THE AMATOLA FOREST COMPLEX

Ecology

The Amatola Forest complex consists of a mixture of exotic and indigenous forest types. It runs east to west along the main south-facing escarpment of the Winterberg mountain ranges, occurring within the central interior of the former Ciskei and the surrounding Eastern Cape regions.

Three main rivers bisect the region: the Little Fish, the Great Fish and the Keiskamma (Heyns *et al* 1993).

Geology

The Beaufort group characterises the Amatola Mountains' geology, which can be subdivided into subgroups: Tarkastad and Adelaide, which form part of the Karoo sequence. Sediments being deposited in river channels, river floodplains, swamps and lakes formed the geology of the area (Heyns et al 1993).

Soils

Soils with a thin, porous toplayer, overlying a columnar horizon that is interspersed with red clays dominate throughout the Amatola Mountains, with the Kologha area at Stutterheim being the exception. There one will find deep red and yellow soils in an advanced stage of weathering (Heyns et al 1993).

Climate

A subtropical climate prevails over the Amatola Mountains, with rainfall peeking in the summer. The rainfall average is 900mm/year, but some places receive more than 1300mm/year while other only receive 540mm/year (Heyns et al 1993). A moisture gradient exists between east and west along the escarpment, with the eastern region being predominantly wetter (Everard and Hardy 1993).

Winters are cool which can get very cold due to cold fronts. Thunderstorms occur during January and February when bergwinds are frequent.

Value of the Amatola forests

As is the case with almost all forests in the Eastern Cape, the Amatola forests play an integral part of rural livelihoods and traditional and cultural systems as well as being essential for stream protection and soil conservation. According to Von Maltitz (2000), the contribution of indigenous forests to national biodiversity is far greater than would be expected from their coverage. This biome is regarded as the second richest per unit area in South Africa apparently with a disproportionate percentage of forest species being rare or endangered. As indicated below, the Amatola forest complex hosts numerous Red Data Book as well as threatened species.

The spiritual value of this forest complex too is important and these forests are sites of traditional rituals and ancestral graves – for example Sandile's grave and cave.

The Amatola forests also provide an attraction to tourists, particularly in the form of hikes, horse and 4 x 4 trails, and picnic sites.

Commercial timber harvesting of Podocarpus species is also a valuable asset from these forests.

Fauna

Mammals

Two prominent and important mammal species in the Amatola Mountains are the Samango-ape (*Cercopithecus albogularis*), the tree dassie (*Dendrohyrax arboreus*) and the blue *duiker (Philantomba monticloa*). The Amatola Mountains are the furthest point westwards where one will find the Samango-ape and the tree dassie (Heyns *et al* 1989).

The serval cat (*Felix serval*) and the leopard (*Panthera pardus*) also occur in the mountains but are scarce and listed as such. The giant golden mole (*Chrysospalax trevelyani)* is largely endemic to the Amatola mountains mountains (Heyns et al 1989) and listed as endangered in the I.U.C.N. Red Data Book. The honey badger (*Mellivora capensis capensis)* that also occurs here is listed as vulnerable (Smithers 1980).

The following mammal species that may occur in the Amatola Mountains and listed in the South African Red Data

Book are:

South African Hedgehog (*Atelerix frontalis*)-rare
African Weasal (*Poecilogale albinucha*)-rare
Rough-haired golden mole (*Chrysospalax villosus*)-vulnerable
(Smithers 1986)

Amphibians
The Hogsback frog (*Anhydrophryne rattrayi*) is endemic to the mountains of the Amatola and lays its eggs under the soil surface and spends its life on the forest floor. Another frog, the rain frog (*Breviceps verrucosus*) also occurs in the forest, but sightings are rare (Heyns *et al* 1989). The Amatola Toad (*Bufo amatolica*) can also be found in the Amatola Mountains and, according to Branch (1988), is classified as restricted and vulnerable.

Snakes mainly occur on forest edges where there is more sunlight and heat.

Two endemic lizards also occur in the area. The Amatola flat lizard (*Afroedura amatolica*) lives in thin rock cracks in granite outcrops in forests and grasslands. The Drakenberg crag lizard (*Pseudocordylus melanotus subviridus*), a relict population, lives in large rock cracks in grassland (Kirkman, 1999).

Butterflies
The following butterfly species listed in the South African Red Data Book which occur here are:

Pennigton Butterfly (*Poecilmitis peningtoni*)- rare
Metisella syrinx- rare
(Henning & Henning 1989)

Birds
In the Amatola Mountain approximately 70 different types of birds occur. These birds are primarily classified as forest dwellers. The Cape Parrot (*Poicephalus robustus*) is of importance to the Amatola Mountains. It is listed as endangered and according to recent studies it is estimated that less than 500 species now occur in the wild. Apparent reasons for the decline in numbers of this bird are the destruction of its habitat as well as capture for the pet trade. The Cape Parrot enjoys long flights out to the low-lying Thornbushveld and coastal plains, and returns to the forest at night to roost. They feed on Olive and Yellow-wood fruit and nest in dead and dying yellowwood species (Heyns *et al* 1989).

The following bird species, which appears in the Red Data Book, can be found in the Amatola Mountains (Brooke 1984):

Peregrine falcon (*Falco peregrinus*)-rare
Cape vulture (*Gyp coprotherus*)-vulnerable
Stanley bustard (*Neotis denhami*)- vulnerable
Martial eagle (*Ploemaetus bellicosus*) vulnerable
Black stork (*Ciconia nigra*)-vulnerable
Crowned crane (*Balearica regulorum*)- not listed in Brooke (1984), but recent evidence suggests that it should be listed as threatened (Kirkman, 1999).

Fish
Rivers and streams that flow through forest do not contain many fish, the reason being that habitat opportunities are very scarce and also that there is a lack of nutritional food sources (Heyns *et al* 1989).

Flora

Forest communities
The forests that are found in the Amatola Mountains are confined to kloofs and gullies. The reason for this is that water limits the spread of forests. Although not exclusively limited to water, fire also keeps forest from invading grassland (Heyns *et al,* 1989).

Forest types
The Amatola mountain complex consists out of 221 individual forests ranging from 3 to 4990 ha making a total of 40 553 ha. Thicket and woodland (46 281ha) and exotic plantations (15 142) ha make up the rest of the land cover of the Amatola Mountains (Everard and Hardy 1993). The thicket and woodland is mainly on communal land while the exotic plantations are currently being managed by DWAF and SAFCOL although in the near future SAFCOL will be managing all plantations.
There are six different indigenous forest and veld types in the Amatola Mountains:

- Wet High forest
- Moist High forest
- Medium moist high forest
- Dry high forest
- Dry scrub forest
- Non-forest areas (Heyns et al 1989).

Threatened plants in the Amatola complex
There are 27 different species that are on the threatened plant list in this area. Four are classified as vulnerable, 13 as rare, 5 as indeterminate and 5 as uncertain. Examples of the rare species include:

Cape Onionwood	Cassipourea flanaganii
Thorny Karree	*Rhus crispa*
Umtiza	*Umtiza listerana*
Kei Bottlebrush	*Greyia flanaganiii*

(Hall *et al*, 1980)

Activities occurring in the Amatola Mountains

Podocarpus harvesting
Podocarpus (Yellowwood) species are commercially harvested here for use in the furniture manufacturing process. Approximately 350m^3 is harvested annually in these forest, the value being ± R250 000. Two sawmilling businesses in the area have contracts to mark, harvest and extract this timber.

Non-timber products
A number of non-timber forest products are also extracted from our forests. These include: firewood (deadwood only), thatching grass, harvesting of tree plants for medicinal purposes, bunches of herbs, harvesting of certain species for construction, fencing and other household items, walking sticks and crafts, driftwood collection, monkey rope for basket weaving. The forests are also used for honey collection, fruit collection, grazing, clay gathering as well as traditional ceremonies. Permits are issued for the removal of these various forest products and forest activities, however, illegal harvesting and gathering, as well as hunting also occurs.

Recreation facilities
The Amatola hiking trial is known as one of the most demanding as well as one of the most scenic hiking trials in southern Africa. It takes six days to complete with the hikers having accommodation for five nights. The 105-kilometre trail winds through plantation, indigenous forests and montane grasslands reaching some of the higher peaks of the Amatola range. The trail starts at the Madem Dam (situated in the Pirie Forest) and ends at Hogsback (Anon 1994). At present DWAF is working with Pondocrop (an NGO) to find suitable options to include local community organisation(s) in the management of this trail - they would thus share the responsibility and the benefits.

There are also other hiking options available. These include: the Sandile Cave Walk - one day; the Zingcuka Trail - two days; the Pirie-Evelyn Walk – two days.

The Kologha forest near Stutterheim also offers attractive hiking options. Apart from the various hiking trails, there are also mountain bike trails and horse trails. The Gubu dam is nearby which is stocked with trout - permits can be obtained for fishing from the Stutterheim Angling Club in Stutterheim.

The forests of Hogsback and Katberg also offer various day hikes. The hiking trail at Katberg is currently not being serviced, but still open for hikers who use it at their own risk. The local community has shown a keen interest in taking over the management of the hiking trail.

At all the walks described above picnic and/or braai facilities are present.

Monitoring and research areas

A long term *Podocarpus* monitoring program (increment, mortality) was implemented in the late 1980's in the former RSA Amatola forests – this is still being carried out, thu sproviding valuable information on these species for sustainable management.

A timber yield regulation system exists for *Podocarpus* utilisation in the former RSA Amatola forests. This system is also now applied in the timber utilisation areas in the former Ciskei. However, the system needs to be refined (based on monitoring data collected during the past few years) and a growing stock survey needs to be done for all timber utilisation areas to ensure optimum sustainable utilisation.

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