

Bush encroachment : a major threat to pastoralists livelihood in Ethiopia

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Introduction Ethiopia has a vast area of rangeland (61 to 67% of the land area) located around the periphery and they are found below 1,500 m a.s.l. They support pastoral and agro-pastoral communities (mostly Somalia , Afar and Borana) of about 9.8 million people belonging to 29 ethnic groups . The rangelands are not only important for livestock raising but also for wildlife habitats , ecotourism , irrigated agriculture , medicinal plants , conservation of biodiversity , and exploitation of natural resources (Abule *et al.* , 2005) . However , bush encroachment , the process of open grassland savanna being transformed into bushes & shrubs , is a major problem . Therefore , the objective of this paper is to review the status of bush encroachment and its effect on the livelihood of the pastoralists in Ethiopia .

Materials and methods Ethiopia , with a land area of 1,104,300 km² , is located in the horn of Africa bordered in the north by Eritrea and Djibouti , in the south by Kenya , in the east by Somalia and in the west by Sudan . The rangelands have unreliable and erratic rainfall , with regularly high temperature . This paper is based on reviewing literatures and documents .

Results According to the pastoralists compared to the past , the rangelands are bush encroached and the major triggering factors were the lack of prescribed fire , severe overgrazing , drought and the expansion of farming into the rangelands . Accordingly , there is a change in the species composition of livestock they keep from grazer (cattle and sheep) to browsers (camel and goats) . Furthermore , the pastoralists have noticed that bush encroachment is leading to agricultural and biodiversity problems . It has created a decrease in grass production , difficulty in livestock herding , damage by wildlife , and problems of bloating . The encroaching species and their density also varied from rangeland to rangeland . The major encroaching species in the Afar region are *Prosopis juliflora* , *Acacia seyal* , *Acacia mellifera* and *Acacia senegal* while in the Borana rangeland species of *Acacia* and *Commiphora* and in parts of the Somalian rangeland , *Acacia nubica* and *A . Mellifera* . The communal grazing lands are more bush encroached (greater than 2,500 woody plants/ha) than the other grazing types and *Parthineum hysterophores* is becoming a major concern . In some rangelands , the bush encroached area is about 52% of the total land area . There is no visible bush control method being undertaken by the pastoral communities on their own effort except in the Borana rangeland which was supported by different organizations (Oba *et al.* , 2000 ; Gemedo , 2004 ; Abule *et al.* , 2005 ; Admasu , 2006 ; Amaha , 2006 ; Belaynesh , 2006 ; Teshome , 2007) .

Conclusions Bush encroachment has created a difficulty for the pastoralists to plan effective resource management and utilization strategies . Accordingly , the control of bush encroachment must be given due attention which requires a proper understanding of causal factors , invasive species , the degree and extent of encroachment , the mechanism and the population dynamics of invasive species and long-term community based control programs .

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