

Chapter 7

Conservation of Afroalpine Habitats

J.R. Malcolm and Zelealem Tefera

The Ethiopian wolf is only one of an array of plants and animals restricted to high elevations in Ethiopia (Box 2.1) and these species are only some of the important resources of the alpine zones. Other resources include agricultural land, catchment areas and places of historical and cultural significance. The Ethiopian wolf may play an important role as a flagship species but its conservation will only be successful if attention is paid to the wise management of all the resources occurring in its range.

Afroalpine grasslands and ericaceous heathlands form the afroalpine zone. They extend above 3,400 m and cover about 5,000 km² (Chapter 2). Sixty percent of this habitat occurs in three mountain ranges (Arsi, Simien and Bale) with the remainder scattered in as many as 20 smaller areas over the rest of the highlands. Three primary mountain ranges receive some recognition as protected areas under the EWCO. About 750 km² of land above 3,400 m in the Arsi mountains is in a Controlled Hunting Area. However, the Wildlife Organisation has only a minimal presence. There are 680 km² of afroalpine and subalpine habitat in the Simien Mountains of which 180 km² fall within the Simien Mountains National Park and the remainder in the Buffer Zone drawn around the Park. The largest area of protected high elevation habitat is in the Bale Mountains. Of 1,485 km² above 3,400 m, 1209 km² lie inside the Bale Mountains National Park. Outside the areas recognised by EWCO, there is one area of afroalpine habitat in Menz (Amhara Regional State – South Zone) that is managed by a committee of the community (Chapter 3). For the other small areas of afroalpine habitat scattered across the country there is no information.

This discussion of the resources of the afroalpine and their management will focus on Bale and Simien. Management Plans for both areas were completed in 1986 (Hillman 1986, Hurni 1986). This analysis draws on the 'Guidelines for Mountain Protected Areas' (Poore 1992).

The Physical and Cultural Setting

The highlands of Ethiopia are a massive volcanic dome formed from eruptions between 70 and 5 million years ago. The Great Rift Valley divides the lava massif into a larger northern area and a smaller southeastern area. During the Pleistocene the high areas were glaciated. The most recent glaciers retreated within the last 10,000 years and extended down to about 3,700 m with a periglacial zone extending to 3,300 m.

Most of the land above 3,400 m is steep and soil formation is limited. Above 3,700 m thin soils have developed after the glacial retreat. Deeper soils are present in the flatter areas in the periglacial zone. Below 3,300 m most of the natural forests and their soils has been lost to 2,000 years of cultivation. Rainfall in the high altitude zones varies from 1,000–2,000 mm/year with one period of drought extending from December to February or March.

The Habasha people have ruled the northern highlands for most of the last millennium. They are mixed agriculturalists growing barley at high elevations as well as keeping cattle, sheep and goats. Up to the 1970s, land tenure in many places was feudal. Peasant tenants contributed part of their produce to the landowner.

The southeastern highlands were conquered in the 17th and 18th centuries by Oromo pastoralists. This culture recognises clan based communal grazing lands. Cultivation of barley is also integral to their subsistence in the highlands. The southeast was incorporated into the Habasha (Amhara) empire in the 1890s and is now re-emerging as a political force with the end of the Amhara regime.

The Resources

Management of the subalpine and alpine ecosystems must balance the value of the natural resources used by humans with the intrinsic value of the biological heritage of the area. A diverse array of resources is present.

Wild Species

The plants and animals restricted to high Ethiopian mountains were described in Chapter 2. Conservation of these species and particularly the endemics is of paramount importance. In addition some species have immediate economic value. Grass of the genus *Festuca* is used for thatch and basket making. It grows up to about 3,600 m on good soils. As described above, areas of this grass have been set aside by some communities with limited harvest periods.

Menassie (1991) recorded 42 species used in the Bale Mountains as medicines and a further 10 that were used for food or drinks. A wild thyme (*Thymus serrulatus*), used to make a tea, is harvested by people living close to the town of Dinsho and near Menz. It is dried, put in plastic bags and sold to travellers on buses. The potential value of the wild plants for medicines has not been assessed.

Agricultural Resources

Barley cultivation occurs almost continuously below 3,300 m and may extend up to 3,600 m depending on soils, slope and frost. Recently abandoned fields indicate areas where cultivation has failed. Pressure to find agricultural land is strong. Land at about 3,600 m in the Simien Mountains has recently been ploughed and even the steeper parts of the Bale Mountains up to 3,300 m have been cleared.

Domestic animals use the entire alpine habitat. There are large seasonal movements of stock as animals are removed from the areas of cultivation during the growing season. The effects of domestic stock on the populations of herbivorous rodents are unknown. Areas where the herds are corralled at night have high levels of nitrogen and specialized plants.

Firewood and Fuel

The ericaceous heathlands are or have been an important source of firewood in some areas. Typically the wood is collected a year or two after a fire has killed the above ground growth. Bundles of heather twigs are collected and carried to lower elevation. In most areas this fuel is for local use. However, in the large heather areas of Arsi, the wood is gathered on a commercial scale. Large boles of heather plants in many areas suggest that ericaceous heathlands were both more extensive and of larger stature a generation or two ago.

Water Resources

The high ground in the mountains catches more rain than the surrounding lowlands. This is marked in the Simien where the lowlands less than 35 km east of the peaks receive only one third of the rainfall (500 vs 1,500 mm/yr) (Hurni 1986). In the south, all three of the major rivers that provide water to southeastern Ethiopia have their headwaters in the Bale Mountains. Maintenance of these high elevation watersheds is important. The potential for hydroelectric power on many of the fast flowing streams has hardly been tapped.

Tourist Values

The spectacular scenery and unusual animal life offer great opportunities for tourism. Many of the areas are accessible only on foot or horseback and the number of large wild animals will never rival the great African savannah parks. However, there is plenty of room to develop trekking and camping tours together with more specialised interest groups such as bird watchers, rock climbers and even fly fishing in Bale. The Simien is also within easy reach of some of the famous historic sites of Ethiopia.

Sport Hunting

Sport hunting occurred in the ericaceous zone of the Arsi Mountains until August 1993 when it was banned. Mountain nyala (*Tragelaphus buxtoni*) were the main trophy, although warthog (*Phacochoerus aethiopicus*) and bushbuck (*T. scriptus*) were taken occasionally.

Cultural Resources

The high mountain areas are important in the social and ritual life of the people who live there. In Bale, there are as many as 30 burial grounds in the park (Regassa 1992) which also operate as prayer sites. A small hill close to the headquarters of BMNP is the site of an annual religious celebration.

Obsidian tool fragments are common in the Web Valley in the BMNP but most of the area has not been surveyed archaeologically.

Other Resources

Mineral Springs. In the Bale Mountains, most domestic stock is taken to natural mineral springs at approximately monthly intervals (Kemp-McCarthy 1990). The waters appear to be an important nutritional supplement although their exact action is unknown. Five of the larger and more valued springs occur above 3,400 m. These high elevation springs are communal property.

Roads. The high mountains are criss-crossed with trails reflecting the important lines of communication for people and their herds over the high passes. The well used drove roads are marked by multiple cattle tracks often deeply eroded.

This inventory of resources is probably not complete and it is likely that other elements of the mountain environment will acquire value in the future in ways that we cannot anticipate. However, it may provide a perspective on the range of values that need to be integrated into a successful programme of development.

Management

In the Ethiopian Mountains, as elsewhere, the interactions between people in search of subsistence and the natural communities are complex. For example the Oromo people in Bale and Arsi are remarkably tolerant of the large endangered species with which they share their land. They are reported to take wounded mountain nyala into their huts to treat them (Regassa 1992) but the evidence suggests that mountain nyala avoid areas grazed by cattle. Despite their tolerance an expansion of the Oromo pastoralists will lead to a decline in the numbers of mountain nyala. Similarly, the Ethiopian wolves are not persecuted by the Oromo and wolves have been seen to use the grazing herds of cows as camouflage to approach their rodent prey (Sillero-Zubiri and Gottelli 1995a). However, we now know that it is the herders' dogs that threaten the wolves with both disease and hybridization (Chapter 4).

Probably the most pervasive impact of people involves the regular burning and cutting of the heathlands which cover, or used to cover, most of the subalpine zone. The closed canopy heather thickets or small forests are replaced in most places by grasslands. These derived grasslands have been shown to have

greater species diversity and provide more grazing than the original heathlands (Miehe and Miehe, 1994). However, these advantages are offset by the fact that clearing the heather removes the tall cover necessary for the native ungulates, particularly the mountain nyala.

Two trends will inevitably impinge on any of the ecological relationships now operating. First, human populations will continue to expand and second, human standards of living must increase. Some of the mechanisms to cope with these changes seem to be in place. There are two national parks with management plans and each has a buffer zone drawn around its boundaries. The challenge is to translate these areas marked on maps into programs of development that benefit human and non-human resources.

Some of the steps seem clear. First and foremost, any management must involve the local people. Liaison committees now operate between the park's authorities and the local administrative districts in both Bale and Simien. This communication is vital but projects that benefit the local people and involve them in the development of the park will be important. The development of tourism has great potential. The guides in Simien are organised into a cooperative and at least one hotel caters mainly to tourist traffic. More visitors are needed before similar facilities in Bale would be profitable but this is unlikely to occur before all-weather roads and reliable sources of fuel are available in the area.

Many other forms of development such as the provision of veterinary services, herd improvement with artificial insemination, and provision of mineral supplements could help the local people. By reducing the number of domestic animals needed to secure a livelihood, such programs could possibly reduce the impact of stock on the afroalpine ecosystems. Negotiations over stocking rates are more likely to succeed if the wildlife authorities can provide some help to the pastoralists.

The wildlife authorities are in a position to initiate these changes and to dispel their old authoritarian image. A large grant from UN for rehabilitation in the Gondar region which includes the Simien Park provides a stimulus for integrative planning.

Similarly, a three year project has started in Menz, funded by the Darwin Initiative of Great Britain. Its aims are to integrate biodiversity conservation with the sustainable management of Afroalpine resources.