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Phytogeographic zones of Dhofar (Southern Oman)

Abstract

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The flora and vegetation of the most interesting phytogeographic zones of Dhofar are briefly described here through a S-N ideal transect starting from the coastal plain by the Arabian sea to the Saudi Arabian border, for about 300 km across.

The remarkable aspects of the flora and vegetation of Dhofar (the southern region of Oman) depend on the concurrent influence of two factors: the monsoon rain and the mountain range extending eastwards parallel to the coast for about 250 km, from the Yemen border to the Gulf of Hasik. From June to September, during the SW monsoon (*Khareef*), the mountains oppose a natural barrier, stopping fog and rain from penetrating inland. The synergetic effects of monsoon moisture and local orography support, on the southern slopes of the mountains a luxuriant vegetation of trees and shrubs, while, on the northern slopes, scarcely or not effected by the monsoon, the soil is covered by isolated trees and shrubs. The northern slopes gradually sink into a dry plateau, followed by a succession of cliffs and gullies dissected by numerous wadis, northwards crossing a vast desert area with gravel plains combined with rocky hills. Towards the Saudi-Arabian border, rocky deserts change into sandy deserts of level lands and dunes, with sporadic or no vegetation at all (further information in Radcliffe-Smith 1980; Miller & Morris 1988).

An ideal transect from south northwards (Fig. 1), from the coastal plain by the Arabian Sea to the southern slopes of the coastal range, and then descending gradually through the dry plateau and the vast desert area down to the Saudi-Arabian border (for about 300 Km across), shows the most interesting phytogeographic zones of Dhofar as described here below.

1. *The coastal plain.* – It is characterized by sandy shores and steep rocky cliffs. The sandy shores (Rakhyut, Al Mughsail (Fig. 2a), Khor Rori, Mirbat, Sadh, Habdin, Hasik (Fig. 2b) are sparsely covered with a vegetation consisting mainly of *Cyperus conglomeratus* Rottb., *Ipomoea pes-caprae* (L.) R. Br., *Urochondra setulosa* (Trin.) C.E. Hubb., *Atriplex farinosum* Forssk., *Dichanthium micranthum* Cope, *Heliotropium fartakense* O. Schwartz, *Salsola imbricata* Forssk., *Suaeda vermiculata* J. F. Gmel. and *Aerva javanica*

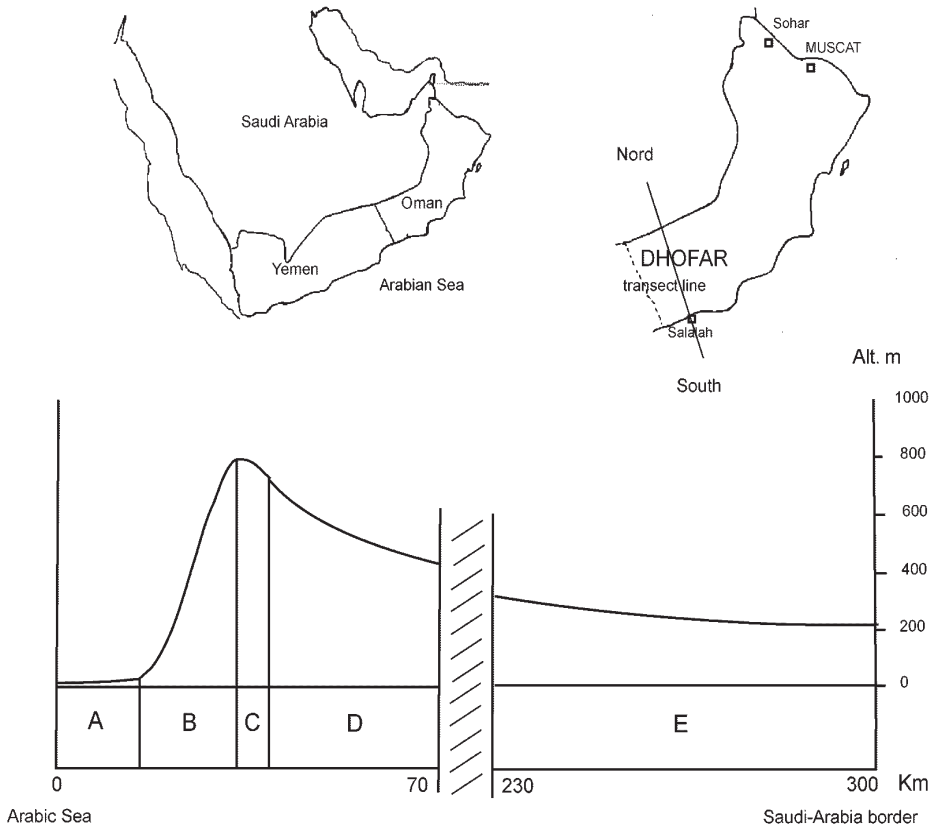


Fig. 1. Transect from south northwards, from the Arabian Sea to the Saudi-Arabia border (for about 300 Km across); the most interesting phytogeographic zones of Dhofar are shown: **A**) coastal plain; **B**) southern mountain slopes; **C**) northern mountain slopes; **D**) pre-desert area; **E**) desert area.

(Burm. f.) Juss.. On the rocky cliffs there are shrubs such as *Salvadora persica* (L.) Garcin. and halophilous herbs like *Limonium axillare* (Forssk.) Kuntze and succulents such as *Caralluma flava* N.E. Br., *Sansevieria ehrenbergii* Schweinf., *Adenium obesum* (Forssk.) Roem. & Schult, *Aloe dhufarensis* Lavranos and the tiny *Euphorbia hadramautica* Baker, particularly abundant in the area of Raysut (*locus classicus*).

2. *The southern slopes of the coastal mountains.* – Due to the monsoon effects, the slopes and valleys of the coastal range facing the Arabian Sea are covered with dense woodlands. Up to 400-500 m of altitude there are deciduous trees and shrubs like *Anogeissus dhofarica* A. J. Scott and *Blepharispermum hirtum* Oliv., and spiny or intricately branching plants belonging to *Acacia* sp. pl., *Cadaba* sp. pl., *Commiphora* sp. pl. At this altitude the woodland shows a marked seasonal difference due to the succession of moisture or drought (Figs 2c, 2d). At higher altitudes, up to 800-900 m, instead, the wood-

land is dominated by semideciduous or evergreen trees and shrubs (with *Olea europea* L. subsp. *cuspidata* (G. Don) Ciferri and *Euclea racemosa* Murr. subsp. *schimperi* (A. DC.) F. White dominating), so that, even in the dry season, the vegetation looks much the same all the year round, although a little less luxuriant during the dry period.

On the southern escarpment over Salalah and climbing towards Gadow, the woods are inhabited by *Cordia nevillei* Alston, *Olea europea* subsp. *cuspidata*, *Euclea racemosa* subsp. *schimperi*, *Anogeissus dhofarica* and numerous shrubs of *Blepharispernum hirtum*, *Jatropha dhofarica* A. R.-Sm., associated with vines such as *Cissus quadrangularis* L., *Luffa acutangula* (L.) Roxb., *Cucumis sativus* L.. During the monsoon season, the herbs cover consists of *Impatiens balsamina* L., *Gladiolus ukambanensis* (Baker) Marais, *Plectranthus barbatus* (Andr.) Benth. and quite a number of grasses.

Climbing towards Tawi Attayr (east of Salalah), but at low altitude, the scrubland, is formed by *Jatropha dhofarica*, *Blepharispernum hirtum*, *Euphorbia cactus* Ehrenb. ex Boiss. and *Cistus quadrangularis* together with isolated trees of *Delonix elata* (L.) Gamble and *Sterculia africana* R. Br . (Figs. 2e).

Crossed the road leading to Tawi Attayr, near wadi Hinna, there is a little wood of *Adansonia digitata* L. (baobab tree), with *Anogeissus dhofarica*, *Tamarindus indicus* L. and *Ficus sycomorus* L..

In the cooler and more elevated valleys of the southern escarpments there are pure woods of *Anogeissus dhofarica* with an undergrowth of tall herbs, mainly grasses and composites.

3. *The northern mountain slopes towards Thumrayt.*- In this north-facing area (900-700 m), beyond the coastal chain, the effect of the monsoon moisture fades away. The shrubby vegetation consists mainly of *Commiphora* sp. pl., many succulents such as *Euphorbia balsamifera* Ait., *E. cactus* (Fig. 3a), *E. badramautica*, *Aloe dhofarensis*, *Adenium obesum* and *Caralluma flava*, together with annual and perennial herbs like *Kleinia saginata* Halliday (Fig. 3b), *Pancratium maximum* Forssk., *Heliotropium longiflorum* (A. DC.) Jaub. & Spach, *Farsetia longisilqua* Decne. and *Moricandia sincaica* (Boiss.) Boiss. Individual plants of *Dracaena serrulata* Baker are locally abundant in the highest part of the dry plateau.

4. *The pre-desert area.* - Further inland, passed the dry plateau, there is a large area gently sloping from 700 to 400 m of altitude, marked by small, rounded, rocky, hills and low depressions excavated by numerous northwards draining wadis. The vegetation becomes scarcer with scattered trees, shrubs and discontinuous herbs. This is the growth area of *Boswellia sacra* Flueck., the frankincense tree (Fig. 3c). Besides the *Boswellia* trees (Fig. 3d), that are predominant, there are rare plants of *Acacia pachyceras* O. Schwartz and some herbs like *Commicarpus boissieri* (Heimerl) Cufod., *Arnebia hispidissima* (Lehm.) DC., *Vernonia arabica* F. G. Davies, *Centaurea pseudosinaica* Czerep., *Pulicaria jaubertii* E. Gamal-Eldin, *Cleome austroarabica* D. F. Chamb., *Euphorbia larica* Boiss., *Fagonia schweinfurthii* (Hadidi) Hadidi and *Convolvulus histrix* Vahl. (see also Raffaelli & al. 2003).

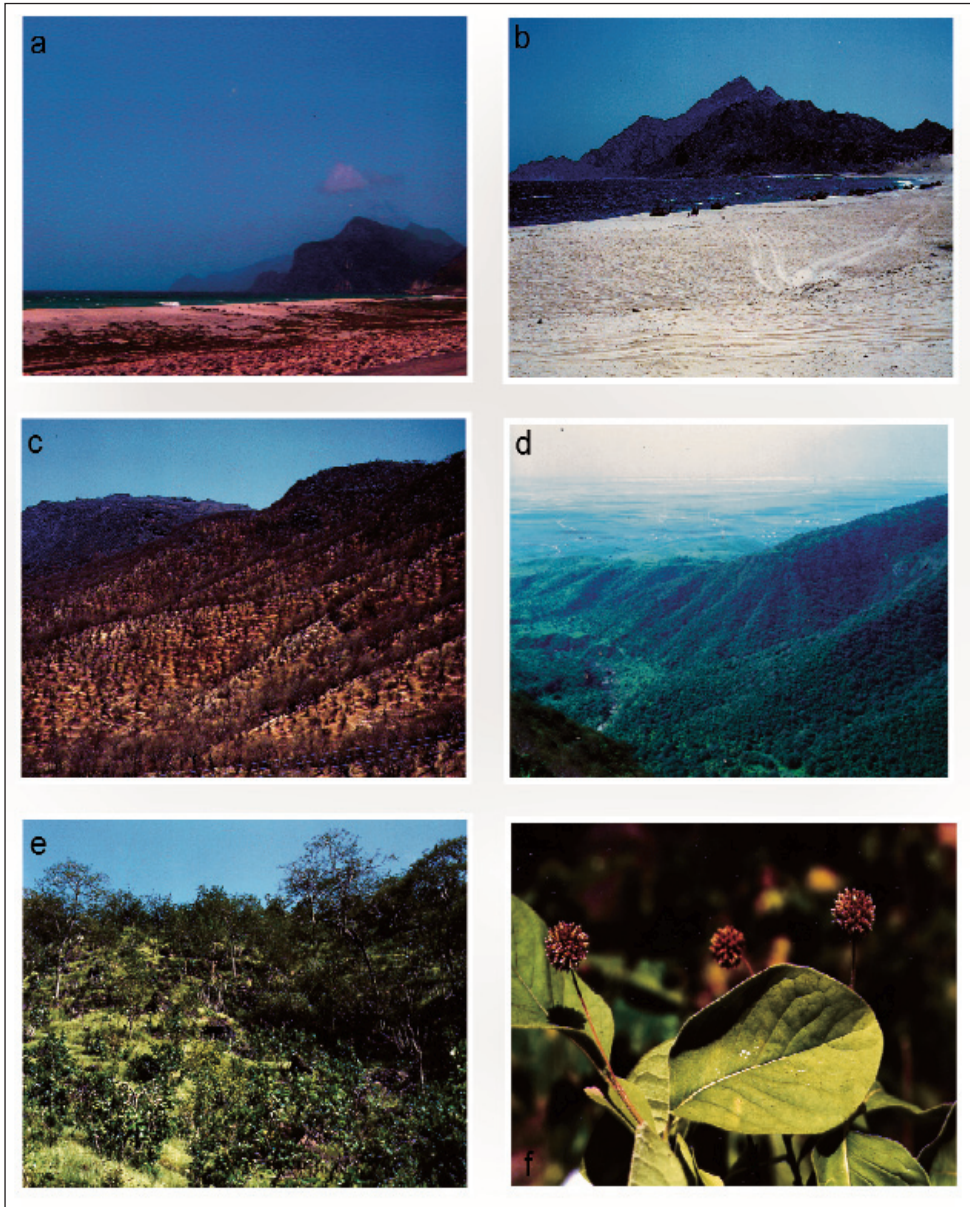


Fig. 2. **a)** Costal plain, sandy shore and rocky coast near Al Mughsayl; **b)** near Hasik; **c)** Woodlands on the southern mountain slopes behind Salalah during the dry season (April), note the trees lacking leaves and no herbs cover on the ground; **d)** Woodlands with *Anogeissus dhofarica*, *Blepharisperrum hirtum* and *Ormocarpum dhofarense* at the end of the monsoon season (August), note the luxuriant cover of trees and herbs; **e)** Scrubland near Ain Raizat with *Jatropha dhofaricha*, the plant with the yellow green leaves, and *Delonix elata*, on the top of the hill; **f)** Fruits and leaves of *Blepharisperrum hirtum*, a common shrubs on the southern mountain escarpments.

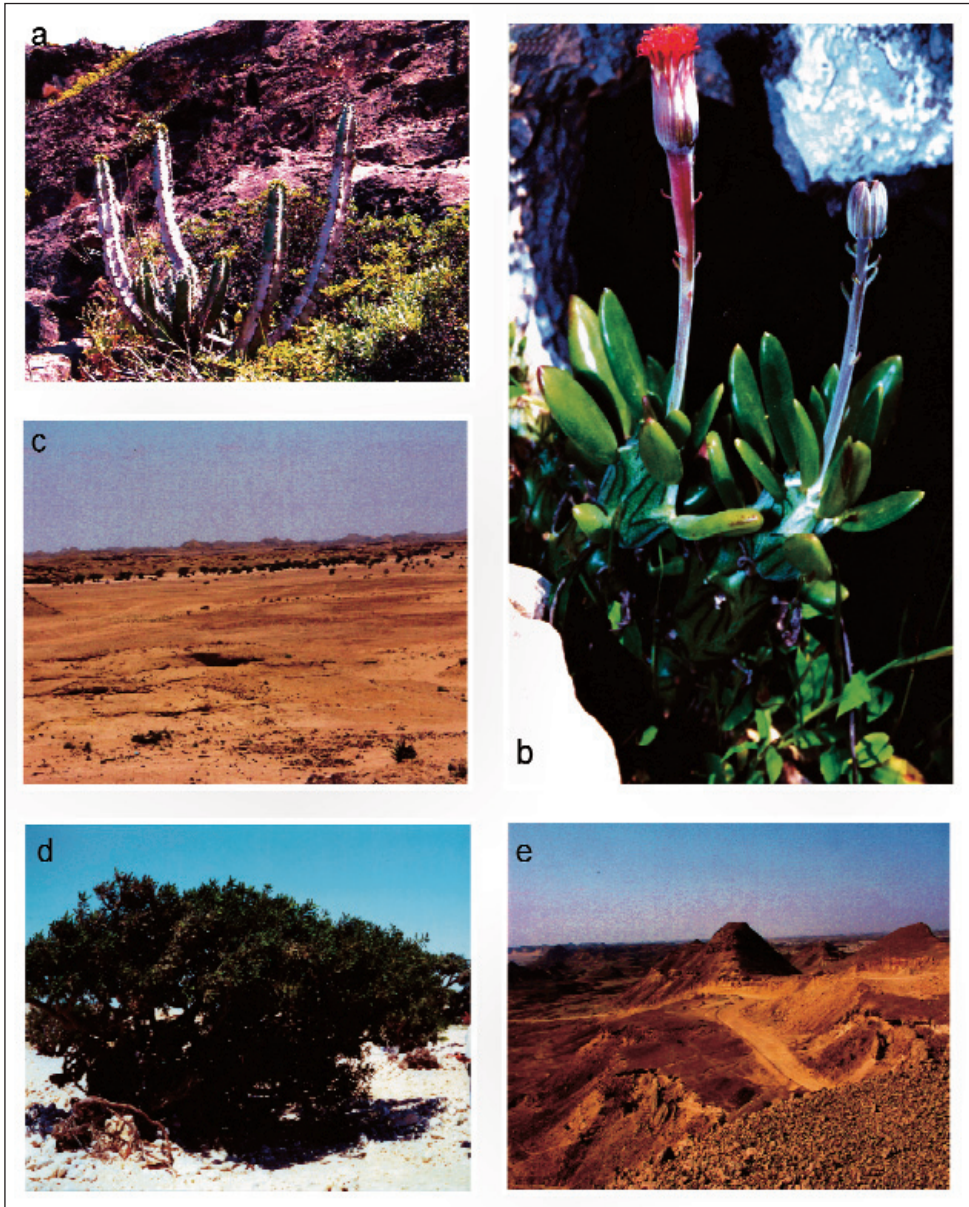


Fig. 3. **a)** *Euphorbia cactus* on the northern slopes of the coastal mountains, near Aqabat al Hatab; **b)** *Kleinia saginata*, a common succulent of the mountain northern slopes near Aqabat al Hatab; **c)** The pre-desert area near Wadi Dowkah (the frankincense Park), 42 Km north of Salalah; the plants of *Boswellia sacra* are concentrated in the wadi bed; **d)** An old tree of *Boswellia sacra* at Wadi Dowkah, the plant is 4,5 m high; **f)** Rocky round hills and pebbly plains in the desert area of north Dhofar, the vegetation is quite absent.

5. *The desert* .- Moving from Thumrayt, 200 km northwards to the Saudi-Arabian border, descending from 400 to 250 m of altitude, we meet a desert-looking land, characterised by low round-shaped rocky hills and pebbled plains alternated with flat sandy areas (Fig. 3e). The vegetation is sporadic or completely absent; some bushes of *Sarcostemma viminalis* (L.) R. Br. and rare shrubs of *Prosopis cineraria* (L.) Druce are present. In the whole area there are numerous large wadis; scattered trees of *Acacia pachyceras*, rare bushes of *Periploca visciformis* (Vatke) K. Schum. and succulent species of *Zygophyllum* sp. pl. grow along the wadis. Locally, in the rare humid areas, the palm *Nannorrhops ritchieana* Griffith can develop.

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