

# BUSH ENCROACHMENT

## PRACTICAL TIPS ON HOW TO MANAGE THE ENCROACHMENT OF WOODY PLANTS IN GRASSLANDS, WOODED GRASSLANDS AND WETLANDS

### What is bush encroachment?

Bush encroachment is a natural phenomenon that results in the transformation of a grass-dominated ecosystem to a tree-dominated ecosystem through a process known as plant succession. Unmanaged grasslands become colonised by hardy, pioneer tree species. Shade, produced by the canopy of these trees, rapidly begins to stunt and kill the natural grass-dominated groundcover. This shaded area then becomes colonised by shade-loving shrubs and forms an ideal place for other tree species to germinate. Over time, a small forest clump begins to develop around the original tree, often with invasive shrubs such as Khaki Weed (*Tagetes minuta*), Lantana (*Lantana camara*) and Triffid Weed (*Chromolaena odorata*) beginning to emerge on the outskirts of the clump. As more of these clumps begin to develop there is a conversion from a grass-dominated veld type to a woody veld type.



Above left: Woody clumps emerging in natural grassland.

Above: Young Acacias encroaching into grassland.



Left: Sickie-bush (*Dichrostachys cinerea*) thicket encroaching into poorly managed grasslands.

## What is the difference between bush encroachment and invasive alien plant infestation?

The key difference between bush encroachment and invasive alien plant infestation is that bush encroachers are mainly indigenous woody plants. Another important difference is that, under certain circumstances, these indigenous woody plants have important ecological niches (specific places within an ecosystem) to fill, such as in natural forests, along water courses and other wooded ecosystems. Invasive alien plants have no natural niche in South Africa and should be eradicated.

## What causes bush encroachment?

Natural ecosystems are maintained by a number of natural conditions known as limiting factors. These may be specific climatic conditions such as rainfall or temperature, soil conditions such as nutrients and pH, or physical factors such as fire or grazing. For example, the type of vegetation found in the arid Karoo region will retain its characteristics because the low rainfall of the region does not favour more temperate or tropical vegetation. Climate is the main limiting factor in maintaining Karoo ecosystems. Within the eThekweni Municipal Area (EMA) the main limiting factors of our two grass-dominated veld types (KwaZulu-Natal Sandstone Sourveld and Nongongoni Veld) are fire and grazing. This is why our grasslands are sometimes referred to as Fire Climax Grasslands. As our grass-dominated ecosystems are reduced through urban development and agricultural uses, they often end up as small islands where grazing and fire are reduced or done away with completely. Our climate favours natural succession from a grass-dominated ecosystem to a more wooded one, resulting in grasslands becoming woodier if not properly managed.

## Is bush encroachment a problem?

Yes, within the EMA it is a problem. Our diverse grasslands are prone to bush encroachment which reduces their biodiversity further. Here are some facts about them:

1. KwaZulu-Natal Sandstone Sourveld, is classified nationally as an “Endangered” vegetation type and only 0.2% of it has been placed under formal protection within our province’s proclaimed parks. Within the EMA, at least 73% of this veld type has already been transformed through some form of habitat destruction. This veld type carries a high diversity of flora and fauna and it is thus important that we properly manage those areas that are still untransformed in a way that this asset is properly conserved.
2. Approximately 62% of the original area of Nongongoni veld, within the EMA, has been transformed. There are only a few patches of this veld type left in the western parts of the EMA, therefore it is vital that it is properly conserved.
3. The species diversity within encroached areas is often very low, with only a few species dominating, thus reducing biodiversity value. Bush encroachment also poses problems for those who graze horses and cattle on their land as valuable grazing is lost.



*Species rich  
KwaZulu-Natal  
Sandstone  
Sourveld.*

## Are all trees within grass-dominated veld types bad?

Absolutely not! There are many tree species that are particularly suited to living in a grass-dominated ecosystem and do not form bush clumps, for example Willow Beechwood (*Faurea saligna*) and Marula (*Sclerocarya birrea*).

## Some species often associated with bush encroachment

The list below features some of the more common bush encroachers that must be removed if you are going to maintain healthy grasslands.

- Bracken Fern (*Pteridium aquilinum*)
- Climbing Flat-bean (*Dalbergia obovata*)
- Coast Silver Oak (*Brachylaena discolor*)
- False Assegaiwood (*Maesa lanceolata*)
- Flat-crown (*Albizia adianthifolia*)
- Mitzeeri (*Bridelia micrantha*)
- Natal Wild Banana (*Strelitzia nicolai*)
- Pigeonwood (*Trema orientalis*)
- Sickie Bush (*Dichrostachys cinerea*)
- Tassel Berry (*Antidesma venosum*)
- Tinderwood (*Clerodendrum glabrum*)
- Wild Date Palm (*Phoenix reclinata*)



Bracken fern  
(*Pteridium  
aquilinum*).



Bush  
encroach-  
ment into  
natural  
grassland.

## Tips to follow when managing bush encroachment

When dealing with indigenous bush encroachment, discretion should be used. It would be wrong, and in some instances, illegal (depending on the tree species) to cut down all trees within a grass-dominated ecosystem. In many instances it is more a case of managing such clumps so that they do not begin to spread. Here are some points to remember when dealing with bush encroachment:

- Timely and proper management burns in grass-dominated ecosystems will suppress the emergence of woody vegetation and will usually destroy any tree saplings under 1 m in height.
- Emerging trees such as Flat-crowns (*Albizia adianthifolia*) or Pigeonwood (*Trema orientalis*) should be removed from grasslands as they act as nuclei for bush encroachment.
- The margins of bush clumps (also known as ecotones) often become overgrown with indigenous and alien invasive shrubby plants. These form impenetrable thickets which, over time, can aid in the expansion of the bush clump. These thickets can be cleared mechanically by pulling out seedlings or slashing larger plants. When slashing shrubby material, always apply herbicide as this will greatly reduce re-coppicing of plants.
- During management burns, allow the fire to burn into the bush clump. This will destroy all emerging woody species growing around the margin and ensure the clump doesn't get any larger (refer to ECOFILE 2 for more information on burning).
- It is a sound management practice to properly identify the species of trees in a bush clump so that no specially protected trees are damaged, killed or removed as this could result in prosecution in terms of the National Forests Act (1998).
- Bracken Fern (*Pteridium aquilinum*) growing within grass-dominated ecosystems is problematic as it is particularly invasive, smothering out grass plants and other forbs (herbaceous plants) and paving the way for the emergence of woody plants and forest pioneers. It can be removed mechanically by cutting stands continuously over six-weekly cycles, during the active growing period, or chemically, by applying metsulfuron-methyl or imazapyr based herbicide at the end of the active growth period in autumn.
- When using herbicide it is best to seek advice from someone who is qualified in the use thereof.

For more information contact:

- Plant Protection Research Institute  
Ntjg@natal1.Agric.za  
or 033 355 9416/ 033 355 9413
- National Department of Agriculture,  
PieterB2@nda.gov.za  
or 033 345 3515 / 033 345 3557
- Ezemvelo KZN Wildlife  
Mortyk@kznwildlife.com  
or 031 274 1150
- eThekweni Municipality Parks, Recreation and Leisure Department: Natural Resources Management Division  
MkhwanaziSibusiso@durban.gov.za  
or 031 311 6717
- eThekweni Municipality Environmental Management Department  
pettersont@durban.gov.za  
or 031 311 7011
- Your local Conservancy