; Syn. *Linum strictum* var. *spicatum* Pers. (Pampanini 1930)

LYTHRACEAE

- Cul. Punica granatum* L..... (Saaed 2008)

MALVACEAE

- Dou. Anisodonteia fruticosa* (P.J.Bergius) D.M.Bates; Syn. *Malva reflexa* Andrews..... (Saaed 2008)
Cul. Corchorus olitorius L. (Saaed 2008)
Cul. Lagunaria patersonia (Andrews) G.Don. (Al-Habony 1999)
Malva aegyptia L. (Ali & Jafri 1977c, Al-Habony 1999, El-Shahary 2002)
Malva aegyptia L. subsp. *aegyptia*; Syn. *Malva aegyptia* subsp. *leiocarpa* Iljin..... (Pampanini 1930)
Malva parviflora L. (Al-Habony 1999)
Malva sylvestris L. (Ali & Jafri 1977c, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Malva sylvestris var. *ambigua* Schweinf. & Asch. (Pampanini 1930)
Malva verticillata L. (Ali & Jafri 1977c)

MORACEAE

Cul. Ficus carica L. (Al-Habony 1999, Saaed 2008)

MYRTACEAE

Aln. Eucalyptus gomphocephala A.Cunn. ex DC. (Al-Habony 1999, Saaed 2008)

Aln. Eucalyptus sp. (Saaed 2008)

Cul. Psidium guajava L. (Saaed 2008)

NITRARIACEAE

Nitraria retusa (Forssk.) Asch.;

Syn. *Nitraria tridentata* Desf. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

Peganum harmala L. (Pampanini 1930, Jafri & El-Gadi 1977g, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

Tetradiclis tenella (Ehrenb.) Litv.; Syn. *Tetradiclis salsa* C.A.Mey. (Pampanini 1930, Jafri & El-Gadi 1977g)

OLEACEAE

Cul. Olea europaea L. (Al-Habony 1999, Saaed 2008)

Cul. Olea europaea L. subsp. *europaea*; Syn. *Olea europaea* subsp. *oleaster* (Hoffmanns. & Link) Negodi. (Pampanini 1930)

Phillyrea latifolia L.; Syn. *Phillyrea media* L. (Le Houérou 2004)

OROBANCHACEAE

Cistanche compacta (Viv.) Bég. & A.Vacc.;

Syn. *Cistanche lutea* subsp. *compacta* (Viv.) Bég. & A.Vacc. (Pampanini 1930)

Cistanche lutea (Desf.) Hoffmanns. & Link;

Syn. *Cistanche phelypaea* Cout. (Pampanini 1930, El-Shahary 2002, Saaed 2008)

Cistanche violacea (Desf.) Hoffmanns. & Link; Syn. *Cistanche violacea* (Desf.) G.Beck (Al-Habony 1999)

Orobanche cernua Loefl. (Jafri & El-Gadi 1978g)

Orobanche mutelii F.W.Schultz; Syn. *Phelipanche mutelii* (F.W.Schultz) Pomel. (Pampanini 1930)

Phelipanche portolicitana (A.Pujadas & M.B.Crespo) Carlón, G.Gómez, M.Laínz, Moreno Mor., Ó.Sánchez & Schneew.; Syn. *Kopsia mutelii* var. *spissa* (Beck) Bég. & A.Vacc. (Pampanini 1930)

OXALIDACEAE

Oxalis pes-caprae L. (Al-Habony 1999)

PAPAVERACEAE

Fumaria densiflora DC. (Al-Habony 1999, El-Shahary 2002, Jafri & El-Gadi 1977h)

Glaucium corniculatum (L.) J.H.Rudolph (Jafri & El-Gadi 1977i, El-Shahary 2002)

Glaucium flavum Crantz (Al-Habony 1999, El-Shahary 2002)

Hypecoum littorale Wulfen; Syn. *Hypecoum geslinii* Coss. & Kralik (El-Shahary 2002, Saaed 2008)

Hypecoum pendulum L. (Al-Habony 1999)

Papaver dodecandrum (Forssk.) Medik.; Syn. *Roemeria dodecandra* (Forssk.) Stapf (Pampanini 1930)

- Papaver dubium* L.....(El-Shahary 2002)
Papaver hybridum L.(Jafri & El-Gadi 1977i, Al-Habony 1999)
Papaver rhoeas L..... (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

PLANTAGINACEAE

- Globularia arabica* Jaub. & Spach (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Kickxia aegyptiaca (L.) Nábelek(El-Shahary 2002)
Kickxia aegyptiaca (L.) Nábelek subsp. *aegyptiaca*; Syn. *Linaria aegyptiaca* (L.) Dum.Cours(Pampanini 1930)
Linaria haelava (Forssk.) F.Dietr.; Syn. *Linaria haelava* var. *angustifolia* (Viv.) Pamp.(Pampanini 1930)
End. *Linaria laxiflora* subsp. *calcarlongum* Qaiser(Al-Habony 1999)
Linaria virgata subsp. *syrtica* Murb.;
Syn. *Linaria virgata* var. *syrtica* (Murb.) E.A.Durand & Barratte(Pampanini 1930)
Misopates orontium (L.) Raf.....(Al-Habony 1999)
Misopates orontium (L.) Raf. subsp. *orontium* ; Basionym *Antirrhinum orontium* L.(Pampanini 1930)
Plantago albicans L.; Syn. *Plantago albicans* var. *angustifolia* Guss.(Pampanini 1930, El-Shahary 2002)
Plantago amplexicaulis Cav.....(Pampanini 1930)
End. *Plantago cyrenaica* E.A.Durand & Barratte(Pampanini 1930)
Near *Plantago crypsoides* Boiss.....(Pampanini 1930, Jafri & El-Gadi 1979b)
Plantago indica L.; Syn. *Plantago arenaria* Waldst. & Kit.(El-Shahary 2002)
Plantago lagopus L.....(Pampanini 1930, Al-Habony 1999)
Plantago lanceolata L.....(Pampanini 1930, Jafri & El-Gadi 1979b)
Plantago notata Lag.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Plantago ovata Forssk.(Pampanini 1930, El-Shahary 2002)
Plantago phaeostoma Boiss. & Heldr.....(Pampanini 1930, Jafri & El-Gadi 1979b)

PLUMBAGINACEAE

- Limoniastrum monopetalum* (L.) Boiss.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
End. *Limonium cyrenaicum* (Rouy) Brullo(El-Shahary 2002)
Limonium delicatulum (Girard) Kuntze; Basionym *Statice delicatula* Girard(Pampanini 1930)
Limonium pruinsum (L.) Chaz.; Basionym *Statice pruinosa* L.; Syn. *Limonium pruinsum* (L.) Kuntze; *Limonium pruinsum* var. *hirtiflorum* (Cav.) Maire & Weiller.....
.....(Pampanini 1930, Jafri & El-Gadi 1984a, Al-Habony 1999, El-Shahary 2002)
Limonium lobatum (L.f.) Chaz.; Syn. *Statice thouinii* Viv.;
Limonium thouinii (Viv.) Kuntze (Jafri & El-Gadi 1984a, Al-Habony 1999, El-Shahary 2002)
Near *Limonium tubiflorum* (Delile) Kuntze; Basionym *Statice tubiflora* Delile
.....(Pampanini 1930, Jafri & El-Gadi 1984a, Al-Habony 1999, El-Shahary 2002)

POLYGONACEAE

- Polygonum aviculare* L.....(Al-Habony 1999)
Polygonum equisetiforme Sibth. & Sm.....(Pampanini 1930, Jafri & El-Gadi 1983b, El-Shahary 2002)
Polygonum maritimum L.(El-Shahary 2002)
Rumex acetosa L.....(El-Shahary 2002)
Rumex bucephalophorus L.(Pampanini 1930)
Rumex simpliciflorus Murb.....(Pampanini 1930)
Rumex spinosus L.; Syn. *Emex spinosa* (L.) Campd.(Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Rumex vesicarius L.(Pampanini 1930, Al-Habony 1999)

PORTULACACEAE

Cul. Portulaca oleracea L.....(Pampanini 1930)

PRIMULACEAE

Lysimachia arvensis (L.) U.Manns & Anderb.;

Basionym *Anagallis arvensis* L..... (Al-Habony 1999, El-Shahary 2002, Saaed 2008)

Lysimachia arvensis f. *latifolia* (L.) B.Bock; Syn. *Anagallis arvensis* var. *latifolia* (L.) Lange.....(Pampanini 1930)

Lysimachia arvensis var. *caerulea* (L.) Turland & Bergmeier;

Syn. *Anagallis arvensis* var. *caerulea* (L.) Gouan(Pampanini 1930)

Lysimachia linum-stellatum L.; Syn. *Asterolinon linum-stellatum* (L.) Duby.....(Pampanini 1930)

RANUNCULACEAE

Adonis dentata Delile.....(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)

Adonis microcarpa DC.(El-Shahary 2002)

Delphinium halteratum Sm.....(El-Shahary 2002)

Near Nigella arvensis subsp. *taubertii* (Brand) Maire; Basionym *Nigella taubertii* Brand.....(Pampanini 1930)

Ranunculus asiaticus L.; Syn. *Ranunculus asiaticus* var. *flavus* Sickenb.;

Ranunculus asiaticus var. *grandiflorus* Bég. & A.Vacc.(Pampanini 1930, Al-Habony 1999)

End. Ranunculus cyclocarpus Pamp.(El-Shahary 2002)

RESEDACEAE

Reseda alba L.(El-Shahary 2002)

Reseda arabica Boiss.....(Pampanini 1930)

Reseda decursiva Forssk.; Syn. *Reseda propinqua* R.Br.(Pampanini 1930)

Reseda lutea L..... (Jafri & El-Gadi 1977j, El-Shahary 2002, Saaed 2008)

Reseda lutea subsp. *petrovichiana* (Müll.Arg.) Jafri; Basionym *Reseda petrovichiana* Müll.Arg.(Al-Habony 1999)

Reseda odorata L.(Pampanini 1930)

RHAMNACEAE

Rhamnus oleoides L.....(Pampanini 1930, El-Shahary 2002)

Ziziphus lotus (L.) Lam..... (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

Ziziphus spina-christi (L.) Desf.(Pampanini 1930, Jafri & El-Gadi 1977k)

ROSACEAE

Sanguisorba minor Scop.....(El-Shahary 2002)

Cul. Prunus amygdalus Batsch; Syn. *Amygdalus communis* L..... (Al-Habony 1999, Saaed 2008)

Cul. Prunus armeniaca L..... (Saaed 2008)

Cul. Prunus persica (L.) Batsch; Syn. *Persica vulgaris* Mill.(Saaed 2008)

Cul. Pyrus communis L.....(Jafri & El-Gadi 1977l)

Sarcopoterium spinosum (L.) Spach..... (Jafri & El-Gadi 1977l, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

RUBIACEAE

- Crucianella aegyptiaca* L.; Syn. *Crucianella herbacea* Forssk. (Al-Habony 1999)
Crucianella maritima L.; Syn. *Crucianella rupestris* Guss. (Pampanini 1930)
Galium murale (L.) All. (Pampanini 1930)
Galium setaceum Lam. (Pampanini 1930, El-Shahary 2002)
Galium spurium L. subsp. *spurium*; Syn. *Galium vaillantii* DC. (Pampanini 1930)
Galium verrucosum Huds. (Jafri & El-Gadi 1978h, Al-Habony 1999)
Rubia tenuifolia d'Urv. (Pampanini 1930)
Valantia hispida L. (El-Shahary 2002)
^{New} *Valantia columella* (Ehrenb. ex Boiss.) Bald.; Syn. *Valantia lanata* Delile ex Coss. (Al-Habony 1999)

RUTACEAE

- Haplophyllum tuberculatum* (Forssk.) A.Juss.;
Syn. *Haplophyllum vermiculare* Hand.-Mazz. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)

SALICACEAE

- ^{New} *Populus euphratica* Olivier (El-Shahary 2002)

SALVADORACEAE

- Salvadora persica* L. (Pampanini 1930, Jafri & El-Gadi 1980b)

SANTALACEAE

- Thesium humile* Vahl (Pampanini 1930, El-Shahary 2002, Saaed 2008)

SCROPHULARIACEAE

- Scrophularia canina* L. (Pampanini 1930, El-Shahary 2002)
^{Near} *Verbascum letourneuxii* Asch. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)

SOLANACEAE

- ^{Cul.} *Capsicum annuum* L. (Saaed 2008)
Hyoscyamus albus L. (El-Shahary 2002, Saaed 2008)
Lycium europaeum L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002, Saaed 2008)
Lycium shawii Roem. & Schult. (Al-Habony 1999)
^{Aln.} *Nicotiana glauca* Graham (Al-Habony 1999, El-Shahary 2002, Saaed 2008)
^{Cul.} *Solanum lycopersicum* L. (Saaed 2008)
^{Cul.} *Solanum melongena* L. (Saaed 2008)
Solanum nigrum L. (Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Withania somnifera (L.) Dunal (Jafri & El-Gadi 1978i, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

TAMARICACEAE

- Reaumuria hirtella* Jaub. & Spach.....(Pampanini 1930, Jafri & El-Gadi 1978j, El-Shahary 2002)
Reaumuria vermiculata L.;
 Syn. *Reaumuria mucronata* Jaub. & Spach(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Tamarix aphylla (L.) H.Karst.; Syn. *Tamarix articulata* Vahl(Pampanini 1930, El-Shahary 2002, Saaed 2008)
Tamarix boveana Bunge; Syn. *Tamarix bounopaea* J.Gay.(Pampanini 1930)
Tamarix macrocarpa (Ehrenb.) Bunge(Pampanini 1930)
Tamarix nilotica (Ehrenb.) Bunge; Syn. *Tamarix arabica* Bunge(Pampanini 1930, Al-Habony 1999)

THYMELAEACEAE

- Thymelaea hirsuta* (L.) Endl.
 (Pampanini 1930, Ali & Jafri 1977d, Al-Habony 1999, El-Shahary 2002, Saaed 2008)

URTICACEAE

- Parietaria lusitanica* L.....(Pampanini 1930, Jafri & El-Gadi 1977m)
Urtica urens L..... (Al-Habony 1999, El-Shahary 2002, Saaed 2008)

VERBENACEAE

- Verbena officinalis* L.....(El-Shahary 2002)

VIOLACEAE

- Near Viola scorpiuroides* Coss.(Al-Habony 1999, El-Shahary 2002)

VITACEAE

- Cul. Vitis* sp. (Saaed 2008)

ZYGOPHYLLACEAE

- Fagonia scabra* Forssk.; Syn. *Fagonia sinaica* Boiss.(El-Shahary 2002)
Tetraena alba (L.f.) Beier & Thulin;
 Basionym *Zygophyllum album* L.f.(Pampanini 1930, Al-Habony 1999, El-Shahary 2002)
Aln. Tribulus terrestris L.(Pampanini 1930, Jafri & El-Gadi 1977g, Al-Habony 1999)
Zygophyllum arabicum (L.) Christenh. & Byng;
 Basionym *Fagonia arabica* L.(Pampanini 1930, El-Shahary 2002, Saaed 2008)
Zygophyllum creticum (L.) Christenh. & Byng; Basionym *Fagonia cretica* L.
 (Pampanini 1930, Al-Habony 1999)

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