

## *Dirachma socotrana*—back from the brink?

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*Socotra, a small island in the Indian Ocean, is renowned for its remarkable flora. More than one-third of its 750 plant species are endemic, and seven are included in the IUCN Plant Red Data Book. Among these is Dirachma socotrana, which is something of a botanical curiosity. It was described in 1881 but confusion over its vernacular name led to the belief that it was widespread on the island. In 1989 the authors failed to find it in many of the sites where local people said it grew and on a second visit in 1990 the puzzle was resolved with the help of a linguist. In fact the species is apparently confined to one mountain pass. Although it is not immediately threatened it is, like many of the other plants on the island, at risk because of development plans.*

The small Indian Ocean island of Socotra has long been renowned for its fascinating flora, which includes such botanical curiosities as the cucumber tree *Dendrosicyos socotrana* and the dragon's blood tree *Dracaena cinnabari*. Socotra, like many other oceanic islands, contains a large number of endemic plant and animal species. There are approximately 750 species of flowering plants and ferns recorded; of these over 250 are endemic. One of the most interesting of these is *Dirachma socotrana*—one of the seven species from Socotra recorded in the *IUCN Plant Red Data Book* (Lucas and Syngé, 1978), where its status is categorized as endangered. It was considered to be the sole representative of the family Dirachmaceae, which White (1983) gives as the only endemic family in the Somalia–Masai regional centre of endemism and which was, until recently, thought to be endemic to Socotra. However, in 1979 another species was discovered in Somalia. This second species still awaits scientific description.

*Dirachma socotrana* is a small, white-flowered, deciduous tree reaching about 3 m in height. It is something of a botanical curiosity, possessing an interesting mixture of characteristics. For example, the flowers have eight petals, sepals and stamens—an unusual number in flowering plants, while the fruits closely resemble those found in *Geranium*.

*Dirachma socotrana* was originally discov-

ered by a Scottish botanist, Sir Isaac Bayley Balfour, during his pioneering botanical expedition to the island in 1880. He collected only sterile material but was able to complete the description of the plant the following year from flowering material collected by a German explorer and naturalist, Georg Schweinfurth. Balfour was puzzled by the affinities of the genus but on the basis of its *Geranium*-like fruits placed it in the Geraniaceae. Since then botanists have either placed it in a family of its own, the Dirachmaceae (e.g. Hutchinson, 1959), or treated it as an anomalous member of the Geraniaceae (e.g. Cronquist, 1981).

The name *Dirachma* was chosen by Balfour to reflect 'drachmam', the local name for the species given by Schweinfurth. The wood of drachmam was noted for its sweet smell when burnt. In 1989 we found pieces of dried drachmam to be widely available on Socotra. Dead wood (the living tree is never cut) is collected in the mountains and sold in the coastal settlements, where it is highly valued as an incense. We were told that it was quite common in the mountains and were shown pieces of the wood in most houses that we visited.

Balfour (1888) remarked that the species was 'on the slopes of Haghier; not uncommon' and in view of this and the above comments it seemed surprising that the tree was not seen by any other collectors on the island until 1967

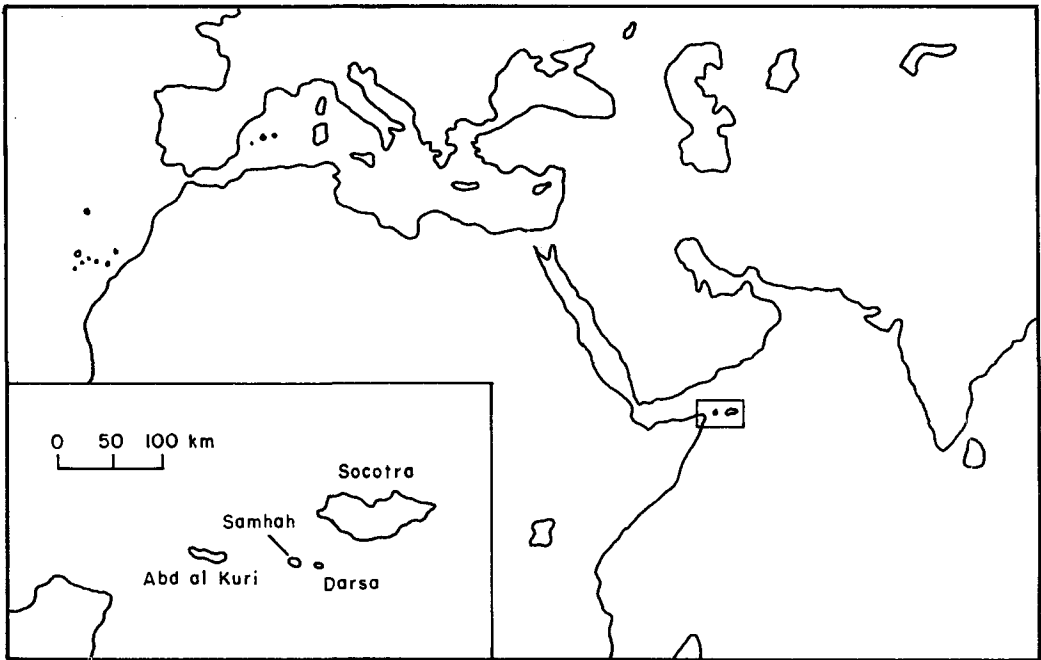
when Radcliffe-Smith found about 30 trees in the Muqadrihon Pass. However, Q. Cronk, who briefly visited the island in 1985 under the auspices of the WWF, failed to find the tree in the Muqadrihon Pass. At the time of his visit, however, the trees were not in leaf. He was informed that the trees were cut for firewood from the more accessible regions, but that the tree was widespread in other areas of the island and that in one spot there were over 1000 trees.

In 1989 the authors visited the island and tried to assess the status of the species. The population at Muqadrihon was found again and we were also told by informed local people that drachmam was widespread on the island. We were therefore rather perplexed at not being able to find it in any of the sites to which we were led.

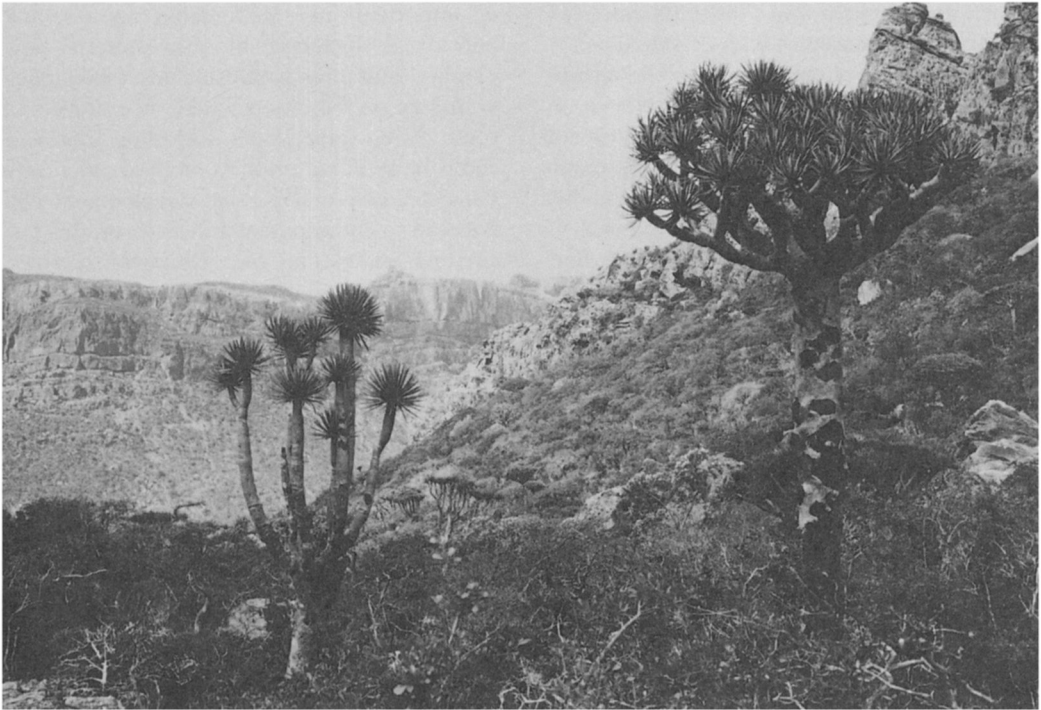
It was only in 1990, after again visiting Muqadrihon with a linguist, Dr Miranda Morris, that we were able to resolve the mystery. Drachmam is, in fact, the dried wood of 'tahn' *Cephalacrotan socotrana* (Euphorbiaceae), a relatively widespread endemic tree. The vernacular name of *Dirachma socotrana* is 'tifit',

and the tree has little local importance. The bark may be stripped by goats in times of drought when better browse is unavailable but this is the only use we recorded. Tifit is, according to local people, restricted to the area of the Muqadrihon Pass. In all, we counted some 30 trees in approximately 1 sq km. About 20 are found just inland of the highest part of the pass, on a gentle south-west-facing slope. Seven were found on limestone cliffs to the north-west of the pass. Isolated trees were also found on steep granite slopes to the south-east and along the path going up to Muqadrihon from the coastal plain. The area is heavily wooded and there could well be more trees, but the total population is certainly very low. Following several years of drought, the area is fairly heavily grazed and no regeneration was noted.

The Muqadrihon Pass is probably the wettest area on the island and has the most luxuriant vegetation. It crosses, in a north-east/south-west direction, from the Hadibon plain on the north coast to the Wadi Ayhaft, which runs to the interior of the island. It also marks the junction of the granite of the



Map showing location of Socotra off the north-east coast of Africa.



View of the Muqadrihon Pass, showing dragon's blood trees *Dracaena cinnabari* (A. Miller).

Haggier Mountains and the limestone of the Reiged Plateau so that the slopes above the pass are granite to the south-east and limestone to the north-west. The vegetation is dense, semi-deciduous, submontane thicket with emergent *Dracaena cinnabari* and dominated by *Buxus hildebrandtii*, with *Cephalocroton socotranus*, *Acacia pennivenia*, *Arthrocarpum gracile*, *Ormocarpum dhofarensis*, *Rhus thyrsoflora*, *Boswellia ameero*, *Ficus vasta*, *Jatropha uncostata*, *Carphalea obovata*, *Commiphora ornifolia* and *C. socotrana*. With the exception of the *Ficus* and *Buxus*, all the species mentioned above are endemic. Several other rare and endangered species are found in the Muqadrihon Pass including, for example, *Indigofera socotrana*, which is known only from there and one other place on the island, and *Punica protopunica* (a very rare wild relative of the pomegranate and the only other member of the family Puniceae), which has its largest population here—about 12 trees. On the cliffs above the Pass are large populations of *Dorstenia gigas* and *Begonia socotrana*. The last three species

are all included in the *IUCN Plant Red Data Book* (Lucas and Syngé, 1978).

The low number of known trees and the lack of natural regeneration is obviously a cause for serious concern for the long-term survival of the species. Any changes in the area such as the building of a road through the Muqadrihon Pass or the digging of new wells could rapidly lead to the extinction of this species. At present, however, the existing trees are under no immediate threat. The Muqadrihon Pass cannot be reached by car and traditional restraints against the cutting of live trees are still generally adhered to. Of the trees we examined, about half had some of their bark stripped by goats but otherwise seemed quite healthy.

In general it is encouraging to record that the vegetation in many parts of the island is still relatively healthy and not suffering the devastation experienced on nearby mainland Africa and southern Arabia. In the majority of areas where the vegetation has been most obviously altered the indications are that this

is not a recent event and that there has been no dramatic change since Balfour's time.

It is impossible at present to be able to comment on the past distribution of *Dirachma* on Socotra. Balfour recorded the tree as being not uncommon in the mountains, but he made only two collections and, from reading his diaries, it seems clear that these were made in the Muqadrihon. We could not find Schweinfurth's locality (Wadi Digal). It seems probable that even in Balfour's time *Dirachma* was restricted to the Muqadrihon and further that there has not been a dramatic reduction in the population over the last 100 or so years.

It would be wrong to give the impression that the vegetation of the island has not suffered at all. On the coastal plain and around the main settlements there has certainly been overgrazing and it is in these areas that possible extinctions may have occurred. For instance, *Taverniera sericophylla* and *Neurancanthus capitatus*, which were apparently common in Balfour's time, have not been collected since. However, during our two trips (6 weeks in total) we found nearly all the plants described in the 19th century by Balfour and Schweinfurth, including some that had not been seen since they were originally discovered, for example *Dicoma canescens*, *Lachnocapsa spathulata* and *Metaporana porosa*. Detailed notes on the vegetation and conservation status of most species will appear in later publications.

The future prospects of the island hang in the balance. Socotra is on the eve of the implementation of badly needed development programmes. Unfortunately there are innumerable cases world-wide where the breakdown in traditional practices associated with such development has quickly led to environmental tragedy. The WWF is hoping to implement an *in-situ* conservation project on Socotra with the co-operation of the Yemeni Government. The International Board for Plant Genetic Resources has been collaborating over the past few years in the *ex-situ* conservation in Yemen

of important and endangered species, and Socotra is included in these efforts. The planned measures would include establishing a nursery on the island where the numbers of some of the rarer plants, including *Dirachma*, could be built up prior to reintroduction into the field. Let us hope that development will not lead to environmental disaster on this fascinating island and that *Dirachma socotrana*, which represents an important element of flowering plant diversity, will survive in its natural habitat.

#### Acknowledgments

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