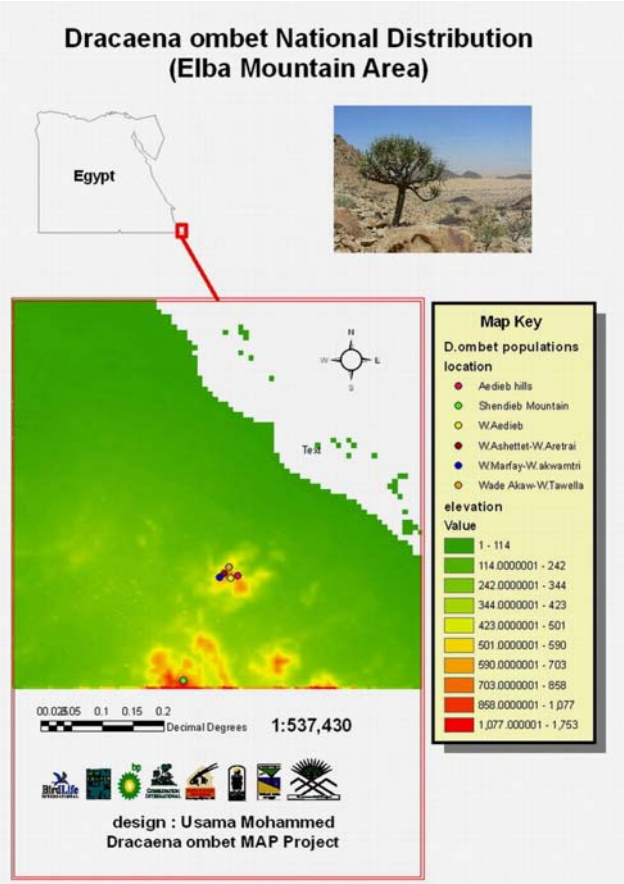
When climate change breaks down traditional laws in mountain areas: Case study for the Gabel Elba protected area in Egypt on the effect of climatic change on the endangered *Dracaena ombet* tree

by Usama Ghazaly

It has been reported that the globally endangered tree, the *Dracaena ombet* of the Elba Mountains of Egypt are exhibiting widespread decline especially during the last 10 years. A detailed survey for the Elba Mountain area that lies between 450m and 1436m of altitude inside the Gabel Elba Protected Area (GEPA), has been carried by the Gabel Elba Protected Area's rangers as part of the *Dracaena ombet* Monitoring and Assessment Project, funded by the Conservation Leadership Programs. The survey's results show that this decline is occurring and has accelerated at the lower and middle elevations of the *Dracaena ombet* range, with unhealthy trees, no sign of any new generation, pathogens effecting the trees and widespread tree death between 450-850m. At higher altitudes, the *Dracaena* woodland in general is healthy, maybe due to a scattered distribution pattern for this tree at these elevations, rather than a grove-distribution as at the mid elevation, or maybe for other reasons. This altitudinal pattern of *Dracaena* woodland conditions in the GEPA is very similar to that documented for the *Dracaena ombet* population of the Erkowit mountain in north east Sudan from about 50 years ago. We detected the effects of pathogens among most of the population of trees, but these do not appear to be responsible for the observed decline.



By reviewing the current conditions and also gathering the related traditional knowledge from local people from the Bisharia tribes, climatic conditions are seen as the main factors which affect the current status of the *Dracaena ombet* in the GEPA, which since 1996 has not received any rainfall except slight rain in November 2002. We suggest that the woodland decline is related in some way to climate change, where this is related to degradation of mountain habitats as a result of the extreme drought conditions and where also there is a shortage of natural resources, effecting local people in the upper zones where *Dracaena* grows. This leads to over-use of natural resources especially fuel wood taken from the acacia tree and other species. Resources are limited in the lower zones, in the wades and coastal plains and these areas show more signs of the effect from the drought than other areas.

Dracona ombet tree

It is recognized that most of places abundant with trees in the best condition occur in areas where the terrain consists of a solid rock pavement with extensive cracks, on north-east facing slopes, down which water and soil flow after rains, providing moisture and nourishment for the roots of the trees. These areas tend to be located on the western part of the Red Sea coast.

It seems likely that main cause of the decline in extent and quality of *Dracaena* woodland is the gradual drying up of the area of southern Egypt. There is no direct historical data available from the GEPA about the distribution or status of *Dracaena ombet*, but there is strong circumstantial evidence that this area has been drying up over the last few hundred years. When comparing and matching available data about the extreme drought especially in the last 10 years with the available data about the distribution and status of *Dracaena ombet* in the GEPA during the last 6 years, it is appears that probably this

drought has had a great impact on the current populations inside the GEPA. As it is known, *Dracaena ombet* occurs only at a high elevation between 450 to 1450 m in this area, which is affected by mists and cloud which come from the east, from the Red Sea coast towards the GE summit. Local people, traditional reports and the old explorers in this area have described the extent of this cloud/mist coverage diminishing over the years.

Resulting from the current extreme drought and climatic conditions, this area has turned into an evacuation area for people and livestock, where people have started to go down to the lower hills and closer to towns and villages. This means that the local settlements have become deserted and dead like the surrounding trees.

Drought and it's effects

Another potential threat to the *Dracaena ombet*, especially regarding it's long-term survival, is the over-exploitation of acacia woods. With the gradual effect of drought, livestock production has also decreased, so local people have gone in search for new sources of income. People are now using the dead acacia trees, which had been used for many years as a traditional fuel source but in very small quantities among these tribes. Traditional uses have developed and rapidly accelerated into commercial use, with over-

collecting and exploitation not only of dead trees, but from live trees as a source of charcoals that is obtained from this tree. At present, local communities' traditional laws and knowledge in this harsh environment have broken-down as a result of the shortage of natural resources which have led to an unsustainable use of these resources.

At present, we can be assured that there are many acacia woodlands areas in the coastal plains and wades, but in the low and mid slopes in the GE there has been eradication and the ecosystem has been depleted, especially in the very sensitive ecosystems in the Elba mountains where the closely related *Dracaena ombet* occur.

In the face of these harsh circumstances, there is an urgent need for understanding the local people's perspectives regarding this problem and working together to revive the old traditional laws which surely will play an important role in encouraging local communities towards more sustainable use of natural resources. In the *Dracaena ombet* conservation project in the GEPA, we agreed with the local people to the setup and implementation of a zoning plan for this area, including multiuse, restricted zones and also buffer zones to give the ecosystem an opportunity to become more resilient. Hopefully this will help in giving the *Dracaena ombet* a last chance for resistance against a rapidly extinction in the Elba Mountains.

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Usama Mohammed Ghazaly is a Senior Ranger in the Gabel Elba Protected Area in Egypt (ughazali_gepa@hotmail.com). He is a botanist and team leader for the *Dracaena ombet* tree Monitoring and Assessment Project. His is particularly interested in community-based nature conservation and protected areas. He also works as the voluntary executive secretary for the Red Sea Protected Areas Development Association in Egypt.