

73

Avinoam Danin

SPECIES NEW TO SCIENCE DISCOVERED IN SINAI

Notes on Current Research

Avinoam Danin is Senior Lecturer in the Department of Botany at the Hebrew University of Jerusalem. His *Desert Vegetation of Israel and Sinai* was published in 1983 (Jerusalem), while on *Pictorial Flora of Israel* (Hebrew) he collaborated with other scholars from the Hebrew University. Dr. Danin furthermore published numerous articles dealing with Botany in the Eastern Mediterranean region. He is a member of OPTIMA, the International Organization for Plant Taxonomy of the Mediterranean Region. Together with Professor N. Feinbrun of the Hebrew University he is currently revising *Flora Palaestina for An Analytical Flora of Israel*.

Following the research and field collection of plants in the Sinai by a team from the Hebrew University of Jerusalem (1)* a few species not known before were found. The aim of the present paper is to highlight these discoveries.

A few years before the study in Sinai started the present author studied the desert vegetation of the Northern Negev (2, 3). A species of *Origanum* new to science (4) was discovered in an area that was visited by other scientists before. It was growing in smooth-faced outcrops of limestone. This habitat was found to function as a refugium for plants that suffered in other habitats from climatic changes (5). The rock faces contribute considerable amount of run-off water to the crevices and soil pockets whenever it rains. The plants capable of growing in these crevices may enjoy a moisture regime which is typical of the relatively moist Mediterranean territory (2-7). This poorly known habitat has the potential of sup-

porting rare plants extinct in other desert habitats. With this knowledge the botanist may be able to find new and rare plants in already studied areas. Many of the plants that were reported as new records for Sinai were confined to these rocks (8).

Sinai was divided into 12 geomorphological-ecological districts (8, 3) and was surveyed accordingly. There are two districts that have large outcrops of smooth-faced rocks (9): the southern Sinai Massif of plutonic rocks and the anticlines of sedimentary rocks in northern Sinai (Gebel Maghara, G. Halal, and G. Yiallaq).

Enumeration

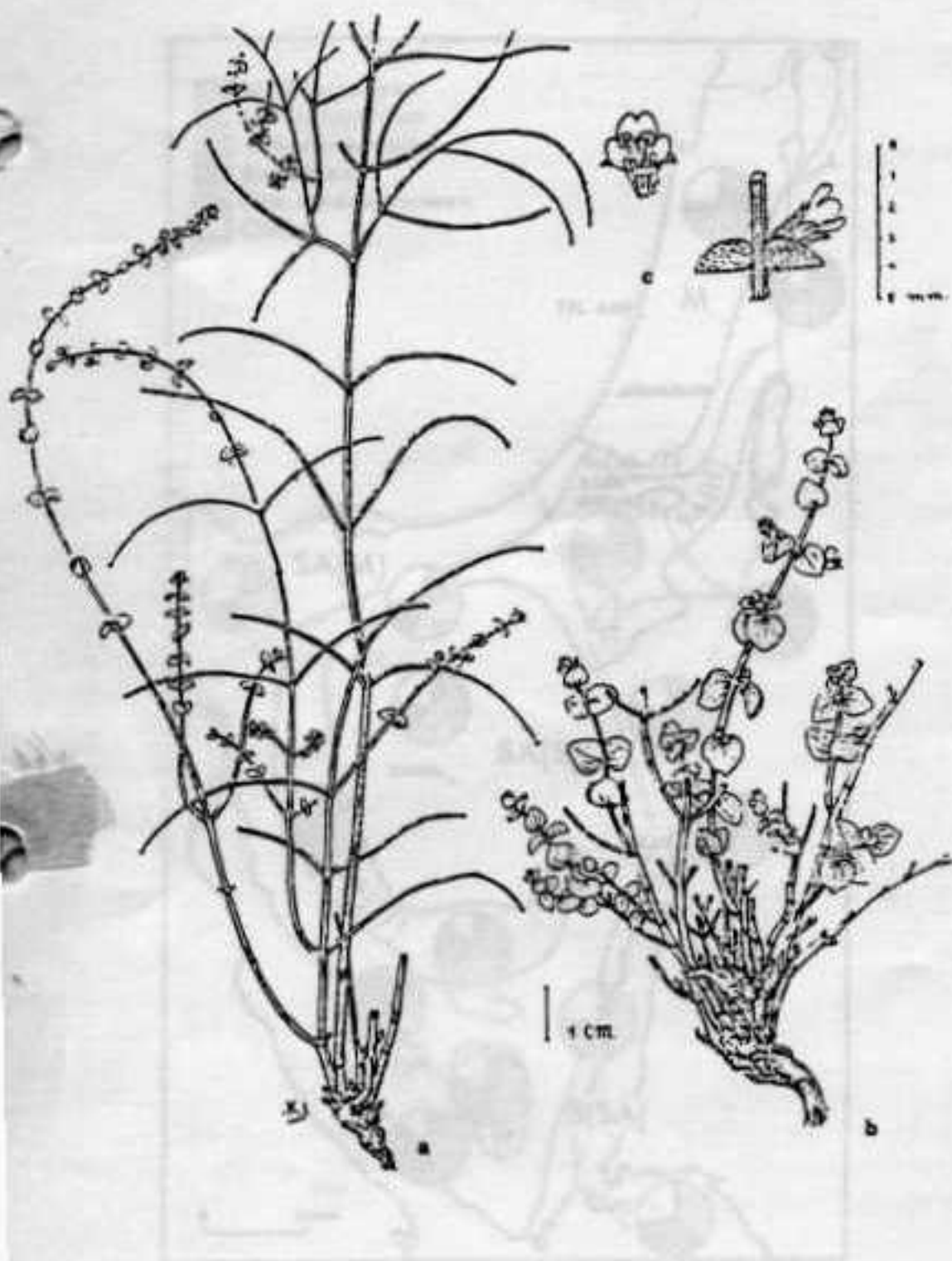
- *Micromeria serbaliana* Danin & Hedge was named after Gebel Serbal, its type locality (10). It was found to be different from the already known species *Micromeria sinaica* and is confined to large smooth outcrops of red granite. It was found first in Gebel Umm Shaumar, but with no flowers that are essential for the full identification of the plant.

- *Brassica deserti* Danin & Hedge was found in central Sinai near Gebel el Igma (10). The soils derived from chalk and marl are extremely dry and salty. The type specimen was collected in a relatively wet year when the soil was locally leached and enabled the plant growth. It resembles other very common *Cruciferae* — namely *Diploaxis harra* that is widely distributed in the Near Eastern deserts.

- A specimen of a plant that was named by us *Ephedra pachyclada* (10) was deposited in the herbarium of the Royal Botanic Garden, Edinburgh, Scotland. Later it became the type for a species named *Ephedra sinaica* Riedl.

- *Origanum isthmicum* Danin was named after the Isthmic Desert of northern Sinai (11). It was found while we studied the relict populations of *Juniperus phoenicea* in Gebel Halal. We observed from far a large outcrop of limestone. Later we found there a very locally growing *Origanum*. As far as we know, it is restricted to an area of some 5 × 2 km of the western escarpments of this mountain range, only in north-facing slopes, in crevices of large

* Numbers appearing in brackets refer to 'Notes and Comments' at the end of this article.



Origanum isthmicum Danin, collected in
Gebel Halal, Northern Sinai

outcrops of smooth limestone and dolomite. It may be that the entire population amounts to 2-3,000 individuals.

- *Reaumuria negevensis* Zohary et Danin was discovered as a result of plant collections in Sinai. Its long known relative, *Reaumuria hirtella*, was not known well enough from Israel. The latter was collected in Sinai and then helped us in understanding the new species *Reaumuria negevensis* (12). This last species was found later in a few places in northern Sinai.

- *Minuartia sinaica* (Boiss.) Danin was discovered on April 5, 1835 by Schimper, who brought his collection to the famous Swiss botanist Edmond Boissier. Boissier described it as *Alsine sinaica* Boiss. Later he thought it deserves to be only a variety of *Alsine picta*. We collected a lot of specimens of the former in Sinai. In 1983, a rainy year in the Negev Highlands promoted the growth of *Minuartia sinaica* (our plant and its related species are included in the genus *Minuartia* at present) on salty loessial soils. *Minuartia picta* is confined there to leached stony or rocky slopes. There are some morphological differences between the two species. We examined the seed coat morphology with scanning electron microscope and found additional diagnostic characters. The type specimen, deposited in Geneva, was studied and we came to the conclusion that it should be regarded as an independent species (13).

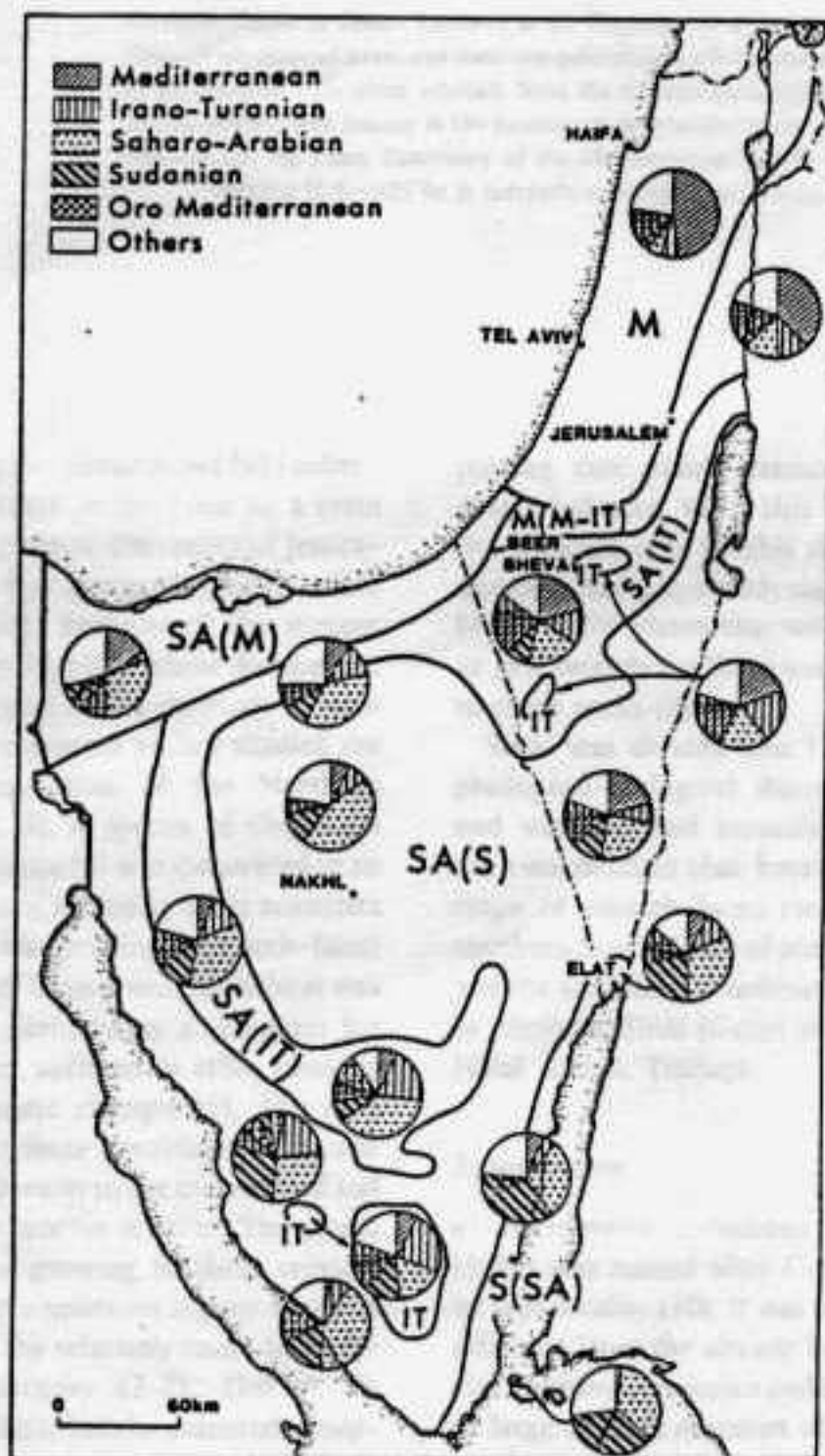
- *Polygala sinaica* Botsch. is a well-known species that grows in Sinai in crevices of granite and sandstone. Specimens found in wadis of gravel plains in the southern Negev near Elat and in central Sinai differed morphologically from those of *P. sinaica*. We compared our specimens in Boissier herbarium, Geneva, with other species from the Near East. Found to differ

significantly, the new taxon was named *Polygala negevensis* after its type locality. It grows in southern Jordan and northwestern Saudi Arabia as well (13).

Additional information on our findings is reported in a checklist (14). A plant geographical map is presented in two other papers (15, 16).

Notes and Comments:

- 1 The team of the Department of Botany was directed by Prof. G. Orshan and included Prof. N.H. Tadmor, Dr. G. Halevy, Dr. A. Shmida, and the present author.
- 2 Danin, A., Orshan, G. and Zohary, M. 1975: 'The Vegetation of the Northern Negev and the Judean Desert of Israel,' *Israel J. Bot.* 24: 118-172.
- 3 Danin, A. 1983: *Desert Vegetation of Israel and Sinai*, Jerusalem.
- 4 Danin, A. 1967: 'A new *Origanum* from Israel, *Origanum ramonense* Danin sp.n.' *Israel J. Bot.* 16: 101-103.
- 5 Danin, A. 1972: 'Mediterranean Elements in Rocks of the Negev and Sinai Deserts,' *Notes Roy. Bot. Gard. Edinburgh* 31: 437-440.
- 6 Danin, A. 1967: '*Varthemietum Iphionoides* Desertorum,' *Israel J. Bot.* 16:53.
- 7 Yair, A. and Danin, A. 1980: 'Spatial Variations in Vegetation as Related to the Soil Moisture Regime over an Arid Limestone Hillside, Northern Negev,' *Oecologia* (Berlin) 47: 83-88.
- 8 Danin, A. 1973: 'Contributions to the Flora of Sinai. II. New records,' *Israel J. Bot.* 22: 18-32.
- 9 Danin, A. 1978: 'Plant species Diversity and Ecological Districts of the Sinai Desert,' *Vegetatio* 36: 83-93.
- 10 Danin, A. and Hedge, I.C. 1973: 'Contributions to the Flora of Sinai. I. New and Confused Taxa,' *Notes Roy. Bot. Gard. Edinburgh* 32: 259-271.
- 11 Danin, A. 1969: 'A new *Origanum* from the Isthmic Desert (Sinai), *Origanum isthmicum* sp. n.' *Israel J. Bot.* 18: 191-193.
- 12 Zohary, M. and Danin, A. 1970: 'The Genus *Reaumuria* in the Near East,' *Israel J. Bot.* 19: 305-313.
- 13 Danin, A. 1987: 'Contribution to the Flora of Israel and Sinai. I. Studies in the Apopetalous Genera *Minuartia*, *Silene*, *Polygala* and *Sedum*,' *Israel J. Botany* (in press).
- 14 Danin, A., Shmida, A. and Liston, A. 1985: 'Contributions to the Flora of Sinai III. Checklist of the Species Collected and Recorded by the Jerusalem Team,' *Willdenowia* 15: 255-322.
- 15 Danin, A. and Plitmann, U. 1987: 'Revision of the Plant Geographical Territories of Israel and Sinai,' *Plant Evolution and Systematics* 150: 43-53.
- 16 Danin, A. 1986: 'Flora and Vegetation of Sinai,' in: *Proc. Roy. Soc. Edinburgh Biol. Ser.* 89B: 159-168.



Phytogeographical Map of Israel and Sinai
(from [15] Danin & Plitmann 1987)