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UNESCO OFFICE IN DOHA

An Illustrated Checklist of the Flora of Qatar

**John Norton, Sara Abdul Majid, Debbie Allan,
Mohammed Al Safran, Benno Böer & Renee Richer**



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2009



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Qatar Foundation

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The authors would be pleased to receive comments or corrections on the text, further information on the occurrence of species in Qatar and good quality digital photographs of plants growing in Qatar. Correspondence should be addressed to: John Norton, Browndown Publications, 215 Forton Road, Gosport, Hampshire PO12 3HB, UK (e-mail: books@jncology.com)

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Cover photograph: a sandy wadi with *Acacia tortilis* and *Lycium shawii*, within an area of gently undulating limestone 'hamada' – the characteristic landscape of Qatar (south-west Qatar, March 2007). Insets: *Convolvulus cephalodpodus*, *Anastatica hierochuntica*, *Centaurea sinaica* and *Cynomorium coccineum*.

Authors

John Norton is an independent ecological consultant and botanist, based in Hampshire, UK. He has spent more than two and a half years in total working in the Arabian Peninsula, including spells in northern Saudi Arabia and the United Arab Emirates to conduct research on the Houbara Bustard. Since 1998 he has made several trips to Qatar to undertake wildlife surveys and impact assessments, including a detailed survey of the Dukhan area in 2007. He has a keen interest in the wildlife and ecology of desert habitats and has built up an extensive collection of photographs and herbarium specimens. In the UK he is a committee member of the Hampshire Flora Group, which organises field meetings, and encourage people to develop botanical identification skills.

Benno Böer is a botanist and ecologist working at the UNESCO Doha Office as the Ecological Sciences Advisor for the Arab Region. He has been involved in several international research programmes in ecosystem study, vegetation mapping and other forms of botanical research in Saudi Arabia, Qatar, Bahrain, Oman, Kuwait and the United Arab Emirates and has authored or contributed to several scientific publications and books including the two most recent floras covering the UAE (Jongbloed, *et al.* 2000, 2003). He has a special interest in the rehabilitation of coastal and desert ecosystems and through UNESCO helped to set up the first biosphere reserve for the country at Al Reem in 2007 and is helping to establish the Quranic Botanic Garden in Doha.

Sara Abdul Majid is an environmental scientist and dedicated conservationist. Born and raised in Qatar, she has developed a passion for the unique desert environment of the country. She worked at an environmental consulting firm (URS Doha office) before pursuing her Masters in Conservation at University College London. During her time with URS, Sara has been involved in conducting terrestrial and marine field surveys including the study of baseline flora, fauna, soil/sediment and groundwater conditions. She has recently conducted research at Al Reem Biosphere Reserve, including the characterization and mapping of vegetation communities, in collaboration with UNESCO and the Ministry of Environment (Qatar).

Debbie Allan is a self-taught botanist and naturalist who has studied the flora of her local area of Gosport in Hampshire for more than 15 years. Together with John Norton she is working on a flora of the area, which lies on a floristically rich coastal peninsula, to be published in 2010. Past work has included five years spent indexing scientific publications and 15 months (to April 2006) computerising botanical records for the Hampshire Rare Plant Register, a project funded by the Botanical Society of the British Isles and the Hampshire Wildlife Trust. She presently works as an assistant ecologist with John Norton.

Mohammed Al Safran was born in Qatar and has developed a special interest in its flora and plant ecology. He studied at Qatar University and subsequently obtained a Masters degree in Agricultural and Environmental Sciences at Newcastle University in 2008 and is presently completing his PhD on the ecology and status of *Prosopis cineraria* and *Acacia tortilis* in Qatar. He is also currently teaching at Qatar University Department of Biology & Environmental Sciences and is supervising the management of the 'Biology Field' at the university campus, helping to involve students in the study of flora, fauna and soil relationships.

Renee Richer is visiting assistant professor at Weill Cornell Medical College in Qatar. Trained as a botanist and ecologist at Harvard University, she worked in southern Africa from 1994-2002. While assistant professor and director of the Environmental Conservation and Research Center at the American University of Armenia, she worked closely with government, NGOs and communities in furthering environmental development in the country, culminating in the Whitley award in 2007. With a keen interest in environmental science and sustainable development in arid regions, she has authored scientific publications and co-authored a book on environmental course design. She is currently studying the flora of Qatar.

Foreword

This illustrated plant species Checklist of the Flora of Qatar has been produced in the overall framework of a major project linking biodiversity conservation with cultural heritage, namely the Quranic Botanic Garden (QBG) in Qatar. The guidelines for the QBG have been developed under the guidance of Qatar Foundation and with the international and inter-disciplinary support and expert advice of Mr. Abdulaziz Al Midfa (United Arab Emirates), Prof. Dr. Abdulrahman Al Muftah (Qatar), Prof. Dr. Kamal Batanouny (Qatar Foundation), Dr. Benno Böer (UNESCO), Dr. Gary Brown (Kuwait), Dr. Uwe Herpin (Brazil), Prof. Dr. Fared Krupp (Germany), Dr. Guido Licciardi (UNESCO) and Ms. Narjes Yedder (Tunisia). They have developed the over-arching vision to '*Provide the people of Qatar and the Gulf Region with a Centre of Excellence for Research and Education, promoting the conservation of natural and cultural heritage, emphasising the teachings of the Holy Qur'an and the Hadith. This will also function as a prime recreational destination*'. I am highly thankful to the above experts.

A lot has been achieved in a short time, since October 2007, when UNESCO and Qatar Foundation embarked on this joint initiative, which received generous support from Maersk Oil Qatar, and which was assisted by Ralf Oliver of London and Botanic Gardens Conservation International. The International Advisory Committee met, guidelines were developed based on expert recommendations, the master plan was developed, reviewed, revised and produced, and an external evaluation report was compiled. These were all essential steps towards the establishment of the Quranic Botanic Garden.

The flora of Qatar and the Arabian Peninsula has always been important for the Arab people, as a source for livestock grazing, construction material, firewood and food. It is important in our modern times that we study the natural vegetation, learn to understand vegetation ecology, and document and conserve our national and regional flora. The indigenous plants have undoubtedly a large number of medicinal, pharmaceutical, landscaping, scientific and economic values that are yet to be discovered. This volume is a new and essential contribution, because and it contains a comprehensive listing of species that occur in the country, as well as providing important eco-geographical information about these species.

It is with great joy that I can witness and provide the foreword for this milestone as a supporting element of the QBG. During their research the authors faced many deficits in the existing literature, namely a lack of reliable, accurate and up-to-date botanical data. I congratulate them for their achievement, including those elements of real capacity building. I highly recommend this volume as an important source of information about, and education into, the understanding of the flora of Qatar.

Saif Al Hajari
Vice-Chairperson of Qatar Foundation

Preface

My interest in Arabian plant life started in 1988 when I travelled to the Harrat al Harrah area in north-west Saudi Arabia on the first of five trips over a period of two years to study the habitat of the Houbara Bustard, a traditional quarry of the Arab falconer. Although a dry, rocky area, the flora here is relatively rich, especially in the sandy wadis and silt pans which retain some moisture during the summer months. My work then took me to Abu Dhabi during the winter of 1991–92, where although working as an ornithologist I visited all parts of the Emirate and quickly became familiar with the range of plant life of this predominantly sandy area. Travels to the Al Liwa oasis, at the edge of the Empty Quarter, were particularly memorable during this time.

In November 1994 I returned to Abu Dhabi to work for six months for one of the predecessors of the Abu Dhabi Environment Agency (EAD), where I carried out both bird and plant-related work. This is where I first met Benno Böer, who had already been employed as an ecologist there for several years – having previously spent time in the Eastern Province of Saudi Arabia as well as Abu Dhabi, studying the ecology of mangroves, saltmarshes and desert vegetation. During the spring of 1995 a good rainy spell allowed us the opportunity to study the germination and development of native desert plants, particularly in the confines of our research station at Sweihan, a 1.5 km x 1.5 km square enclosure (Böer & Norton 1996a, 1996b). Whilst the flora inside the station flourished, the plants outside soon disappeared due to the attentions of the local herd of camels. Encouragingly, we also noticed that parts of an adjacent area had been fenced off to prevent grazing. This may have been a measure to protect the wintering grounds of the Houbara, or could have been a now rare example of the traditional Bedouin *hema* system of grazing protection.

From this background, we subsequently both went on to develop a keen interest in the habitats and flora of the region and of Qatar in particular. After publishing an important account of his Abu Dhabi work on the anthropogenic impacts on desert ecosystems (Böer 1999), Benno moved to Doha to work for UNESCO, where he has gone on to promote the restoration and wise management of desert habitats. Since 2002 he has been working to set up the first biosphere reserve for the country at Al Reem, which was finally established in 2007. He was also instrumental in establishing the Quranic Botanic Garden in Doha.

I carried on working in the UK as an ecological consultant, but in 1998, 2003 and 2004 I made brief visits to Qatar to carry out ecological surveys for environmental impact assessments at the two main industrial ‘cities’ of Mesaieed and Ras Laffan. More recently, during February and March 2007 I organised a large-scale flora and fauna survey of Qatar Petroleum’s Dukhan Concession Area, on the west coast. This followed the wettest winter for 10 years in the Gulf, which resulted in remarkable green swathes of annual vegetation across large parts of Qatar. I was joined on this survey by Simon Aspinall, an old friend and then long-term former resident of Abu Dhabi, who besides being a renowned ornithologist is also one of the most experienced botanists working in the region. He has contributed several of the photographs included in this book and made more than his fair share of noteworthy discoveries.

The flora of the Arabian Peninsula has principally been studied and documented by visiting or expatriate Egyptian, Pakistani, Sudanese and western botanists, most notably Abdel Bari, Boulou, Batanouny, Chaudhary, Collette, Jongbloed and Mandaville. Although some of these have investigated the flora in a professional role through specific research programmes, others have pursued their studies in their own time in an amateur capacity, particularly the Western botanists. In Qatar, most of the research has been carried out through the University of Qatar, which was founded in 1977. Professor Batanouny published the first and only definitive account of the flora in his *Ecology and Flora of Qatar* soon after in 1981. This was followed by a short, but useful account of the flora by El Amin in *Wild Plants of Qatar*, published by the Arab Organization for Agricultural Development in 1983, the result of a 14-month collecting trip. No further comprehensive works

on the flora of Qatar have been published since this time, apart from a few journal papers dealing largely with saline habitats and a detailed report by the University on vegetation types and soil relationships (Abulfatih *et al.* 2001).

Unfortunately, the scientific value of the books by Batanouny and El Amin is now diminishing because plant names have changed and new species have been discovered. The flora has changed in many areas due to increased grazing pressure, the recreational use of desert areas and particularly through the increase in irrigation schemes in farms, towns and cities. Benno and I realised that a new flora of Qatar was urgently needed, but despite our reasonable familiarity with the country we also knew that neither of us had enough knowledge to be able to write a full scientific flora. This will hopefully follow in a few years time after we (or others) have carried out more detailed research and have visited some of the lesser-explored areas. In the meantime, we have compiled this checklist with the intention of providing an up-to-date scientific list of the plants that are known to occur, including brief details where known of their status, distribution, habitat and uses.

We were lucky to have found two local Qataris, Sara Abdul Majid and Mohammed Al Safran, both with a keen interest in the country’s natural heritage, to assist us in compiling this book. Renee Richer who is currently resident in Qatar also provided useful information on the distribution of species and medicinal uses. The remaining author, Debbie Allan, shared with me much of the general research and compilation of information from other floras. Whilst the checklist is not intended to be an identification guide and does not contain any keys or detailed descriptions, we hope that it will provide a useful source of information for ecologists and other scientists carrying out surveys and other research. However, our main aim in publishing it is to stimulate interest and understanding of the natural habitats, vegetation and flora of Qatar, which in contrast to the rest of the Gulf states have been poorly studied and under-valued.

The production of the checklist has been kindly funded by UNESCO and will be used to promote and inform their Quranic Botanic Gardens project, being run in conjunction with the Qatar Foundation and supported by Maersk Oil Qatar. The aims of the project include the establishment of a living collection of all native plant species occurring in the State of Qatar, as well as plants from the Arabian Peninsula and those mentioned in the Holy Quran and the Hadith. It also aims to build up a knowledge-base of plant taxonomy and vegetation ecology amongst Qatari botanists. In this regard we have great hopes that young Qatari men and women will discover the beauty of the national flora, develop a passion for wildlife and come to understand the importance of botanical and ecological scientific research into the natural world.

John Norton
Gosport, UK, October 2009

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We are also indebted to Eric Clement (Gosport, UK) for providing advice and help on identification and taxonomic issues, for proof-reading the text and making many useful suggestions, and also for checking plant specimens and for the extended loan of books on the Arabian flora. Thanks are also due to Simon Aspinall (Norfolk, UK) for permission to reproduce photographs.

Introduction

Selection of Species

This publication lists all species of vascular plants (flowering plants and ferns) recorded growing in the wild in the State of Qatar. These comprise all species known to be native, but also many that have been introduced intentionally or accidentally by man and are now naturalised, often as weeds of cultivation. Several commonly-planted species are also included that are not yet known to be widely naturalised, but could become so in the future. They include a few salt-tolerant trees and shrubs that are becoming increasingly important for urban landscaping and ornamental use in the Gulf. Such species are widely planted to provide shelter from wind and sun, visual screening of industrial buildings and for their general aesthetic value in ‘greening’ projects. The total number of species included in the checklist is nearly 400 of which about 270 are likely to be truly native.

Naturalised species are of interest to botanists and ecologists as they often become established very quickly when introduced into suitable habitats in places away from their country of origin. Thus in some cases they may compete with native species for water and other resources. It is important in publications such as this to document these species and publicise their presence so that their status can be monitored. In Qatar and elsewhere in the Gulf one tree in particular, the Mesquite *Prosopis juliflora*, originally from central America, has now become an undesirable invasive species. Although primarily found in and around inhabited areas, it is increasingly seen growing in more remote desert localities. In contrast, the native *Prosopis cineraria* or *ghaf*, which is on the edge of its range in Qatar, is undergoing a serious decline. The vast majority of the naturalised species included in this checklist are annual or perennial ‘mesophytic’ plants that are dependent on artificial irrigation. Many, however are also found in the numerous natural depressions in Qatar, particularly after winter rains, when soils may remain damp for a considerable time. It is prudent to monitor such species to see if they are having any impact on the native flora, which also abound in these depressions.

Batanouny and El Amin visited cultivated areas as part of their research and so recorded these naturalised and ‘escaped’ species in some detail. Regrettably, the present authors have not been able to revisit many farm areas; instead we have concentrated our efforts on natural habitats. We have therefore not been able to confirm the current status of many of the species mentioned in the earlier publications. Several species recorded in Qatar have not been fully confirmed through expert determination of specimens. The two published volumes of the Flora of the Arabian Peninsula and Socotra (Miller & Cope 1996, Cope 2007) only list species as occurring in Qatar (and other countries) where the authors have seen specimens. In this checklist unconfirmed species have been noted in the text and include, for example, those recorded by El Amin but not previously by Batanouny, and a few old records by Obeid (1975). Where the identification is thought very likely to have been in error the species name has been shown in square brackets.

Sources of Information

This checklist is partly a synthesis of historically published information, especially from the previous accounts of the Qatar flora by Batanouny (1981) and El Amin (1983), as already mentioned. It was felt important to summarise the information included by these authors, as their works include much useful data on status, distribution and uses of species. More recent information was obtained from a list of newly recorded species for Qatar published by Abdel Bari (1997). Other principal sources include the aforementioned Miller & Cope 1996 and Cope 2007, along with Boulos’s *Flora of Egypt* (Boulos 1999-2005), Jongbloed’s *Wild Flowers of the UAE* (Jongbloed *et al.* 2003) and Mandaville’s *Flora of Eastern Saudi Arabia* (1990). Other recent floras covering Gulf states were also consulted, including those for Bahrain: Phillips (1988) and Cornes & Cornes (1989) and for Kuwait: Daoud & Al-Rawi (1985) and Shuaib (1995). Specific comments made by these authors have been cited in the text, but to save space the dates of publication have not usually been repeated.

Much information for this checklist has, however, been derived from the authors’ knowledge and experience of the flora both in Qatar and other parts of the Arabian Gulf. Nonetheless, the occurrence and distribution of many species over much of Qatar is poorly known and so some of our remarks are either brief or generalised. Further research and a mapping survey of the whole country is badly needed. The least explored parts of the state include the extreme north coast, the southern borderlands with Saudi Arabia and the offshore islands that lie within Qatari territory. It is probable that such areas could support a number of hitherto unrecorded native species. It is also likely that a large number of non-native species will be added to the list in future years as more are introduced through importation of food, forestry plants and livestock. Furthermore, little is known about the species of permanently wet areas, such as ponds and lagoons created through irrigation run-off and water treatment schemes.

Photographs and line-drawings are a valuable means of checking the identity of plant species, so in addition to providing a selection of our own photographs in this checklist, we have also carefully referenced published photographs and illustrations from the floras and other guides covering the Gulf region. In addition to those mentioned above, these comprise Western (1989) and the two most recent publications covering the Sultanate of Oman (Ghazanfar 2003, Pickering & Patzelt 2008), which contain a small but useful selection of plants found in Qatar.

Much of the time spent compiling the checklist was taken up with checking taxonomy and recent changes to nomenclature. Names of plants unfortunately change constantly as new information from field-work or herbarium research is published, particularly now that DNA studies are widely carried out. We have tried to use the most up to date name available, if we believe the change has been or will be accepted by the scientific community. In some cases the use of a scientific name of a plant species comes down to personal choice. Therefore we have largely followed Miller & Cope (1996), Cope (2007), Jongbloed *et al.* (2003) and Boulos (1999-2005); but have also made use of internet resources such as *ePIC* (electronic Plant Information Centre administered by the Royal Botanic Gardens, Kew), *IPNI* (International Plant Names Index), *GRIN* (Germplasm Resources Information Network, United States Department of Agriculture) and for Asteraceae and some other plants the Euro+Med PlantBase. Commonly-used synonyms have been given for each species where relevant and any taxonomic uncertainties have been noted in the species accounts.

Arabic names have been compiled from first-hand knowledge of the authors, partially supplemented by literature searches. Names have been listed where well known in Qatar or in widespread use in the Gulf or other parts of the Arab-speaking world. Most the publications listed above also have useful lists of Arabic names, but Mandaville (1990) is recommended as he gives the sources of most of his names and provides a comprehensive Arabic index.

Overview of Habitats and Vegetation

Qatar is largely an arid, desert area with a hot, sunny climate, receiving minimal rainfall, which is often sporadic in occurrence. Fogs occur in winter and spring and contribute a more regular source of water to the flora. The majority of the land surface consists of flat to gently undulating calcareous rocks, with sand formations occurring in the south-east. The country is largely low-lying, but there are some small jebels in the south (rising to just over 100 metres at the highest point) and a rocky Miocene ridge extending from Dukhan to near the southern border on the west coast. Away from the deeper sand areas, the soils are generally shallow, consisting of sands, silts and gravels, but the north of the country also supports numerous natural depressions known as ‘rodāt’, of various sizes, many of which have much deeper, richer soils, and have therefore been converted to farmland to grow crops. The reader is recommended to refer to Batanouny (1983) and Abulfatih *et al.* (2001) for further information on geology, soils and climate.

From a plant ecologist’s point of view the main edaphic (soil) factors affecting choice of habitat of desert species in areas such as the Gulf are the degree of retention of soil moisture, the level

of salinity, soil particle size and the degree of soil compaction. These are often inter-related. The mineral and nutrient content of soils may be important secondary factors affecting plant growth in some areas. Thus, the flora of Qatar can usually be placed into one of five main habitat groups:

- (a) strongly 'xerophytic' species of rock and gravel deserts where soil depth is limited and conditions are very dry;
- (b) 'halophytic' species tolerant of saline areas, such as saltmarshes, coastal sands, sabkha edge and inland oolitic sands;
- (c) species that grow in natural silt and sand depressions where water retention is higher than for (a);
- (d) species adapted to grow in deeper sand, where water is available under the surface;
- (e) species associated with man-made and man-influenced sites, particularly those receiving artificial irrigation, such as roadsides, farms, gardens and sewage ponds.

Species that are more catholic in their requirements may be found in more than one group. Annual species mainly fall in groups (a), (c) and (e) and can grow in almost any situation or soil type, provided there is at least a shallow surface covering of sand or silt. Group (e) includes many naturalised species that are weeds of cultivation. However, a number of true desert species also grow in irrigated habitats; often more luxuriantly due to the increased supply of water. Some of these are adapted to spread quickly in times of good rainfall.

The main habitat types and associated vegetation in Qatar can be summarised as follows:

Dunes and deep sand areas are strongly undulating or form chains of the familiar crescent-shaped 'barchan' dunes; they occur mainly in the south and south-east and are moderately saline, characteristically supporting the mound-forming shrub *Seidlitzia rosmarinus*.

Sand sheets are shallower areas of sand forming flat or gently undulating terrain; they may be stabilised and firm, or sometimes quite soft. They occur mainly in the south-west and are often dominated by sand-binding grasses, especially *Panicum turgidum*, or locally by the shrub *Haloxylon salicornicum*.

White sand of marine origin occurs inland in SW Qatar. It is moderately saline and supports a distinctive vegetation dominated by *Cyperus conglomeratus* and *Tetraena qatariensis*. *Agriophyllum minus* is a distinctive associate.

Coastal sand on beaches is usually coarse-textured and calcareous due to abundant shell fragments. It is often grey, or sometimes pinkish in hue. Halophytic shrubs such as *Cornulaca* spp. usually dominate, but the habitat often supports diverse mixed grass and shrub vegetation. Naturalised date palms (*Phoenix dactylifera*) occur in this habitat at Umm Bab.

Wadis and runnels are linear features formed in the landscape, which may flow with water during times of heavy rainfall. In Qatar they are generally not well defined in terms of depth or gradient, but are characterised by linear or oval patches of accumulated sand, often within otherwise featureless hamada or gravel desert areas. They support distinctive types of vegetation, composed of certain grasses, perennial and annual herbs and also often support stands of *Lycium shawii*. The lily *Dipcadi erythraeum* is especially characteristic of small sandy runnels.

Sand and silt pans and larger natural depressions ('rodats') support moderately compact to very compact soils composed of fine sand, silt or loam. They often become flooded during rains and may retain moisture for some time afterwards. Soils often have higher quantity of organic matter than other desert areas. They are usually characterised by stands of trees and shrubs

comprising *Acacia* spp., *Prosopis juliflora*, *Ziziphus nummularia* and *Lycium shawii*; and are often rich in annual and perennial herbs and grasses. Characteristic species of silt pans include *Cymbopogon commutatus*, *Pulicaria undulata*, *Andrachne telephioides*, *Astragalus eremophilus*, *Althaea ludwigii* and *Corchorus depressus*. In the south, depressions are mostly small, circular features a few metres to a few hundred metres across, but in the north and central parts of Qatar they may be irregular or more linear in shape and can reach 2-3 kilometres in length. These larger rodats have often been converted to farmland and are irrigated and cultivated to grow crops. For further information see Batanouny (1981) and Babikir (1986).

'Sabkha' refers to usually low-lying areas of sandy desert which have been inundated by seawater or rainwater that has dried out leaving a salt-encrusted surface. They occur mainly on or near the coast in Qatar, with larger ones occurring east of Dukhan and at Mesaieed. Most are too salty to support any vegetation, but many have a marginal zone (referred to as 'sabkha edge') that is often dominated by halophytic species such as *Limonium axillare*, *Salsola* spp. or *Tetraena qatariensis*. Native species of *Tamarix* may also occur.

Saltmarsh occurs in coastal bays and creeks, often in muddy areas, and is locally dominated by mangrove *Avicennia marina*, with dense stands of *Arthrocnemum macrostachyum* and other halophytes.

Gypsum desert occurs in the west and north-west, particularly in the Dukhan area. Soils are composed of a high proportion of calcium carbonate and are strongly calcareous. They vary from soft to moderately compact and are also mixed with sand and silt in places. They support a variety of vegetation types that also occur in other sandy and gravelly habitats, but a few species such as *Helianthemum kahircicum* and *Erodium glaucophyllum* are particularly characteristic.

Gravel plain is used to describe flat desert areas with a surface layer of gravel or stones. Several variations of this habitat occur in Qatar, with soils varying from soft to compact and fine to coarse-textured. Most of these are characterised by relatively poor cover of vegetation, often of low-growing or stunted perennial herbs, grasses and shrubs. Typical species include *Helianthemum lippii*, *Polycarpha repens* and *Stipagrostis* spp.

'Hamada' is flat or gently undulating desert with stones and rocks on the surface or embedded in the surface, usually with compact soils and only small quantities of wind-blown sand and silt on the surface. In Qatar this habitat is formed from the limestone bedrock and is a feature of large areas of the interior of the country. The vegetation is usually dominated by *Lycium shawii* and *Tetraena qatariensis*, with the annual grass *Stipa capensis* turning the landscape green after winter rains.

Rock outcrops occur in the west and south-west of the country and occasionally elsewhere. The summits are often rather bare of vegetation due to the lack of soil particles for growth, but their sides accumulate pockets of wind-blown sand and can be quite rich in vegetation. After winter rains the low-growing annual *Sclerocephalus arabicus* may be locally abundant.

Cultivated and irrigated soils are damp periodically or all year round and often have higher levels of organic matter and nutrients. Some may be moderately saline. Depending on the purpose for which they are used they can support various kinds of vegetation, often of non-native, naturalised species.

Wetland areas include pools and channels that take waste water from irrigation and water treatment schemes and remain wet or waterlogged all year round. Such sites usually support dense reedbeds of *Phragmites australis* around the margins, often mixed in with *Tamarix*. Other tall emergent plants sometimes occur. The edge zones often support lower-growing wetland grasses such as *Polygogon monspeliensis* and *Aeluropus lagopoides*. An extensive lake system to the west of Doha has been formed in recent years from waste water sources.

Notes on Layout and Terminology

Abbreviations Used in the Text

To make this checklist easy to read and understand, abbreviations and codes have not been used, except to denote approximate geographical areas of Qatar. The country can be roughly divided into equal thirds: north (N), central (C) and east (E), with the northern and southern parts each also conveniently divided into NW and NE, SW and SE. This appears to be the system used by earlier authors. Main localities are shown on the map (p. xiv).

Shortened author names are used in the lists of photographs and illustrations (see below). Initials of the present authors (BB, SAM, JN, MS & RR) are used in the text when attributing plant records. Square brackets around a species name indicates that there is a strong possibility it was misidentified by previous authors and has not occurred in Qatar.

Order of Species

The checklist is arranged in the traditional order of ferns (Pteridophyta), cone-bearing flowering plants (Gymnospermae), 'double seed-leaved' flowering plants (Dicotyledoneae) and 'single seed-leaved' flowering plants (Monocotyledoneae). Families and species are arranged in alphabetical order within these. Only a single fern (*Ophioglossum polyphyllum*) and gymnosperm (*Ephedra foliata*) are presently known to occur in Qatar.

Family Names

Family names are mostly those recommended by the Angiosperm Phylogeny Group (2003), with the modern names being used for Apiaceae, Asteraceae, Brassicaceae, Fabaceae, Lamiaceae and others (now less often referred to as Umbelliferae, Compositae, Cruciferae, Leguminosae and Labiatae). Tradition has been upheld by recognising Capparaceae, but including it within it those species often separated into the Cleomaceae.

Scientific Names

The currently accepted scientific name of each species is given in bold type, with the author citation in standard format. Synonyms in common or recent use are given in italics with their authors below the species entry.

Vernacular Names

Vernacular (or common) names in English are listed only for widely occurring and familiar species or genera. Some authors of regional floras have invented their own English names, but this practice serves no scientific use and can lead to confusion, so for a large number of species no English vernacular name has been given. In some cases the names given are local to the place of origin, but have become more widely used (e.g. some Indian names of species naturalised in the Gulf).

The Arabic vernacular names are shown in Arabic script and as English transliterations. Words of similar root but pronounced differently are separated by a slash symbol (/). This usually reflects a slightly different dialect or different derivations of the same word, but not all variations have been given. Single or double uppercase letters in the transliterations are used to denote the emphatic consonants. The Arabic letter 'aim has usually been denoted by a single apostrophe, and the letter qaf by the English 'q', even though often pronounced as a hard 'g' in the Gulf and usually spelt as such.

Growth Form & Flowering Period

The species' growth form or habit, and height is summarised using general terms (see **Box 2**). The likely flowering period in Qatar is shown as abbreviated month ranges, e.g. 'Feb–Mar', or 'all year' for species that may flower at any time of the year. It should be borne in mind that flowering

periods may be variable for many species, as they are often determined by the timing of winter or spring rains.

Status

Each species is stated as being either **native** (occurring in Qatar within part of its natural range) or **introduced** (occurring as a result of human action). A preceding question mark [?] indicates that the status is uncertain. What has been termed here as the '**rarity status**' or overall occurrence of species in Qatar is categorised as 'very common', 'common', 'local' or 'rare' (see **Box 1**). This provides a broad assessment of the frequency of species, regardless of habitat type or local abundance. These classifications could be used as an initial stage in selecting species of conservation priority; for example those *native* species that are of *local* or *rare* occurrence. A preceding question mark indicates that the rarity status is uncertain, but for a small number of planted or introduced species the occurrence is unknown and this category has been omitted.

For species not recorded by Batanouny or El Amin, a source for the first published record is given, or where published for the first time in this checklist, details of the record are given, with the author's name or initials. Specimens of most of these species have been retained by JN and identification confirmed by E. Clement; they will be deposited at Kew herbarium in due course.

Qatar has no endemic species, but mention is made of a few 'near-endemics', for example species with distributions restricted to parts of the Gulf. A list of other Gulf countries in which the species has been recorded is given at the end of the status section in alphabetical order. Oman has been excluded from these lists as most of it lies outside the Arabian Gulf area. For Saudi Arabia only species included in Mandaville (1990) are noted, in addition to a few additional ones mapped by Miller & Cope (1996) and Cope (2007), though these sources were not exhaustively checked.

Abundance, Habitat & Distribution

The local abundance, habitat preferences and distribution over Qatar are summarised in this section. Local or 'relative' abundance is the frequency and abundance of species relative to the area or habitat in which they are growing (see **Box 3**). Information on habitat preferences and distribution has usually been combined, rather than listing separately, since in many cases these are inter-related. General information on habitats is given in the Introduction. Distribution is given in terms of the main geographical areas of Qatar as described above or by reference to more specific localities or areas. Localities are mentioned mainly for the more localised and rare species, where necessary repeating details given by previous authors. Most are included on the map (page xiv).

Box 1. Categories used to summarise occurrence in Qatar

very common	Species distributed over most parts of the country and occurring in most habitat types.
common	Species with a wide range, but may be absent from some geographical areas or from certain types of habitat.
local	Species of scattered distribution, i.e. occurring only in a small number of often widely spaced sites. Invariably this will apply to species dependent on certain types of habitat or habitat conditions which themselves are localised.
rare	Species of very limited distribution in Qatar; usually restricted to about five or fewer localities (based on published information and current knowledge).

Box 2. Main terms used to describe growth form and habit

tree	Long-lived, woody plant with clearly defined trunk; growing to 3 m or more in height, but often shorter if browsed by livestock.
shrub/small shrub	Long-lived woody plant usually without clearly defined trunk; usually attaining a height of 0.3–3 m; ‘small shrub’ has been used to refer to shrubs that do not usually exceed 60 cm in height.
shrublet	Perennial plants with the appearance of herbs, but with tough, woody lower stems; usually less than 30 cm in height, but often much shorter (may be spreading over the ground).
annual herb	Herbaceous, i.e. non-woody, plants usually completing a life cycle of germination to seed production within a 12-month period. In desert conditions annual herbs rarely grow taller than 30 cm and are usually much shorter.
biennial/perennial herb	Herbaceous plants (other than grasses, rushes and sedges) living longer than a year. Biennial herbs normally complete a life cycle in two years; ‘tall herb’ is sometimes used to refer to herbs normally exceeding 1 m in height.
annual/perennial grass	Grasses are members of the Poaceae family. These share the characteristics of having usually hollow stems with simple linear flat or rolled leaves and specialised flowers without coloured petals.
sedge	Members of the Cyperaceae family. Like grasses they have specialised and distinctive flowering structures, but mostly have solid stems.
rush	Members of the Juncaceae family (one species in Qatar).
climber	Plants but which rely on other plants for support. They often take the form of long stems winding around the stems of other plants in spiral fashion.
parasitic plant	Plants lacking chlorophyll, and therefore having no green parts; usually growing on and obtaining nutrients from roots or stems of other plants.

Box 3. Terms used to describe local abundance

dominant	Species forming the greatest proportion of biomass of the vegetation of a localised area or habitat and usually also the highest percentage cover of all species present. Such species are often used to define vegetation types. The term is not used here to refer to the most numerous or highest cover species in sparse desert vegetation, as this can be misleading.
abundant	Species that are very numerous over an area or habitat and are often characteristic of it, usually contributing a high proportion of the plant biomass and/or vegetation cover.
frequent	Species that are numerous in a particular area or habitat type and often characteristic of it, though not normally contributing a high proportion of the total biomass or vegetation cover.
occasional	Species occurring at low frequency wherever they occur, contributing very little to the total biomass of the vegetation or to the cover.

Uses

This section summarises the main cultural and economic uses of plants, either recorded historically and traditionally or during the present-day, though the sources consulted often do not make a clear distinction between past and present. Mention is also made of the main desert species of importance for grazing and browsing animals, i.e. camels, sheep and goats (now ubiquitous over the Gulf and representing the biggest threat to the native flora). Poisonous species have also been highlighted in the accounts.

Most of the information on medicinal uses has been summarised from the earlier floras or from Ghazanfar (1994) and Rizk & El-Ghazaly (1995). These have been cited in the text but the dates have not been repeated to save space. Only the well known or general uses have been mentioned here, so these publications should be consulted for more detailed information. A wealth of data is also available on the internet, due to the current widespread interest in herbal medicine. The authors of this checklist do not accept liability for any incorrect or misleading information given.

Notes

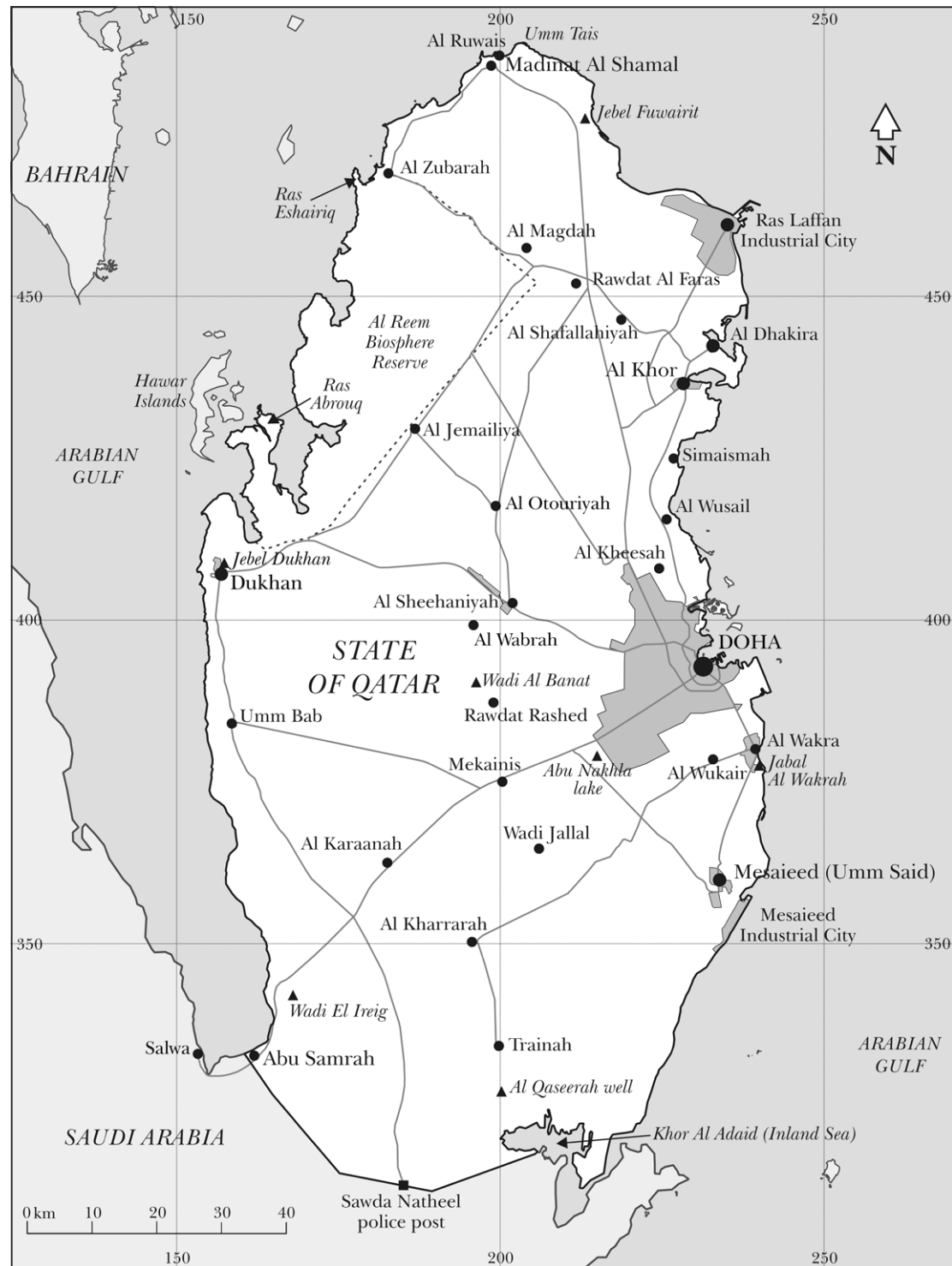
Additional taxonomic information and other notes are included here.

Photographs and Illustrations (‘Photos’)

This entry lists the page or plate numbers of photographs and other illustrations published in the floras covering the Gulf region. Line drawings and coloured illustrations are indicated by a superscript ‘L’ after the number. Line drawings in Miller & Cope (1996) and Cope (2007) have not been included. The publications have been referred to using abbreviated authors’ names as follows:

- ElAmin** El Amin, H.M (Arab Organization for Agricultural Development) (1983). *Wild plants of Qatar*.
- Bat** Batanouny, K.H. (1981). *Ecology and Flora of Qatar*.
- Coll** Collenette, S. (1999). *Wildflowers of Saudi Arabia*.
- Corn** Cornes, M.D. & Cornes, C.D. (1989). *The wild flowering plants of Bahrain*.
- Daoud** Daoud, H.S. & Al-Rawi, A. (1985). *Flora of Kuwait. Volume 1: Dicotyledoneae*.
- Ghaz** Ghazanfar, S.A. (2003). *Flora of Oman, Volume 1, Piperaceae–Primulaceae*. [CD with book]
- Jong** Jongbloed, M. *et al.* (2003). *The comprehensive guide to the wildflowers of the United Arab Emirates*.
- Mand** Mandaville, J.P. (1990). *Flora of Eastern Saudi Arabia*.
- Phil** Phillips, D.C. (1988). *Wild flowers of Bahrain. A field guide to herbs, shrubs and trees*.
- Pick** Pickering, H. & Patzelt, A. (2008). *Field guide to the wild plants of Oman*.
- Shuaib** Shuaib, L. (1995). *Wild flowers of Kuwait*.
- West** Western, A.R. (1989). *The flora of the United Arab Emirates: an introduction*.

Although not referenced here, Sheila Collenette’s earlier book, *An illustrated guide to the flowers of Saudi Arabia* (Collenette 1985), is also a valuable resource, as it contains a different selection of photographs to those shown in her later publication (Collenette 1990). Plate numbers for species illustrated in this checklist are given to the right of the scientific name.



Map of the State of Qatar, showing main roads and principal localities mentioned in the text. Coordinates are shown in Qatar National Grid.

PTERIDOPHYTA

OPHIOGLOSSACEAE

Ophioglossum polyphyllum A. Braun

Plate 3

VERNACULAR NAMES: adder's-tongue fern

GROWTH FORM: Fern. Fl. Feb–Mar.

STATUS: Native. Local. First published record: Abdel Bari (1995); see also Abdel Bari (1997). Also recorded: UAE.

HABITAT & DISTRIBUTION: Occasional, N and S Qatar, sandy areas.

USES: Used to be eaten as salad greens (Jongbloed *et al.*).

PHOTOS: Coll 629; Jong 7.

GYMNOSPERMAE

EPHEDRACEAE

Ephedra foliata Boiss.

Ephedra ciliata Fischer & C.A. Mey.; *Ephedra peduncularis* Boiss.

VERNACULAR NAMES: shrubby horsetail, 'alanda

عندة

GROWTH FORM: Climber. Fl. Apr–May.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy depressions, with *Ziziphus* or *Acacia*, N and C Qatar.

USES: Batanouny mentions that protruding branches are usually 'trimmed' by camels. 'Certain plants of this genus yield ephedrine, used in the treatment of colds, asthma and hay fever' (Cornes & Cornes). 'The crushed boiled plant is used for tanning' (El Amin).

PHOTOS: Bat 17; Coll 297; Corn 50; Jong 9; Phil 87; West 30.

ANGIOSPERMAE: DICOTYLEDONEAE

ACANTHACEAE

Avicennia marina (Forssk.) Vierh.

Plates 1, 4

Avicennia officinalis L.

VERNACULAR NAMES: dwarf mangrove, *qurm*, *shourah*

قرم, شورة

GROWTH FORM: Tree. Fl. Mar.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Sheltered bays and creeks, often along the tide line; usually dominant where it occurs. Main surviving areas are at Umm Tais, Ras Laffan, Al Dhakhira, Al Khor, all in NE Qatar and Al Wakra. Abulfatih *et al.* report finding a stunted specimen in a muddy inlet on the W coast and suggested the conditions were too saline there. A Government programme to restore mangrove vegetation has been in place since 1988, with successful work being carried out at Ras Laffan, but recently a large area has been cleared at Al Wakra and some of the area at Al Khor has also been destroyed. Areas at Umm Tais and Al Dhakhira are protected as natural reserves.

USES: Probably not very palatable to animals. 'Sometimes browsed by camels when other plants are not available' (Mandaville). 'White mangrove is a source of tannin' (Cornes & Cornes). The bark, roots and seeds have various medicinal uses.

PHOTOS: ElAmin 2; Coll 745; Corn 36, 196; Jong 196, 197; Mand 174; Phil 28, 29; Pick 225; West 125.

Blepharis ciliaris (L.) B.L. Burtt

Plate 2

Blepharis edulis auct.VERNACULAR NAMES: eyelash plant, *shawk al-Dub*, *naqi*, *niqeyl*

شوك الضب, نقي, نقيل

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional, on compact stony and gravelly soils; mainly in C Qatar; rare in the west. El Amin recorded along the road from Al Sheehaniyah (where it still common) to Dukhan; it also occurs along the road to Al Zubarah (RR).

USES: Grazed by camels but not by sheep or goats (El Amin). The roots are ground to make a powder (kohl) and used to treat eye inflammation and cataracts. The seeds have healing and anti-inflammatory properties (Rizk & El-Ghazaly).

PHOTOS: Bat 93; Coll 5; Jong 106; Mand 196; Pick 15; West 135.

AIZOACEAE

Aizoon canariense L.

Plate 6

VERNACULAR NAMES: *jafnah*, *hadaq*

جفنة, حدق

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE. HABITAT & DISTRIBUTION: Frequent; usually on harder substrates with shallow deposits of sand. USES: Eaten by camels; leaves are eaten in salads.

PHOTOS: El Amin 1; Bat 19; Coll 12; Corn 5, 53; Daoud 151; Jong 109; Mand 14; Phil 59, 60; Pick 91; Shuaib 86; West 35.

Aizoon hispanicum L.VERNACULAR NAMES: *jafnah*

جفنة

GROWTH FORM: Annual herb. Fl. Mar–May.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Coarse gravels, sandy depressions and runnels; C Qatar.

PHOTOS: Coll 12; Corn 53; Daoud 149, 150; Mand 15; Shuaib 87.

Mesembryanthemum cryptanthum Hook. f.

Plate 5

Mesembryanthemum forskahlii Hochst. ex Boiss.; *Opophytum forskahlii* (Hochst. ex Boiss.) N.E. Br.VERNACULAR NAMES: *samH*, *ghasool*

سمح, غاسول

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: Noted in two places in western Qatar, 2007 (JN), including one site on the outskirts of Dukhan township and another south of Umm Bab; both on compact, calcareous soils. Also Al Khor island (RR). Batanomy cited a record by Boulos (1978).

USES: Ground seeds are used in making bread and other foodstuffs.

PHOTOS: Coll 13; Corn 54; Mand 16; Phil 61.

Mesembryanthemum nodiflorum L.

Plate 7

Cryophytum nodiflorum (L.) L. BolusVERNACULAR NAMES: Egyptian fig marigold, *hurr*, *samH*, *ghasool*

حر, سمح, غاسول

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in dried out saline areas, such as the edges of irrigated fields and along beaches, on compacted sand or other soils; mainly NE Qatar.

PHOTOS: Coll 13; Corn 54; Daoud 152, 153; Jong 110; Phil 62; Shuaib 87.

Zaleya pentandra (L.) C. Jeffrey*Trianthema pentandra* L.VERNACULAR NAMES: *lami*

لامي

GROWTH FORM: Annual or perennial herb. Fl. Dec–Mar.

STATUS: Introduced. Rare. First published record: Abdel Bari (1997). Also recorded: UAE.

HABITAT & DISTRIBUTION: A weed of waste ground.

PHOTOS: Jong 113; West 36.

AMARANTHACEAE

Aerva javanica (Burm. f.) Juss. ex Schult.*Aerva persica* (Burm. f.) Merr.; *Aerva tomentosa* Forssk.VERNACULAR NAMES: *tuwaim*, *Tirf, ra'*

تويم, طرف, راء

GROWTH FORM: Small shrub. Fl. Feb–Mar.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent on rocky substrates with shallow sand, or in silty and sandy depressions.

USES: Several authors note that the flower heads were formerly used by the bedouin for stuffing saddles, pillows and cushions. Used as a remedy for toothache and dermatitis, and an infusion is used to reduce swelling (Rizk & El-Ghazaly). Flowers are used as a wound dressing and to stop bleeding; liquid from the roots is used to treat eye diseases in cattle in Saudi Arabia (Ghazanfar).

PHOTOS: El Amin 3; Bat 31; Coll 33; Corn 58; Ghaz 54; Jong 115; Mand 52; Phil 26, 27; Pick 149; West 53, 54.

Amaranthus graecizans L.VERNACULAR NAMES: *quTayf, sindar*

قطيف, سندر

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in cultivated and disturbed areas, including farms and gardens.

USES: Leaves are used as an emollient; crushed leaves are applied to scorpion stings, snake bites, irritating or itchy rashes (Ghazanfar).

PHOTOS: Bat 32; Coll 35; Corn 61; Jong 118; Pick 200; West 54.

Amaranthus hybridus L.*Amaranthus chlorostachys* Willd.VERNACULAR NAMES: *rowaf*

رواف

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of cultivated fields and gardens.

PHOTOS: Bat 32; Coll 35; Jong 119.

Amaranthus viridis L.*Amaranthus gracilis* Desf.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in cultivated and disturbed areas, including farms and gardens.

USES: Used in the treatment in a wide variety of stomach complaints and as a laxative (Rizk & El-Ghazaly).

PHOTOS: ElAmin 1; Bat 32; Coll 37; Corn 61; Jong 120.

APIACEAE

Ammi majus L.VERNACULAR NAMES: Bishop's weed, *khillah*, *nayniya*

خلة نينية

GROWTH FORM: Annual herb. Fl. Apr–May.

STATUS: Introduced. Also recorded: Kuwait, UAE.

HABITAT & DISTRIBUTION: Cultivated areas.

USES: Used in the Middle East for centuries as a treatment for particular skin diseases (Rizk & El-Ghazaly).

PHOTOS: Coll 722; Jong 531; Pick 151; Shuaib 59; West 106.

Anethum graveolens L.

VERNACULAR NAMES: dill

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Introduced. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Cultivated areas.

USES: Leaves and seeds used as salad, also used as a herb and spice in cooking for its aniseed-like flavouring, e.g. to flavour rice dishes. Numerous medicinal uses are described by Rizk & El-Ghazaly.

PHOTOS: Bat 75; Coll 722; Jong 532; West 106.

Bupleurum semicompositum L.

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Very rare on sandy soils (Batanouny). Mainly a coastal species in the Gulf.

PHOTOS: Coll 724; Daoud 172¹; Shuaib 58.**Foeniculum vulgare** (L.) Mill.VERNACULAR NAMES: fennel, *shamar*

شمر

GROWTH FORM: Biennial or perennial herb. Fl. Mar–May.

STATUS: Introduced. Local. Not in other Gulf floras.

HABITAT & DISTRIBUTION: An occasional escape, e.g. along irrigated roadsides.

USES: Cultivated for its aniseed-flavoured seeds, which are widely used in Asian cooking. Numerous medicinal uses are described by Rizk & El-Ghazaly.

PHOTOS: Coll 730.

Torilis nodosa (L.) Gaertn.

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Introduced. Rare. First published record: Abdel Bari (1997). Also recorded: UAE.

HABITAT & DISTRIBUTION: Details not noted by Abdel Bari, but recorded from wadis and plantations in the UAE (Jongbloed).

PHOTOS: Jong 537.

APOCYNACEAE

Nerium oleander L.*Nerium mascatense* DC.VERNACULAR NAMES: common oleander, *Haban*

حبان

GROWTH FORM: Tree. Fl. All year.

STATUS: Introduced. Also recorded: UAE.

HABITAT & DISTRIBUTION: Not known but widespread throughout the Gulf; native to parts of UAE and Oman.

USES: Widely planted in towns for shade and landscaping. The bitter roots are used medicinally, including as a diuretic and emetic. Ghazanfar states that the leaves are used for the treatment of bronchitis and coughs in Arabia.

PHOTOS: Jong 125; Pick 47; West 110.

ASCLEPIADACEAE

Calotropis procera (Aiton) W.T. Aiton

Plate 8

VERNACULAR NAMES: Sodom's apple, *'ushar*, *ashkhar*

عشار, أشخار

GROWTH FORM: Shrub or tree. Fl. May–Jul.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, UAE.

HABITAT & DISTRIBUTION: In Qatar mainly in disturbed areas where there is run-off of rainwater or irrigation, such as including farms, roadsides and gardens. Rarely away from habitation. Not included in the accounts by Batanouny or El Amin, but was probably less common in the past.

USES: Not edible and probably poisonous. Mandaville discusses the toxicity in some detail. He also notes that it is 'well known to many bedouin who remember the shrub as the source of wood used in preparation of the best charcoal for the manufacture of black gunpowder'. Leaves and latex are used for treating wounds, pain, scorpion stings and for strengthening muscles affected by paralysis (Ghazanfar).

PHOTOS: Coll 52; Corn 37; Jong 128, 129; Phil 133; Pick 21; Shuaib 83; West 111.

Glossonema varians (Stocks) Benth. ex Hook. f.

Plates 9, 10

Glossonema edule N.E. Br.VERNACULAR NAMES: *'itr* (plant), *jarawah* (fruit)

عتر (النبته). جراوة (الثمرة)

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant, or locally dominant in shallow sandy runnels and depressions on gravel plains and hamada; mostly S Qatar.

USES: 'Whole plant is good fodder; fruit eaten by animals' (El Amin); Mandaville also states that the very young leaves and raw young fruits are edible.

PHOTOS: ElAmin 1; Bat 77¹; Coll 65; Corn 162; Jong 132; Mand 155; Phil 134; Pick 94; West 112.

Leptadenia pyrotechnica (Forssk.) Decne.

Plate 11

VERNACULAR NAMES: burning bush, desert broom, *markh*

مرخ

GROWTH FORM: Shrub or tree. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy habitats. Although a dominant component of the coastal vegetation over much of the Gulf, it prefers non-saline, fairly deep sand and therefore is restricted in Qatar, mainly to western coastal areas. In NE Qatar it is rare near the coast at Dukhan (JN) and locally frequent at Ras Abrouq (SAM); grazed, stunted specimens have been seen at Al Kharrarah (RR).

USES: Eaten by camels (El Amin). Young flowers and fruits ‘considered edible by southern tribesmen’ (Mandaville). Pickering & Patzelt (2008) note that the buds are edible and that dried hair from the seeds is used as kindling. An infusion made from the stems is taken as a diuretic (Ghazanfar).

PHOTOS: ElAmin 1; Bat 78; Coll 70; Corn 165; Jong 133; Phil 132, 135; Pick 95; West 113.

ASTERACEAE

Aaronsohnia factorovskyi Warb. & Eig

Plate 13

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Occasional or locally frequent in small sandy or silty depressions; C and S Qatar.

USES: ‘The plant is sometimes eaten raw by bedouin, who may also use it in the preparation of *iq*t (dried sour milk cakes)’ (Mandaville citing Dickson 1955).

PHOTOS: Bat 95; Coll 166; Mand 210, 211; Shuaib 111.

Artemisia inculta Delile*Artemisia sieberi* Besser; *Artemisia herba-alba* AssoVERNACULAR NAMES: *shiH*

شيع

GROWTH FORM: Perennial herb. Fl. May.

STATUS: Native. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by Batanouny at a single location along the road N of Doha, in a small depression.

USES: The plant is known to have anti-microbial properties and is used as an antiseptic and an insecticide. Rizk & Ghazaly list many medicinal uses, including treatment for stomach complaints, coughs, bronchitis and to cure nervous troubles.

PHOTOS: None.

Atractylis carduus (Forssk.) C. Chr.

Plate 14

Atractylis flava Desf.VERNACULAR NAMES: white thistle, *jalwa*, *laymoony*, *shuwwaykh*

جلوة, ليموني, شويخ

GROWTH FORM: Annual or perennial herb. Fl. Mar–Apr.

STATUS: Native. ?Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy habitats. Previously recorded from Al Karaanah, Al Wakra and Wadi Al Banat and recently from Al Kharrarah and other parts of W Qatar.

USES: El Amin reported that it is not liked by animals but eaten by camels when nothing else is available.

PHOTOS: ElAmin 7; Bat 96; Coll 174; Corn 204; Jong 143; Phil 67; Shuaib 115.

Calendula arvensis (Vaill.) L.VERNACULAR NAMES: field marigold, *Hanwa*

حنوة

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional as a weed of disturbed areas and silty depressions.

PHOTOS: ElAmin 38⁺; Bat 97; Coll 175; Jong 144; Phil 68; Shuaib 107.**Calendula tripterocarpa** Rupr.

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Sandy and gravelly soils in rodar; C Qatar.

PHOTOS: Coll 175; Mand 214.

Carthamnus eriocephalus (Boiss.) Greuter*Carduncellus eriocephalus* Boiss.VERNACULAR NAMES: *kharshooT*, *lowmeya*

خرشوط, لومية

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Local. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Occasional in rocky areas. El Amin recorded from Jebel Dukhan and Wadi Al Banat.

PHOTOS: None.

Centaurea sinaica DC.

Plate 15

Centaurea pseudosinaica Mouterde, non Czerep.VERNACULAR NAMES: *birkan*, *murrar*

بركان, مرار

GROWTH FORM: Annual or biennial herb. Fl. Mar–Jul.

STATUS: Native. Common. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in shallow sandy deposits.

PHOTOS: ElAmin 7; Bat 97, 101; Coll 178; Jong 148; Mand 224, 225; Pick 99; Shuaib 116; West 141.

Cichorium pumilum Jacq.

GROWTH FORM: Annual herb. Fl. Summer.

STATUS: Introduced. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: A weed in alfalfa (*Medicago sativa*) fields (Batanouny).

PHOTOS: None.

Eclipta prostrata (L.) L.*Eclipta alba* (L.) Hassk.

VERNACULAR NAMES: false daisy

GROWTH FORM: Annual herb. Fl. Apr–May.

STATUS: Introduced. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded from a single location by Batanouny, but occurs in irrigated lawns and other damp places elsewhere in the Gulf, so may be more widespread now in Qatar.

USES: Rizk & El-Ghazaly list numerous cosmetic and medicinal uses.

PHOTOS: Coll 191; Corn 207; Jong 155; Mand 207; Pick 156; West 142.

Erigeron bonariensis L.

Conyza bonariensis (L.) Cronquist

GROWTH FORM: Annual herb. Fl. Mar–Sep.

STATUS: Introduced. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional, in gardens and cultivated areas.

USES: Flowering branches are used as an antirheumatic and diuretic; the aerial part is used in the treatment of liver and urinary diseases, and stomach ulcers (Rizk & El-Ghazaly).

PHOTOS: ElAmin 7; Bat 97; Coll 182; Jong 151; Shuaib 108.

Filago desertorum Pomel

Plate 12

Filago spathulata C. Presl forma *desertorum* (Pomel) Pamp.

VERNACULAR NAMES: *quTeyna*

قطينة

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in shallow sand, especially depressions and runnels.

USES: El Amin noted that the plant is eaten by ‘rabbits’ (i.e. Cape Hare *Lepus capensis*).

PHOTOS: ElAmin 40¹; Bat 98; Coll 192; Corn 208; Jong 156; Phil 69; West 143.

[**Filago prolifera** Pomel]

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: First published record: Obeid (1975). Not in other Gulf floras.

NOTES: Not confirmed for Qatar. Batanouny and El Amin did not see this species, and it does not seem to have been recorded by other botanists in Arabia, so the record may be in error for *F. desertorum*.

PHOTOS: none.

Flaveria trinervia (Spreng.) C. Mohr

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Introduced. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in irrigated, cultivated areas. Noted as a ‘serious weed’ in some regions by Cornes & Cornes.

PHOTOS: Coll 193; Corn 208; Jong 157; West 143.

Glebionis coronaria (L.) Spach

Chrysanthemum coronarium L.

VERNACULAR NAMES: crown daisy

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded from irrigated lawns in Doha b Batanouny.

USES: Medicinal uses are listed by Rizk & El-Ghazaly.

PHOTOS: Coll 180.

Gymnarrhena micrantha Desf.

Plate 17

VERNACULAR NAMES: dog’s paw, camel’s eye

كف الكلب

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional on gravel plains, stony or rocky areas, growing in thin sandy deposits.

USES: Poisonous and animals avoid it (El Amin).

PHOTOS: ElAmin 8; Coll 193; Jong 158; Mand 201; Shuaib 113.

Ifloga spicata (Forssk.) Sch. Bip.

Plate 18

VERNACULAR NAMES: *Hasaj, shajarat al ’anz*

حسج شجرة العنز

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent, on gravel plains, sand sheets, coastal sand and other areas with firm sandy soils; over most of Qatar.

PHOTOS: ElAmin 40¹; Coll 196; Corn 215; Jong 160; Mand 200; Phil 70; Shuaib 114; West 145.

Koelpinia linearis Pall.

Plate 19

VERNACULAR NAMES: goat’s beard, *lahiat al-tais*

لا هية التيس

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. ?Local. First published record: Abdel Bari (1997). Also recorded: Bahrain, Kuwait, UAE.

HABITAT & DISTRIBUTION: A plant in fruit was photographed by S. Aspinall from SW Qatar in March 2007 (see Plate).

PHOTOS: Coll 197; Corn 215; Jong 163; Phil 71; Shuaib 112.

Laphangium luteoalbum (L.) Tzvelev

Gnaphalium luteoalbum L.

GROWTH FORM: Annual herb. Fl. Not known.

STATUS: Introduced. ?Rare. First published record: Abdel Bari (1997). Not in other Gulf floras.

HABITAT & DISTRIBUTION: Cultivated areas.

PHOTOS: None.

Launaea capitata (Spreng.) Dandy

Launaea glomerata (Cass.) Hook. f.

VERNACULAR NAMES: *Hawa/Huwa*

حوة

GROWTH FORM: Biennial herb. Fl. Feb–Apr.

STATUS: Native. Very common. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in sandy and silty soils.

USES: Edible to man and animals (El Amin).

PHOTOS: ElAmin 8, 32¹; Bat 100; Coll 200; Jong 165; Shuaib 109; West 145.

Launaea goraensis Hoffm.

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: ?Native. ?Rare. Not confirmed for Qatar. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Sandy soils in SE Qatar and Umm Bab (El Amin).

PHOTOS: None.

Launaea mucronata (Forssk.) Muschl.*Launaea cassimiana* (Jaub. & Spach) Kuntze; *Sonchus cassinianus* Jaub. & SpachVERNACULAR NAMES: *Hawa/Huwa*, 'atheed, yamroor, Hajaid, Safara حوة, عثيد, يمرور, حبيد, صفرة

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional on sandy or silty soils; often in disturbed areas around habitation. Occurs along parts of the NE coast and in sandy habitats in the south (MS).

NOTES: Subsp. *L. m. mucronata* and *L. m. cassiana* both occur in the Gulf, the latter often being treated as a separate species.PHOTOS: ElAmin 32¹; Coll 201; Jong 167, 168; Mand 232; Phil 73; Shuaib 109; West 146.**Launaea nudicaulis** (L.) Hook. f.VERNACULAR NAMES: *Hawa/Huwa*, *Huwa ghanam*, *ghazzal* حوة, حوة غنم, غزال

GROWTH FORM: Biennial or perennial herb. Fl. Feb–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in sandy habitats.

USES: 'The leaves are used to treat fevers and to stop excessive bleeding after childbirth' (Ghazanfar). Rizk & El-Ghazaly also state that they are put on the heads of children to cure fever.

PHOTOS: ElAmin 32¹; Bat 102; Coll 202; Corn 216; Jong 169; Mand 233; Phil 74; Shuaib 110; West 147.**Launaea procumbens** (Roxb.) Ramayya & Rojagopal*Launaea fallax* (Jaub. & Spach) O. KuntzeVERNACULAR NAMES: *Hawa/Huwa* حوة

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in sandy habitats, including rodal, beaches and disturbed areas around habitation.

PHOTOS: ElAmin 32¹; Bat 100; Coll 202; Jong 170; Phil 75; West 147.**Matricaria aurea** (Loefl.) Sch. Bip.

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Silty depressions.

USES: Chamomile tea is brewed from flower heads, 'known to both bedouin and villagers' (Mandaville) and is used for general stomach problems such as colic, cramps and stomach aches (Ghazanfar).

PHOTOS: Coll 204; Jong 172.

Matricaria chamomilla L.*Matricaria recutita* L.

GROWTH FORM: Annual herb. Fl. Not known.

STATUS: Introduced. Rare. First published record: Abdel Bari (1997). Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded at Al Sheehaniyah and Doha.

PHOTOS: None.

Pallenis hierichuntica (Michon) Greuter*Asteriscus hierichunticus* (Michon) Wiklund; *Asteriscus pygmaeus* (DC.) Coss. & Durieu; *Odontospermum pygmaeum* (DC.) O. Hoffm.VERNACULAR NAMES: *jahwayan* جهويان

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Silty depressions, N and C Qatar (El Amin).

USES: El Amin mentions that it is used by locals to clean and perfume their teeth.

PHOTOS: ElAmin 6; Bat 95; Coll 173; Jong 141; Mand 206; Shuaib 113.

Pentanema divaricatum Cass.*Vicoa pentanema* Aitch. & Hemsl.VERNACULAR NAMES: *zmiem al bar* زميم البر

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy and silty depressions with *Ziziphus* trees. In Saudi Arabia Mandaville recorded it as a weed of disturbed ground around farms and roadsides.

USES: The plant has antifungal and antibacterial properties.

PHOTOS: ElAmin 40¹; Bat 107; Jong 174; West 152.**Picris aspleniodes** L.*Picris radicata* (Forssk.) Less.VERNACULAR NAMES: *Hawdhan* حودان

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Occasional in sandy depressions in S Qatar.

PHOTOS: ElAmin 8; Bat 104; Coll 208.

Picris cyanocarpa Boiss.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Occasional in saline sandy habitats.

PHOTOS: Coll 207.

Pluchea dioscoridis (L.) DC.*Conyza dioscoridis* (L.) Desf.

GROWTH FORM: Perennial herb or shrub. Fl. Jan–Dec.

STATUS: Introduced. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded only once by Batanouny, but the species is now widespread (Abdel Bari 1997). Plentiful in *Phragmites* ponds at Dukhan water treatment works in 2007 (JN).

NOTES: There is a discussion on the taxonomy of this species in Mandaville (1990, p. 289).

PHOTOS: Coll 209; Jong 177; Pick 54.

Pulicaria gnaphalodes (Vent.) Boiss.*Pulicaria undulata* Kostel.VERNACULAR NAMES: *jithjath*, *nafayj*

جثجاث, نفيج

GROWTH FORM: Perennial herb or small shrub. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain.

HABITAT & DISTRIBUTION: Occasional at Ras Laffan and Mesaieed (JN), but absent from the west coast. Also listed by Abdel Bari as ‘widespread’. Appears to prefer compact or disturbed gravelly or silty soils, particularly in depressions and wadis.

USES: ‘A plant unpalatable to grazing animals and flourishing where others are regularly grazed bare’ (Cornes & Cornes).

NOTES: This is the species recorded by Batanouny as *P. undulata*, the name now given to *Pulicaria crispa*. At the time his flora was published *P. crispa* was known as *Francoeuria crispa*.

PHOTOS: ElAmin 8; Bat 103; Corn 212; Phil 78.

[Pulicaria sicula (L.) Moris]

GROWTH FORM: Annual herb. Fl. Not known.

STATUS: First published record: Obeid (1975). Not in other Gulf floras.

NOTES: A North African species not recorded by other botanists in Arabia. Obeid’s record could relate to a casual occurrence of an introduced plant or be in error for another species.

PHOTOS: none.

Pulicaria undulata (L.) C.A. Mey.

Plate 16

Francoeuria crispa (Forssk.) Cass.; *Pulicaria crispa* (Forssk.) Oliv. See note under *P. gnaphalodes*.VERNACULAR NAMES: *jithjath* (and variations), *shay el-jebel*

جثجاث, شاي الجبل

GROWTH FORM: Perennial herb. Fl. Mar–Jun.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Often abundant in small silty depressions. Scattered plants may occur anywhere in sandy or silty habitats.

USES: Various authors report its use in traditional medicine, including use as a diuretic.

PHOTOS: Bat 99^l, 103; Coll 210; Corn 211; Jong 183; Phil 77; Shuaib 111; West 149.**Reichardia tingitana** (L.) Roth

Plate 20

Reichardia orientalis (L.) Hochr.VERNACULAR NAMES: *mureer*, *Hawdhan*

مريير, حوذان

GROWTH FORM: Annual herb. Fl. Mar–May.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in shallow sandy deposits, sandy depressions and cultivated areas.

USES: Those listed by Ghazanfar include treatment of colic, constipation, swollen and inflamed eyes, using the leaves.

PHOTOS: ElAmin 9, 38^l; Coll 212; Corn 34, 220; Jong 184; Mand 234; Phil 79; Pick 107; Shuaib 107; West 149.**Rhanterium epapposum** Oliv.

Plate 21

VERNACULAR NAMES: *'arfaj*

عرفج

GROWTH FORM: Small shrub. Fl. Mar–Jul.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Being a favoured grazing species is rarely seen in quantity. Frequent in the western part of Ras Laffan Industrial City (JN 2004) where protected from grazing; very scattered in western Qatar in 2007. Batanouny and El Amin recorded mainly from S Qatar, where may still be locally abundant. Usually on thin, sandy or loamy deposits; often in rocky areas.

USES: Widely documented as an important grazing plant. Several authors also mention its use for firewood. Used in the treatment of digestive disorders and for its antimicrobial properties (Rizk & El-Ghazaly).

PHOTOS: ElAmin 38^l; Bat 105^l, 106; Coll 213; Jong 185; Mand 203, 204; Phil 80; Shuaib 111; West 150.**Senecio glaucus** L.*Senecio coronopifolius* Desf.; *Senecio desfontainei* DruceVERNACULAR NAMES: *mureer*

مريير

GROWTH FORM: Annual herb. Fl. Jan–Mar.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional or locally frequent on sandy beaches and in cultivated depressions (Batanouny). Occurs at Al Wakra coast (El Amin), Ras Laffan (JN) and Umm Tais (RR).

USES: Rizk & El-Ghazaly state that the plant contains alkaloids and is toxic to animals and humans.

NOTES: The plant in the Gulf is *S. glaucus* subsp. *coronopifolius* (Maire) C. Alexander.

PHOTOS: ElAmin 9; Coll 217; Corn 223; Jong 188; Mand 212, 213; Phil 66, 81; Shuaib 107; West 150.

Senecio vulgaris L.

VERNACULAR NAMES: groundsel

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Local. Not in other Gulf floras.

HABITAT & DISTRIBUTION: A weed of irrigated, cultivated places.

USES: Medicinal uses are described by Rizk & El-Ghazaly.

PHOTOS: Coll 218.

Sonchus asper (L.) Hill

VERNACULAR NAMES: prickly sowthistle

GROWTH FORM: Annual herb. Fl. Mar–May.

STATUS: Introduced. Rare. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: An occasional weed of gardens and other cultivated places.

PHOTOS: Coll 219; Corn 224.

Sonchus maritimus L.

GROWTH FORM: Perennial herb. Fl. Apr–May.

STATUS: Introduced. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Reported from a farm near Al Khor by El Amin.

NOTES: A typographical error in El Amin’s book (p. 41) inadvertently put this species into the genus *Senecio*, but the record in any case seems doubtful as this species is not recorded elsewhere in the Gulf.

PHOTOS: None.

Sonchus oleraceus L.

VERNACULAR NAMES: smooth sow-thistle, wild lettuce, *aldheid* النيد
 GROWTH FORM: Annual or biennial herb. Fl. Feb–Apr.
 STATUS: Introduced. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.
 HABITAT & DISTRIBUTION: An occasional weed of cultivation.
 USES: The leaves and sap have numerous medicinal properties.
 PHOTOS: Bat 106; Coll 219; Corn 224; Jong 190; Phil 82; Shuaib 109; West 151.

Sonchus tenerrimus L.

GROWTH FORM: Annual or biennial herb. Fl. Apr–May.
 STATUS: Introduced. Rare. Also recorded: UAE.
 HABITAT & DISTRIBUTION: A weed of cultivation.
 PHOTOS: Coll 220; Jong 191.

Symphotrichum squamatum (Spreng.) G.L. Nesom

Aster squamatus (Spreng.) Hieron.
 VERNACULAR NAMES: *jahwayan* جهويان
 GROWTH FORM: Perennial herb. Fl. Mar–May.
 STATUS: Introduced. Local. Also recorded: Bahrain, E Saudi Arabia.
 HABITAT & DISTRIBUTION: Frequent. Batanouny noted that it grew profusely as a weed in some irrigated rodats in N Qatar. An increasing species in the Middle East.
 NOTES: Shown on Plate 7 of El Amin, where labelled ‘*Conyza maritima*’, but there is no text entry.
 PHOTOS: ElAmin 7; Bat 96; Coll 173; Corn 203.

Tripleurospermum auriculatum (Boiss.) Rech. f.

Matricaria auriculata (Boiss.) Muschl.
 VERNACULAR NAMES: *zafira, daqiqa, qaraiS* زفيره, دقيقة, قرايس
 GROWTH FORM: Annual herb. Fl. Apr.
 STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia.
 HABITAT & DISTRIBUTION: Occasional in silty rodats in N and C Qatar, often under *Acacia* and *Ziziphus*.
 USES: ‘Said to be eaten with stews’ (El Amin).
 PHOTOS: ElAmin 9; Bat 107; Coll 222; Corn 218.

Urospermum picroides (L.) F.W. Schmidt

GROWTH FORM: Annual herb. Fl. Mar–Apr.
 STATUS: Native. ?Rare. First published record: Abulfatih *et al.* (2001) (included in a list of species recorded). Also recorded: Bahrain, Kuwait, UAE.
 HABITAT & DISTRIBUTION: A plant of rocky areas.
 PHOTOS: Coll 222; Jong 192; Shuaib 108; West 151.

Xanthium spinosum L.

GROWTH FORM: Annual herb. Fl. Jun.
 STATUS: Introduced. Rare. Not in other Gulf floras.
 HABITAT & DISTRIBUTION: Cultivated fields; N Qatar.

USES: The plant is used in the treatment of diabetes, rabies and other diseases and medical conditions; the leaves have diuretic properties. Poisoning of cattle from the plant has been reported (Rizk & El-Ghazaly).
 PHOTOS: Coll 225.

BORAGINACEAE

Anchusa hispida Forssk.

Gastrocotyle hispida (Forssk.) Bunge Plate 24
 VERNACULAR NAMES: *rims, 'anbasees* رمس, عنبسييس
 GROWTH FORM: Annual herb. Fl. Mar–Apr.
 STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.
 HABITAT & DISTRIBUTION: Occasional in sandy areas and silty depressions; especially N and C Qatar.
 PHOTOS: Bat 84; Coll 88; Corn 173; Daoud 243; Jong 200; Phil 48; Shuaib 66; West 121.

Arnebia decumbens (Vent.) Coss. & Kralik

VERNACULAR NAMES: Arabian primrose, *kaHal* كاحل
 GROWTH FORM: Annual herb. Fl. Feb–Apr.
 STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.
 HABITAT & DISTRIBUTION: Occasional in C and W Qatar. Previously recorded from Salwa and Jebel Dukhan, on saline, sandy soils.
 USES: The deep red root is used by bedouin women as a cosmetic (rouge).
 PHOTOS: ElAmin 2; Coll 82; Corn 170; Daoud 237; Jong 201; Phil 45; Shuaib 66.

Arnebia hispidissima (Lehm.) DC.

VERNACULAR NAMES: Arabian primrose, Prophet flower, *kaHil, melleiH, Hasheshat al'arneb* كاحل, مليح, حشيشة الأرنب Plate 22
 GROWTH FORM: Annual or biennial herb. Fl. Mar–Apr.
 STATUS: Native. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.
 HABITAT & DISTRIBUTION: Abundant on shallow sandy deposits in all habitat types except saline areas. Perhaps more abundant in S and SW Qatar.
 USES: ‘Women formerly used the powdery red dust, that rubs off the thick dark-red roots of these plants, as a cosmetic’ (Cornes & Cornes). Root strongly red and probably used as a dye (Mandaville). The cosmetic use also recorded for the UAE. The whole plant is used for fevers including malaria (Ghazanfar).
 PHOTOS: ElAmin 2; Bat 83; Coll 83; Corn 170; Jong 202; Mand 171; Phil 46; Pick 108; West 120.

Echiochilon jugatum I.M. Johnst.

Echiochilon kotschyi (Boiss. & Hohen.) I.M. Johnst.; *Lithospermum kotschyi* (Boiss. & Hohen.) I.M. Johnst. Plate 23
 VERNACULAR NAMES: stoneseed, *najmat al bar* نجمة البر
 GROWTH FORM: Shrublet or small shrub. Fl. Feb–Apr.
 STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.
 HABITAT & DISTRIBUTION: Occasional on compact soils at Ras Laffan and other coastal areas in the NE (JN, MS).
 PHOTOS: Bat 84; Coll 87; Corn 173; Jong 206; Phil 47; West 121.

Echium horridum Batt.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Previously recorded from SW Qatar in sandy habitats.

USES: Reported by El Amin to help urine complaints and to give relief from fever.

PHOTOS: None.

Heliotropium bacciferum Forssk.

Plate 25

Heliotropium crispum Desf.; *Heliotropium kotschyi* (Bunge) GürkeVERNACULAR NAMES: turnsole, heliotrope, *ramram*, *dhanab al-'aqrab*

مرام, ذنب العقرب

GROWTH FORM: Shrub. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant or sometimes dominant in sandy, often compacted soils, including coastal beach sand. Also in disturbed areas by roadsides and around towns and villages.

USES: Dried powdered leaves are used as a poultice for abscesses, boils, sprains and swellings (Rizk & El-Ghazaly). Also used for treating ulcers, mouth blisters and snake bites (Ghazanfar).

PHOTOS: ElAmin 2; Bat 85; Coll 89; Corn 174; Daoud 240; Jong 210; Mand 167; Phil 44, 51; Pick 160; Shuaib 67; West 123.

Heliotropium ramosissimum (Lehm.) Sieb.VERNACULAR NAMES: *ramram*

مرام

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional on gravelly or sandy soils. Previously recorded for N Qatar, but also found in the south.

USES: Medicinal uses are similar to those recorded for *H. bacciferum*.

PHOTOS: Coll 91; Corn 177; Phil 52.

Heliotropium zeylanicum (Burm. f.) Lam.

GROWTH FORM: Herb. Fl. Not known.

STATUS: Introduced. ?Rare. First published record: Abdel Bari (1997). The salt-tolerant plant *H. curassavicum* L. is also very likely to occur in Qatar in gardens and farms. Not in other Gulf floras.

HABITAT & DISTRIBUTION: A weed of cultivation.

PHOTOS: None.

Lappula spinocarpos (Forssk.) Asch. ex Kuntze

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in silty depressions and gravelly soils.

PHOTOS: Bat 86; Coll 93; Daoud 241, 242; Jong 217; Mand 169; Shuaib 68.

Moltkiopsis ciliata (Forssk.) I.M. Johnst.

Plate 27

Lithospermum callosum VahlVERNACULAR NAMES: *Halam/Halamah*, *ghabshah*

حلمة, غيشه

GROWTH FORM: Shrublet or small shrub. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent on sand sheets, depressions and other sandy areas.

PHOTOS: Bat 86; Coll 93; Corn 178; Daoud 239; Jong 218; Phil 53; Shuaib 68; West 123.

Ogastemma pusillum (Coss. & Durand ex Bonnet & Baratte) Brummitt

Plate 26

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent on hard ground, including hamada and other rocky areas. Not mentioned by earlier authors and thought to have been discovered new to Qatar in 2007; however it is probable that there has been confusion with the very similar *Lappula spinocarpos*.

PHOTOS: Coll 94; Jong 219; Shuaib 68.

BRASSICACEAE

Anastatica hierochuntica L.

Plates 28, 29

VERNACULAR NAMES: rose of Jericho, virgin's hand

كف مريم, كف العذراء, جميع فاطمة, برقان, قفينة

kaf Maryam, *kaf al athra*, *junay' faTimah*, *birkan*, *qufay'ah*

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to abundant in shallow sandy deposits, including runnels and small depressions. The plant is extremely common just west of Kharrarah (RR).

USES: Its use as a charm and herbal aid in childbirth is widely reported. Batanouny mentions that it is sold in markets of Qatar as well as other Arabian countries. The dried plant is soaked in water and when it has unfurled the water is drunk by the expectant mother. Further information is given in Phillips and Rizk & El-Ghazaly.

PHOTOS: ElAmin 11; Bat 36; Coll 246; Corn 98; Daoud 87¹; Ghaz 184, 185; Jong 223; Mand 84, 85; Phil 142, 143; West 60.**Brassica rapa** L.

VERNACULAR NAMES: turnip

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Farms and cultivated areas.

USES: A widely cultivated vegetable. Has been used in the treatment of various medical conditions including arthritis, chest-colds, dysentery, fever, mastitis, rheumatism, scurvy and skin ailments (Rizk & El-Ghazaly).

PHOTOS: Coll 248.

Brassica tournefortii GouanVERNACULAR NAMES: *qarraS*, *shiltam*

قراص, شلتام

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: ?Native. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of cultivation.

PHOTOS: Coll 249; Daoud 83, 84; Jong 224; Shuaib 60.

Carrichtera annua (L.) DC.

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Rare. First record: SW Qatar, March 2007 (JN). Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: A single plant in fruit growing in thin soil on a rocky summit.

PHOTOS: Coll 250; Daoud 94, 95, 96; Shuaib 63.

Eremobium aegyptiacum (Spreng.) Asch. & Schweinf. ex Boiss.

Plate 30

Eremobium lineare (Delile) Boiss.

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Local. First record?: SW Qatar, March 2007 (JN & S. Aspinall). Miller & Cope mention a record for which there is no supporting specimen. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional, mainly on compact, gravelly soils in SW Qatar (found in 2007 at several scattered localities following winter rains). Elsewhere in the Gulf area it is a widespread plant of deeper sand, becoming locally abundant after rains. Gravel and sand forms have been noted by Collenette (see Miller & Cope).

PHOTOS: Coll 253; Jong 231; Mand 95; West 61.

Eruca vesicaria (L.) Cav.

Eruca sativa Mill.

VERNACULAR NAMES: rocket, *ji'rjeer*

جر جبير

GROWTH FORM: Annual or biennial herb. Fl. Feb–Apr.

STATUS: Introduced. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed in gardens and other cultivated areas.

USES: Eaten in salads. The whole plant is considered an aphrodisiac and considered a cure for a wide range of medical conditions, including inflammations, ulcers, stomach-ache, epilepsy and toothache (Rizk & El-Ghazaly).

PHOTOS: Coll 253; Daoud 89; Jong 232; Shuaib 61.

[Erucaria crassifolia (Forssk.) Delile]

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Not confirmed for Qatar. Not in other Gulf floras.

NOTES: Miller & Cope note that it is recorded from Qatar by Batanouny (1981) and the UAE by Western. However, they remark that no verified material has been seen and the occurrence of the species in Arabia needs confirmation. Batanouny reported it as growing 'especially in rod at in N Qatar'.

PHOTOS: The plant identified as *E. crassifolia* is shown in Bat 37 and West 61.

Erucaria hispanica (L.) Druce

Erucaria lineariloba Boiss.

VERNACULAR NAMES: pink mustard

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by El Amin from rod at in N Qatar.

PHOTOS: Coll 254; Jong 233; Phil 144; West 62.

Farsetia heliophila Bunge ex Cosson

Plate 31

Farsetia hamiltonii Royle; *Farsetia arabica* Boulos

GROWTH FORM: Perennial herb or shrublet. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in thin sandy or silty deposits in stony or rocky areas. Frequent at Abu Nakhla sewage ponds (RR).

NOTES: Records of *Farsetia linearis* Decne. ex Boiss. in the Gulf are in error for *F. heliophila* according to Miller & Cope.

PHOTOS: Corn 101; Jong 234; Phil 145.

Lepidium aucheri Boiss.

VERNACULAR NAMES: *rashad bari*

رشاد بري

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: A species of silty depressions which have held rainwater.

PHOTOS: Coll 257; Daoud 84^l.

Lepidium didymum L.

Coronopus didymus (L.) Sm.

VERNACULAR NAMES: swine-cress

GROWTH FORM: Annual herb. Fl. All year.

STATUS: Introduced. Local. First published record: Abdel Bari (1997). Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: This species is a recent colonist in the Gulf; it is only included in the most recent flora for the region (Jongbloed *et al.*). In Qatar it is likely to occur in irrigated lawns and roadsides.

PHOTOS: Jong 229.

Lepidium sativum L.

VERNACULAR NAMES: garden cress

GROWTH FORM: Annual herb. Fl. Jan–Mar.

STATUS: Introduced. ?Rare. First published record: Abdel Bari (1997). Also recorded: Kuwait.

HABITAT & DISTRIBUTION: Recorded from a roadside.

USES: A salad herb. Various medicinal uses are reported.

PHOTOS: Coll 258; Shuaib 61.

Matthiola longipetala (Vent.) DC.

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Previously recorded from Al Wakra and Salwa.

PHOTOS: ElAmin 50^l; Coll 261; Daoud 108, 109, 11; Shuaib 62.

Raphanus sativus L.

VERNACULAR NAMES: radish, *fijl*

فجل

GROWTH FORM: Annual or biennial herb. Fl. Mar–Apr.

STATUS: Introduced. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: An escape from cultivation in farm areas.

USES: Widely grown as a salad vegetable. A wide variety of medicinal benefits and uses are described.

PHOTOS: Coll 264; Corn 102.

Savignya parviflora (Delile) Webb

Plate 32

VERNACULAR NAMES: *jrjees, kuljuman, jiljilan*

جرجيس, كلجمان, جلجان

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent on rocky ground and shallow, compacted sand; especially SW Qatar.

USES: Rizk & El-Ghazaly report that in Bahrain the leaves are used as purgative and hypoglycaemic.

PHOTOS: ElAmin 50¹; Bat 37; Coll 264; Corn 105; Daoud 97, 98.; Jong 241; Mand 79; Phil 146; Shuaib 62; West 64.

Schimpera arabica Hochst. & Steud. ex Steud.

Schimpera persica Boiss.

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Usually occurs on silty sand; recorded from S Qatar.

PHOTOS: Coll 264; Daoud 102, 103; Mand 86, 87; Shuaib 63; West 65.

Sinapis arvensis L.

VERNACULAR NAMES: wild mustard, *khardal*

خردل

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of cultivated and irrigated areas.

PHOTOS: Coll 265; Jong 242.

Sisymbrium erysimoides Desf.

VERNACULAR NAMES: *thuwaT*

ثواط

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded from N and C Qatar in silty or sandy rodats; often associated with *Ziziphus nummularia* trees.

PHOTOS: ElAmin 52¹; Coll 265; Jong 243; Pick 110; West 65.

Sisymbrium irio L.

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Introduced. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of cultivation, irrigated soils and waste ground.

PHOTOS: Coll 266; Daoud 117; Jong 244; Shuaib 60.

Sisymbrium orientale L.

GROWTH FORM: Annual herb. Fl. Mar–May.

STATUS: Introduced. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: A weed of lawns (Batanouny) and waste ground (Abdel Bari).

PHOTOS: ElAmin 11; Bat 37; Coll 266.

Zilla spinosa (L.) Prantl

VERNACULAR NAMES: *shaja, silla, shubrum*

شجا, سلا, شبرم

GROWTH FORM: Small shrub. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional or frequent in SW Qatar in sandy and silty depressions. The village of Umm al Shubrum is named after the plant, which occurs in the area. Also found at Mekainis, Al Kharrarah and Umm Slal Mohammed (MS).

USES: 'A useful remedy in the treatment of ailments such as kidney stones' (Rizk & El-Ghazaly).

PHOTOS: Coll 267; Daoud 93; Jong 245; Mand 76; West 66.

CAPPARACEAE

Capparis spinosa L.

VERNACULAR NAMES: common caper, *shafallaH*

شفلح

GROWTH FORM: Shrub. Fl. Mar.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in stony and rocky areas and compact silty soils in depressions and by roads; mainly in NE Qatar.

USES: Buds are cooked and pickled and used as flavouring in cooking (El Amin). The leaves of the plant are used for treating earache, coughs, expelling stomach worms and for diabetes. (Ghazanfar). Rizk & El-Ghazaly also list numerous other medicinal uses.

NOTES: There are two widespread varieties in Arabia: var. *spinosa* (*C. aegyptiaca* Lam., *C.s.* var. *aegyptia*) and var. *mucronifolia* (Boiss.) Hedge & Lamond. For Qatar earlier authors recorded var. *spinosa* (the form often seen by roadsides), but Miller & Cope also list var. *mucronifolia* (of rocky areas).

PHOTOS: ElAmin 3; Bat 33¹; Coll 108; Corn 106; Ghaz 165; Jong 248; Mand 69, 70; Phil 57, 58; West 57.

Cleome amblyocarpa Barratte & Murb.

Cleome africana Botsch.

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy saline depressions.

USES: Jongbloed *et al.* note its use to treat abdominal and rheumatic pains.

PHOTOS: Coll 109; Jong 249.

Cleome brachycarpa Vahl ex DC.

GROWTH FORM: Annual or short-lived perennial. Fl. Dec–Mar.

STATUS: Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded from Al Khor by Batanouny.

PHOTOS: Bat 34; Coll 110; Ghaz 170; Jong 251; West 57.

Cleome noeana Boiss.*Cleome dolichostyla* Jafri

GROWTH FORM: Annual or perennial herb, or small shrub. Fl. May–Aug.

STATUS: Native. Rare. First published record: Miller & Cope (1996). Also recorded: UAE.

HABITAT & DISTRIBUTION: Gravel desert on the north coast (Miller & Cope).

NOTES: Only subsp. *noeana* occurs in Qatar; subsp. *brachystyla* (Defflers) Chamberlain & Lamond is found elsewhere in Arabia. The plant named as *C. dolichostyla* Jafri in Arabia is included within *C. noeana* by Miller & Cope.

PHOTOS: Jong 253, West 58.

Cleome scaposa DC.VERNACULAR NAMES: *DHefra*, *zefra*

ظفرة زفرة

GROWTH FORM: Annual or short-lived perennial. Fl. Apr.

STATUS: Native. Local. Also recorded: UAE.

HABITAT & DISTRIBUTION: Rocky places; previously recorded N of Doha by Batanouny and recently in a few sites in NE Qatar (MS).

PHOTOS: Bat 35; Coll 112; Ghaz 169; Jong 255.

Dipterygium glaucum Decne.

Plate 33

VERNACULAR NAMES: *'alqa*

علاقة

GROWTH FORM: Perennial herb or shrublet. Fl. Mar.

STATUS: Native. Local. First record: SW Qatar, March 2007 (JN and S. Aspinall). Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: In moderately firm sand mixed with gravel, and similar habitats. A species also of stable sand dunes in some other parts of the Gulf.

USES: 'Of some importance for grazing in more remote regions' (Mandaville).

PHOTOS: Coll 113; Ghaz 176-8; Jong 256; Pick 117; West 59.

CARYOPHYLLACEAE

Herniaria hemistemon J. Gay

Plate 34

VERNACULAR NAMES: *um waja' alkabid*, *ghebayra*

أم ووجع الكبد، غبيرة

GROWTH FORM: Perennial herb. Fl. Feb–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent on compact or thin soils over most of Qatar.

USES: 'Good fodder' (El Amin). The scientific name refers to its use in treating hernias (mentioned for Europe by Jongbloed *et al.*). It is used in Bahrain as a diuretic and purgative (Rizk & El-Ghazaly).

PHOTOS: Bat 20; Coll 119; Corn 62; Daoud 146; Jong 264; Mand 24; Phil 150; Shuaib 95; West 39.

Herniaria hirsuta L.VERNACULAR NAMES: *'eysh shawlah*

عيش شوله

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded only once on Jebel Dukhan by El Amin.

USES: Used as a diuretic and astringent (Batanouny); a powerful narcotic and stomach irritant (Rizk & El-Ghazaly).

PHOTOS: Coll 120; Shuaib 95.

Paronychia arabica (L.) DC.

Plate 35

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional on shallow sandy soils.

USES: 'The entire plant is used as a stimulant and aphrodisiac' (Rizk & El-Ghazaly).

PHOTOS: Bat 21; Coll 122; Corn 62; Daoud 145; Jong 265; Phil 151; Shuaib 95; West 39.

Polycarpaea repens (Forssk.) Asch. & Schweinf.

Plate 36

VERNACULAR NAMES: *kameela*, *makhor*

كميلة, ماخور

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent or abundant on sand sheets, gravel plains and other sandy habitats.

USES: Mandaville remarks that the plant is traditionally used by one of the bedouin tribes to treat mange of camels. Ghazanfar records its use as an antidote for snake bite.

PHOTOS: Coll 123; Corn 65; Daoud 142, 143; Ghaz 67; Jong 266; Phil 152; Shuaib 96; West 40.

Polycarpaea robbairea (Kuntze) Greuter & Burdet*Robbairea delileana* Milne-Redh.

GROWTH FORM: Perennial herb. Fl. Feb–Apr.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: El Amin recorded from Umm Slal Ali and Al Kharrarah on gravelly and stony soils.

PHOTOS: Bat 22; Coll 123; Daoud 144; Ghaz 69; Jong 267; Shuaib 96.

Polycarpaea spicata Wight ex Arn.VERNACULAR NAMES: *daqeeqa*

دقيقة

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Occasional on sandy and gravelly soils, including disturbed soils around towns.

PHOTOS: Bat 21; Coll 124; Ghaz 68; Jong 268.

Polycarpon tetraphyllum (L.) L.

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Introduced. Rare. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of gardens, usually on sandy soils.

PHOTOS: Coll 124; Daoud 140, 141; Jong 269; Shuaib 96.

Sclerocephalus arabicus Boiss.VERNACULAR NAMES: knucklehead weed, *thrais*, *Haras*

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Abundant, often locally dominant. Always on hard surfaces, including gravel plains, stony and rocky areas, where there is a thin covering of silt or sand.

USES: El Amin remarks that it is not liked by animals due to its bristles.

PHOTOS: Bat 22; Coll 125; Corn 65; Daoud 147; Jong 270; Mand 25; Phil 153; Shuaib 97; West 40.

Silene arabica Boiss.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Sandy habitats; N Qatar.

PHOTOS: Coll 126; Daoud 134, 135; Mand 18; Shuaib 98.

Silene conica L.

GROWTH FORM: Annual herb. Fl. Not known.

STATUS: Native. Rare. First published record: Abdel Bari (1997). Also recorded: Kuwait.

HABITAT & DISTRIBUTION: Recorded along the road to Umm Bab; also Dukhan and C Qatar.

PHOTOS: None.

Silene villosa Forssk.VERNACULAR NAMES: desert campion, *Turbah*

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in sandy habitats. Not rare as noted by Batanouny, but only numerous after rains.

NOTES: Miller and Cope (1996, p. 219) distinguish two forms 'A' and 'B' in Arabia, of which only form B is recorded for Qatar.

PHOTOS: El Amin 3; Bat 23; Coll 130; Daoud 133; Ghaz 72; Jong 274; Mand 20; Phil 154; Shuaib 99; West 41.

Spergula fallax (Lowe) E.H.L. KrauseVERNACULAR NAMES: *daqeeqa*

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent or abundant in sandy or silty depressions, particularly under shade of trees, but also in other habitats.

PHOTOS: Bat 23; Coll 132; Daoud 116⁴; Ghaz 70; Jong 275; Mand 21; Pick 167; West 42.**Spergularia bocconei** (Scheele) Asch. & Graebn.

GROWTH FORM: Annual or biennial herb. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Frequent in sandy or silty depressions, particularly under shade of trees.

PHOTOS: Coll 132; Corn 66.

Plate 38

ثريس. حرس

Spergularia diandra (Guss.) Boiss.VERNACULAR NAMES: *umm threib*, *qaleiqah*

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Abundant on thin sandy deposits on hamada and other rocky areas; also in other sandy habitats, gardens and cultivated areas.

PHOTOS: Coll 132; Daoud 138, 139; Jong 276; Mand 22; Shuaib 97.

Stellaria media (L.) Vill.

VERNACULAR NAMES: chickweed

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of gardens and other irrigated, cultivated areas.

USES: Rizk & El-Ghazaly list numerous medicinal uses.

PHOTOS: Coll 133; Jong 279.

Stellaria pallida (Dumort.) Murb.

VERNACULAR NAMES: lesser chickweed

GROWTH FORM: Annual herb. Fl. Jan–Mar.

STATUS: ?Native. Uncertain. Also recorded: Kuwait.

HABITAT & DISTRIBUTION: A species of moist ground.

NOTES: The only *Stellaria* species listed for Qatar by Miller & Cope, who comment on the difficulty in identifying this and *S. media* with certainty.

PHOTOS: None.

Vaccaria hispanica (Mill.) RauschertVaccaria *pyramidata* Medik.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded from Al Khor by El Amin.

PHOTOS: Coll 134; Shuaib 98.

CASUARINACEAE

Casuarina equisetifolia L.

VERNACULAR NAMES: Australian pine, she-oak

GROWTH FORM: Tree. Fl. Not known.

STATUS: Introduced. Common. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Mainly gardens and roadsides in towns and cities.

USES: Widely planted for ornament and shade.

NOTES: Several species are planted in the Gulf (Miller & Cope); *C. equisetifolia* L. probably being the more common and widespread. *C. cunninghamiana* Miq. is listed by El Amin (p. 149) as planted in Qatar and the hybrid with *C. equisetifolia* has been recorded in Kuwait.

PHOTOS: None.

أم ثريب, قليقة

CHENOPODIACEAE

Agathophora alopecuroides (Delile) Fenzl. ex Bunge*Agathophora iraqensis* Botsch.; *Halogeton alopecuroides* (Delile) Moq.; *Salsola alopecuroides* Delile

GROWTH FORM: Small shrub. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded at Al Khor and Umm Slal Ali.

NOTES: Two varieties occur in Arabia, var. *alopecurioides* and var. *papillosa* (Maire) Boulos; both may grow in Qatar.

PHOTOS: Bat 26; Mand 49.

Agriophyllum minus Fisch. & Mey.

Plate 43

Agriophyllum montasiri El-Gazzar

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in saline sandy areas on the coast and in 'white sand' areas inland. So far recorded only from SW Qatar.

PHOTOS: ElAmin 16¹; Coll 139; Jong 281.**Anabasis setifera** Moq.

Plate 40

VERNACULAR NAMES: *hamD al 'arnab, sha'ran*

حمض الأرنب, شعيران

GROWTH FORM: Small shrub. Fl. Aug–Nov.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Widespread on harder substrates including compacted, moderately saline, sandy soils including sabkha edge.

USES: El Amin states that it is known for good salt grazing for camels and other animals.

PHOTOS: ElAmin 3; Bat 24; Coll 140; Corn 70; Daoud 191, 192, 19; Ghaz 53; Jong 282; Pick 204; Shuaib 75; West 45.

Arthrocnemum macrostachyum (Moric.) K. Koch*Arthrocnemum glaucum* (Delile) Ung.-Sternb.VERNACULAR NAMES: *shinan, 'ajram, HamaD*

شنان, عجرم, حمض

GROWTH FORM: Shrub. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Abundant in saltmarsh along coasts at Al Khor, Ras Eshairiq, Umm Bab and Dukhan. Also locally dominant on coastal sabkha at Ras Abrouq.

USES: Dry stems are used as firewood.

PHOTOS: ElAmin 4; Bat 24; Coll 141; Corn 82; Ghaz 37, 38; Jong 283; Pick 205; West 45.

Atriplex leucoclada Boiss.

Plate 41

VERNACULAR NAMES: *orache, rughl*

رغل

GROWTH FORM: Shrub. Fl. Oct–Nov.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in coastal areas.

USES: Grazed by sheep and camels and is valuable salt grazing (El Amin). Cornes & Cornes note that '*Atriplex* species are a good source of fodder, with high protein content'.NOTES: Two forms are recorded for Arabia: var. *inamoena* (Aellen) Zoh. and var. *turcomanica* (Moq.) Zoh. Only the latter is confirmed for Qatar by Miller & Cope.

PHOTOS: ElAmin 4; Bat 25; Coll 142; Corn 73; Daoud 162, 163; Ghaz 33; Jong 284; Mand 28; Phil 96; Shuaib 78; West 46.

Bassia eriophora (Schrad.) Asch.VERNACULAR NAMES: *quTn*

قطن

GROWTH FORM: Annual herb. Fl. Apr–May.

STATUS: Native. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: El Amin recorded it near Al Khor.

USES: El Amin remarks that the white fibres are used as cotton stuffings.

PHOTOS: ElAmin 4; Coll 143; Corn 74; Daoud 165, 166, 16; Mand 29; Shuaib 78.

Bassia muricata (L.) Asch.VERNACULAR NAMES: *jebira, quTn*

جبيرة, قطن

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in northern Qatar. Occurs in the Dukhan area on compacted gypsum soils (JN).

USES: Grazed and liked by camels, sheep and other livestock.

PHOTOS: Coll 144; Daoud 139¹; Jong 285; Shuaib 78.**Beta vulgaris** L.VERNACULAR NAMES: *beet, salaq, shamandar, bari*

سلق, شمندر, بري

GROWTH FORM: Perennial herb. Fl. Mar.

STATUS: Introduced. ?Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: An escape from cultivation; the wild form occurs in saltmarshes but has not been recorded from Qatar.

USES: Cultivated as a vegetable. The plant has diuretic, aphrodisiac and various other medicinal properties (Rizk & El-Ghazaly).

NOTES: *Beta vulgaris* subsp. *vulgaris* is the cultivated garden beet and *B. vulgaris* subsp. *maritima* (L.) Arcang. is the wild sea beet.

PHOTOS: Coll 144; Jong 286.

Bienertia cycloptera Bunge ex Boiss.

GROWTH FORM: Perennial herb. Fl. Sep–Oct.

STATUS: Native. ?Rare. First record: Mesaieed, November 1998 (JN). Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A species of coastal saltmarshes.

NOTES: A specimen collected from the coast at Mesaieed was provisionally determined as this species by E. Clement, but dried specimens of fleshy-leaved Chenopodiaceae are very difficult to identify. It is not known to have been previously recorded from Qatar, but is widespread elsewhere along the Gulf coast and may have been overlooked at other sites in Qatar.

PHOTOS: Coll 144; Daoud 175, 176, 17; Jong 287; Mand 35; Shuaib 76.

Chenopodium album L.VERNACULAR NAMES: *shawlah*, *siamjat al reiH*, *weraq*, *zarbekh*

شوله, سيمجات الريح, وراق, زربيح

fat hen, white goosefoot

GROWTH FORM: Annual herb. Fl. Apr–May.

STATUS: Introduced. Common. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A frequent weed of cultivated and irrigated areas.

USES: Various medicinal uses have been documented.

PHOTOS: Bat 25; Coll 145; Jong 288; Shuaib 78; West 47.

Chenopodium murale L.VERNACULAR NAMES: *zarbeeH*, *khaisa*, *weraq*, *abu 'affeyn*

زربيح, خايسة, وراق, أبو عفين

fat hen, white goosefoot

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in disturbed areas, especially around towns and villages.

PHOTOS: ElAmin 4; Bat 25; Coll 146; Corn 77; Daoud 161; Ghaz 31; Jong 289; Phil 97; Pick 207; Shuaib 78; West 47.

Cornulaca aucheri Moq.VERNACULAR NAMES: *hadh*, *saley*

حاذ, سلي

GROWTH FORM: Annual herb. Fl. Oct–Nov.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Coastal areas, including Umm Bab, Salwa and Al Khor.

PHOTOS: Bat 26; Coll 147; Corn 77; Ghaz 44; Jong 291; Shuaib 77.

Cornulaca monacantha DelileVERNACULAR NAMES: *thallaj*, *hadh*

ثلاج, حاذ

GROWTH FORM: Small shrub. Fl. Oct–Nov.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in coastal areas and in S Qatar on deeper saline sand.

USES: Reported by Rizk & El-Ghazaly to have some degree of antimicrobial activity when ingested. Leaves are used to treat jaundice in Qatar (Ghazanfar).

PHOTOS: ElAmin 5; Bat 26; Coll 148; Corn 77; Ghaz 45; Jong 280^L, 292; West 48.**Halocnemum strobilaceum** (Pall.) M. Bieb.VERNACULAR NAMES: *sabat*, *hadhadi*

سبت, حدادي

GROWTH FORM: Shrub. Fl. Sep–Oct.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny from saltmarsh at Al Khor and Abu Samrah.

USES: Cornes & Cornes report that the plant is intensively grazed by camels in sabkha areas and also by gazelles; Mandaville (citing an earlier author) mentions a herdsman's belief that overfeeding on this plant is a cause of lung disease in camels.

PHOTOS: Coll 149; Corn 85; Daoud 168, 169; Jong 290, 293; Mand 30; Phil 98; Shuaib 75; West 48.

Halopeplis perfoliata (Forssk.) Bunge ex Schweinf. & Asch.

Plate 42

VERNACULAR NAMES: *khurreyz* (string of beads)

خريز

GROWTH FORM: Shrub. Fl. Mar.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Locally abundant in saltmarsh and sabkha edge, or occasionally on saline sand; mainly N Qatar and the E coast.

PHOTOS: ElAmin 5; Bat 27; Coll 149; Corn 38, 85; Ghaz 35, 36; Jong 280^L, 290, 294; Phil 99; Pick 57; West 49.**Haloxylon persicum** Bunge*Haloxylon ammodendron* (C.A. Meyer) BungeVERNACULAR NAMES: *ghada*, *qadha*, *rimth*

قذى, رمث

GROWTH FORM: Shrub or small tree. Fl. Feb–May.

STATUS: Native. Rare. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A characteristic species of deep, often drifting sand. Recorded only by El Amin, but, confusingly, he refers to this species as *Haloxylon salicornicum* (and what is now known as *H. salicornicum* under the older name of *Hammada elegans*). He recorded it east of Salwa at Mah Sobia hill (the area now known as Al Mashbiya), near the Saudi Arabian border.

USES: Grazed by camels; highly valued as firewood by bedouin and desert villagers (Mandaville).

PHOTOS: ElAmin 5; Coll 150; Jong 296; West 49.

Haloxylon salicornicum (Moq.) Bunge ex Boiss.

Plate 44

Hammada elegans (Bunge) Botsch.; *Hammada salicornica* (Moq.) IljinVERNACULAR NAMES: *rimth*

رمث

GROWTH FORM: Shrub. Fl. Sep–Oct.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Abundant in parts of SW Qatar in sandy areas between Abu Samrah and Al Karaanah. Also found at Khor Al Adaid, but local elsewhere. An area has recently developed at the Al Sheehaniyah racecourse in C Qatar.

USES: Good fodder for camels. Other animals graze on it when nothing else is around' (El Amin). Mandaville notes that it is important camel grazing when annuals and grasses are not available but remarks: 'excessive saltbush grazing is recognised to be physiologically damaging'. A source of firewood. A relatively small number of medicinal uses are documented; stems are used to treat hypoglycaemia (Ghazanfar).

PHOTOS: ElAmin 5; Bat 29; Coll 151; Corn 78; Daoud 188, 189, 19; Ghaz 46, 47; Jong 297; Phil 100; Shuaib 74; West 50.

Salicornia europaea L.

Plate 45

Salicornia maritima Wolff & Jefferies; *Salicornia herbacea* L.

VERNACULAR NAMES: glasswort

GROWTH FORM: Annual herb. Fl. Nov.

STATUS: Native. Rare. First published record: Abdel Bari (1997). Also recorded: Bahrain, Kuwait.

HABITAT & DISTRIBUTION: Locally abundant at Al Khor; also at Umm Tais (RR).

NOTES: Batanouny undoubtedly recorded *Salsola soda* L. in error for this species.

PHOTOS: Daoud 170, 171; Phil 101; Shuaib 76.

Salsola cyclophylla Baker

GROWTH FORM: Small shrub. Fl. Oct–Dec.

STATUS: Native. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny in S Qatar ‘where it dominates a community on the road to the UAE’. Typical habitats in Saudi Arabia include sand dunes, rocky slopes, limestone and sandstone plateaux (Miller & Cope).

PHOTOS: Coll 153; Jong 298; Mand 40.

Salsola drummondii Ulbr.

GROWTH FORM: Shrub. Fl. Oct–Dec.

STATUS: Native. ?Rare. First published record: Miller & Cope (1996). Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: In other parts of the Gulf this is a species of saline sandy areas, including sabkha; usually near the coast.

PHOTOS: Jong 299; Pick 58.

Salsola imbricata Forssk.

Plate 46

Salsola baryosma (Roem. & Schult.) Dandy; *Salsola foetida* Delile ex Spreng.

VERNACULAR NAMES: saltwort, *kharee* *T*

خریط

GROWTH FORM: Small shrub. Fl. Jun–Sep.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent or abundant in coastal saline areas, including beaches and sabkha, occasionally in other habitats.

USES: ‘In Bahrain, the flowers are used as a diuretic and anti-inflammatory’ Rizk & El-Ghazaly.

NOTES: Plate 46 shows a *Salsola* species, possibly *S. imbricata*.

PHOTOS: ElAmin 6; Coll 153; Corn 39, 74, 78; Daoud 180, 181; Ghaz 51; Jong 280^L, 300; Phil 102; Shuaib 77; West 50.

Salsola schweinfurthii Solms-Laub.

GROWTH FORM: Small shrub. Fl. Not known.

STATUS: Native. ?Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in saline areas in S Qatar according to Batanouny.

NOTES: Needs confirmation as not listed for Qatar by Miller & Cope.

PHOTOS: Coll 154.

Salsola villosa Schultes

Salsola mandavillei Botsch.; *Salsola vermiculata* sensu Mandaville, non L.; *Salsola vermiculata* var. *villosa* (Schultes) Moq.

GROWTH FORM: Small shrub. Fl. Mar.

STATUS: Native. ?Local. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded by Batanouny from C and N Qatar in calcareous stony soils and saline areas.

USES: Favourite grazing for camels (Mandaville). Salt grazing (El Amin). Often used as firewood (Mandaville).

NOTES: Needs confirmation as not listed for Qatar by Miller & Cope.

PHOTOS: Mand 41.

Seidlitzia rosmarinus Bunge ex Boiss.

Plate 47

VERNACULAR NAMES: *shinan/ushnan, julman*

شنان, جلمان

GROWTH FORM: Shrub. Fl. Sep–Oct.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Abundant and often dominant on undulating sand, sabkha edge and over sand dunes from Mesaieed southwards.

USES: The leaves are used as a cleansing agent (Ghazanfar).

PHOTOS: Bat 30; Coll 155; Corn 86; Daoud 179; Jong 302; Mand 37; Shuaib 75.

Suaeda aegyptiaca (Hasselq.) Zohary

Plate 48

Chenopodium aegyptiacum Hasselq.; *Schanginia aegyptiaca* (Hasselq.) Aellen; *Schanginia baccata* (Forssk.) Moq.

VERNACULAR NAMES: seablite, *suweid, Hatallus, julman*

سويد, حنلس, جلمان

GROWTH FORM: Perennial herb. Fl. Sep–Oct.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in coastal areas and wherever saline soils occur, including irrigated farmland.

USES: El Amin remarks that fresh leaves are sold in markets in Qatar for eating in salads. Stems and leaves are also used to treat tooth and gum infections. Ghazanfar mentions that the plant is used as snuff to alleviate dizziness, headaches and other ailments.

PHOTOS: Bat 29; Coll 156; Corn 81; Daoud 173, 174; Jong 303; Phil 103; Shuaib 80; West 52.

Suaeda vermiculata Forssk. ex J.F. Gmel.

Plate 49

Suaeda fruticosa Forssk. ex J.F. Gmel.

VERNACULAR NAMES: seablite, *suweid*

سويد

GROWTH FORM: Shrub. Fl. Oct.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional or frequent in coastal saline habitats.

USES: Jong *et al.* note that the plant is suitable for saline irrigation and a promising landscape plant, and is also used to treat asthma.

PHOTOS: ElAmin 6; Bat 30; Coll 157; Corn 81; Daoud 172; Ghaz 41; Jong 280^L, 304; Phil 104; Pick 59; Shuaib 80; West 53.

Traganum nudatum Delile

GROWTH FORM: Shrub. Fl. Mar.

STATUS: Native. ?Rare. First published record: Miller & Cope (1996). Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A plant of rocky places over Arabia generally.

PHOTOS: Coll 158; Daoud 178; Shuaib 80.

CISTACEAE

Helianthemum kahiricum Delile

Plate 50

VERNACULAR NAMES: *raqrouq*

رقروق

GROWTH FORM: Shrublet. Fl. Mar.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Mainly on harder, calcareous substrates in W Qatar. Frequent in the Dukhan area (JN).

PHOTOS: ElAmin 25¹; Bat 71; Coll 159; Corn 97; Daoud 35; Ghaz 133-4; Jong 305; Phil 160; West 101.

Helianthemum lippii (L.) Dum.-Cours.

Plate 51

VERNACULAR NAMES: *raqrouq*

رقروق

GROWTH FORM: Shrublet. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant on hamada, gravel plains and sandy soils.

USES: Rizk & El-Ghazaly report that the plant possesses antimicrobial activity.

PHOTOS: ElAmin 6, 25¹; Bat 71, 72¹; Coll 159; Daoud 36; Jong 306; Phil 161; Shuaib 106; West 102.

COMBRETACEAE

Conocarpus lancifolius Engl.

VERNACULAR NAMES: *damas*

GROWTH FORM: Tree. Fl. Not known.

STATUS: Introduced. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Planted at Mesaieed Industrial City (JN), but may be more widespread.

USES: A saline-tolerant tree producing dense foliage, making it suitable for use as shade and screening.

PHOTOS: None.

CONVOLVULACEAE

Convolvulus arvensis L.

VERNACULAR NAMES: bindweed, *'ullayq*

عليق

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional or frequent in lawns, gardens and other cultivated areas.

USES: The plant is poisonous if eaten in any quantity (Rizk & El-Ghazaly); roots and leaves are used as an anti-haemorrhagic (Ghazanfar).

PHOTOS: ElAmin 9; Coll 226; Corn 181; Jong 310; Phil 139; Shuaib 54; West 117.

Convolvulus cephalopodus Boiss.

Plate 52

Convolvulus buschiricus Bornm.

VERNACULAR NAMES: *khatme*

خاتمي

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy areas; particularly W Qatar.

PHOTOS: Bat 79; Daoud 21, 215, 216; Jong 311; Pick 168; Shuaib 55; West 117.

Convolvulus fatmensis Kunze

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded by Batanouny from silty soils in rodlat.

PHOTOS: Bat 80; Coll 229.

Convolvulus glomeratus Choisy

VERNACULAR NAMES: *'ullayq*

عليق

GROWTH FORM: Perennial herb. Fl. Mar.

STATUS: Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded from cultivated rodlat, in light or sandy soils.

USES: Taken as a purgative (Rizk & El-Ghazaly).

PHOTOS: ElAmin 10; Bat 80; Coll 229; Jong 312.

Convolvulus pilosellifolius Desr.

Plate 53

VERNACULAR NAMES: *melbow, haTHmy, rukheima*

ميلبو, هنمي, رخيمة

GROWTH FORM: Perennial herb. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Locally abundant in silty depressions and rodlat in C Qatar.

USES: Eaten as salad or cooked with rice to add flavour (El Amin, Jongbloed *et al.*). Used as a purgative in Bahrain (Rizk & El-Ghazaly).

PHOTOS: ElAmin 10, 44¹; Bat 82; Coll 230; Corn 182; Daoud 185¹; Jong 313; Phil 140; Shuaib 54; West 118.

Convolvulus prostratus Forssk.

Convolvulus deserti Hochst. & Steud.; *Convolvulus microphyllus* (Roth) Spreng.

VERNACULAR NAMES: *'ullayq*

عليق

GROWTH FORM: Perennial herb. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in silt pans and other depressions; also on gravelly soils and in runnels.

NOTES: *C. prostratus* and *C. deserti* are two closely related taxa for which the taxonomy is poorly understood. Batanouny listed both species, but it is probable that only one variable entity occurs.

PHOTOS: ElAmin 10; Bat 79, 81; Coll 230; Jong 314; West 118.

Cressa cretica L.

VERNACULAR NAMES: alkali weed, rosin weed, *nedewah*

ندبوة

GROWTH FORM: Perennial herb. Fl. Mar–May.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional on compact saline soils around the coasts; especially N Qatar. Recorded from Ras Laffan (JN), just west of Doha (RR) and is common at Al Zubarah (RR).

USES: In Bahrain, the leaves are used as an expectorant (Rizk & El-Ghazaly); also used as an aphrodisiac (Ghazanfar).

PHOTOS: ElAmin 10; Bat 82; Coll 233; Corn 182; Daoud 212, 213; Jong 317; Phil 141; Shuaib 55; West 119.

Cuscuta chinensis Lam.

VERNACULAR NAMES: Chinese dodder

GROWTH FORM: Annual parasitic herb. Fl. Jan–Dec.

STATUS: Introduced. ?Local. Needs confirmation for Qatar. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Batanouny mentions that this species is a fairly common parasite of cultivated alfalfa (*Medicago sativa*) and sweet basil (*Ocimum basilicum*), as well as *Ziziphus nummularia*.

USES: Rizk & El-Ghazaly list a large number of medicinal uses.

PHOTOS: None.

Cuscuta pedicellata Ledeb.

VERNACULAR NAMES: dodder

GROWTH FORM: Parasitic herb. Fl. Apr.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded from cultivated areas on many different hosts including crops such as alfalfa (*Medicago sativa*) and sweet basil (*Ocimum basilicum*); also on trees such as *Prosopis* and *Ziziphus*, and also on *Chenopodium*, *Fagonia* and *Trigonella* spp.

PHOTOS: Coll 234.

Cuscuta pentagona Engelm.

VERNACULAR NAMES: dodder

GROWTH FORM: Parasitic herb. Fl. Not known.

STATUS: Introduced. Rare. First published record: Abdel Bari (1997). Not in other Gulf floras.

HABITAT & DISTRIBUTION: Abdel Bari records it as a 'common parasite on ornamental annuals'.

PHOTOS: None.

CUCURBITACEAE

Citrullus colocynthis (L.) Schrad. Plate 54

Cucumis colocynthis L.

VERNACULAR NAMES: *hanDHal*, *shary* (fruit), *Hadaj*

حنظل شري (ثمرة), حدج

desert squash, bitter gourd/squash

GROWTH FORM: Perennial herb. Fl. Apr–Jul.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy areas, particularly in depressions and runnels; though single plants may cover a large area.

USES: El Amin reports that the ripe fruit were used to prepare gunpowder. The plant is well known to have strong laxative properties; other medicinal uses recorded by Ghazanfar include treatment of dog, insect and snake bites; to relieve pain in joints and as a hair dye.

PHOTOS: ElAmin 16; Bat 73, 74¹; Coll 268; Daoud 4, 46, 47, 48; Ghaz 151; Jong 323; Mand 67, 68; Phil 105; Pick 170; Shuaib 55; West 104.

Cucumis prophetarum L.

VERNACULAR NAMES: *shary*, *haneiDalan*, *Hadak*

شري, هنيضان, حدق

GROWTH FORM: Perennial herb. Fl. Apr–May.

STATUS: Introduced. ?Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Previously recorded from Al Karaanah.

USES: The plant has purgative properties (Rizk & El-Ghazaly).

PHOTOS: ElAmin 16; Bat 73, 74; Coll 270; Ghaz 147-9; Jong 325; Pick 122; West 105.

CYNOMORIACEAE

Cynomorium coccineum L. Plate 55

VERNACULAR NAMES: red thumb, desert thumb, *Tarthuth*

طرثوث

GROWTH FORM: Parasitic perennial herb. Fl. Mar.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: On damp, saline sand, including beaches, thus mainly with a coastal distribution. Frequent at Dukhan water treatment works, growing on *Tetraena qatarensis* and nearby on the west coast (JN); also occurs at Ras Laffan (RR), Mesaieed and Khor Al Adaid (MS). Other host plants include species of Chenopodiaceae.

USES: The roots are edible and were sold in earlier times as a vegetable. Flowers were used as a dye in Saudi Arabia (Ghazanfar); used as a aphrodisiac in Bahrain (Rizk & El-Ghazaly).

PHOTOS: Bat 75; Coll 276; Corn 33, 145; Daoud 70; Jong 326; Mand 134; Phil 64, 65; Shuaib 51; West 105.

EUPHORBIACEAE

Andrachne telephioides L. Plate 56

VERNACULAR NAMES: *HuweimDHa*

حويمظه

GROWTH FORM: Perennial herb. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in silty depressions.

USES: The plant is poisonous and used as an insecticide (Rizk & El-Ghazaly).

PHOTOS: Bat 63; Coll 302; Corn 120; Daoud 64, 65; Jong 330; Phil 168; Shuaib 84; West 92.

Chamaesyce arabica (Hochst. & Steud. ex Boiss.) Soják

Euphorbia arabica Anderson

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Rare. First published record: Abdel Bari (1997). Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded near Abu Samrah on a 'mud plain'.

PHOTOS: Jong 334; West 93.

Chamaesyce granulata Forssk.

Euphorbia granulata (Forssk.) Soják

VERNACULAR NAMES: *labeinah*

لبينة

GROWTH FORM: Annual or biennial herb. Fl. Mar–May.

STATUS: Introduced. Common. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occurs on various soils and a weed in urban areas, but may have been frequently mis-recorded for *C. serpens*.

USES: Sap is applied to poisonous bites (Jongbloed *et al.*).

NOTES: One of several very similar prostrate *Euphorbia* species, often treated as *Chamaesyce*, that occur in damp, disturbed habitats, particularly in lawns, gardens and plantations.

PHOTOS: ElAmin 11; Bat 63; Coll 315; Daoud 67; Jong 335; Shuaib 85; West 95.

Chamaesyce hirta (L.) Millsp.*Euphorbia hirta* L.VERNACULAR NAMES: *labeinah*

لبينة

GROWTH FORM: Annual herb. Fl. Apr–Sep.

STATUS: Introduced. Rare. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of cultivated land (Batanouny).

USES: The sap is used to treat cuts and wounds (Rizk & El-Ghazaly), a number of other medicinal uses are also listed.

PHOTOS: Coll 317; Jong 338; Shuaib 86.

Chamaesyce prostrata (Aiton) Small*Euphorbia prostrata* Aiton

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Introduced. Common. Also recorded: UAE.

HABITAT & DISTRIBUTION: Frequent in irrigated areas in C Qatar, especially in rodāt.

USES: Amongst those listed by Rizk & El-Ghazaly are to treat flu, dysentery, to purify blood and improve the milk of nursing mothers. It is also used as a diabetes remedy and the sap applied to sores and used as a snake bite remedy.

PHOTOS: ElAmin 12; Bat 64; Jong 342.

Chamaesyce serpens (Kunth) Small*Euphorbia serpens* Kunth

GROWTH FORM: Annual herb. Fl. Dec–May.

STATUS: Introduced. Not confirmed for Qatar, but very likely to occur. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Likely to occur in similar habitats to *C. granulata*.

PHOTOS: Coll 321; Corn 122; Jong 343; West 94.

Chrozophora oblongifolia (Delile) A. Juss. ex Spreng.*Chrozophora verbascifolia* (Willd.) A. Juss.VERNACULAR NAMES: *Tanoom*

طنوم

GROWTH FORM: Perennial herb or small shrub. Fl. Dec–May.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in cultivated depressions, field margins and disturbed areas in C Qatar.

USES: *Chrozophora* species have been traditionally used in Arabia to produce dyes. Further details are given by Mandaville.

PHOTOS: Coll 302; Daoud 66; Jong 331; Pick 209; West 92.

Chrozophora tinctoria (L.) Raf.*Chrozophora obliqua* (Vahl.) A. Juss. ex Spreng.VERNACULAR NAMES: *Tanoom, zerraij*

طنوم, زريج

GROWTH FORM: Annual (occasionally perennial) herb. Fl. Apr–Jun.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in cultivated rodāt, field margins and disturbed areas; C Qatar.

USES: Like *C. oblongifolia*, used to produce dyes; however for *C. tinctoria* Mandaville states that although long used in southern Europe and the Mediterranean there do not appear to be any records of this use in eastern Arabia.PHOTOS: ElAmin 11, 55¹; Coll 302; Mand 135; Shuaib 85.**Euphorbia dracunculoides** Lam.

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Introduced. ?Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded by El Amin from disturbed soils of rodāt; C Qatar.

PHOTOS: Coll 312.

Euphorbia heterophylla L.*Euphorbia geniculata* OrtegaVERNACULAR NAMES: *labeinah*

لبينة

GROWTH FORM: Annual herb. Fl. Jan–Apr.

STATUS: Introduced. Common. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny as ‘common’ at Al Wabrah where naturalised, but may be more widespread now.

PHOTOS: Coll 317; Jong 336.

Euphorbia peplus L.

VERNACULAR NAMES: petty spurge

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Introduced. Rare. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional as a roadside weed in Dukhan township in 2007 (JN).

USES: The plant is good for asthma and catarrh; the milky juice is used to remove corns, warts and in the treatment of cancer of the stomach, liver and uterus (Rizk & El-Ghazaly).

PHOTOS: Bat 64; Coll 320; Corn 122; Jong 341.

Euphorbia retusa Forssk.

Plate 57

Euphorbia cornuta Pers.

GROWTH FORM: Annual (occasionally perennial) herb. Fl. Feb–Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded on a silt pan NE of Zikreet in 2007 (JN).

PHOTOS: Coll 320.

Mercurialis annua L.

GROWTH FORM: Annual herb. Fl. All year.

STATUS: Introduced. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by Batanouny but no information given on status or distribution; likely to occur in damp, cultivated areas, as in other parts of the world.

PHOTOS: Coll 326.

Phyllanthus niruri L.

VERNACULAR NAMES: stone-breaker

GROWTH FORM: Annual herb. Fl. Not known.

STATUS: Introduced. ?Local. First published record: Abdel Bari (1997). Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded as 'widespread' in gardens.

USES: As its English name indicates, well-known as a cure for kidney stones and also used to treat liver diseases. Dried leaves and extracts of the plant are sold commercially around the world. Other reported uses include to aid digestion, relieve pain and to treat malaria and other fevers.

NOTES: *P. amarus* Schumach. is closely-related and has similar uses (this is much more common as a naturalised species than *P. niruri*).

PHOTOS: None.

Ricinus communis L.

VERNACULAR NAMES: castor oil plant, 'arash

عراش

GROWTH FORM: Shrub. Fl. Jan–May.

STATUS: Introduced. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: In the Gulf generally it is widely planted in shelterbelts, but also escapes into areas around gardens and farms.

USES: It is well known that the oil is extracted for medicinal uses, particularly as a laxative, and that the seeds contain a deadly poison, the alkaloid 'ricinine'. The oil is also used in the chemical industry and as a lubricant. Ghazanfar also gives various other uses, including the treatment of bad breath, blisters, ulcers, toothache, inflamed eyes and rheumatic pain.

PHOTOS: Coll 327; Jong 346; Pick 175.

FABACEAE

Acacia ehrenbergiana Hayne

Plate 58

Acacia flava (Forssk.) Schweinf.VERNACULAR NAMES: *salam*

سلم

GROWTH FORM: Shrub or tree. Fl. Apr–May.

STATUS: Native. Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in rodal and other sandy areas, often with other large shrubs and trees. Less widely distributed than *A. tortilis*, but it is locally dominant in C and SE Qatar, especially at Al Sheehaniyah. Mandaville states that it is the commonest *Acacia* of the Eastern Province of Saudi Arabia.

USES: Animals graze on leaves and pods; stems are used as firewood and the species is a good sand stabiliser (El Amin). The plant has antimicrobial activity and extracts are used to produce a molluscicide to kill snails (Rizk & El-Ghazaly).

PHOTOS: ElAmin 13; Bat 41, 42¹; Coll 471; Jong 423; Mand 109, 110; Pick 237.**Acacia nilotica** (L.) Delile*Acacia arabica* Willd.VERNACULAR NAMES: Arabian gum tree, *Sunt, jard* (fruit)

صنت, جرد (ثمرة)

GROWTH FORM: Tree. Fl. Mar–Nov.

STATUS: Introduced. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Subsp. *indica* is widely planted in the Gulf and presumably in Qatar; it is native to parts of Saudi Arabia and Oman.USES: The wood has various construction uses and can be used as firewood and for producing charcoal. The bark is a source of tannin and dye. Gum Arabic is obtained from this and other *Acacia* species and used commercially as stabiliser in the food industry; also as an ingredient in other products such as glues, paints and cosmetics.

PHOTOS: Jong 424; Pick 239; West 69.

Acacia tortilis (Forssk.) Hayne

Plate 59

Acacia raddiana Savi; *Acacia spirocarpa* Hochst. ex A. Rich.VERNACULAR NAMES: *samr*

سمر

GROWTH FORM: Shrub or tree. Fl. May–Jun.

STATUS: Native. Very common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Locally dominant in sandy depressions, wadis and larger runnels, often preferring the slightly elevated ground at the edges of such features.

USES: Grazed by livestock and used for fodder and firewood. The gum is of economic importance in some regions. The wood is used for building camel folds (Rizk & El-Ghazaly).

PHOTOS: ElAmin 13; Bat 41, 43¹; Coll 476; Jong 422, 425; Mand 112, 113; Pick 236; West 69.**Alhagi maurorum** Medik.*Alhagi camelorum* Fisch.; *Alhagi graecorum* Boiss.

VERNACULAR NAMES: camelthorn, 'aaqool

عاقول

GROWTH FORM: Small shrub. Fl. Apr–May.

STATUS: Introduced. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occurs in the NW of Al Khor town (MS) and seen by MAS at two locations in W Qatar. Batanouny recorded it at Abu Samrah and Umm Bab. Usually in saline or disturbed sandy soils, including farms and coastal areas.

USES: Grazed by camels. The plant exudes a sugary sap that dries into 'manna' (Jongbloed *et al.* citing an earlier author). Ghazanfar states that the whole plant is used for treating cataracts, migraine, jaundice, migraine, painful joints and as an aphrodisiac.NOTES: The distinction between *A. maurorum* and *A. graecorum* is very slight and probably not taxonomically significant.

PHOTOS: Corn 126; Daoud 34; Jong 347; Phil 31; Shuaib 89; West 70.

Argyrolobium arabicum (Decne.) Jaub. & Spach*Argyrolobium abyssinicum* Jaub. & Spach

GROWTH FORM: Annual or short-lived perennial herb. Fl. Not known.

STATUS: ?Native. ?Rare. First published record: Obeid (1975). Not in other Gulf floras.

HABITAT & DISTRIBUTION: In Egypt the plant grows in sandy and rocky hillsides and in wadis (Boulos).

NOTES: Similar to *Lotus* so there may be some doubt over the identification of this record; Boulos gives the distribution as extending to Arabia, but the species is not shown in Collenette.

PHOTOS: None.

Astragalus annularis Forssk.

Plate 60

VERNACULAR NAMES: *Halaq*

حلق

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in sandy depressions. Abundant in the Dukhan to Umm Bab area after rains in 2007 (JN).

PHOTOS: Coll 480; Corn 129; Daoud 25, 26; Jong 349; Mand 120; Phil 32; Shuaib 92; West 71.

***Astragalus corrugatus* Bertol.**

Astragalus tenuirugis Boiss.

VERNACULAR NAMES: *Halaq, kharwatim al bar*

حلق, خواتم البر

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded in S Qatar at Al Karaanah and some areas in the north (MS). Grows in silty and sandy depressions and other areas with fine, shallow soils.

PHOTOS: ElAmin 70⁺; Bat 44; Corn 129; Daoud 20, 21; Jong 350; Mand 122; Phil 33; Shuaib 93.

***Astragalus eremophilus* Boiss.**

Plate 61

VERNACULAR NAMES: *Halaq*

حلق

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny from depressions and a wadi in S Qatar near Al Karaanah and also from a sandy area in W Qatar near Umm Bab (JN).

PHOTOS: ElAmin 70⁺; Bat 44; Coll 483; Jong 351; Mand 123.

***Astragalus hamosus* L.**

VERNACULAR NAMES: *Halaq*

حلق

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Previously recorded from Al Wabrah.

PHOTOS: ElAmin 13, 70⁺; Bat 45; Coll 484.

***Astragalus hauarensis* Boiss.**

Astragalus gyzensis Delile

VERNACULAR NAMES: *Halaq*

حلق

GROWTH FORM: Annual herb. Fl. Mar–May.

STATUS: Native. Rare. First record: near Umm Bab, March 2007 (S. Aspinall). Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Mandaville describes it as ‘perhaps the most common *Astragalus* of sandy habitats’, so it may occur elsewhere in southern Qatar.

PHOTOS: Daoud 22, 23, 24; Jong 353; Mand 124; Shuaib 93.

***Astragalus schimperi* Boiss.**

VERNACULAR NAMES: *Halaq*

حلق

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded at Jebel Dukhan.

PHOTOS: Coll 486; Daoud 18, 19; Shuaib 93.

***Astragalus sieberi* DC.**

Astragalus zubairensis Eig

VERNACULAR NAMES: *khanaSir al 'aroos*

خناصر العروس

GROWTH FORM: Shrublet. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded in SW Qatar, west of Al Karaanah and Wadi Al Ireig. Recently seen in Mesameer area (MS).

PHOTOS: ElAmin 14, 70⁺; Bat 45; Coll 486; Shuaib 94.

***Astragalus tribuloides* Delile**

VERNACULAR NAMES: *rakhami*

رخامي

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in sandy depressions and runnels; mainly C Qatar.

PHOTOS: ElAmin 14, 70⁺; Bat 46; Coll 488; Corn 129; Daoud 16, 17; Jong 355; Shuaib 93.

***Cullen plicata* (Delile) C. H. Stirt.**

Psoralea plicata Delile

VERNACULAR NAMES: *Hama*

حما

GROWTH FORM: Small shrub. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded by Batanouny from roadside runnel at Al-Amiriyah and a protected rodah in Trainah on waste land near irrigation.

USES: An infusion of the leaves is drunk for respiratory and intestinal ailments and the fruits are used in the treatment of gastric ulcers (Rizk & El-Ghazaly).

PHOTOS: Bat 51; Coll 517.

***Hippocrepis areolata* Desv.**

Hippocrepis bicontorta Loisel.

VERNACULAR NAMES: *umm al qurain*

أم القرين

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in sandy areas; especially W Qatar.

PHOTOS: ElAmin 14, 73⁺; Bat 47; Coll 498; Corn 130; Daoud 30, 31; Jong 361; Mand 131; Phil 35; Shuaib 91; West 73.

***Hippocrepis constricta* Kunze**

VERNACULAR NAMES: *qileiqlan*

قليفان

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. ?Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny from sandy soils in rodah, but he did not give details of abundance.

PHOTOS: ElAmin 73⁺; Bat 48; Coll 498; Jong 362; West 74.

Hippocrepis multisiliquosa L.VERNACULAR NAMES: *qileiqilan*

قيلقان

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Depressions and runnels.

PHOTOS: ElAmin 14, 73¹; Bat 48.**Hippocrepis unisiliquosa** L.

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. ?Rare. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Batanouny recorded as ‘fairly common’ in depressions, but it is not mentioned by El Amin; Mandaville states that it appears to be very rare in Saudi Arabia.

PHOTOS: Coll 499; Jong 363.

Hymenocarpus circinnatus (L.) Savi

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Native. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by Batanouny from Jebel Al Wakra.

PHOTOS: None.

Indigofera intricata Boiss.

Plate 62

VERNACULAR NAMES: *Hameira*

حميرة

GROWTH FORM: Shrublet. Fl. Jan–Jun.

STATUS: Native. Common. First published record: Mandaville (1990, p.181). Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy habitats. It appears to be relatively frequent in western coastal areas (JN, SAM) and is also common across a large part of the UAE (Jongbloed *et al.*).

USES: The roots and leaves are used as a tonic (Rizk & El-Ghazaly).

NOTES: Probably mis-named as *I. articulata* Gouan by earlier authors.

PHOTOS: ElAmin 15; Bat 49; Jong 367; Pick 66.

Indigofera oblongifolia Forssk.

GROWTH FORM: Shrublet. Fl. Not known.

STATUS: ?Introduced. Rare. First published record: Abdel Bari (1997). Also recorded: UAE.

HABITAT & DISTRIBUTION: Abdel Bari found this species near Doha central market, suggesting that it has been introduced by human activity.

USES: Ghazanfar states the roots are used for an analgesic and as an anti-inflammatory; leaves are used as a hair wash.

PHOTOS: Jong 369; West 75.

Lathyrus inconspicuus L.

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Introduced. Rare. First record: SW Qatar, March 2007 (S. Aspinnall). Not in other Gulf floras.

HABITAT & DISTRIBUTION: A weed of crops such as chick-pea, so the record may refer to a plant that had escaped from a cultivated area. Not recorded elsewhere in the Gulf and possibly not from the Arabian Peninsula, but known from the Mediterranean region.

PHOTOS: None.

Lotononis platycarpa (Viv.) Pic.Serm.*Lotononis dichotoma* (Delile) Boiss.; *Lotus platycarpa* Viv.

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy habitats in S Qatar. Previously also recorded from Al Wakra and Wadi Al Banat.

PHOTOS: ElAmin 15, 76¹; Bat 53; Coll 506; Jong 370; Mand 114.**Lotus garcinii** DC.

GROWTH FORM: Small shrub. Fl. Dec–Jun.

STATUS: Native. Rare. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A species of coastal, slightly saline sand. Recorded from NW Qatar by Batanouny.

PHOTOS: Coll 507; Corn 133; Jong 371; Pick 67; West 76.

Lotus glinoides Delile*Lotus schimperii* Steud. ex Boiss.VERNACULAR NAMES: *Hawrbeith*

حوربيث

GROWTH FORM: Annual herb. Fl. Apr–May.

STATUS: Native. Local. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy areas; W and S Qatar.

NOTES: *L. glinoides* and *L. schimperii* were formerly regarded as distinct species, and are probably best amalgamated, but not all authors agree.

PHOTOS: Coll 507; Jong 372; West 76.

Lotus halophilus Boiss. & Spruner

Plate 63

Lotus pusillus Viv.; *Lotus villosus* Forssk., non Burm. f.VERNACULAR NAMES: gazelle's horn, *Hawrbeith*, *qarn al ghazal*

حوربيث, قرن الغزال

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Abundant in sandy habitats, especially after winter rains. Depressions in the Dukhan area in 2007 turned green with this species. May be less common in E Qatar.

USES: Grazed by sheep and goats (El Amin). Due to its abundance and presumed high protein content of the pods this species would presumably have been an important seasonal grazing species in the region.

PHOTOS: ElAmin 76¹; Coll 508; Corn 133; Daoud 14, 15; Jong 373; Phil 36; Shuaib 91.**Medicago laciniata** (L.) Mill.*Medicago aschersoniana* Urb.VERNACULAR NAMES: medick, *nafal*, *jut bari*, *barseem bari*, *abu Hassak*

نفل, جت بري, برسيم بري, أبو حسك

GROWTH FORM: Annual herb. Fl. Feb–Mar.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in sandy habitats.

USES: Said to be 'palatable grazing' by Batanouny, although El Amin says it is grazed by animals but not much liked because of the bristly fruit.

NOTES: A very variable species that was formerly separated into two species or varieties (see Mandaville).

PHOTOS: ElAmin 78^l; Bat 50; Coll 509; Corn 134; Daoud 10, 11; Jong 374; Mand 117; Phil 37; Shuaib 89; West 77.

Medicago polymorpha L.

VERNACULAR NAMES: *nafal, jut bari*

جت بري, برسيم بري

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Introduced. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in rodat in C Qatar and in gardens.

PHOTOS: Coll 511.

Medicago sativa L.

VERNACULAR NAMES: alfalfa, lucerne, *burseem, jatt*

برسيم, جت

GROWTH FORM: Perennial herb. Fl. May–Jul.

STATUS: Introduced. ?Common. Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: May occur as an escape from cultivation.

USES: This is a very common and widely grown fodder crop throughout the Arabian peninsula. Ghazanfar states the leaves are used to treat bruises, fractures and to stop nose-bleeds. Seeds are used as an aphrodisiac.

PHOTOS: Bat 50.

Melilotus albus Medik.

VERNACULAR NAMES: sweet clover, *Handaquq, nafal*

حندقوق, نفل

GROWTH FORM: Annual or biennial herb. Fl. Mar–Apr.

STATUS: Introduced. Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in irrigated places, including gardens.

USES: Grazed by animals (El Amin), but widely known to have toxic effects on livestock. Used to treat rheumatic pain and various other medical conditions and has narcotic action (Jongbloed *et al.*, Rizk & El-Ghazaly).

PHOTOS: ElAmin 80^l; Bat 50; Coll 512; Jong 375.

Melilotus indicus (L.) All.

VERNACULAR NAMES: scented trefoil, indian melilot, *Handaquq, nafal*

حندقوق, نفل

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in irrigated places, including gardens.

USES: Rizk & El-Ghazaly list various medicinal uses including treatment of rashes, abdominal cramps and genital diseases.

PHOTOS: ElAmin 15; Coll 512; Corn 134; Daoud 12, 13; Jong 376; Mand 118; Phil 38; Pick 128; Shuaib 89; West 77.

Ononis reclinata L.

VERNACULAR NAMES: small restharrow

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Rare. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Reported as rare by Batanouny and seen only once recently near Jebel Dukhan (JN).

PHOTOS: Coll 514.

Ononis sicula Guss.

GROWTH FORM: Annual herb. Fl. Mar.

STATUS: Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded from sandy soils in cultivated rodat.

PHOTOS: Coll 515; Jong 378.

Parkinsonia aculeata L.

VERNACULAR NAMES: '*aqrab*

عقرب

GROWTH FORM: Tree. Fl. Not known.

STATUS: Introduced. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Presumably widespread in urban areas.

USES: Planted as an ornamental tree, for erosion control and a source of firewood and charcoal.

PHOTOS: Bat 16.

Prosopis cineraria (L.) Druce

Plate 64

VERNACULAR NAMES: *ghaf*

غاف

GROWTH FORM: Tree. Fl. May–Aug.

STATUS: Native. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A survey by MS confirmed that there are two main areas of distribution in C and N Qatar. At the 'Al Ghafat' area at Rawdat Rashed there are eight trees and at the 'Al Ghaf' area near Medinat Al Shamal there are 13 trees. All are mature specimens, which according to Abdel Bari *et al.* (2007) have an estimated age of 90–150 years or more. Over the country as a whole there are likely to be no more than 50 native trees surviving. No young or regenerating trees have been seen and it is clear that the species is declining. Qatar lies at the western edge of the distribution of the species in the Gulf, with the main native range centred on Dubai (where the species is also under threat from habitat destruction) and the eastern Emirates, extending into Oman. It only just reaches Saudi Arabia at the edges of the Rub' Al Khali (Mandaville). Worldwide it occurs in the deserts of northern India, parts of southern India, Pakistan, Iran and Afghanistan. It is also planted in Qatar.

USES: A very important tree in the Arabian Gulf. Bedouin used to eat young leaves and seed pods, and they are also consumed by animals. The tree provides good firewood and is used in afforestation projects (El Amin). Many medicinal uses are recorded (see also under *P. juliflora*).

PHOTOS: Jong 426, 427; Pick 241; West 78.

Prosopis juliflora (Sw.) DC.

Plate 65

VERNACULAR NAMES: mesquite, *ghuweif*

غوييف

GROWTH FORM: Tree. Fl. Oct–Jan, Mar–May.

STATUS: Introduced. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to abundant or dominant in sandy areas, disturbed habitats and cultivated areas. Originally planted in and around towns and villages but now naturalised and has spread into desert areas. Several authors note that it is an invasive species and may compete with native trees. Many municipalities in the region have tried to eradicate the species with poison, burning and uprooting, but this is unlikely to be effective since it is now well established in various habitats and produces large quantities of seeds (see also Uses). A prominent individual specimen stands on the island in Doha Bay, formerly known as Palm Tree Island. Since August 2005 it has not been irrigated but seemingly survives in good condition.

USES: Jongbloed *et al.* note that the 'pods are nutritious and valuable as fodder', although Cornes & Cornes say that the foliage is apparently unpalatable as it is never browsed. This species may be best managed by using for charcoal production, which would have environmental benefits by reducing the need to import charcoal originating from tropical sources. There have been claims that the species causes allergies, but there seems to be a lack of substantial scientific evidence for this. The plant is a traditional remedy for catarrh, colds, dysentery, inflammation, stomach-ache, sore throats and wounds; the root has diuretic properties (Rizk & El-Ghazaly).

PHOTOS: Coll 516; Corn 14, 30, 38; Jong 429; Phil 30⁺; Pick 242.

Rhynchosia minima (L.) DC.

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded from Al Magdah, N Qatar.

USES: Rizk & Ghazaly report that it used in the treatment of skin diseases.

PHOTOS: Coll 519; Jong 381.

Scorpiurus muricatus L.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: ?Introduced. Rare. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded from cultivated rodan in N Qatar.

USES: 'Good fodder' (El Amin).

PHOTOS: Bat 52; Coll 522; Shuaib 89; West 80.

Senna alexandrina Mill.

Cassia senna L.

VERNACULAR NAMES: *senna makki*, *helul*

سنة مكي, حلول

GROWTH FORM: Shrub. Fl. Mar–Dec.

STATUS: Introduced. ?Local. First published record: Abdel Bari (1997). Also recorded: UAE.

HABITAT & DISTRIBUTION: A garden weed.

USES: Leaves are used for constipation and stomach cramps (Ghazanfar).

PHOTOS: Jong 382.

Senna italica Mill.

Plate 66

Cassia italica (Mill.) Spreng.; *Cassia obovata* Collad.

VERNACULAR NAMES: *senna*, *'ishriq*, *senna*, *helul*

عشوق, سنة, حلول

GROWTH FORM: Shrublet or small shrub. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional, particularly on more compacted soils on gravelly and rocky areas, and also in disturbed areas near to habitation.

USES: Grazed by sheep and goats (El Amin), but Mandaville remarks that some bedouin consider it toxic to livestock. It is used as a 'purgative and stimulant and sold in markets for that use' (Batanouny), but Mandaville says (of eastern Arabia) that there is 'apparently no record of such medicinal use'. Ghazanfar also notes that the leaves and seeds are used to treat constipation and stomach cramps.

PHOTOS: ElAmin 12; Bat 47; Coll 523; Corn 1, 39, 125; Jong 383; Mand 105, 106; Phil 34; West 72.

Senna occidentalis (L.) Link

Cassia occidentalis L.

GROWTH FORM: Annual or short-lived perennial herb. Fl. Not known.

STATUS: Introduced. ?Local. First published record: Abdel Bari (1997). Also recorded: Kuwait.

HABITAT & DISTRIBUTION: A garden weed.

PHOTOS: Coll 524.

Sesbania sesban (L.) Merr.

Sesbania aegyptiaca (Poir.) Pers.

VERNACULAR NAMES: *sesban*

GROWTH FORM: Shrub or tree. Fl. Not known.

STATUS: Introduced. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Likely to be found planted or naturalised under shade of trees along roadsides or in date plantations. Mandaville comments that in eastern Saudi Arabia it is self-propagating in the larger oases.

USES: Eaten by man and used for animal fodder; planted for ornamental use and as a soil improver; saline-tolerant. A species of high economic importance in some countries. Leaves are used to treat skin rashes and wounds (Ghazanfar).

PHOTOS: None.

Taverniera aegyptiaca Boiss.

GROWTH FORM: Perennial herb or small shrub. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Bahrain.

HABITAT & DISTRIBUTION: 'Long runnels dissecting the Miocene country in S Qatar' (Batanouny).

NOTES: There is some confusion over the recording of this and the next species. Most Gulf floras only record *T. sparteae*; the two are similar in appearance and so Batanouny's identification may be in doubt.

PHOTOS: Bat 52; Coll 525; Corn 137; Phil 42.

Taverniera sparteae (Burm. f.) DC.

Taverniera aegyptiaca Boiss.

VERNACULAR NAMES: *'aelijaan*, *dahseer*

علجان, دهسير

GROWTH FORM: Shrub. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Mainly in NE Qatar, where locally frequent on more compact soils. Well-grown bushes occur at Ras Laffan Industrial City (JN) and the species is also found at Al Dhakira, Fuwairit and Simaismah (MS).

Notes: See under *T. aegyptiaca*. Plants in the NE are presumed to be this species, but have not been collected or confirmed by an expert.

PHOTOS: Coll 527; Jong 385; Mand 133; West 81.

Trifolium resupinatum L.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of irrigated farmland.

USES: Used as fodder (El Amin).

PHOTOS: West 82.

Trigonella anguina Delile

VERNACULAR NAMES: *nafal*

نفل

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Occasional or frequent in silty depressions; mainly N Qatar.

USES: Noted as palatable to livestock by Batanouny and El Amin.

PHOTOS: ElAmin 84⁺; Bat 53; Coll 532; Daoud 8, 9; Shuaib 90.

Trigonella glabra Thunb.

Trigonella hamosa L., nom. rej.

VERNACULAR NAMES: Egyptian fenugreek, *nafal*, *quTeifah*

نفل قطيفة

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent or abundant in farms and gardens.

USES: Used as fodder (El Amin). Eaten raw by bedouin as a salad herb (Mandaville).

PHOTOS: ElAmin 15, 84⁺; Bat 53; Coll 533; Corn 138; Daoud 4, 5; Jong 390; Shuaib 90; West 83.

Trigonella monantha C.A. Mey.

VERNACULAR NAMES: *nafal*

نفل

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Cultivated rod at in C Qatar.

PHOTOS: None.

Trigonella stellata Forssk.

VERNACULAR NAMES: star fenugreek, *nafal*, *quTeifah*, *Hilba bariyah*

Plate 67

نفل قطيفة حلبة برية

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in wadis, runnels, depressions and other sandy areas.

USES: Batanouny notes that it is palatable to sheep & goats, but Mandaville states that excessive grazing is reported to cause bloat in livestock. Used by Shammar bedouin women as sweet-scented hairdressing (Mandaville quoting Dickson 1955).

PHOTOS: ElAmin 84⁺; Bat 54; Coll 533; Corn 138; Daoud 6, 7; Jong 391; Mand 116; Phil 43; Shuaib 90.

Vicia monantha Retz.

GROWTH FORM: Annual herb. Fl. Apr–May.

STATUS: ?Introduced. Rare. Also recorded: Bahrain, E Saudi Arabia, UAE.



1: *Avicennia marina*



2: *Blepharis ciliaris*



3: *Ophioglossum polyphyllum*



4: *Avicennia marina*



5: *Mesembryanthemum cryptanthum*



6: *Aizoon canariense*



7: *Mesembryanthemum nodiflorum*



8: *Calotropis procera*



9: *Glossonema varians*



15: *Centaurea sinaica*



16: *Pulicaria undulata*



10: *Glossonema varians*



11: *Leptadenia pyrotechnica*



12: *Filago desertorum*



17: *Gymnarrhena micrantha*



18: *Ifloga spicata*



19: *Koelpinia linearis*



13: *Aaronsohnia factorovskyi*



14: *Atractylis carduus*



20: *Reichardia tingitana*



21: *Rhanterium epapposum*



22: *Arnebia hispidissima*



23: *Echiocaulon jugatum*



29: *Anastatica hierochuntica*



30: *Eremobium aegyptiacum*



31: *Farsetia heliophila*



24: *Anchusa hispida*



25: *Heliotropium bacciferum*



26: *Ogastemma pusillum*



32: *Savignya parviflora*



33: *Dipterygium glaucum*



34: *Herniaria hemistemon*



27: *Mollkiopsis ciliata*



28: *Anastatica hierochuntica*



35: *Paronychia arabica*



36: *Polycarpha repens*



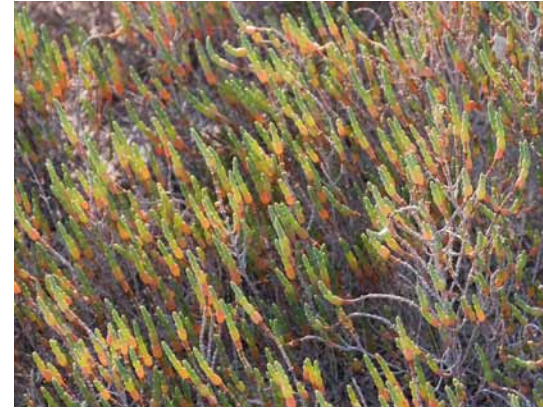
37: *Spergula fallax*



38: *Sclerocephalus arabicus*



39: *Silene villosa*



45: *Salicornia europaea*



46: *Salsola* sp.



40: *Anabasis setifera*



41: *Atriplex leuoclada*



42: *Halopeplis perfoliata*



47: *Seidlitzia rosmarinus*



48: *Suaeda aegyptiaca*



49: *Suaeda vermiculata*



43: *Agriophyllum minus*



44: *Haloxylon salicornicum*



50: *Helianthemum kahiricum*



51: *Helianthemum lippii*



52: *Convolvulus cephalopodus*



53: *Convolvulus pilosellifolius*



58: *Acacia ehrenbergiana*



59: *Acacia tortilis*



54: *Citrullus colocynthis*



55: *Cynomorium coccineum*



60: *Astragalus annularis*



61: *Astragalus eremophilus*



56: *Andrachne telephioides*



57: *Euphorbia retusa*



62: *Indigofera intricata*



63: *Lotus halophilus*



64: *Prosopis cineraria*



65: *Prosopis juliflora*



71: *Frankenia pulverulenta*



72: *Monsonia nivea*



66: *Senna italica*



67: *Trigonella stellata*



73: *Teucrium polium*



74: *Cocculus pendulus*



68: *Erodium glaucophyllum*



69: *Erodium laciniatum*



70: *Salvia aegyptiaca*



75: *Neurada procumbens*



76: *Cistanche tubulosa*



77: *Plantago ciliata*



78: *Emex spinosa*



84: *Lycium shawii*



85: *Corchorus depressus*



79: *Limonium axillare*



80: *Scrophularia deserti*



81: *Fagonia indica*



86: *Fagonia ovalifolia*



87: *Seetzenia lanata*



88: *Tetraena qatariensis*



82: *Rumex vesicarius*



83: *Ziziphus nummularia*



89: *Tetraena simplex*



90: *Phoenix dactylifera*



91: *Cyperus conglomeratus*



92: *Cenchrus ciliaris*



97: *Dichanthium foveolatum*



98: *Stipa capensis* (left) and *Lasiurus scindicus*



93: *Dipcadi erythraeum*



94: *Dipcadi erythraeum*



99: *Aeluropus lagopoides*



100: *Centropodia forsskalii*



101: *Chrysopogon plumulosus*



95: *Chrysopogon plumulosus*



96: *Cutandia memphitica*



102: *Lasiurus scindicus*



103: *Ochthochloa compressa*



104: *Panicum turgidum*



105: *Pennisetum divisum*



106: *Polypogon monspeliensis*



107: *Sporobolus ioclados*



108: *Stipa capensis*



109: *Schismus arabicus*



110: *Stipagrostis plumosa*

HABITAT & DISTRIBUTION: Recorded as a weed of irrigated land.
PHOTOS: Coll 534; West 83.

FRANKENIACEAE

Frankenia pulverulenta L.

Plate 71

VERNACULAR NAMES: *moleiH*

مليح

GROWTH FORM: Annual herb. Fl. Feb–May.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to abundant on saline ground, including cultivated areas and coastal sand.

USES: Rizk & El-Ghazaly report it to be used as a diuretic.

PHOTOS: ElAmin 58^l; Bat 73; Coll 329; Corn 113; Daoud 41,42,43; Jong 393,394; Phil 163; Shuaib 87; West 103.

GENTIANACEAE

Centaurium pulchellum (Sw.) Druce

Erythraea pulchella (Sw.) Fries

VERNACULAR NAMES: lesser centaury

GROWTH FORM: Annual herb. Fl. Feb–May.

STATUS: Introduced. Rare. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny in Al Wabrah. Regarded mainly as a naturalised weed in Arabia.

USES: Various medicinal uses are reported by Rizk & El-Ghazaly.

PHOTOS: Coll 330; Corn 166; Jong 396; Mand 153; Phil 89; West 110.

Enicostema verticillatum (L.) Engl. ex Gilg

Enicostema axillare (Lam.) A. Raynal comb. illeg.

GROWTH FORM: Perennial herb. Fl. Not known.

STATUS: Introduced. Rare. First published record: Abdel Bari (1997). Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded from Qatar University car park.

PHOTOS: None.

GERANIACEAE

Erodium glaucophyllum (L.) L'Hér.

Plate 68

VERNACULAR NAMES: *kebaisha*, *timmair*

كبيشة, تمير

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Occasional in gypsum desert, shallow or compacted silty soils. Particularly numerous at Dukhan (JN); also recorded Ras Laffan (JN), Al Wakra, Al Karaanah (earlier authors).

USES: El Amin notes that it is grazed by animals, although Mandaville says that some bedouin report that overgrazing on this species can lead to bloat.

PHOTOS: Bat 55; Coll 332; Corn 146; Daoud 227; Mand 149; Phil 90,91; Shuaib 72.

Erodium laciniatum (Cav.) Willd. Plate 69
Erodium pulverulentum (Cav.) Willd.
 VERNACULAR NAMES: cut-leaved crane's-bill, *Hambaz*, *qarnawah* حمباز, قرونه
 GROWTH FORM: Annual herb. Fl. Mar–Apr.
 STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.
 HABITAT & DISTRIBUTION: Frequent to abundant in sandy and silty depressions; mainly C and N Qatar.
 PHOTOS: Bat 55; Coll 333; Corn 149; Daoud 23, 232, 233; Jong 397; Phil 92; Shuaib 72.

Erodium oxyrhynchum M. Bieb.
Erodium bryoniiifolium Boiss.
 GROWTH FORM: Annual (occasionally perennial) herb. Fl. Mar–Apr.
 STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia.
 HABITAT & DISTRIBUTION: Recorded from rod at in N Qatar.
 PHOTOS: Coll 335; Daoud 228, 229.

Geranium molle L.
 GROWTH FORM: Annual herb. Fl. Mar–Apr.
 STATUS: Introduced. Local. Not in other Gulf floras.
 HABITAT & DISTRIBUTION: Occasional in N and S Qatar in rod at and gardens, usually in shade of trees.
 PHOTOS: Bat 56; Coll 337.

Monsonia heliotropioides (Cav.) Boiss.
 GROWTH FORM: Perennial herb. Fl. Feb–May.
 STATUS: Native. ?Local. Also recorded: E Saudi Arabia, UAE.
 HABITAT & DISTRIBUTION: Reported by Batanouny as common; S and W Qatar. El Amin also states that it occurs at Al Wakra, Al Karaanah and Mekainis.
 PHOTOS: Bat 56; Coll 338.

Monsonia nivea (Decne.) Webb Plate 72
 VERNACULAR NAMES: *qarnow*, *dahmah* قرونو, دهمة
 GROWTH FORM: Annual or biennial herb. Fl. Mar–Apr.
 STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.
 HABITAT & DISTRIBUTION: Frequent on gravel and stone plains, compacted sand sheets and similar habitats.
 USES: El Amin mentions that some local people boil it to cure fevers.
 PHOTOS: Bat 56; Coll 339; Corn 149; Daoud 235; Jong 399; Phil 93; Shuaib 72; West 86.

LAMIACEAE

Salvia aegyptiaca L. Plate 70
 VERNACULAR NAMES: *na'aim/na'eem*, *ra'al* نعيم, رعل
 GROWTH FORM: Shrublet or small shrub. Fl. Mar–May.
 STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in shallow silty or sandy soils, in rocky areas, also in depressions with coarse soils.

USES: The plant is used in the treatment of diarrhoea, gonorrhoea, haemorrhoids and eye diseases (Rizk & El-Ghazaly, Ghazanfar).

PHOTOS: ElAmin 12; Bat 87; Coll 460; Corn 199; Daoud 248; Jong 405; Phil 137; Pick 32; West 127.

Teucrium polium L. Plate 73
 VERNACULAR NAMES: *ja'ad/yaad* جعد

GROWTH FORM: Perennial herb. Fl. Apr–May.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Stony runnels and silty soils; C and N Qatar. Occasional at Ras Laffan (JN) and mentioned for Jebel Fuwairit by earlier authors.

USES: Many reputed medicinal uses, e.g. for fevers and cholera (El Amin), malaria and insect bites (Jongbloed *et al.*, Mandaville). Other medicinal uses are listed by Rizk & El-Ghazaly.

PHOTOS: ElAmin 12, 64^L; Bat 88, 89^L; Coll 467; Corn 200; Daoud 244; Mand 176; Phil 138; Shuaib 69.

LINACEAE

Linum strictum L.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. ?Rare. Also recorded: Bahrain.

HABITAT & DISTRIBUTION: Recorded by El Amin from 'C Qatar, Wakra hills' (presumably Jebel Al Wakra, E Qatar). Habitat is given as light soils on depressions.

USES: The seeds yield an oil similar to linseed oil (El Amin).

PHOTOS: ElAmin 87^L.

LORANTHACEAE

Plicosepalus acaciae (Zucc.) Wiens & Polhill

Loranthus acaciae Zucc.

VERNACULAR NAMES: *Hadal* حدل

GROWTH FORM: Climbing, parasitic shrub. Fl. Sep–Oct.

STATUS: Native. Local. First record: Al-Madheed (2004). Not in other Gulf floras.

HABITAT & DISTRIBUTION: Occasional, growing on *Acacia* and *Lycium shawii*; especially rod at in C & N Qatar.

PHOTOS: Pick 70.

LYTHRACEAE

Lawsonia inermis L.

Lawsonia alba Lam.

VERNACULAR NAMES: *henna*, *Henna/Hinna* حنا

GROWTH FORM: Tree. Fl. Sep–Feb.

STATUS: Introduced. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Planted in urban areas in the Gulf, but distribution in Qatar uncertain.

USES: Widely used in the Middle East as a dye for painting hands and feet and worldwide for colouring hair and beards. The leaves are used for fevers, as a local anaesthetic and anti-inflammatory and for treating mouth ulcers (Ghazanfar). Jongbloed *et al.* remark that it is one of the traditional 'plants of paradise' which should not be cut for fuel.

PHOTOS: Bat 16; Jong 441; Pick 179.

MALVACEAE

Abutilon fruticosum Guill. & Perr.

VERNACULAR NAMES: *lowaq*, *ja'ja'an*

لواق, جعجعان

GROWTH FORM: Shrub. Fl. Jan–Apr.

STATUS: Introduced. ?Local. Also recorded: UAE.

HABITAT & DISTRIBUTION: Occasional in rodat; C and N Qatar.

PHOTOS: Bat 70; Coll 549; Ghaz 129.

Abutilon pannosum (G. Forst.) Schtdl.

VERNACULAR NAMES: *lowaq*

لواق

GROWTH FORM: Shrub. Fl. Apr–Jun.

STATUS: Introduced. ?Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional on rodat in C Qatar.

NOTES: *Abutilon hirtum* (Lam.) Sweet is listed as a synonym by Jongbloed, though usually regarded as a separate species.

PHOTOS: Bat 70; Coll 551; Jong 413; Pick 132; West 99.

Althaea ludwigii L.

VERNACULAR NAMES: *khatma*

ختمة

GROWTH FORM: Annual or biennial herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in silty, loamy and gravelly soils; mainly in depressions in C Qatar.

PHOTOS: ElAmin 89^l; Bat 69; Coll 552; Daoud 52; Jong 414; Shuaib 56.

Malva nicaeensis All.

VERNACULAR NAMES: *khubeizah*

خبيزه

GROWTH FORM: Annual or biennial herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded only once by Batanouny from a northern farm.

PHOTOS: None.

Malva parviflora L.

VERNACULAR NAMES: least mallow, cheeseweed, *khubeizah*

خبيزه

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in sandy soils after rains; is more common in and around inhabited and cultivated areas.

USES: Mandaville quotes earlier authors who reported that the leaves are eaten as a vegetable by Persians in Kuwait. Phillips notes that the leaves were used in the past to treat coughs and bladder complaints. Rizk & El-Ghazaly list a number of medicinal uses and state that the plant is poisonous to cattle and horses. Ghazanfar reports that the seeds and leaves are also used to treat fevers and ulcers.

PHOTOS: ElAmin 16; Coll 557; Corn 117; Daoud 50, 51; Jong xix, 416; Phil 129; Pick 181; Shuaib 56; West 100.

MENISPERMACEAE

Cocculus pendulus (J.R. & G. Forst.) Diels

Plate 74

VERNACULAR NAMES: *khuneeq*

خنيق

GROWTH FORM: Climber. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded from Al Karaanah and Al Kharrarah. Still at the latter location, and also present at Qatar University campus (MS). Usually grows over *Ziziphus* or *Acacia* trees.

USES: Fruit edible (El Amin). Used in the treatment of fevers (Rizk & El-Ghazaly).

PHOTOS: ElAmin 16; Bat 40; Coll 563; Ghaz 8, 9; Jong 421; West 55, 56.

MOLLUGINACEAE

Mollugo cerviana (L.) Ser.

VERNACULAR NAMES: carpetweed

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Introduced. ?Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Previously recorded by Batanouny from farmed rodat in N and C Qatar.

USES: A number of medicinal properties are listed by Rizk & El-Ghazaly.

PHOTOS: Coll 565.

MORACEAE

Ficus carica L.

VERNACULAR NAMES: fig, *teen*

تين

GROWTH FORM: Shrub or tree. Fl. Not known.

STATUS: Introduced. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: One of the more widely planted fig species. It may occasionally escape into the wild.

USES: Grown for fruit and as an ornamental plant.

PHOTOS: Ghaz 16; West 31.

Morus nigra L.

VERNACULAR NAMES: black mulberry

GROWTH FORM: Tree. Fl. Not known.

STATUS: Introduced. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: Present distribution in Qatar not known but widespread in the Gulf.

USES: Ornamental planting.

PHOTOS: none.

MYRSINACEAE

Anagallis arvensis L.

VERNACULAR NAMES: 'ayn al qaT (*cat's-eye*), 'uwaynah (little eye)

عين القط, عويينة

blue/scarlet pimpernel

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in cultivated areas and rodat with trees, particularly in N and NW Qatar.

USES: Ghazanfar reports the whole plant is used to treat skin rash and ulcers.

NOTES: Formerly placed in the Primulaceae. The blue-flowered form, currently known as *A. arvensis* subsp. *foemina* Mill., appears to be the usual form in Qatar and other parts of the Gulf, but the scarlet-flowered form has also been reported.

PHOTOS: Bat 75; Coll 621; Daoud 195; Ghaz 209-10; Jong 473; Mand 103; Phil 157, 158; Pick 35; Shuaib 56; West 108.

NEURADACEAE

Neurada procumbens L.

Plate 75

VERNACULAR NAMES: creeping thorn rose, *sa'adan*

سعيدان

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in shallow or deep sand; mainly S Qatar.

USES: It is well known that the seed pods embed themselves in the hooves of livestock and can cause lameness. El Amin states that the fruit is 'edible by man and loved by many animals' and Mandaville that the fruit is 'not unpleasant... plucked well before they begin to harden'.

PHOTOS: ElAmin 17; Bat 40; Coll 573; Daoud 1; Jong 438; Mand 104; Phil 147; Shuaib 105; West 68.

OROBANCHACEAE

Cistanche tubulosa (Schrenk) Wight

Plate 76

Cistanche lutea Wight; *Cistanche phelypaea* (L.) Cout.; *Cistanche tinctoria* (Forssk.) G. Beck.

VERNACULAR NAMES: desert hyacinth, *dhanoon*, *Tartuth*

ذنون, طرتوث

GROWTH FORM: Parasitic herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Mainly in coastal areas, including coastal sands along beaches, where occasional or forming small clumps. Host plants include *Arthrocnemum macrostachyum*, *Cornulaca* spp, *Limonium axillare*, *Suaeda vermiculata* and *Tetraena qatarensis*.

USES: 'Said to be poisonous' (El Amin). Rizk & El-Ghazaly describe its use as an aphrodisiac, and a tonic to cure impotence and diarrhoea.

NOTES: *C. phelypaea* is here combined with *C. tubulosa*; but it is possible that they are distinct but closely-related species and that both occur in Qatar.

PHOTOS: ElAmin 17; Bat 93; Coll 586; Corn 40, 186; Daoud 22, 224, 225; Jong 444; Mand 189, 190; Phil 54, 55; Pick 140; Shuaib 52; West 135.

Orobanche ramosa L.

VERNACULAR NAMES: hemp broomrape, branched broomrape

GROWTH FORM: Parasitic herb. Fl. Mar.

STATUS: Introduced. ?Rare. First published record: Abdel Bari (1997). Also recorded: Kuwait.

HABITAT & DISTRIBUTION: A parasite on *Solanum nigrum*.

PHOTOS: Pick 36; Shuaib 53.

OXALIDACEAE

Oxalis corniculata L.

VERNACULAR NAMES: creeping sorrel, *Hamd/muHammad*

حمد/محمد

GROWTH FORM: Annual herb. Fl. Apr–Jun.

STATUS: Introduced. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of lawns and gardens in Doha.

USES: The plant has numerous medicinal uses, including the treatment of bruises, clots, fever, snake bite and infections (Rizk & El-Ghazaly).

PHOTOS: Coll 591; Jong 447; Pick 133; Shuaib 73.

Oxalis debilis Kunth

Oxalis corymbosa DC.

GROWTH FORM: Perennial herb. Fl. Not known.

STATUS: Introduced. Rare. First published record: Abdel Bari (1997). Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded as a weed of gardens.

NOTES: Plants recorded in Qatar are probably referable to var. *corymbosa* (DC.) Lourteig.

PHOTOS: None.

Oxalis pes-caprae L.

Oxalis cernua Thunb.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. ?Local. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Cultivated areas, C and N Qatar. A weed of garden origin.

USES: 'Leaves eaten in Iran in stews but bitter in taste' (El Amin).

PHOTOS: Bat 55.

PLANTAGINACEAE

Plantago amplexicaulis Cav.

VERNACULAR NAMES: *rabl*, *rablat al mistaH*

ربل, ريلة المسطح

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Common. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in silty and sandy depressions in C and N Qatar.

USES: The plant has various medicinal properties.

PHOTOS: ElAmin 94⁺; Bat 94; Coll 601; Daoud 197; Jong 452; Shuaib 103.

Plantago ciliata Desf.

Plate 77

VERNACULAR NAMES: *rabl*, *lisan al Hamal*, *quraiTah*, *wedaina*

ربل, لسان الحمل, قريطة, ودينة

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Only a single plant was found during a survey of western Qatar in 2007 (JN and S. Aspinall). Batanouny recorded it as 'fairly common especially in sandy habitats in S Qatar'.

PHOTOS: ElAmin 17; Bat 94; Coll 602; Daoud 201; Jong 454; Shuaib 103; West 137.

Plantago coronopus L.VERNACULAR NAMES: buck's-horn plantain, *rabl*, *wedaina*

ربل, ودينة

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Previously recorded from Dukhan; recorded twice recently in W Qatar.

USES: The roots are used to treat haemorrhoids, malaria and fevers; the leaves are locally applied to wounds, burns, abscesses, bites and inflammations (Rizk & El-Ghazaly).

NOTES: A specimen collected from western Qatar (JN, 2007) was determined by E. Clement as *Plantago commutata* Guss. (*P. coronopus* subsp. *commutata* (Guss.) Pilg.).

PHOTOS: Coll 602; Daoud 196; Phil 155; Shuaib 104.

Plantago lanceolata L.VERNACULAR NAMES: *rabl*

ربل

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Introduced. Local. Also recorded: Kuwait.

HABITAT & DISTRIBUTION: Occasional in cultivated areas in C Qatar.

USES: Medicinal uses are described by Rizk & El-Ghazaly.

PHOTOS: Coll 603; Shuaib 104.

Plantago ovata Forssk.VERNACULAR NAMES: *rabl*

ربل

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy habitats; S Qatar.

USES: Seeds reportedly have been used by bedouin as a laxative (Mandaville). Rizk & El-Ghazaly report many medicinal uses and Ghazanfar that the seeds are used as an astringent, a diuretic and for treating venereal disease.

PHOTOS: ElAmin 94¹; Coll 604; Daoud 199; Jong 455; Mand 184; Shuaib 104; West 137.**Plantago psyllium** L.VERNACULAR NAMES: *rabl*

ربل

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Native. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded on the road from Doha to N Qatar near Umm Slal Mohammed by Batanouny.

PHOTOS: None.

PLUMBAGINACEAE

Limonium axillare (Forssk.) Kuntze

Plate 79

Statice axillaris Forssk.VERNACULAR NAMES: sea lavender, *qaTaf*

قطف

GROWTH FORM: Small shrub. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to dominant on beaches, sabkha edge and other saline habitats around the coasts.

USES: Ghazanfar states the whole plant is used against diarrhoea and as an astringent.

NOTES: The related species *Limonium carnosum* (Boiss.) Kuntze is recorded from Kuwait, Saudi Arabia, UAE and doubtfully Oman (Ghazanfar 2003), and is therefore quite likely to occur in Qatar.

PHOTOS: ElAmin 17; Bat 76; Coll 605; Corn 94; Ghaz 93; Jong 457; Mand 61; Phil 20, 164; Pick 76; West 109.

POLYGALACEAE

Polygala erioptera DC.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy areas and rodan in C Qatar including Dukhan area and Al Wakra.

USES: Jongbloed *et al.* state that the generic name comes from the belief that 'animals feeding on these species would produce more milk'.PHOTOS: ElAmin 97¹; Bat 65; Coll 607; Jong 459; West 96.**Polygala irregularis** Boiss.

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Native. Common. Also recorded: UAE.

HABITAT & DISTRIBUTION: Reported by earlier authors as common, especially in NE Qatar on sandy or gravelly soils.

PHOTOS: Coll 608; Jong 460.

POLYGONACEAE

Calligonum comosum L'Hér.*Calligonum polygonoides* subsp. *comosum* (L'Hér.) SoskovVERNACULAR NAMES: *abal*, *arta*

GROWTH FORM: Shrub. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by El Amin from a sand dune near Umm Bab.

USES: 'The fruits are edible and freshen the mouth with their tart taste' (Cornes & Cornes). Twigs said to be pounded and added to milk as a flavouring or tonic (Mandaville). Cornes & Cornes also mention that it is said to be used in a balm for skin ailments. El Amin says the woody base was used for firewood. Also reported by early authors to be used by bedouin in the tanning of hides.

PHOTOS: ElAmin 18, 99¹; Coll 611; Corn 32, 90; Daoud 154, 155; Ghaz 86, 87, 88; Jong 462, 463; Phil 83, 84; Pick 185; Shuaib 100; West 32.

Emex spinosa (L.) Campd.

Plate 78

Rumex spinosus L.

VERNACULAR NAMES: prickly dock, *Hanzab/Hambaz, Ders al 'ajooz*

حنزاب/حمباز, ضرس العجوز

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional or frequent in sandy habitats.

USES: Phillips and Mandaville note that the plant is edible. It is used as a remedy for stomach disorders (Rizk & El-Ghazaly).

PHOTOS: Bat 18; Coll 612; Corn 93; Daoud 156, 157; Jong 465; Phil 85; Shuaib 99; West 32.

Polygonum argyrocoleum Steud. ex KunzeVERNACULAR NAMES: *ghardab*

غردب

GROWTH FORM: Annual herb. Fl. Not known.

STATUS: ?Introduced. ?Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of moist ground in cultivated rodat.

NOTES: The record of *P. equisetiformis* by Obeid (1975) reported by Batanouny, a Mediterranean species, is probably referable to this species (see Miller & Cope 1996, p. 129) as is *Polygonum bellardii* Sibth. & Sm. (*P. bellardii* All.) recorded by El Amin. Miller & Cope do not list *P. bellardii* for Arabia.

PHOTOS: Coll 613.

Rumex cyprius Murb.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: ?Introduced. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by Batanouny from silty depressions.

USES: 'It is grazed by animals and the leaves are eaten by man as salad or cooked in stews' (El Amin).

PHOTOS: Coll 615.

Rumex dentatus L.VERNACULAR NAMES: *khillah*

خلة

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: ?Introduced. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Previously recorded from damp, sandy soils and silty depressions in cultivated areas.

USES: Rizk & El-Ghazaly mention that an infusion of the plant is used as a cooling agent against sunstroke and that the root is astringent and applied to skin disorders.

PHOTOS: Coll 615; Jong 467.

Rumex vesicarius L.

Plate 82

VERNACULAR NAMES: sorrel, bladderdock, *hummayD*

حميض

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in rocky terrain in shallow deposits of sand or silt, but also recorded in cultivated areas.

USES: The leaves can be eaten raw or cooked. Mandaville reports from an earlier source that it was sometimes added during preparation of *iqf* (dried milk shards) to increase the acidity. A long list of

medicinal properties are given by Rizk & El-Ghazaly and other authors. Ghazanfar states that the leaves and seeds are used to treat scorpion stings.

PHOTOS: ElAmin 18; Bat 18; Coll 616; Daoud 158, 159; Ghaz 85; Jong 470; Pick 79; Shuaib 100; West 34.

PORTULACACEAE

Portulaca oleracea L.VERNACULAR NAMES: purslane, *barbi; baqlah, rijlah*

بربير, بقلة, رجلة

GROWTH FORM: Annual herb. Fl. Apr–Sep.

STATUS: Introduced. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in cultivated areas, including gardens.

USES: A salad herb, widely cultivated and available in many of Qatar's markets as well as grocery stores and supermarkets. Is also highly palatable to animals. Jongbloed *et al.* also note that it is used as a bactericide, and in the treatment of worms, among other uses. Phillips said it was eaten to help digestion and other authors also note its diuretic properties.

PHOTOS: ElAmin 18; Bat 20; Coll 618; Corn 89, 272; Jong 471; Phil 159; Pick 135; Shuaib 73; West 36.

RESEDACEAE

Ochradenus aucheri Boiss.*Ochradenus dewittii* Abdallah

GROWTH FORM: Shrub. Fl. Oct-May.

STATUS: Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: It is normally a species of rocky habitats. Batanouny collected this species near Al Wukair.

PHOTOS: Ghaz 202; Jong 476, 478; West 67.

Ochradenus baccatus DelileVERNACULAR NAMES: *qurDi*

قرضي

GROWTH FORM: Shrub. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional or frequent in sandy or gravelly depressions, growing amongst *Acacia*, *Ziziphus* and *Lycium*. It can be seen by the roadside of the Al Shamal highway from north of Doha to Al Khor and from Al Rayyan to Rawdat Rashed (MS); strong populations also occur inside Qatar University and the surrounding areas.

USES: Cornes & Cornes say that it is mainly eaten by goats which strip the plants down to a few centimetres. The twigs, leaves and flowers are applied to wounds and sores to kill maggots (Rizk & El-Ghazaly). Ghazanfar reports the fruit and leaves are used to treat stomach-ache.

PHOTOS: Bat 38; Coll 638; Corn 110; Daoud 12, 119, 120; Ghaz 196-7; Mand 98, 99; Phil 130; Shuaib 101.

Oligomeris linifolia (Vahl) J.F. Macbr.*Oligomeris subulata* (Delile) Boiss.; *Reseda subulata* Delile

GROWTH FORM: Annual or biennial herb. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant on harder substrates; mainly C and S Qatar.

USES: Grazed by animals, especially goats and sheep (El Amin).

PHOTOS: Bat 39; Coll 639; Corn 113; Daoud 122; Jong 479; Phil 131; Shuaib 101.

Reseda arabica Boiss.VERNACULAR NAMES: *shawlah*

شولة

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded from C and S Qatar, including Umm Bab.

PHOTOS: Coll 639; Daoud 12, 126, 127; Mand 100; Shuaib 102.

Reseda aucheri Boiss.VERNACULAR NAMES: *shawlah*

شولة

GROWTH FORM: Annual or perennial. Fl. Mar–Apr.

STATUS: Native. ?Rare. Also recorded: Kuwait, UAE.

HABITAT & DISTRIBUTION: El Amin recorded it from gravelly depressions in C Qatar. The habitat in the UAE is gravel plains and mountains (Jongbloed).

NOTES: The plant occurring in Qatar and other parts of the Gulf is *R. aucheri* var. *bracteata* (Boiss.) Abdallah & De Wit.

PHOTOS: Coll 639; Ghaz 203; Jong 480; Pick 186; West 67.

Reseda muricata C. Presl.VERNACULAR NAMES: *shawlah*

شولة

GROWTH FORM: Perennial herb. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Occasional in compacted silty sand, in gypsum desert, and in shallows soil in rocky areas.

USES: The plant possesses antimicrobial activity (Rizk & El-Ghazaly).

PHOTOS: ElAmin 106¹; Bat 39; Coll 641; Daoud 13, 129, 130; Mand 101; Shuaib 102.

RHAMNACEAE

Ziziphus mauritiana Lam.VERNACULAR NAMES: *sidr*; *nabaq* (fruit), *kenar* (fruit)

سدر, نيق (ثمرة), كنار (ثمرة)

GROWTH FORM: Tree. Fl. Mar–Apr.

STATUS: Introduced. Common. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Occasional to locally frequent where planted in farms, gardens and roadsides. Rarely naturalised.

USES: Planted along roadsides as a shade tree. The fruits are edible.

PHOTOS: ElAmin 18; Bat 68.

Ziziphus nummularia (Burm. f.) Wight & Arn.

Plate 83

VERNACULAR NAMES: *sidr*; *nabaq* (fruit), *kenar* (fruit), *dom* (fruit)

سدر, نيق (ثمرة), كنار (ثمرة)

GROWTH FORM: Shrub or tree. Fl. Mar–May.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: Occurs in C and S Qatar in sandy depressions; often dominant or mixed with *Acacia* spp.

USES: The fruit is edible, sweet and ‘also used to treat coughs’ (El Amin). The species can be used for firewood. El Amin also comments on its ability to trap sand and control erosion. Mandaville

citing earlier others reports that the *sidr* tree (including *Z. spina-christi*) was used to make the hook-ended camel stick known as the *mush'ab* and that some tribes had a tradition that *sidr* thickets were haunted by *jinn* (spirits), so were not cut for fuel. An infusion of the leaves is used to treat stomach complaints, sore throats and ease joint pains, whilst the leaves are also applied to treat scabies and boils (El Amin, Rizk & El-Ghazaly).

PHOTOS: ElAmin 19; Bat 66¹, 67; Coll 645; Corn 158; Mand 136.**Ziziphus spina-christi** (L.) Desf.VERNACULAR NAMES: Christ's thorn, *sidr*; *nabaq* (fruit)

سدر, نيق (ثمرة)

GROWTH FORM: Tree. Fl. Mar–Apr.

STATUS: Introduced. Local. Also recorded: UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in farms and roadside plantations. Rarely found naturalised.

USES: A list of medicinal uses is given by Rizk & El-Ghazaly. Ghazanfar reports that the leaves, fruit and seeds are used to treat blisters, bruises, chest pains, dandruff, fractures and mouth and gum problems.

PHOTOS: Bat 68; Coll 645; Jong 481; Pick 247; West 97.

RUBIACEAE

Galium tricornutum Dandy

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded from Al Magdah by Batanouny, growing over *Ziziphus*.

PHOTOS: Jong 488; Shuaib 57.

RUTACEAE

Haplophyllum tuberculatum (Forssk.) Juss.VERNACULAR NAMES: *musaykah* ('muskweed'), *Tafr at-tais/sinan at-tais*

مسيكة, طفر التيس/سنان التيس

('smell of the goat')

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in S, W and C Qatar on sandy soils.

USES: El Amin remarks that the plant is 'not liked' as grazing, and that the 'bedouin use it to cure scorpion stings'. Ghazanfar mentions the leaves are used to 'strengthen back muscles after childbirth, for chest pains, flatulence, stomach problems and as a sedative'.

PHOTOS: Bat 65; Coll 662; Daoud 71; Jong 493; Mand 137; Pick 138; Shuaib 58; West 95.

SALVADORACEAE

Salvadora persica L.VERNACULAR NAMES: toothbrush tree, *miswak/suwak*, *rak'arak*

مسواك/سواك, رك/عرك

GROWTH FORM: Shrub. Fl. Mar–Jul.

STATUS: Introduced. ?Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Distribution in Qatar uncertain. Widely planted and naturalised in the Gulf and native to parts of Saudi Arabia, Yemen and the far east of UAE (Jongbloed). One long-established clump occurs by an old well within Ras Laffan Industrial City (JN).

USES: The twigs are traditionally chewed to clean the teeth and are a familiar sight in Arabic markets. Jongbloed *et al.* list many medicinal uses of the fresh and dried leaves, including the treatment of sore joints and scorpion stings.

PHOTOS: Coll 665; Jong 495; Pick 219; West 97.

SAPINDACEAE

Dodonaea viscosa Jacq.

Dodonaea angustifolia L. f.

GROWTH FORM: Shrub or small tree. Fl. Jan–May.

STATUS: Introduced. Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Mainly planted by roadsides. Native to parts of Saudi Arabia and the Hajar Mountains in UAE (Jongbloed).

USES: As an ornamental and for screening; often clipped into hedges. Ghazanfar reports that the leaves are used for treating toothache; many other medicinal uses are listed by Rizk & El-Ghazaly.

NOTES: Possibly two or more subspecies occur, including subsp. *viscosa* Jacq. and subsp. *angustifolia* (L. f.) J.G. West.

PHOTOS: Jong 496; Pick 81; West 96.

SCROPHULARIACEAE

Misopates orontium (L.) Raf.

Antirrhinum orontium L.

VERNACULAR NAMES: weasel's snout, *saysam*

سيسم

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded from cultivated fields in C Qatar.

PHOTOS: Coll 672; Jong 507; West 132.

Scrophularia deserti Delile

Plate 80

VERNACULAR NAMES: desert figwort, *zeita*, *'afeena*, *zafairah*, *'inab al Deeb* زيتة, عفينة, زفيره, عنب الديب

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional; generally on harder substrates in shallow sand or sandy runnels, especially in S and C Qatar.

PHOTOS: ElAmin 19; Bat 92; Coll 683; Corn 191; Daoud 218, 219; Jong 511; Phil 88; Shuaib 70; West 134.

Veronica cymbalaria Bodard

GROWTH FORM: Annual herb. Fl. Apr.

STATUS: Introduced. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: A weed of gardens in Doha.

PHOTOS: Coll 695.

SOLANACEAE

Datura innoxia Mill.

GROWTH FORM: Annual herb. Fl. Mar–Sep.

STATUS: Introduced. Rare. First published record: Abdel Bari (1997). Also recorded: Kuwait.

HABITAT & DISTRIBUTION: Recorded from Doha.

PHOTOS: Coll 697; Shuaib 84.

Lycium shawii Roem. & Schult.

Plate 84

VERNACULAR NAMES: desert thorn, *'awsaj*

عوسج

GROWTH FORM: Shrub. Fl. Jan–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to locally dominant on hamada, in sandy and silty depressions, runnels, wadis and on rocky slopes. Stunted specimens have been recorded in saline habitats. Often grows with stands of *Acacia* and *Ziziphus* trees.

USES: Grazed by animals and the berries are eaten by man; Cornes & Cornes note that the leaves provide browsing for camels and gazelles. Mandaville gives a detailed account relating to the old bedouin superstition that the plant is the abode of *jinn* (spirits), so some tribes do not use it for firewood. He states that it does not in any case provide good fuel, being 'rather thorny and difficult to break'. Medicinally, the stems are used as a diuretic, laxative and tonic (Ghazanfar).

PHOTOS: ElAmin 20; Bat 90, 91⁺; Coll 701; Corn 192; Daoud 210, 211; Jong 515; Mand 159; Phil 149; Pick 190; Shuaib 83; West 129.

Physalis angulata L.

GROWTH FORM: Annual herb. Fl. May.

STATUS: Introduced. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by Batanouny from Doha as a weed amongst a cultivated plants.

PHOTOS: None.

Solanum elaeagnifolium Cav.

GROWTH FORM: Perennial herb. Fl. Mar–May.

STATUS: Introduced. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: A weed of irrigated, cultivated areas in N Qatar.

PHOTOS: Bat 92.

Solanum villosum (L.) Mill.

Solanum nigrum L. var *humile* (Bernh.) Asch.

VERNACULAR NAMES: hairy nightshade, *'inab al-deeb*

عناب الديب

GROWTH FORM: Annual herb. Fl. Mar–May.

STATUS: Introduced. ?Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of disturbed and enriched habitats, including cultivated areas, sewage ponds and gardens.

USES: Batanouny noted that the fruit is edible. Mandaville states that although sometimes listed as a poisonous plant, he has seen the ripe berries being eaten. The plant is used as a diuretic and a long list of additional medicinal uses is given by Rizk & El-Ghazaly.

PHOTOS: Coll 705; Jong 519; Pick 192; Shuaib 84; West 130.

TAMARICACEAE

Tamarix aphylla (L.) Karst.VERNACULAR NAMES: tamarisk, 'athl, *Tarfah*

عتل طرفة

GROWTH FORM: Tree. Fl. Oct–Feb.

STATUS: Introduced. Common. Also recorded: UAE.

HABITAT & DISTRIBUTION: A frequently planted tree, often used as screening or shelterbelt around farms.

USES: Mandaville notes its economic importance in Saudi Arabia, listing various uses including traditional house construction, ornamental planting, afforestation and dune stabilization. A number of medicinal uses is given by Rizk & El-Ghazaly and Ghazanfar.

PHOTOS: Ghaz 139; Jong 523; Pick 85.

Tamarix aucheriana (Decne.) BaumVERNACULAR NAMES: tamarisk, 'athl, *Tarfah*

عتل طرفة

GROWTH FORM: Shrub. Fl. Apr–May, Oct–Nov.

STATUS: Native. Rare. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by El Amin from Jebel Dukhan.

USES: Used as firewood and the bark provides tannins; used for shelter belts (El Amin).

PHOTOS: Coll 711; Daoud 44, 45; Jong 524; Shuaib 82.

Tamarix passerinoides DelileVERNACULAR NAMES: tamarisk, 'athl, *Tarfah*

عتل طرفة

GROWTH FORM: Shrub. Fl. Apr–Aug.

STATUS: Native. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Previously recorded from saline soils in SW Qatar, including Jebel Dukhan.

USES: Used as firewood (El Amin).

PHOTOS: Coll 713.

Tamarix ramosissima Ledeb.VERNACULAR NAMES: tamarisk, 'athl, *Tarfah*

عتل طرفة

GROWTH FORM: Shrub. Fl. Mar–Dec.

STATUS: Native. ?Local. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded by Batanouny from 'saline ground, mainly in S. Qatar'.

PHOTOS: None.

TILIACEAE

Corchorus depressus (L.) StocksVERNACULAR NAMES: *mulakhiyah al bar*

Plate 85

ملخية البر

GROWTH FORM: A prostrate shrublet. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent on silty or sandy depressions with compacted soil.

USES: Rizk & El-Ghazaly report that the plant is used for removing tumours and pain.

PHOTOS: ElAmin 20; Bat 69; Coll 715; Corn 118; Ghaz 107; Jong 526; Mand 63; Phil 127; Pick 142; West 98.

Corchorus olitorius L.VERNACULAR NAMES: *mulakhiyah*

ملخية

GROWTH FORM: Annual herb. Fl. Feb–May.

STATUS: Introduced. ?Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional as a weed of crops.

USES: The leaves are used as a vegetable to make the Arabic dish *mulakhiyah*. A number of medicinal uses are listed by Rizk & El-Ghazaly.

PHOTOS: Coll 716; Ghaz 108.

Corchorus trilocularis L.VERNACULAR NAMES: wild jute, *mulakhiyah al bar*

ملخية البر

GROWTH FORM: Annual herb. Fl. Feb–May.

STATUS: Introduced. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Reported as rare in N Qatar by Rizk & El-Ghazaly. El Amin listed *C. trilocularis* in the Arabic index to his book, but it was omitted from the species accounts.

USES: Cultivated as a vegetable. A number of medicinal uses are listed by Rizk & El-Ghazaly.

PHOTOS: Jong 527; West 98.

URTICACEAE

Forsskaolea tenacissima L.VERNACULAR NAMES: *lazzaq, tubbaq*

لزازق طباق

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: ?Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded by El Amin from sandy soils and gravelly depressions, but he does not mention a location.

PHOTOS: Coll 738; Jong xii, 538; Pick 221; West 30.

Forsskaolea viridis Ehrenb.

GROWTH FORM: Annual herb. Fl. Jan–Apr.

STATUS: Native. ?Rare. First published record: Obeid (1975), but needs confirmation; not listed for Qatar by Miller & Cope. Also recorded: UAE.

HABITAT & DISTRIBUTION: The typical habitat in Saudi Arabia is wadi bottoms and rocky slopes (Miller & Cope).

PHOTOS: Coll 739; Jong 539.

Parietaria alsinifolia Delile

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: ?Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Previously recorded from rodent, including Al Magdah.

PHOTOS: Coll 739; Jong 540.

Urtica urens L.

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Introduced. Local. Not in other Gulf floras.

HABITAT & DISTRIBUTION: A weed of irrigated gardens.

USES: Many medicinal uses such as to sooth wounds and ulcers and to treat diarrhoea (Rizk & El-Ghazaly).

PHOTOS: Coll 740.

VERBENACEAE

Phyla nodiflora (L.) Greene

Lippia nodiflora (L.) Michx.

VERNACULAR NAMES: frogfruit

GROWTH FORM: Perennial herb. Fl. May–Jun.

STATUS: Introduced. Rare. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of wet places.

USES: Sometimes cultivated as ground cover in parts of the Gulf. A wide variety of medical uses are known (Rizk & El-Ghazaly).

PHOTOS: Bat 88; Coll 747; Corn 203; Jong 541; Phil 177; Pick 86; Shuaib 74; West 125.

Stachytarphaeta angustifolia (Mill.) Vahl

GROWTH FORM: Annual or perennial herb. Fl. Mar–Apr.

STATUS: ?Introduced. ?Local. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by El Amin from rodat and runnels in C Qatar, but not recorded by any other authors from Arabia.

USES: El Amin mentions that it is used medicinally in West Africa to treat dysentery, heart troubles, eye and ear sores.

PHOTOS: None.

ZYGOPHYLLACEAE

Fagonia bruguieri DC.

VERNACULAR NAMES: *DHuraymah*

ظريمة

GROWTH FORM: Biennial or perennial herb. Fl. Mar–May.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy and gravelly habitats.

USES: Rizk & El-Ghazaly describe a number of medicinal uses.

NOTES: Batanouny describes three varieties occurring in Qatar: var. *bruguieri*, var. *laxa* Boiss. and var. *rechingeri* Hadidi.

PHOTOS: ElAmin 20; Coll 757; Daoud 55,56; Jong 545; Mand 138; Shuaib 81; West 87.

Fagonia glutinosa Delile

VERNACULAR NAMES: *DHuraymah*

ظريمة

GROWTH FORM: Biennial or perennial herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: Occasional in sandy areas; probably widespread.

PHOTOS: ElAmin 20; Bat 57; Coll 757; Daoud 54; Shuaib 81.

Fagonia indica Burm. f.

Plate 81

VERNACULAR NAMES: *DHuraymah*, *shwaikah*, *shka'e*

ظريمة, شويكة, شكاعي

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional on harder substrates and disturbed areas around inhabited areas.

USES: Ghazanfar reports that the leaves, stems and roots are used for treating abdominal colic, dyspepsia, fever and venereal disease.

PHOTOS: ElAmin 21; Bat 57; Coll 758; Jong 546; Phil 173; Pick 87; West 87.

Fagonia ovalifolia Hadidi

Plate 86

VERNACULAR NAMES: *DHuraymah*, *shwaikah*, *shka'e*

ظريمة, شويكة, شكاعي

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in softer sand.

NOTES: Subspecies *ovalifolia* and *pakistanica* Ghafoor both occur in Qatar; var. *qatarensis* Hadidi has also been described (IPNI), presumably from Qatar.

PHOTOS: ElAmin 21; Bat 58^l, 59; Coll 758; Corn 153; Jong 547; West 88.

Fagonia tenuifolia Steud. & Hochst. ex Boiss.

GROWTH FORM: Perennial herb. Fl. Apr.

STATUS: Native. ?Local. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by El Amin from Al Sheehaniyah and Al Karaanah in sandy depressions and runnels.

PHOTOS: ElAmin 21; Coll 759.

Seetzenia lanata (Willd.) Bullock

Plate 87

Seetzenia orientalis Decne.

VERNACULAR NAMES: *Habyan/Habein*

حبيان/حبين

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy habitats in C and S Qatar.

PHOTOS: ElAmin 22, 118^l; Bat 60; Coll 760; Corn 153; Daoud 53^l; Jong 548; Mand 139; Pick 222; West 88.

Tetraena qatarensis (Hadidi) Beier & Thulin

Plate 88

Zygophyllum qatarense Hadidi

VERNACULAR NAMES: *harm*

هرم

GROWTH FORM: Shrub. Fl. Mar–Apr.

STATUS: Native. Very common. Endemic to the Arabian Peninsula. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant, or dominant in hamada, gravel plains and saline sandy habitats, including sabkha edge and beaches.

USES: Not edible to humans and usually avoided by wild animals and livestock. Mandaville remarks that it provides 'useful summer grazing, but considered unhealthy in excess'.

NOTES: All *Zygophyllum* species in Arabia have recently been transferred to the genus *Tetraena* (Beier *et al.* 2003). Mandaville notes that this is a rather variable species that was often attributed incorrectly to *Zygophyllum coccineum* L. It is possible that other Gulf and Saudi Arabian species, such as *T. mandavillei* may also occur inside the borders of Qatar.

PHOTOS: ElAmin 22, 120^l; Bat 61; Coll 764, 766; Corn 145, 154; Daoud 58, 59, 60; Jong 290, 555; Mand 142; Phil 172, 175; Pick 196; Shuaib 82; West 90.

Tetraena simplex (L.) Beier & Thulin Plate 89

Zygophyllum simplex L.

VERNACULAR NAMES: *harm/hureim, da'a* هرم/هريم دعا

GROWTH FORM: Annual herb. Fl. Mar–Apr.

STATUS: Native. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional or frequent in stony habitats and compacted, often saline soils.

USES: In Bahrain, the leaves are used as an antibiotic and laxative; infusion of leaves or the seeds is applied to the eyes in ophthalmia (Rizk & El-Ghazaly).

PHOTOS: ElAmin 22, 120^l; Bat 62; Coll 766; Corn 157; Jong 556; Phil 176; Pick 145; West 91.

Tribulus arabicus H. Hosni

VERNACULAR NAMES: *shershir* شرشر

GROWTH FORM: Perennial herb. Fl. Feb–Sep.

STATUS: Native. Rare. An Arabian endemic. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Shallow, fine textured soil and pebbly habitats (Batanouny).

USES: Mandaville states that it is a main camel grazing species in parts of the Rub' Al Khali.

PHOTOS: Coll 761; Jong 549; Mand 143, 144.

Tribulus cistoides L.

Tribulus terrestris var. *cistoides* (L.) C. Moore & Betche

VERNACULAR NAMES: *shershir* شرشر

GROWTH FORM: Perennial herb. Fl. Not known.

STATUS: Native. Rare. First published record: Abdel Bari (1997). Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by Abdel Bari from Al Sheehaniyah race track.

PHOTOS: None.

Tribulus pterophorus C. Presl

VERNACULAR NAMES: *shershir* شرشر

GROWTH FORM: Perennial herb. Fl. Mar–Apr.

STATUS: Native. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded only from Al Mashbiya (the area NE of Abu Samrah) by El Amin from an area with stony soils.

PHOTOS: ElAmin 21, 118^l.

Tribulus terrestris L.

VERNACULAR NAMES: *shershir* شرشر

GROWTH FORM: Annual or biennial herb. Fl. Apr–Dec.

STATUS: Native. Local. Also recorded: Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in gravelly and sandy habitats, including disturbed areas around camps, etc.; S and C Qatar.

USES: A wide variety of medicinal uses are described by Rizk & El-Ghazaly.

PHOTOS: ElAmin 21, 118^l; Bat 60; Coll 763; Daoud 61, 62; Jong 553; Pick 146; Shuaib 82; West 89.

ANGIOSPERMAE: MONOCOTYLEDONEAE

ARECACEAE

Phoenix dactylifera L. Plate 90

VERNACULAR NAMES: date palm, *nakhl* نخل

GROWTH FORM: Tree. Fl. Apr–May.

STATUS: Introduced. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Planted all over Qatar. Naturalised on the coast at Umm Bab.

USES: Cultivated in plantations and gardens, especially for the edible fruit (date); also along roadsides to provide greenery and shade. Various authors describe cultural uses, including making ropes, baskets, roofing and used in the construction of boats and houses. It can also be used as firewood. Jongbloed *et al.* note that it has medicinal uses.

PHOTOS: ElAmin 27; Coll 593; Corn 253, 254; Jong 13; Phil 19; West 167.

CYMODOCEACEAE

Diplanthera uninervis (Forssk.) F.N.Williams

Halodule uninervis (Forssk.) Asch.

VERNACULAR NAMES: seagrass

GROWTH FORM: Marine perennial herb. Fl. Not known.

STATUS: Native. Common. First published record: Abdel Bari (1997). Not in other Gulf floras, though marine flowering plants appear to have been overlooked by some authors.

HABITAT & DISTRIBUTION: Intertidal areas around the coast; widespread (BB).

USES: *Diplanthera* spp. and *Halophila* spp. (p. 71) are an important component of the marine food chain, but further study is needed on them in Qatar.

NOTES: *Diplanthera wrightii* (Asch.) Asch has been reported from Bahrain by Cornes & Cornes and may also be found in Qatar (see Mandaville 1990, p. 331).

PHOTOS: None.

CYPERACEAE

Bolboschoenus maritimus (L.) Palla

Scirpus maritimus L.

GROWTH FORM: Sedge. Fl. Mar–Jun.

STATUS: Native. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Batanouny only recorded it in a permanently wet area at Ras Ushirij, at the edge of a patch of *Typha domingensis*.

PHOTOS: Coll 277; Jong 15; West 169.

Cyperus conglomeratus Rottb.

Plate 91

Cyperus aucheri Jaub. & SpachVERNACULAR NAMES: *thanda, rasha, 'andeb, sa'ed, qassis*

ثندة, رشا, عندب, سعد, قسيس

GROWTH FORM: Sedge. Fl. May–Jun.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A plant characteristic of deeper sand, especially larger dunes, but in Qatar also locally abundant around coastal areas on beach sand and on white sand inland. Occasional to locally frequent in other habitats, such as sandy wadis and runnels.

USES: Grazed, but considered inferior as fodder. Jongbloed *et al.* note that the rhizomes are sometimes used as food by humans in times of hunger.

NOTES: This is a very variable group comprising a number of different described varieties and forms, but further study of plants in Qatar and other parts of the Gulf is still needed. For further information see Batanouny and Mandaville.

PHOTOS: ElAmin 23; Bat 124; Coll 279; Corn 233; Jong 18; Phil 167; Pick 261; Shuaib 51; West 168.

Cyperus jeminicus Rottb.*Cyperus conglomeratus* subsp. *jeminicus* (Rottb.) LyeVERNACULAR NAMES: *rukbah, sa'ed*

ركبة, سعد

GROWTH FORM: Sedge. Fl. Apr–May.

STATUS: Native. Local. Also recorded E Saudi Arabia.

HABITAT & DISTRIBUTION: Locally frequent in coastal saline sand, including Ras Laffan, Fuwairit and other areas in NE Qatar (MS).

Notes: Not previously documented for Qatar.

PHOTOS: None.

Cyperus laevigatus L.*Juncellus laevigatus* (L.) C.B. BakerVERNACULAR NAMES: *sa'ed*

سعد

GROWTH FORM: Sedge. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A species of marshy places, often in slightly saline habitats. Recorded by Batanouny at Abu Samrah in SW Qatar.

USES: Fodder for camels (El Amin).

PHOTOS: Bat 124; Coll 280; Corn 231; Jong 19.

Cyperus rotundus L.VERNACULAR NAMES: *sa'ed*

سعد

GROWTH FORM: Sedge. Fl. Jan–Dec.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in marshy areas, such as gardens and cultivated fields. Rarely seen in desert areas.

PHOTOS: Coll 282; Corn 235; Jong 20; West 168.

HYDROCHARITACEAE

Halophila ovalis (R. Br.) Hook. f.

GROWTH FORM: Marine perennial herb. Fl. Not known.

STATUS: Native. Common. Not previously documented for Qatar. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: Intertidal areas around the coast; widespread (BB).

Notes: See comments under *Diplanthera* spp.

PHOTOS: None.

Halophila stipulacea (Forssk.) Asch.

GROWTH FORM: Marine perennial herb. Fl. Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: Intertidal areas around the coast; widespread (BB). Collected from Al Khor shore by El Amin.

PHOTOS: ElAmin 143⁺; Bat 109; Corn 226.

JUNCACEAE

Juncus rigidus Desf.*Juncus arabicus* (Asch. & Buchenau) Adamson; *Juncus maritimus* Lam. var. *arabicus* Asch. & BuchenauVERNACULAR NAMES: *asal, rasha, tanda*

أصل, رشا, تندة

GROWTH FORM: Rush. Fl. Nov–Dec.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in muddy saltmarshes and other damp, saline areas. Occurs at Abu Samrah, Al Dhakhira, Jebel Fuwairit (MS) and also previously recorded from Wadi El Ireig.

USES: Eaten by camels. Used to make mats.

PHOTOS: ElAmin 26; Coll 444; Corn 231; Jong 27; Phil 162; Pick 262.

LILIACEAE

Asphodelus tenuifolius Cav.*Asphodelus fistulosus* L. var. *tenuifolius* (Cav.) BakerVERNACULAR NAMES: *barwaq*

بروق

GROWTH FORM: Annual herb. Fl. Feb–Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to locally frequent in shallow, often somewhat compact, sand; particularly in sandy or gravelly depressions.

USES: Phillips quotes Dickson (1955) reporting that the seeds of the plant were used by the Bedu of Kuwait to make a kind of dried milk. 'Gathered for use as a potherb' (Cornes & Cornes). The seeds have diuretic properties and are applied externally to ulcers and inflamed parts (Rizk & El-Ghazaly).

NOTES: *A. fistulosus* L. is best treated as a separate species; it has been reported from Egypt and northern Saudi Arabia (Boulos).

PHOTOS: ElAmin 26; Coll 78; Corn 228; Jong 31; Phil 124, 125; Pick 154; Shuaib 50; West 154.

Dipcadi erythraeum Webb & Berthel.

Plates 93, 94

Dipcadi serotinum (L.) Medik.; *Dipcadi unicolor* (Stocks) BakerVERNACULAR NAMES: *miSelmow*, *busalamo*, *anSel*, *bessail al maa*,
brown lily

مصيلمو, بوسلمو, أنصل, بسيل الماء

GROWTH FORM: Perennial herb. Fl. Feb–Mar.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in S and C Qatar, in sandy depressions and runnels.

USES: The bulb is reputed to be edible, although Mandaville says it is bitter, whilst Jongbloed *et al.* state that the capsule is edible. Rizk & El-Ghazaly report that in Bahrain the leaves are used as a laxative and as an ointment for wounds.

PHOTOS: ElAmin 27; Bat 109; Coll 431; Corn 35, 227; Jong 33; Mand 266; Phil 126; Shuaib 49; West 154.

POACEAE

Aeluropus lagopoides (L.) Trin. ex Thwaites

Plate 99

VERNACULAR NAMES: *'ikrish*

عكرش

GROWTH FORM: Perennial grass. Fl. Mar–May.

STATUS: Native. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant in saline habitats, including sabkha edge, saltmarsh and the edges of permanent wetland areas. Sometimes dominates large areas of saline flat.

USES: El Amin states this species to be good fodder.

PHOTOS: ElAmin 126⁺; Bat 110; Coll 342⁺; Corn 242; Jong 37; Phil 107; West 156.**Aristida abnormis** Chiov.

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Local. Also recorded: UAE.

HABITAT & DISTRIBUTION: Probably occasional throughout Qatar on shallow soils.

USES: Used for fodder (El Amin).

PHOTOS: Coll 344⁺; Jong 38.**Aristida adscensionis** L.VERNACULAR NAMES: *samaa*, *SafSaf*

سما, صصاف

GROWTH FORM: Annual or perennial grass. Fl. Apr.

STATUS: Native. Rare. First published record: Cope (2007). Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Details of the Cope record(s) not known, but a specimen of this species was collected by JN from a sandy depression in SW Qatar in 2007.

PHOTOS: Coll 345⁺; Jong 39.**Aristida mutabilis** Trin. & Rupr.*Aristida meccana* Hochst. ex Trin. & Rupr.

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Previously recorded from stony and rocky ground in N Qatar.

PHOTOS: None.

Arundo donax L.VERNACULAR NAMES: giant reed, *ghab*, *qalam*

غاب, قلم

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny from Al Wabrah.

USES: Used for fodder (El Amin).

PHOTOS: Coll 348⁺; Jong 40.**Avena sterilis** L.VERNACULAR NAMES: *shufan barri*

شوفان بري

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Common. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Frequent in rodad and other irrigated places.

USES: Used for fodder (El Amin).

NOTES: Cope lists subspp. *sterilis* and *ludoviciana* (Durieu) M. Gillet & Magne for Qatar; the latter is often treated as a separate species.PHOTOS: ElAmin 23; Coll 350⁺.**Brachypodium distachyum** (L.) P. Beauv.*Trachynia distachya* (L.) Link

GROWTH FORM: Annual grass. Fl. Feb–May.

STATUS: Native. ?Local. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny as occasional in deep alluvial soil in rodad.

PHOTOS: Coll 354⁺; Jong 44.**Bromus danthoniae** Trin.

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Appears only to have been recorded by Batanouny (and possibly also by El Amin) from a single locality as Al Sadd, S of Doha.

PHOTOS: Coll 355⁺.**Bromus madritensis** L.*Anisantha madritensis* (L.) Nevski; *Bromus madritensis* subsp. *haussknechtii* (Boiss.) H. Scholz; *Bromus haussknechtii* Boiss.VERNACULAR NAMES: brome grass, *zeil abu al-Hossein*

ذيل أبو الحسين

GROWTH FORM: Annual grass. Fl. Feb–May.

STATUS: Native. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny from a stony area at Umm Slal Mohammed.

PHOTOS: Bat 110; Coll 356⁺; Jong 45.**Bromus scoparius** L.

GROWTH FORM: Annual grass. Fl. Apr–May.

STATUS: Native. Rare. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded by Batanouny from a stony area with accumulated fine soil at Umm Slal Mohammed.

NOTES: Batanouny ascribed his plant to var. *psilostachys* Halácsy (not formally recognised by Cope).

PHOTOS: Coll 357¹.

Cenchrus ciliaris L.

Plate 92

VERNACULAR NAMES: foxtail grass, *sabaT*

سيط

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to abundant or locally dominant in moderately compact sand or silt, especially in rocky areas and often around inhabited areas and farmland.

USES: Described by Mandaville as 'useful fodder grass'.

PHOTOS: Coll 360¹; Jong 46; Mand 237; Phil 108; Pick 251; West 157.

Cenchrus pennisetiformis Hoschst. & Steud.

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded from cultivated rod at in C Qatar by Batanouny, but presumably also occurs in natural areas with sandy and silty soils.

PHOTOS: Bat 111; Coll 361¹; Jong 47.

Cenchrus setigerus Vahl

GROWTH FORM: Perennial grass. Fl. Not known.

STATUS: Native. ?Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: The habitat of this species is similar to other species of *Cenchrus*.

NOTES: Tentatively listed for Qatar by Cope on the basis of the photograph included in Batanouny (Plate 111), mis-labelled as *C. pennisetiformis*.

PHOTOS: Bat 111; Jong 49.

Centropodia forsskaolii (Vahl) Cope

Plate 100

Asthenatherum forsskaolii (Vahl) Nevski

VERNACULAR NAMES: *qasba'a*, *hajeen*

قصباء، هجين

GROWTH FORM: Perennial grass. Fl. Apr–May.

STATUS: Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant in sandy runnels in SW Qatar.

USES: Grazed by camels (Mandaville) and used for fodder (El Amin).

PHOTOS: ElAmin 126¹; Coll 361¹; Jong 50; West 156.

Chloris barbata Sw.

VERNACULAR NAMES: finger grass, *khazamzam*

خزمزم

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Frequent in cultivated farms, gardens and other irrigated land.

USES: Good fodder (El Amin).

PHOTOS: ElAmin 23; Coll 362¹; Phil 109; Pick 252.

Chloris virgata Sw.

VERNACULAR NAMES: finger grass, *khazamzam*, *sineim*

خزمزم, سنيم

GROWTH FORM: Annual grass. Fl. Feb–Jul.

STATUS: Introduced. Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in cultivated land and other irrigated areas, including gardens.

PHOTOS: Bat 112; Coll 363¹; Jong 52; West 157.

Chrysopogon gryllus (L.) Trin.

VERNACULAR NAMES: *halta*

هلتا

GROWTH FORM: Perennial grass. Fl. Apr–Jun.

STATUS: Native. Local. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Occasional to frequent in wadis and runnels, often within rocky areas.

PHOTOS: None.

Chrysopogon plumulosus Hochst.

Plates 95, 101

VERNACULAR NAMES: *halta*, *gharaz*

هلتا, غراز

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Common. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Occasional to locally frequent in shallow sand in wadis and runnels; often within rocky areas.

USES: Eaten by all animals (El Amin).

NOTES: Recorded as *C. aucheri* (Boiss.) Stapf by Batanouny, but later apparently redetermined as *C. plumulosus* (see El Amin, p.128). *C. aucheri* could also occur in Qatar.

PHOTOS: Bat 123; Coll 363¹.

Cutandia memphitica (Spreng.) Benth.

Plate 96

VERNACULAR NAMES: Memphis grass

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy areas of S and W Qatar.

USES: Used for fodder (El Amin).

PHOTOS: Coll 165¹; Jong 54; Mand 251; Phil 110; West 158.

Cymbopogon commutatus (Steud.) Stapf

Cymbopogon parkeri Stapf

VERNACULAR NAMES: incense grass, *Sakhbar*

صخير

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to locally abundant in silty or sandy depressions and runnels; mainly N and C Qatar. Large tussocks of this lemon-scented species dominate silt pans in parts of Ras Laffan Industrial City where there is no grazing.

USES: Grazed, particularly by sheep. The leaves have a strong lemon scent when crushed. Mandaville mentions that there is a history of medicinal use for this species in Arabia. Jongbloed *et al.* state that plants of the genus are cultivated for citronella oil for use as perfume and insect repellent.

PHOTOS: ElAmin 126¹; Bat 112, 113¹; Coll 365¹; Corn 238; Jong 55; Mand 235; West 158.

Cynodon dactylon (L.) Pers.

VERNACULAR NAMES: Bermuda grass, star grass, dog's-tooth grass, *theel/thayyil*, ثيل, نجيل, نجم, *najeel, najm*

GROWTH FORM: Perennial grass. Fl. Most of year.

STATUS: ?Native. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: The main constituent of lawns in urban areas; occasional in natural habitats.

USES: Of economic importance due to its widespread use in making lawns. Medicinal uses worldwide are described by Rizk & El-Ghazaly.

PHOTOS: ElAmin 23; Coll 366¹; Corn 246; Jong 57; Phil 112; West 159.

Dactyloctenium aegyptium (L.) Willd.

VERNACULAR NAMES: *najm* نجم

GROWTH FORM: Annual grass. Fl. Apr–May.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in rodat, irrigated lawns, date groves and other tree plantations.

USES: El Amin notes that it 'is used as fodder, but not of high value'. Various medicinal uses are reported.

PHOTOS: ElAmin 24; Bat 114; Coll 367¹; Corn 247; Jong 58; Mand 248; Phil 113; Pick 254; West 159.

Dichanthium annulatum (Forssk.) Stapf

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Previously recorded as common in irrigation channels and other damp areas in cultivated rodat, but seen only once by the present authors.

USES: Used for fodder (El Amin).

PHOTOS: Bat 115; Coll 369¹; Corn 238; Jong 61.

Dichanthium foveolatum (Delile) Roberty

Plate 97

Eremopogon foveolatus (Delile) Stapf

VERNACULAR NAMES: *halta* هلثا

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in compacted sandy and silty areas; often within rocky habitats.

USES: Used for fodder (El Amin).

PHOTOS: ElAmin 132¹; Bat 111; Coll 369¹; Corn 140; Jong 62.

Digitaria sanguinalis (L.) Scop.

VERNACULAR NAMES: finger grass, crab grass

GROWTH FORM: Annual grass. Fl. May.

STATUS: Introduced. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in damp areas, including the edges of cultivated fields.

USES: Grazed, and used for fodder.

PHOTOS: Coll 371¹; Jong 63.

Echinochloa colona (L.) Link

VERNACULAR NAMES: jungle rice, millet rice, corn panic grass, *moDeiD, Difra* مضيض, صفرة

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in irrigated lawns and gardens.

USES: Good fodder (El Amin).

PHOTOS: ElAmin 132¹; Bat 115; Coll 372¹; Corn 250; Jong 64; West 160.

Eragrostis barrelieri Daveau

VERNACULAR NAMES: love-grass

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in sandy soils.

PHOTOS: Bat 117; Coll 378¹; Jong 66; Mand 250.

Eragrostis cilianensis (All.) Vignolo ex Janch.

VERNACULAR NAMES: stink-grass, love-grass, *tearab* تيراب

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Common. Also recorded: UAE.

HABITAT & DISTRIBUTION: Occasional in sandy runnels, wadis and other sandy areas; also as a weed in irrigated gardens and rodat.

USES: Probably a useful grazing species.

PHOTOS: Bat 117; Coll 378¹; Jong 67.

Eragrostis ciliaris (L.) R. Br.

GROWTH FORM: Annual grass. Fl. Feb–Mar.

STATUS: Native. ?Local. Also recorded: UAE.

HABITAT & DISTRIBUTION: Occasional in fine soils in depressions, often under trees.

PHOTOS: Bat 117; Coll 379¹.

Eragrostis pilosa (L.) P. Beauv.

GROWTH FORM: Annual grass. Fl. Apr–May.

STATUS: Native. Rare. Also recorded: UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny from a depression at Al Magdah, growing under the shade of *Ziziphus* and *Lycium* bushes.

PHOTOS: Coll 381¹.

Halopyrum mucronatum (L.) Stapf

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Dominates an area of beach sand at Abu Samrah.

USES: Used for fodder (El Amin). Much grazed by livestock, including horses along the coast (Mandaville).

PHOTOS: Coll 385¹; Jong 69; West 161.

Henrardia pubescens (Bertol.) C.E. Hubb.

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Local. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Occasional in rodent in C Qatar; also recorded at Doha.

NOTES: Cope notes that much of the material originally named as this species was in fact *Parapholis incurva* (L.) C.E. Hubb. However, he thinks that *Henrardia pubescens* is also likely to be correctly reported for Qatar based on published descriptions.

PHOTOS: None.

Hordeum murinum L.*Hordeum glaucum* Steud.

GROWTH FORM: Annual grass. Fl. Mar–Apr.

STATUS: Native. Rare. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: Batanouny recorded this taxon from Umm Slal Mohammed growing in small depressions on calcareous ridges. It may also occur as a weed species in cultivated areas, as it does elsewhere in the Gulf.

USES: Mandaville remarks that it is grazed by livestock when young, but is less palatable when maturing due to the hard, sharp awns.

NOTES: The form in the Gulf is currently recognised as *Hordeum murinum* subsp. *glaucum* (Steud.) Tzvelev.PHOTOS: Bat 120; Coll 386¹; Phil 114.**Hordeum vulgare** L.VERNACULAR NAME: barley, *sha'ir*

شعير

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Introduced. Local. Also recorded: Bahrain, E Saudi Arabia.

HABITAT & DISTRIBUTION: Occasional in cultivated fields.

USES: An important crop and fodder plant. Rizk & El-Ghazaly describe the medicinal properties of this species.

PHOTOS: None.

Hyparrhenia hirta (L.) Stapf

VERNACULAR NAMES: blue-stem grass

GROWTH FORM: Perennial grass. Fl. Apr–May.

STATUS: Native. ?Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by El Amin from C and W Qatar, including Dukhan.

USES: Good fodder (El Amin).

PHOTOS: Coll 387¹; Corn 140; Jong 70; Mand 236; Phil 115.**Lasiurus scindicus** Henrard

Plates 98, 102

Lasiurus hirsutus (Vahl) Boiss., comb. illeg.VERNACULAR NAMES: *daHaH*

دحاح

GROWTH FORM: Perennial grass. Fl. Apr–May.

STATUS: Native. Very common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant in shallow sandy areas, including runnels; mainly in C and S Qatar.

PHOTOS: Bat 119; Coll 388¹; Jong 73; Pick 255.**Leptochloa fusca** (L.) Kunth*Diplachne fusca* (L.) P. Beauv. ex Roem. & Schult.

GROWTH FORM: Perennial grass. Fl. May–Nov.

STATUS: ?Introduced. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded by Batanouny in a regularly irrigated lawn of Ramada Hotel, Doha. The species may also potentially occur in other wet habitats.

PHOTOS: None.

Lolium rigidum GaudinVERNACULAR NAMES: rye grass, *simbil*, *rabi'ya*

سمبل, ربيعية

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: ?Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional in Doha gardens and lawns, and in damp cultivated fields. May be native in some areas, but widely naturalised.

USES: Used for fodder (El Amin). Toxicity to sheep and cattle has been reported; ingestion of seed-heads can cause neurological disorders and especially affects the bovine liver (Rizk & El-Ghazaly).

PHOTOS: ElAmin 28, 132¹; Coll 390¹; Jong 74¹.**Ochthochloa compressa** (Forssk.) Hilu

Plate 103

Eleusine compressa (Forssk.) Asch. & Schweinf. ex C. Chr.VERNACULAR NAMES: wire grass, *Sineim*, *Hamrah*

صنيم, حمرة

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to locally abundant in sandy depressions and runnels; mainly SW Qatar, including Al Karaanah.

USES: Good fodder (El Amin).

PHOTOS: ElAmin 132¹; Bat 116; Coll 392¹; Corn 241; Jong 76; West 160.**Panicum turgidum** Forssk.

Plate 104

VERNACULAR NAMES: *thamam/ithmam*

ثمام/إثممام

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Abundant on sand sheets, sandy depressions and other sandy habitats. Especially common in S and SW Qatar, where it is a major component of the natural perennial vegetation. It probably avoids saline sand.

USES: Described as good fodder by El Amin. Mandaville said it was reported that bedouin used this as food during famine. Jongbloed *et al.* note that it was used as a wound dressing. The species is a natural sand binder and could have potential for stabilising sand dunes.PHOTOS: ElAmin 24, 136¹; Bat 118; Coll 396¹; Corn 240; Jong 79; Mand 239; Phil 106, 116; West 161.

Parapholis incurva (L.) C.E. Hubb.

VERNACULAR NAMES: curved hard-grass

GROWTH FORM: Grass. Fl. Not known.

STATUS: Native. ?Rare. First published record: Cope (2007). Also recorded: Bahrain, Kuwait, E Saudi Arabia.

HABITAT & DISTRIBUTION: The typical habitats include seashores; but also found in irrigated lawns and gardens.

NOTES: Cope maps a record for this species over Doha. He notes that much of the material originally named as *Henrardia pubescens* (Bertol.) C.E. Hubb. is this species, though he does accept that *Henrardia* also 'probably' occurs.

PHOTOS: None.

Paspalidium desertorum (A. Rich.) Stapf

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Rare. Not in other Gulf floras.

HABITAT & DISTRIBUTION: Recorded by El Amin from irrigated soils at a large farm.

PHOTOS: Coll 397¹.**Pennisetum divisum** (J.F. Gmel.) Henrard

Plate 105

Pennisetum dichotomum (Forssk.) DelileVERNACULAR NAMES: bristle grass, *theimoom*

ثيموم

GROWTH FORM: Perennial grass. Fl. Apr–May.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant on sand sheets, drifting sand and small dunes, especially in S Qatar.

USES: Batanouny remarks that it is grazed, but not preferred by animals. The species has potential to be used as a sand dune fixer (El Amin).

PHOTOS: ElAmin 25, 136¹; Bat 119; Coll 398¹; Corn 142; Jong 80; Phil 117; West 162.**Pennisetum setaceum** (Forssk.) Chiov.

GROWTH FORM: Perennial grass. Fl. Not known.

STATUS: Native. Rare. First published record: Cope (2007). Also recorded: UAE.

HABITAT & DISTRIBUTION: A plant of rocky areas. The map in Cope shows a locality marked on the west coast.

PHOTOS: Jong 81; Pick 256.

Phalaris minor Retz.VERNACULAR NAMES: small canary grass, *sha'ir al-far*

شعير الفار

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Introduced. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed species of cultivated areas.

USES: Used for fodder (El Amin).

PHOTOS: ElAmin 136¹; Coll 402¹; Jong 83.**Phalaris paradoxa** L.VERNACULAR NAMES: *sha'ir al-far*

شعير الفار

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Introduced. Common. Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: Recorded from gardens and cultivated rodats.

USES: Used for fodder (El Amin).

PHOTOS: Coll 402¹.**Phragmites australis** (Cav.) Trin. ex Steud.*Phragmites communis* Trin.VERNACULAR NAMES: reed, *qaSSab*, *ghab*, *booS*

قصب, غاب, بوص

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Locally dominant as reedbed fringing waste water lagoons and other permanent wetlands, especially at Abu Nakhla and Abu Hamour lagoons; also at Ras Laffan, Mesaieed and Dukhan.

USES: ElAmin notes that it is used for fodder, and also for thatching and firewood. Rizk & El-Ghazaly list many medicinal uses, including in the treatment of leukaemia, cholera, arthritis, coughs, earaches, fevers, nausea and toothache. The rhizome is used for acute arthritis and jaundice.

NOTES: All records for Qatar refer to subsp. *australis*, but subsp. *altissimus* (Benth.) D. Rivera & M.A. Carreras occurs in Saudi Arabia and UAE (Cope).PHOTOS: ElAmin 25; Bat 120; Coll 403¹; Corn 245; Jong 84; Mand 243; Phil 118; West 162.**Poa annua** L.

VERNACULAR NAMES: annual meadow grass

GROWTH FORM: Annual grass. Fl. Jan–Dec.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Reported by Batanouny as a rare weed of lawns.

PHOTOS: Coll 403¹; Jong 85¹.**Polypogon monspeliensis** (L.) Desf.

Plate 106

VERNACULAR NAMES: rabbit-foot grass, annual beard-grass, *dhail al quT*

ذيل القط

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant in damp, sandy places; especially at the edges of irrigation channels and freshwater lagoons. Tolerant of low levels of salinity.

PHOTOS: ElAmin 25; Bat 120; Coll 406¹; Corn 248; Jong 86; West 163.**Rostraria pumila** (Desf.) Tzvelev*Koeleria pumila* (Desf.) Domin; *Lophochloa pumila* (Desf.) Bor

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Sandy habitats; occasional in gardens; Dukhan township, 2007 (JN).

USES: Mandaville and Jongbloed *et al.* note its value as a spring grazing grass.PHOTOS: Coll 407¹; Jong 88.

Schismus arabicus Nees

Plate 109

GROWTH FORM: Annual grass. Fl. Mar–Apr.

STATUS: Native. ?Very common. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: *Schismus* species are frequent to abundant over Qatar in sandy soils. Cope describes the habitat of *S. arabicus* as ‘dry banks, wadi beds and sandy hollows’.

USES: Widely known as an important grazing species across parts of Arabia, due to its abundance after rains.

NOTES: Very closely related to *S. barbatus*; differences are given by Cope. Batanouny listed *S. barbatus* without mentioning *S. arabicus*, whilst El Amin listed as *S. arabicus*, with *S. barbatus* as a synonym. Both are confirmed for Qatar by Cope.PHOTOS: Bat 120; Coll 408[†]; Corn 251.**Schismus barbatus** (L.) Thell.

GROWTH FORM: Annual grass. Fl. Mar–Apr.

STATUS: Native. ?Common. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Described as ‘sandy plains, often overlying limestone’ (Cope).

NOTES: See comments under *S. arabicus*.PHOTOS: Coll 409[†]; Corn 251; Jong 90; Mand 246.**Setaria verticillata** (L.) P. Beauv.VERNACULAR NAMES: rough bristle-grass, *luSeeq*

لصيق

GROWTH FORM: Annual grass. Fl. May.

STATUS: Introduced. Local. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of cultivated land.

PHOTOS: ElAmin 25; Coll 410[†]; Corn 249; Jong 91; Pick 258; West 163.**Setaria viridis** (L.) P. Beauv.

GROWTH FORM: Annual grass. Fl. May.

STATUS: Introduced. Local. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: A weed of damp areas in farms and gardens.

USES: The plant is applied externally for bruises; various medicinal uses of the seed are reported (Rizk & El-Ghazaly).

PHOTOS: Coll 411[†].**Sorghum halepense** (L.) Pers.

VERNACULAR NAMES: Johnson grass

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Introduced. Rare. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded from cultivated fields in C Qatar.

USES: Used for fodder (El Amin). Cultivated as forage in many parts of the world (Mandaville).

PHOTOS: Coll 412[†]; Jong 93.**Sorghum x drummondii** (Nees ex Steud.) Millsp. & Chase

VERNACULAR NAMES: Sudan grass

GROWTH FORM: Annual or short-lived perennial grass. Fl. Not known.

STATUS: Native. First published record: Cope (2007). Also recorded: E Saudi Arabia.

HABITAT & DISTRIBUTION: May occur in farm areas as an escape from cultivation.

USES: Cultivated for fodder.

NOTES: Derived from *Sorghum bicolor* (L.) Moench. and its wild ancestor *S. arundinaceum* (Desv.) Stapf. (Cope).

PHOTOS: None.

Sphenopus divaricatus (Gouan) Rchb.

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Rare. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Previously recorded by El Amin from saline, sandy soils in S Qatar.

PHOTOS: Coll 412[†]; Jong 94[†].**Sporobolus ioclados** (Nees ex Trin.) Nees

Plate 107

Sporobolus arabicus Boiss.VERNACULAR NAMES: *Sakhham, rashad, nejma*

صخام, راشد, نجمة

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Dominant in moderately saline sandy and silty areas, including sabkha edge and other coastal habitats.

USES: Used for fodder (El Amin).

PHOTOS: ElAmin 26, 141[†]; Bat 121; Coll 414[†]; Corn 242; Jong 95; Phil 119; West 164.**Sporobolus spicatus** (Vahl) KunthVERNACULAR NAMES: drop seed grass, *Sakhham*

صخام

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Occasional to frequent in urban areas, particularly irrigated roadside plantations, lawns and gardens; tolerant of salinity.

PHOTOS: ElAmin 136[†]; Coll 416[†]; Corn 251; Jong 96; Phil 120; West 164.**Stipa capensis** Thunb.

Plates 98, 108

VERNACULAR NAMES: spear grass, feather grass, needle grass, *Sama'a*

صمعة

GROWTH FORM: Annual grass. Fl. Apr.

STATUS: Native. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent to abundant and often dominant after winter rains on compact, shallow sandy soils in rocky areas and hamada; also in shallow sandy depressions and runnels.

USES: Batanouny remarks that it is grazed when young, but also that it can be injurious to animals, due to the sharp awns, when fruiting. Mandaville states that it is used as standing hay after fruits have fallen.

PHOTOS: ElAmin 141[†]; Bat 122; Coll 417[†]; Corn 140; Jong 97; Mand 252; Phil 121.**Stipagrostis ciliata** (Desf.) De Winter

GROWTH FORM: Perennial grass. Fl. Feb–Jul.

STATUS: Native. Rare. First published record: Cope (2007). Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Seen only once recently, in W Qatar (S. Aspinall & JN, 2007), growing in compact, silty soil.

PHOTOS: Coll 418^l; Jong 98; Mand 241.

Stipagrostis obtusa (Delile) Nees

VERNACULAR NAMES: *nuSi/naSi*

نصي

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Common. Also recorded: E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in gravel plains, gravelly depressions and other areas with compact soil.

USES: Used for fodder (El Amin).

PHOTOS: Bat 122; Coll 420^l.

Stipagrostis plumosa (L.) Munro ex T. Anderson

Plate 110

VERNACULAR NAMES: *nuSi/naSi*

نصي

GROWTH FORM: Perennial grass. Fl. Apr.

STATUS: Native. Very common. Also recorded: Bahrain, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Frequent in sandy habitats; possibly more so in C and S Qatar.

USES: Noted by several authors to be good fodder for livestock. Mandaville and Batanouny mention it being gathered in Saudi Arabia to supplement grazing, or sold as hay.

PHOTOS: ElAmin 26; Bat 123; Coll 420^l; Corn 237; Jong 99; Phil 122; West 165.

Stipagrostis sokotrana (Vierh.) De Winter

VERNACULAR NAMES: *nuSi/naSi*

نصي

GROWTH FORM: Perennial grass. Fl. Not known.

STATUS: Native. ?Local. First published record: Cope (2007). Endemic to the Arabian Peninsula. Also recorded: Bahrain, UAE.

HABITAT & DISTRIBUTION: Recorded at Ras Laffan (JN, 2004), but the specimen requires confirmation. Locally common here on compact, silty soils; may therefore be more widespread in N Qatar.

PHOTOS: Corn 237; Phil 123.

TYPHACEAE

Typha domingensis (Pers.) Poir. ex Steud.

VERNACULAR NAMES: cat's-tail, reedmace, *bardi*, *booS*, *deeS*

بردي, بوس, ديس

GROWTH FORM: Perennial herb. Fl. May–Aug.

STATUS: Native. Local. Also recorded: Bahrain, Kuwait, E Saudi Arabia, UAE.

HABITAT & DISTRIBUTION: Recorded from a small number of sites by Batanouny. It grows at Abu Nakhla wastewater ponds south of Doha (MAS) and is likely to be more frequent now, due to the increase in permanently wet areas associated with sewage treatment works and irrigation schemes.

USES: Batanouny notes that this species is used for many purposes such as baskets, paper-making and cattle feed in other countries. Ghazanfar reports that the flowers are used as a coolant for burns.

PHOTOS: Bat 14; Coll 720; Corn 257; Jong 104; Pick 260; Shuaib 51; West 167.

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Internet Resources

Aluka

<http://www.aluka.org>

'Digital library of scholarly resources from and about Africa'. Resources for plants are extensive and include photographs of specimens from historical collections.

ePIC (electronic Plant Information Centre) (Royal Botanic Gardens, Kew, UK)

<http://epic.kew.org/>

Provides a convenient way to search IPNI and various resources at Kew, including bibliographies, herbarium collections and seed database.

Euro+Med PlantBase

<http://ww2.bgbm.org/EuroPlusMed/query.asp>

An on-line database and information system for the vascular plants of Europe and the Mediterranean region. At the time of going to press it covered three of the largest families: Asteraceae, Poaceae and Rosaceae, and 29 smaller families.

Global Biodiversity Information Facility (GBIF)

<http://data.gbif.org/welcome.htm>

Provides mapped world distributions for species, based on herbarium records, though these do not include any collections from the Arabian Peninsula.

Global Compendium of Weeds (GCW)

<http://www.hear.org/gcw/>

Useful information on status and world distribution of weed species.

Germplasm Resources Information Network (GRIN)

<http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl?language=en>

Useful general information on taxonomy and world distribution of plants. Covers species occurring in the USA, but includes many species naturalised in Qatar.

International Plant Names Index (IPNI)

<http://www.ipni.org/index.html>

Provides information on plant names and bibliographic details. A collaboration between The Royal Botanic Gardens, Kew, The Harvard University Herbaria, and the Australian National Herbarium.

USDA Plants Database

<http://plants.usda.gov/index.html>

A searchable database of information about the vascular plants and lower plants of the USA and its territories.

Wikipedia

<http://en.wikipedia.org/wiki>

Useful for general information on taxonomy, distribution and uses of many species.

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<i>Blepharis edulis</i>	2	Chloris barbata	74	<i>Coronopus didymus</i>	19	Emex spinosa	58, 78
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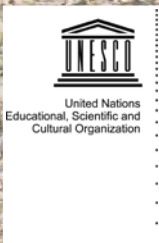
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About this Book

The State of Qatar, situated in the Arabian Gulf, covers over 11,000 km² of land surface and has more than 600 km of coastline. It supports a wide variety of natural habitats including limestone desert, rocky escarpments, coastal saltmarshes, natural depressions filled with fertile sand and silt, gravel plains and sand dunes. Together with various man-made habitats these support a surprisingly rich and varied plant life. This checklist provides details of nearly 400 species of vascular plants that have been recorded in Qatar, including at least 270 that are native and about 125 that are introduced. English and Arabic vernacular names are given where known, together with summary information on rarity status in Qatar; growth form, flowering period, habitat, distribution and uses.

The checklist provides an up-to-date scientific reference for ecologists and others carrying out research on Qatar's habitats and vegetation. Two of the authors are local Qataris, who have studied the flora as part of their academic careers. The checklist updates information published more than 25 years ago by previous botanists working in the country, notably Professor Batanouny who published his *Ecology and Flora of Qatar* in 1981. The checklist will also be useful to local people and visitors interested in the flora of Qatar.

In recent years many of Qatar's natural habitats have come under threat from the inevitable increase in urban, industrial and tourism developments. Many non-native plants have been introduced with food, livestock and forestry imports and some are having detrimental effects on native species. Coastal ecosystems supporting mangroves, saltmarsh and seagrass beds are particularly under threat both in Qatar and other parts of the Gulf. It is important, therefore, that both the native and naturalised flora are monitored to inform impact assessments, ecosystem management and conservation measures. In this regard the Qatar Foundation with support from UNESCO and Maersk Oil Qatar are setting up the Quranic Botanic Garden in Qatar to maintain a living collection of native plants for scientific and educational purposes. These organisations have generously supported the production of this checklist as an important element in biodiversity conservation and environmental education. It is hoped that the checklist will add to the developing knowledge-base of plant taxonomy and vegetation ecology amongst Qatari botanists and stimulate interest and understanding of the natural habitats and flora of Qatar.



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