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Three arboreal species new to the Eastern Desert of Egypt

LOUTFY BOULOS
&
JOSEPH HOBBS

RÉSUMÉ

BOULOS, L. & J. HOBBS (1986). Trois espèces arborées nouvelles pour le désert oriental d'Égypte. *Candollea* 41: 183-191. En anglais, résumé français.

Olea indica Burm. f., *Acacia albida* Del. et *Haloxyton persicum* Bunge sont signalés pour la première fois dans le désert oriental d'Égypte. La nomenclature de *O. indica* est discutée. Des notes écologiques, phytogéographiques et ethnobotaniques sont ajoutées pour les trois espèces.

ABSTRACT

BOULOS, L. & J. HOBBS (1986). Three arboreal species new to the Eastern Desert of Egypt. *Candollea* 41: 183-191. In English, French abstract.

Olea indica Burm. f., *Acacia albida* Del. and *Haloxyton persicum* Bunge are reported for the first time from the Eastern Desert of Egypt. The nomenclature of *O. indica* is discussed. Ecological, phytogeographical and ethnobotanical notes are given for the three species.

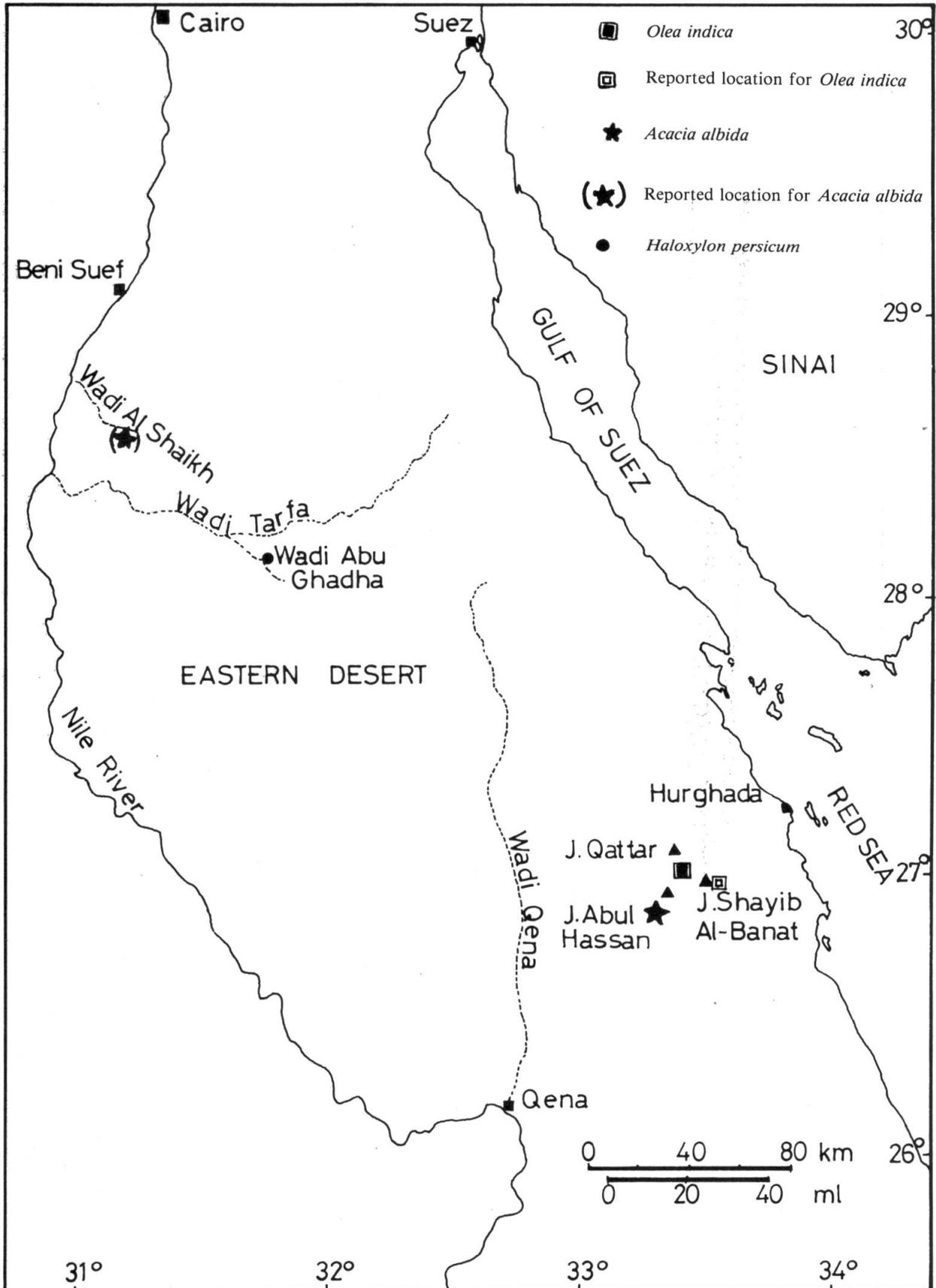
Several field trips were carried out by the co-author (J. H.) in the Eastern Desert of Egypt in 1983 and 1984; over 300 numbers were collected from different localities and habitats. These include 159 species of flowering plants and one gymnosperm. Miscellaneous observations, including ethnobotanical information, were recorded from the bedouins in the study area. The specimens were identified by the senior author and deposited in the Herbarium of National Research Centre, Dokki, Cairo (CAIRC).

Among the species collected, the following three arboreal species are reported for the first time from the Eastern Desert of Egypt: *Olea indica* Burm. fil., *Acacia albida* Del. and *Haloxyton persicum* Bunge. The nomenclature of *Olea indica* is discussed and ecological and phytogeographical notes given for the three species.

1. *Olea indica* Burm. f., Fl. Ind. 6 (6 April 1768).

- = *O. africana* Mill., Gard. Dict. ed. 8, Olea 4 (16 April 1768).
- = *O. chrysophylla* Lam., Tab. Encycl. 1: 29 (1791).
- = *O. chrysophylla* Lam. var. *aucheri* Chev., Rev. Intern. Bot. Appl. Paris 28: 303-304. 18 (1948).
- = *O. aucheri* (Chev.) Ehrend., Anz. Math.-Nat. Kl. Österr. Akad. Wiss. 97: 155-158 (1960).
- = *O. europaea* L. subsp. *africana* (Mill.) P. S. Green, in GREEN & KUPICHA, Kew Bull. 34: 69-70 (1979).

Other synonyms with type citations are given by Green in GREEN & KUPICHA (1979). Green (l.c.) proposed a subspecific status for this species and made a new combination *Olea europaea* L. subsp. *africana* (Mill.) P. S. Green. He justified his new combination on the basis of the difficulty in separating the African plants from *Olea europaea* without fruit and without knowing the provenance of the specimen. He added that his new combination at sub-specific rank enabled the now well-known epithet *africana* to be retained in use, whereas at specific rank it would have to



Map 1. — Distribution of *Olea indica*, *Acacia albida* and *Haloxylon persicum* in the Eastern Desert of Egypt.

give way to the almost completely overlooked name *Olea indica* Burm. f. He added that the type of *O. indica* was almost certainly collected in South Africa and mistakenly attributed to the East Indies, as the plant has never been refound in Java where the type specimen was said to have been collected.

The name *Olea indica* Burm. f. has already been adopted for our species by MEIKLE (1985); it has priority over *O. africana* Mill., *O. chrysophylla* Lam. and the synonyms given above, as well as those given by GREEN (1979). The reason why a specific rather than infraspecific rank may be used is that *Olea indica* and *O. europaea* L. occupy completely different geographical areas: the first is tropical and subtropical, the second is Mediterranean. According to TURRILL (1952) *Olea chrysophylla* (which is synonymous with *O. indica*) is known from Central, East and North East Tropical Africa, South Africa, Mascarenes, east and northern India and western China; it is also known from Arabia (MIGAHID, 1978 and RADCLIFFE-SMITH, 1980) and Iran (MURRAY, 1968). On the other hand, the cultivated olive (usually called *O. europaea* L. var. *europaea* by most authors and called *O. europaea* L. subsp. *europaea* var. *sativa* Loudon by GROHMANN, 1974) is Mediterranean, and the wild olive, *O. europaea* L. var. *sylvestris* (Mill.) Brot., is East Mediterranean (FEINBRUN-DOTHAN, 1978).

No matter what the correct nomenclature is for the wild olive, which is cited differently by different authors [var. *sylvestris* Brot. (do Amaral Franco & da Rocha Afonso, in TUTIN & al., 1972); var. *sylvestris* (Miller) Lehr. (Yaltirik in DAVIS, 1978 and Critopoulos in TOWNSEND & GUEST, 1980); var. *oleaster* (Hoffmg. & Link) DC. (Siddiqi in JAFRI & EL-GADI, 1977); or at subspecific rank (cf. MEIKLE, 1985): subsp. *sylvestris* [silvestris] (Mill.) Hegi; subsp. *oleaster* (Hoffmg. & Link) Negodi] there is general agreement that the wild and cultivated olives are one and the same species: *Olea europaea* L.

If some sterile specimens of *Olea indica* and *O. europaea* are difficult or even impossible to separate, as Green (l.c.) states, this would not justify subspecific rank for *O. indica* (under *O. europaea*) especially when both taxa have fruits different in size, shape and taste. TÄCKHOLM



Fig. 1. — Saleh Ali stands before the formerly largest specimen of *Olea indica*. The two main trunks had been cut for charcoal production some 35 years ago. The tree now assumes a dwarf growth-form. Above his head may be seen the lesser of the main trunks, Jebel Qattar (photo J. Hobbs).



Fig. 2. — Close-up of the “normal” growth form of *Olea indica* with Suliman Saleh, Jebel Qattar (photo J. Hoobs).

(1974) and MIGAHID (1978) describe the fruit of *O. indica* (cited *O. chrysophylla* by them) as a purple almost globose drupe of sweet taste, while it is well known that the fruit of *O. europaea* is different in shape and of a bitter taste. Mrs. Sheila Collenette (private communication) confirms the sweet taste of *O. indica* fruits from her field experience in Saudi Arabia.

It is also well known that the size and oil content vary between wild and cultivated olives. ZOHARY & SPIEGEL-ROY (1975) write: “The two main traits that characterize olives under domestication and set them apart from their wild relatives are a larger fruit size and a higher oil content”.

Again, TURRILL (1952) writes: “A species with so wide a range as *O. chrysophylla* may be expected to show considerable variation... An account of the species, with special reference to African material is given by CHEVALIER... (1948)”. CHEVALIER (l.c.) enumerates several African varieties:

- *Olea chrysophylla* Lam. var. *chrysophylla* (as var. “euchrysophylla Chev.”): East Africa from Eritrea to Zambesia Mountains, Madagascar and Reunion Island.
- *O. chrysophylla* var. *somalensis* (Baker) Chev.: Somalia.

- *O. chrysophylla* var. *nubica* (Schweinf.) Chev.: Erkwit Mountain (Northeast Sudan, Red Sea hills and eventually Jebel Elba, Southeast Egypt).
- *O. chrysophylla* var. *albida* Chev.: Yemen (Arabia).
- *O. chrysophylla* var. *aucheri* Chev.: Djebel (Jebel) Akhdar, Oman (Arabia).
- *O. chrysophylla* var. *ferruginea* (Royle) Chev.: India (Northwest Himalayas), Kashmir, Punjab, Afghanistan and Baluchistan.

GASPARE & MADDALENA (1979), in their survey of the species of *Olea* morphologically close to *O. indica* Burm. f. (*O. chrysophylla* Lam. in the text), found a remarkable likeness between it and the African species: *O. excelsa* Ait., *O. hochstetteri* Bak., *O. laurifolia* Hoch. (non Lam.) ex Bak., *O. kilimandscharica* Knobl. and *O. mussolinii* Chiov. They add: "The remarkable likeness they have with *O. chrysophylla* Lam. is not enough to consider them as heterotypic of the latter".

From the above, it is apparent that *Olea indica* Burm. f. is a well-defined species, with geographical races widely distributed in tropical and subtropical Africa and Southwest Asia; it is more closely related to the African element of *Olea* rather than to the Mediterranean *Olea europaea* L.

***Olea indica* Burm. f.**

Jebel Qattar, 50 km southwest of Hurghada, 2500-3000 ft., east facing slope, 20 April 1983, Hobbs 44 (CAIRC).

The trees grow on steep slopes of precambrian granites at edges of a small tributary, associated with *Launaea spinosa* (Forsskål) Sch. Bip., *Periploca aphylla* Decne., *Lycium shawii* Roem. & Sch. and *Pistacia khinjuk* Stocks; the latter species was represented by a single dead plant.

Six specimens of *Olea indica* are recorded from this locality. The altitudinally lowermost was by far the largest; its trunk (circumference ca. 1 m) had been chopped off by an axe probably some 30 years ago for charcoal. This plant has a stunted growth, almost hedge-like in habit, commencing around the base of the trunk. The other five plants grow in a smaller, steeper tributary, about



Fig. 3. — A flowering branch of *Olea indica*, Jebel Qattar (photo J. Hobbs).



Fig. 4. — The stand of *Acacia albida* at Jebel Abul Hassan (photo J. Hobbs).

Fig. 5. — Close-up of *Acacia albida* at Jebel Abul Hassan (photo J. Hobbs).

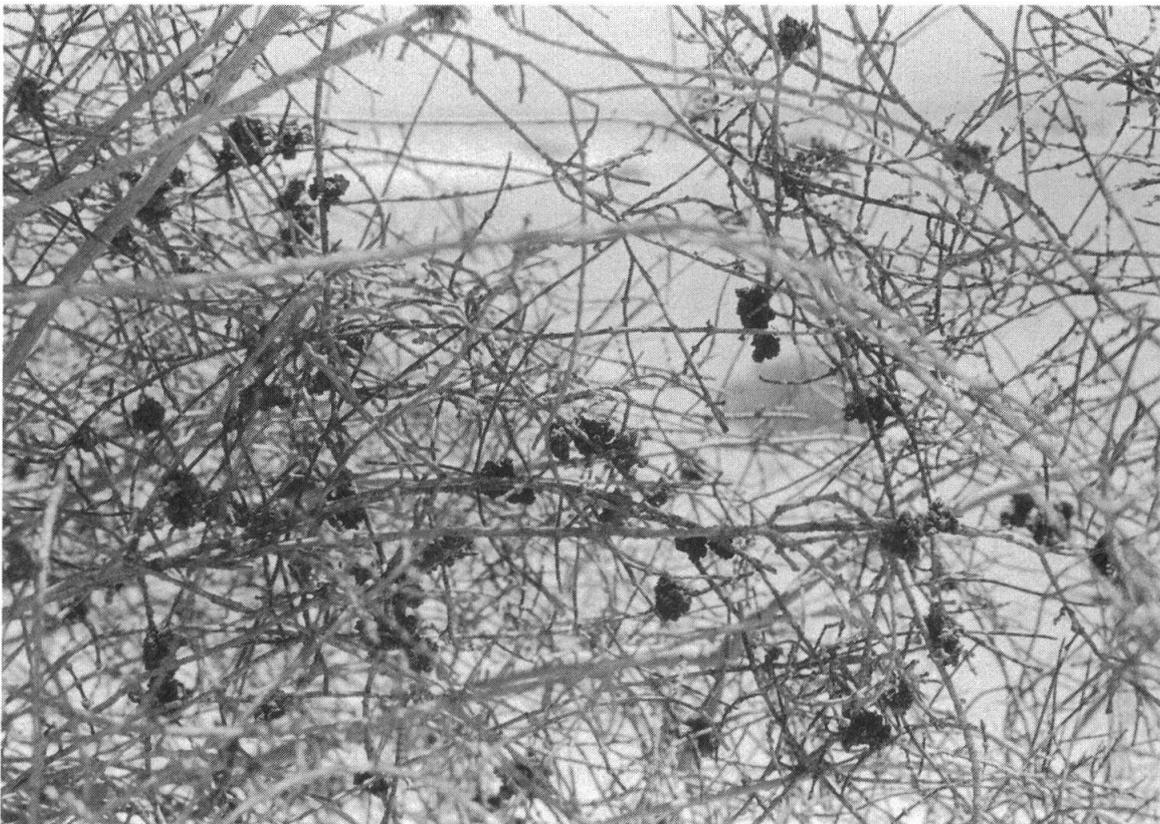
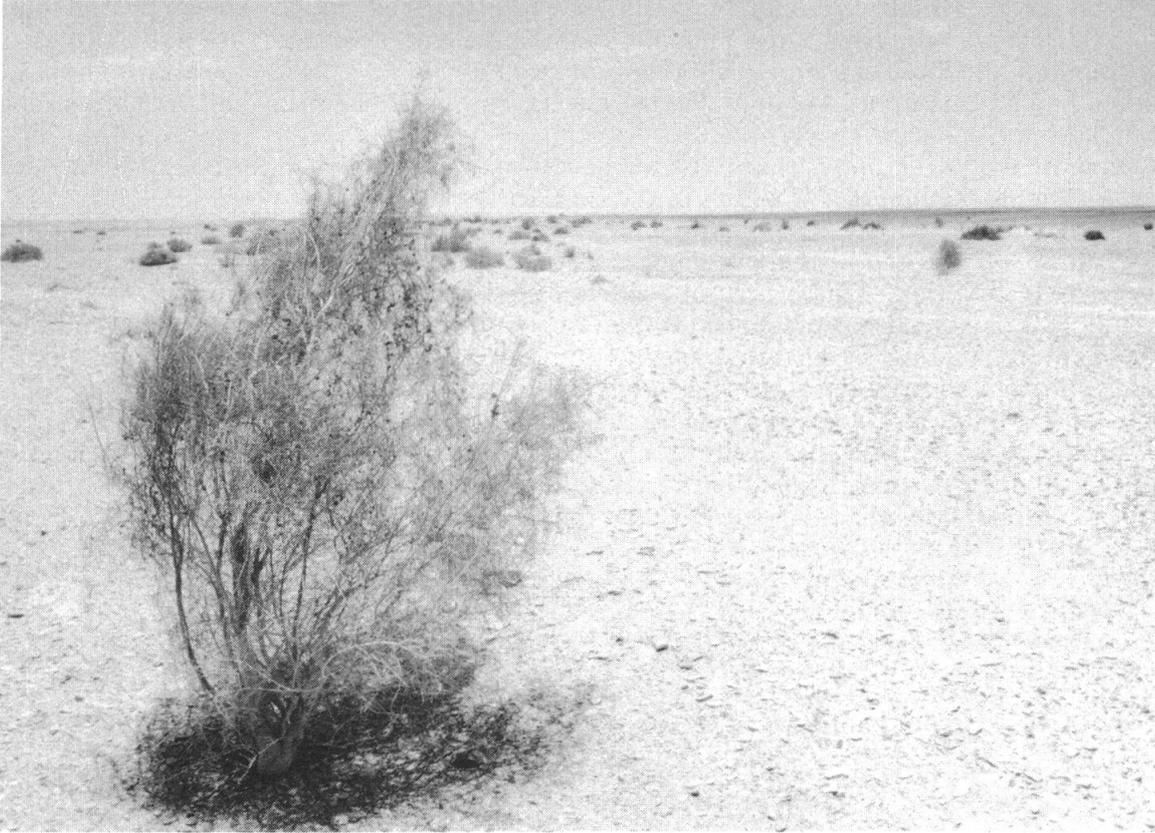


Fig. 6. — *Haloxylon persicum* and its habitat at Wadi Abu Ghadha (photo J. Hobbs).

Fig. 7. — A close-up of *Haloxylon persicum* at Wadi Abu Ghadha, notice the insect galls on the branches (photo J. Hobbs).

400 m higher; two of these were dead, one had been badly damaged many years ago by charcoalers and two possess normal growth, reaching about 3 m in height. These trees are now "protected" by the "modern" Bedouin of the area, although conservation was not always the norm. The largest individual had a trunk about 45 cm in diameter at the base, and had been cut for charcoal some 35 years ago.

One more tree of *O. indica* is said (by the bedouin) to be growing in the neighbouring Jebel Shayib Al-Banat, the highest mountain in the Eastern Desert of Egypt (2187 m).

Olea indica is described as a common evergreen tree in the mountain gullies of Jebel Elba, Egypt (TÄCKHOLM, 1974). The few small trees of *O. indica* in Jebel Qattar, probably a relic of a previously more luxuriant vegetation, represent the northernmost locality of the species in Africa; Jebel Elba, which was previously known to be its northern limit, is ca. 700 km southwest of Jebel Qattar. Although seemingly a part of the Eastern Desert of Egypt, Jebel Elba has its characteristic vegetation rich in arboreal species, and is classified as a separate phytogeographical region by TÄCKHOLM (1974), and a separate ecological territory by WICKENS (1977). Jebel Elba, considered as a northern extension of the Red Sea Hills (WICKENS, l.c.), thus represents the northern limit for some arboreal elements characteristic of the East African and often the Southwest Arabian domains, such as: *Olea indica* Burm. f., *Euclea schimperi* (A. DC.) Dandy, *Delonix elata* (L.) Gamble, *Boscia angustifolia* A. Rich., *Acacia asak* (Forsskål) Willd., *Commiphora opobalsamum* (L.) Engl., *Grewia tenax* (Forsskål) Fiori, *Dodonaea viscosa* Jacq., *Sterculia africana* (Lour.) Fiori, etc.

2. *Acacia albida* Del., Fl. Aegypt. 142, t. 52, (1813).

Synonyms and type citations are given by WICKENS (1969). Local vernacular name: Haraaz.

Jebel Abul Hassan, 65 km southwest of Hurghada, 1500-2000 ft., on a terrace above a large wadi in the interior of a red granite massif, 18 May 1983, *Hobbs 22* (CAIRC). A small permanent water source is located 60 m upstream, but does not flow to the Acacias. The species growing in the vicinity of *A. albida* are: *Launaea spinosa* (Forsskål) Sch. Bip., *Lycium shawii* Roem. & Sch., *Artemisia judaica* L., *Calligonum comosum* L'Hérit., *Pulicaria crispa* (Forsskål) Oliv., *Zilla spinosa* (Turra) Prantl, *Zygophyllum coccineum* L., *Lavandula stricta* Del., *Citrullus colocynthis* (L.) Schrader, *Acacia raddiana* Savi, *Fagonia tristis* Sickenb. and *Cleome droserifolia* (Forsskål) Del.

About 35 individuals form a "grove", with a total extent of about 300 square metres, in a linear arrangement on one side of and just above the torrent wadi bed. Most of the plants (26) are small trees, up to 3 m high, the rest are smaller. The Ma'aza Bedouin of the Red Sea Mountains who are familiar with the flora of this region also report *A. albida* from Wadi Al-Sheikh (ash-Shaykh) southeast of Beni-Suef.

According to WICKENS (1969) and TÄCKHOLM (1974), *Acacia albida* is restricted in Egypt to the Nile Valley region. TÄCKHOLM (l.c.) refers to uncertain records from Egypt in the Oases, Eastern Desert (southern region, not our area), Western Desert and Jebel Elba. The distribution map given by WICKENS (l.c.) confirms its distribution within the Nile Valley and not elsewhere in Egypt. Our record, therefore, is the first authentic finding from the Eastern Desert of Egypt. WICKENS (l.c.) gives a detailed description of the plant as well as its chromosome number, pollen, anatomy, geographical distribution, ecology, history, life history, pests and diseases, economic importance and an up-to-date literature list. The vegetative anatomy of *A. albida* is given by CUTLER (1969).

3. *Haloxylon persicum* Bunge in Buhse, Nouv. Mem. Soc. Nat. Mosc. 12: 189 (1860). Local vernacular name: Ghadha.

Wadi Abu Ghadha, southern tributary of Wadi Tarfa (facing Minya), growing along a 12 km stretch, 1000-1200 ft., 7 May 1983, *Hobbs 106* (CAIRC).

This tributary of Wadi Tarfa is shallow, with a low terrace, hardly 1.5 m high. *Haloxylon persicum* grows on a flat sandy plain with flinty gravel and fragments of limestone. There are no wells in the direct vicinity, but the locality looks like a large catchment area which may assure the regeneration of the plant cover whenever sufficient rain occurs. The species is locally common: the number of specimens was estimated at ca. 1500 in an area 12 km long, with a frequency, in

the portion of the wadi visited, of 12 individuals per 100 m²; some specimens attain 2 metres in height. Associated species are: *Artemisia judaica* L. and *Cornulaca monacantha* Del.

The previous records of *Haloxylon persicum* in Egypt are from Sinai, one from Jebel El-Maghara (Northern Sinai) and two from Southern Sinai (cf. DANIN, 1973). Our new finding from the Eastern Desert of Egypt is probably the southwestern extremity of the total range of the species; it is not known westwards of our locality. ZOHARY (1966) describes the area of *H. persicum* as Irano-Turanian, extending into adjacent Saharo-Arabian territories (in Iraq, N. Arabia and S. Palestine).

Knowing that *Haloxylon persicum* is a rare plant and restricted to the above locality in the Eastern Desert of Egypt, the Ma'aza Bedouin protect it as well as other rare plants. They would impose very heavy, albeit verbal, censure on any kinsman who would destroy them or use them for making charcoal. The Ma'aza know that the wood of *Haloxylon persicum* is an excellent fuel, but learned this only from burning dead material.

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