

## Chapter 2: The Baviaanskloof Mega-Reserve

---

The study area is centred around the Baviaanskloof and Kouga Mountains in the Eastern Cape, South Africa, an area that supports a population of leopards. The planning domain of the Baviaanskloof Mega-Reserve (BMR, Boshoff *et al.* 2008) was used as the study site for this study, as it includes both conservation and non-conservation areas. The BMR has had a long history of leopard-stock farmer conflict and is also the focus for a major conservation initiative, the BMR Project (Boshoff *et al.* 2001).

### 2.1 Baviaanskloof Mega-Reserve (BMR)

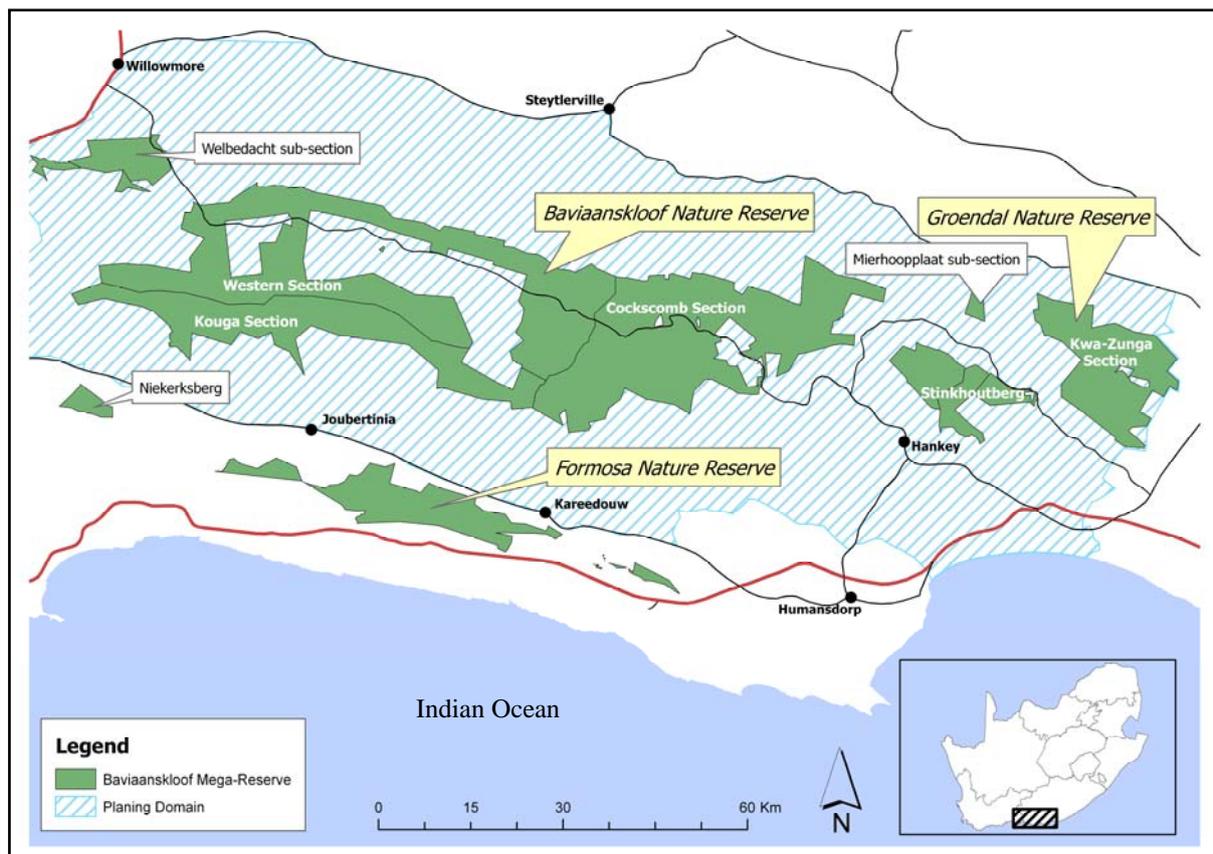
The three major goals of the BMR Project are to (1) conserve the biodiversity of the area, (2) protect its role as a catchment area and a provider of fresh water, and (3) promote sustainable economic development in the Planning Domain (Boshoff 2008).

The BMR Planning Domain incorporates the Baviaanskloof Nature Reserve (BNR), Groendal Nature Reserve (GNR), Formosa Nature Reserve (FNR), their sub-sections, and the farming areas bordering these reserves (Figure 2.1; Boshoff 2008). The study area is dictated by the BMR Planning Domain, and incorporates all the farming communities that fall within this planning domain. These farming communities include the areas in and around Willowmore, Steytlerville, Baviaanskloof, Cockscomb, and Kareedouw. The various farming communities in relation to the BNR and the Planning Domain of the BMR are shown in Figure 2.1. The conservation area is bordered predominantly by livestock farmers (northern border of the Baviaanskloof Nature Reserve and the Kareedouw area, south of the Cockscomb section) with other landuse types including irrigated crops (between the Cockscomb and Stinkhoutberg sections and south of the Kouga section), contracted conservancies and private nature reserves (scattered throughout the planning domain; Boshoff 2008). The dominant landuse in these areas is small stock farming and to a lesser extent, cattle farming.

### 2.2 Baviaanskloof Nature Reserve

The Baviaanskloof Nature Reserve (BNR) is managed by the Eastern Cape Parks Board (ECPB) as a protected area. It was proclaimed a World Heritage Site in 2004 because of the significant ecological processes and biodiversity, and threatened species (Boshoff 2008). The BNR forms the core of the BMR and is situated in the western part of the Eastern Cape Province (Figure 2.1) and spans 199 477 ha (Boshoff 2008). It consists of three sections and

one sub-section: (1) the Western section (78 274 ha) which forms the northern and western boundaries of the reserve, (2) the Kouga section (39 113 ha) to the south of the reserve, (3) the Cockscomb section (72 617 ha) which makes up the eastern portion of the reserve, and (4) the Welbedacht sub-section (9 473 ha) situated north-west of the western section (Boshoff 2008). The BNR falls within a large protected area network (Baviaanskloof Reserve Cluster – BRC) which includes the Groendal Nature Reserve (43 428 ha) and the Formosa Nature Reserve (25 324 ha; Figure 2.1).



**Figure 2.1:** The location of the Baviaanskloof Mega-Reserve Planning Domain including the Baviaanskloof Nature Reserve, Groendal Nature Reserve, Formosa Nature Reserve, their individual sub-sections, and the planning domain in relation to the surrounding towns and South Africa.

### 2.3 Climate

The BNR is situated in an area that receives rain throughout the year (Buckle 1989), with the driest period occurring from December to February (Teague *et al.* 1989). The rainfall ranges from 500 to 700 mm per year in the east and the west receives approximately 300 mm per year (Teague *et al.* 1989). There is a marked longitudinal difference in the rainfall, with the Kouga

Mountains to the south receiving an average of 547 mm per year and the Baviaanskloof Mountains to the north receiving an average of 451 mm per year (Buckle 1989).

The area is characterised by warm summers (maximum temperatures can reach 45°C) and relatively mild winters (temperatures range from 5°C to 31°C; Buckle 1989), with average yearly temperatures of 17°C to 18°C whilst the higher areas have temperatures below 13°C (Teague *et al.* 1989). The mountain peaks are often covered in snow in winter (Buckle 1989) and frosts occur seldom (Teague *et al.* 1989).

## **2.4 Geology**

According to Rust & Illenberger (1989), most of the valley floor of the BNR is covered by fault-fractured quartzite, Bokkeveld shale and Enon conglomerate. The mountainous areas consist of quartzite and shales of the Table Mountain and Witteberg groups (Rust & Illenberger 1989). This gives rise to acidic, nutrient poor soils that are coarse grained, rocky and shallow (Teague *et al.* 1989). Deeper soils only occur on the valley floor and the plateaus (Rust & Illenberger 1989), and tend to be less rocky with greater clay content (Campbell 1985).

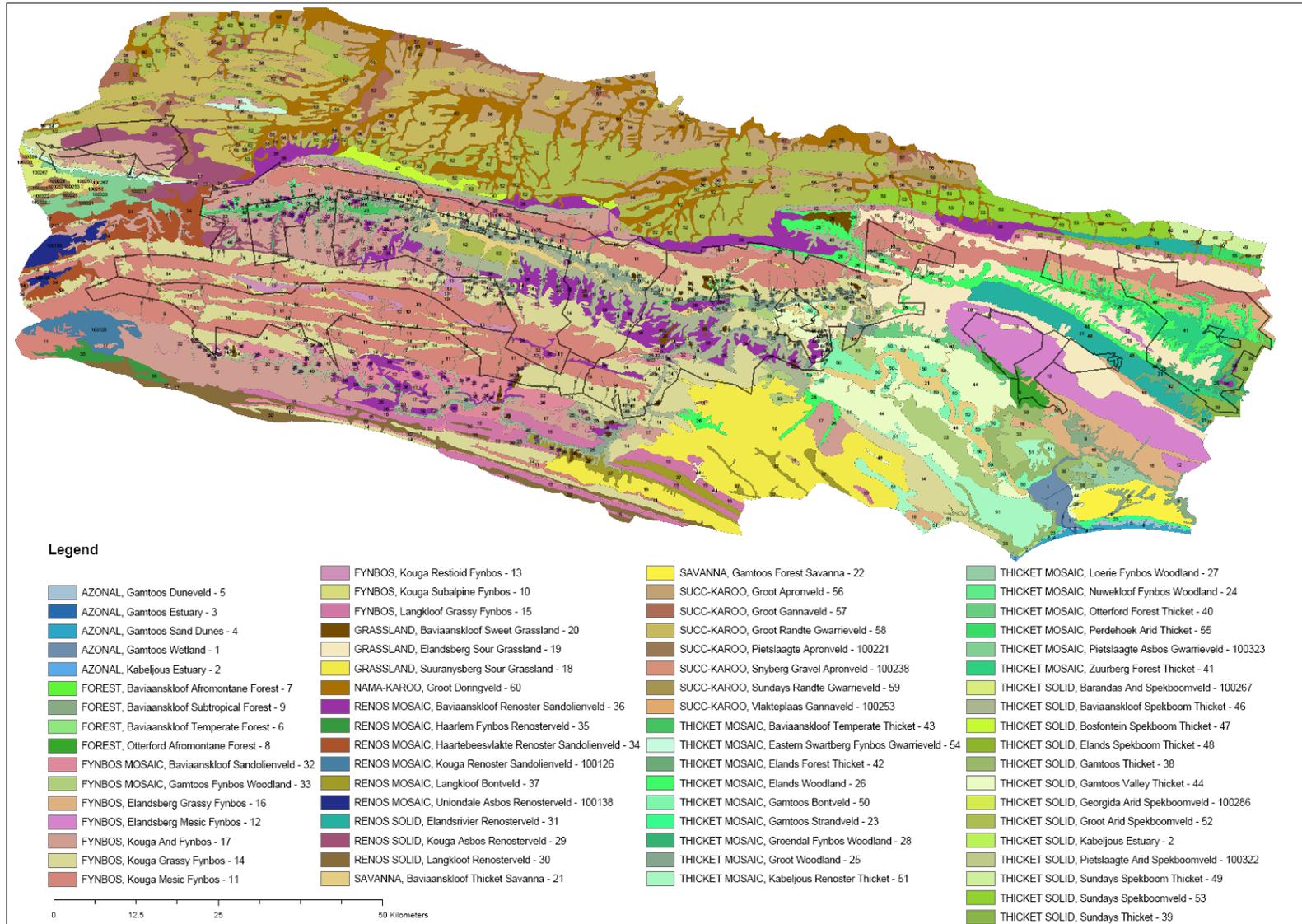
## **2.5 Vegetation**

The Baviaanskloof Mega-Reserve (BMR) occurs within the transition zone between the Cape Floristic Region (CFR), and the south-western part of the Maputuland-Pondoland Subtropical Thicket (Boshoff 2005). This transitional area contains examples of seven of the eight South African biomes, which are, Fynbos, Sub-tropical Thicket, Nama Karoo, Succulent Karoo, Grassland, Savanna, and Forest Biomes (Boshoff 2005). Due to the highly diverse topography, soil types and microclimates (Vlok 1989), the BMR has 69 vegetation types (Figure 2.2), which are dominated by fynbos and sub-tropical thicket elements (Boshoff 2005). Of these vegetation types, 31 are endemic to the area and 16 are near endemic (Boshoff 2005). According to Vlok (1989), the major factors that determine the distribution of these vegetation types are soil type, soil fertility, rainfall, and fire.

The Fynbos elements are located on the nutrient poor soils of the mountains (Boshoff 2005), with Wet Mountain Fynbos occurring on the moist (rainfall greater than 800 mm p.a.) upper portions of the steep south facing slopes, Mesic Mountain Fynbos on the mid south facing slopes where the rainfall ranges from 400 to 600 mm p.a., Arid Mountain fynbos on the drier (rainfall between 300 and 400 p.a.) north facing slopes, and Grassy Fynbos on the loamy north facing slopes (Vlok 1989). All the Fynbos types are driven by fire regimes, which are a critical ecosystem process for these vegetation types (Boshoff 2005).

The Sub-tropical Thicket elements are found on the deeper, more nutrient rich soils of the valley floor and mountain slopes (Boshoff 2005), with Valley Bushveld occurring on the lower mountain slopes, and Spekboomveld higher up (Vlok 1989). The Subtropical Thicket vegetation types are highly diverse. This is because of the transitional nature of the BMR that gives rise to a large number of Sub-tropical Thicket mosaics, which occurs when the thicket forms clumps within the other vegetation such as Fynbos and Succulent Karoo (Boshoff 2005).

The rest of the vegetation types are made up of Nama Karoo and Succulent Karoo elements, which occur on the relatively low rainfall areas to the north and west of the BNR (Steytlerville area), Grassland elements on the foothills, Savanna elements on the alluvial soils of the river floodplains, and Forest elements in riverine areas and sheltered ravines (Vlok 1989).



**Figure 2.2:** Vegetation types occurring within the Baviaanskloof Mega-Reserve Planning Domain. The reserve cluster is indicated by the solid black lines. See <http://www.wildernessfoundation.org.za> for detailed information.