

**Flora of Eastern Saudi Arabia.** J.P. Mandaville. Kegan Paul International, London and New York jointly with the National Commission for Wildlife Conservation and Development, Riyadh. Pp x + 482; 270 colour photographs. ISBN 0 7103 0371 8. £125.

Mandaville's *Flora of Eastern Saudi Arabia* is an important and scholarly contribution to our knowledge of the Arabian flora. The territory covered approximates to that of the Eastern Province of Saudi Arabia, an area of some 605, 000 square kilometres – over twice that of the United Kingdom. Within this region are found some of the most important oil fields in the world, as well as the Rub' al-Khali or 'Empty Quarter', which is probably the world's largest area of continuous sand cover. The author is a respected authority on the Arabian flora and this work, based on 25 years of field experience, is the first comprehensive account of the flora of eastern Saudi Arabia. Blatter's *Flora Arabica* (1919–1936), an enumeration of the species then known in Arabia, included only 19 records from the region. More recently the Eastern Province was covered by Migahid and Hammoudas' *Flora of Saudi Arabia* (1978) but unfortunately their treatment is far from adequate.

The book is divided into two parts – introduction and taxonomic treatment. The introduction is very readable with comprehensive sections on the history of botanical investigations, topography and geology, climate, phytogeography, the paleoenvironment and vegetation.

The historical section reads like a list of British Arabian explorers including such names as H. St John Philby, Bertram Thomas, Violet Dickson and Wilfred Thesiger. The topography of eastern Arabia is dominated by the great sand deserts of the Rub' al-Khali and a narrow crescent-shaped strip of sand, the Dhana, which forms a natural boundary to the west of the region. The Rub' al-Khali covers in total about 500, 000 square kilometres of which 400, 000 are within the area of the *Flora* and in which 'sand mountains' up to 250m tall are found. The sections on climate provides some interesting statistics. No areas are totally devoid of rain but some parts of the Rub' al-Khali may receive no rain for several years at a stretch. Annual rainfall means range from around 100 mm in the north and north-east of the area to less than 10 mm in the Rub' al-Khali in the south. Temperatures range from 52°C absolute maximum down to -3°C minimum. By any definition the vegetation of the region is sparse and desertic, dominated by very open, dwarf shrublands with many of the more important plant communities characterised by a single, woody species. Few areas are totally devoid of vegetation but over the vast tract of the Rub' al-Khali only 37 species have been recorded.

The taxonomic treatment includes all non-cultivated plants occurring in the region. A detailed floristic breakdown is provided. The flora is not rich, including some 565 species of vascular plant. Of these 392 or 69% are natives of the desert or other undisturbed habitats and the remaining 173 are segetals, ruderals or plants of disturbed places. 73 families are represented; the largest are Gramineae (91 spp.), Compositae (66 spp.) and Leguminosae (50 spp.). There are only three or four endemic species, mainly from the southern, more arid regions.

The format is that of a traditional, manual-style *Flora*. Families are arranged according to Stebbins (1974) and indented keys to families, genera and species are provided.

Species descriptions are usually between five and ten lines long (longer for plants known by the author to be seldom or incompletely described in other works) and, unless otherwise stated, are largely based on the author's own specimens. References to the original publication of plant names are not included and synonymy is kept to a minimum by including only names which are likely to be encountered in the literature since about 1950. The descriptions are followed by concise notes on habitat and frequency. Specimens collected by the author (and a few other collectors) are listed by locality and arranged in eight topographical subregions. Finally the vernacular names of plants are given (using the BGN/PCGN system of transliteration) accompanied by notes on the tribal affiliation of informants and often with the derivation of names, notes on traditional uses and occasional anecdotes. For instance under *Salsola vermiculata* (Chenopodiaceae):

'RUTH (Mutayr, gen., N); reported by Bedouins to be a favourite grazing plant of the camel, and often used for firewood. Many formerly good stands in wadis northwest of our territory have been much depleted by the pressure of these uses. Its importance to the northern tribes is suggested by a folk anecdote that relates how a Rawalah tribesman, upon death, asked his heavenly judge whether RUTH was to be found in paradise. When told that it was not, he replied that in that case, he would simply prefer to go elsewhere'.

Dot maps, giving distribution within eastern Arabia, are provided for a few species and there are three sections of coloured plates containing 270 photographs taken in the field. These are well reproduced and of an excellent standard. Finally, after the main taxonomic text, there is a glossary of botanical terms, gazeteer, bibliography, indexes of vernacular names (in both Arabic and English scripts) and a general index.

I have used the *Flora of Eastern Saudi Arabia* constantly over the last few months and have found it to be, as described on the dust-cover, 'a definitive reference work' which I can fully recommend to anyone interested in the flora of Arabia, or indeed, with an interest in desert floras in general. The book is clearly arranged, attractively finished and solidly bound. My only reservation is the price which – at £125 – is likely to place it beyond the reach of many.

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