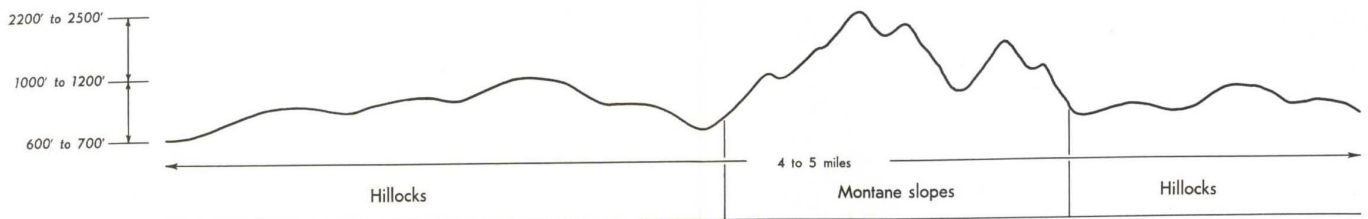


BETHANGA LAND SYSTEM

BETHANGA LAND SYSTEM

Area: 49 square miles 1.3% of catchment

(a) Distribution of land forms



(b) Land system diagram

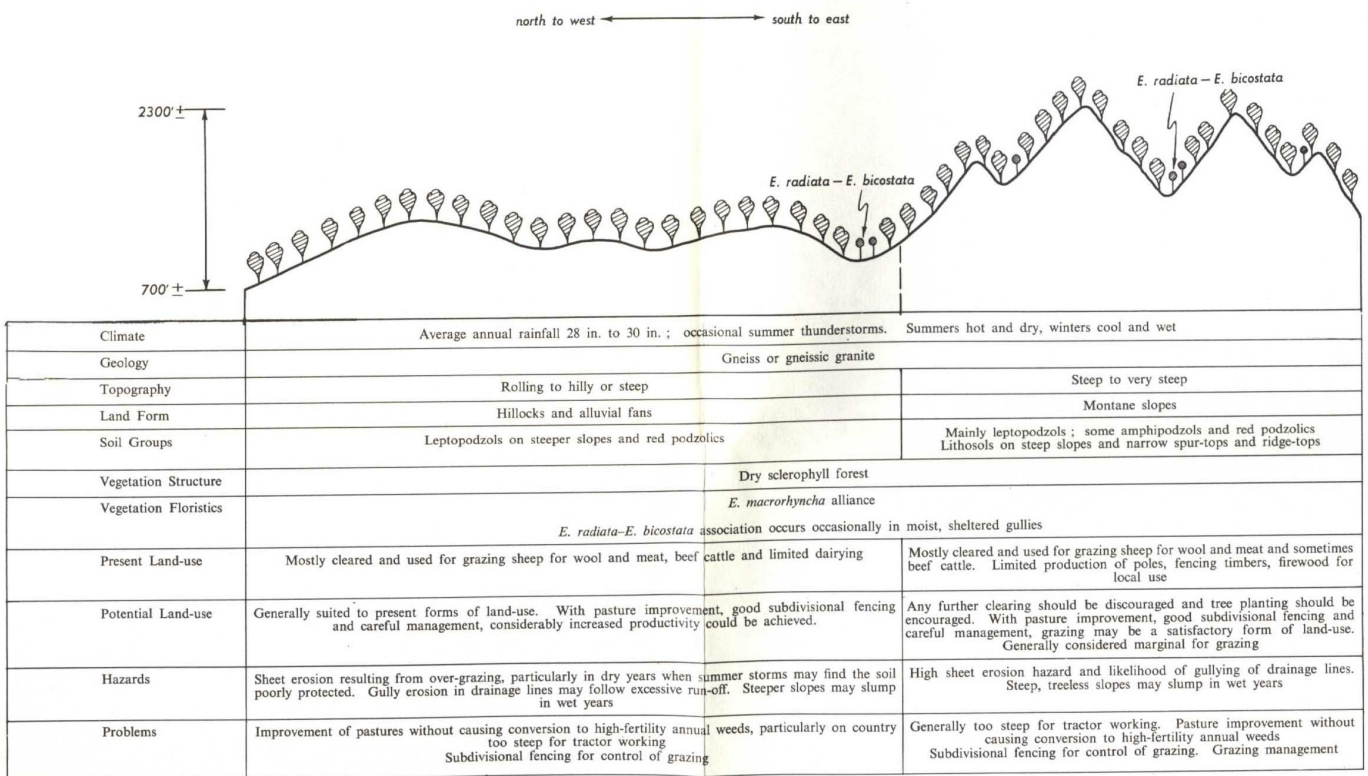


Fig. 30 - Bethanga Land System

The Bethanga land system is in the north-western corner of the catchment. The area occupied is about 49 square miles, which is a little over one per cent. of the total area of the catchment. Tenure is almost entirely freehold, there being only a few small areas of Crown land, mostly around the township of Bethanga and Mt. Talgarno.

The hillocks land form occupy about 50 to 60 per cent of the area and montane slopes make up the remainder (Figure 30). The range in elevation is from about 600 feet to 700 feet in the valleys, to about 2,200 feet. The altitude of Mt. Talgarno is 2,101 feet. The main streams flowing through the land system are Spring Creek and Jarvis Creek.

The main rock in the land system is gneiss. Small terraces of post-Pliocene alluvium and Recent stream alluvium occur, but are not of significant size. Auriferous quartz reefs which occur through the gneiss were mined over a period from 1875 to about 1911.

Average annual rainfall over this relatively compact land system is about 25 inches to 30 inches, a large proportion of which falls during the cooler months. A good deal of the summer rainfall is derived from thunder-storms, which usually result in high-intensity rain with a consequent low infiltration and high run-off. Summers are relatively hot and dry. With a range of over 1,000 feet in elevation, a variation of climate is experienced, with slightly cooler temperatures at the higher elevations. Cold-air drainage into valleys results in more frosts in valley tracts. Northern aspects are typically warmer and drier than southern.

Soils of the leptopodzol group are the most common in this land system, and lithosols occur on steeper slopes, and particularly on northern aspects. Some red podzolic soils occur on flatter country in the valleys and regosols have a limited occurrence.

The vegetation of this land system is typically a dry sclerophyll forest of the *E. macrorhyncha* alliance. The drier end of the range of the alliance is best represented in this area and *E. goniocalyx* and *E. polyanthemos* are prominent. *Pteridium esculentum* develops best on southern aspects where soil-moisture availability is higher but drainage is good. The ground flora is usually sparse.

The erosion hazard in this land system is probably as high as any in the catchment because of the particular combination of soils, slopes and climate, and its proximity to the reservoir makes any erosion all the more important. Actual erosion however does not present many serious problems at present. Sheet erosion from steep northern aspects is moderate to severe in some parts, and stream-bank erosion occurs to a limited extent. In general, gully erosion has not reached serious proportions. Slumping occurs on southerly aspects in wetter-than-average years, but is not common. This land system could become a serious problem if poor management of farms in the area allowed excessive deterioration of the pastures.

Current land-use in the land system is predominantly grazing of sheep for wool and meat, with dairying and fattening of beef cattle less common. Pasture improvement is largely confined to annual dressings of superphosphate, and because of the hilly nature of most of this area, aerial topdressing is favoured. The sowing of improved species is generally limited to the less-extensive areas which have more-gentle slopes. Improved pastures of high-productivity species would considerably raise the safe carrying capacity of the area, however the rainfall is probably inadequate for maintenance of perennial species. Steeper land under forest should be left uncleared, and much cleared steep land may also be better under forest vegetation. More subdivisional fencing on steep cleared land would facilitate better control of grazing.

One of the major problems is the establishment and maintenance of effective ground cover on the steeper slopes, particularly the northern aspects. Another problem associated with the first, arises from the top-dressing of native pastures without introducing improved species. This tends to encourage high-fertility annual weeds.