

# Weeds in the Burdekin Rangelands: Impacts

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A plant that is beneficial from one perspective may be regarded as a weed from another. In the same way, any assessment of the impacts of weeds will be influenced by the interests and perceptions of those making the assessment. Even within land-user groups there may exist a diversity of opinions in relation to particular weeds.

## Impacts of weeds

All this makes assessing the impacts of weeds a complex issue. There are some species for which there is general agreement about their status as weeds but usually a range of opinions exists. Even rubber vine, which is very widely recognised as a serious weed in the Burdekin Rangelands and other parts of northern Australia, could, until recently, be purchased in southern Australia as an ornamental.

An overall assessment must weigh up the costs and benefits of the occurrence of a particular species. This should take into account that for any given weed, costs may be ascribed to one land use or location and benefits to another, or both costs and benefits may be ascribed to various land uses and locations.

One integrative assessment of weed impacts is implied in the state regulatory procedure of weed declarations. Such weed declarations may be made on a state-wide basis or in individual local government areas (Table 1 overleaf). Various categories of declarations are applied in Queensland under state legislation. Ten species (plus the various species of mesquite) currently present in the Burdekin Rangelands are recognised under this legislation. This recognition does not, of course, indicate what the impacts of particular weeds are or quantify them in any way, but does imply that there is

broad acceptance of their status as weeds. A national assessment of Australia's most serious weeds is provided by a listing of Weeds Of National Significance (WONS), an initiative of the National Weed Strategy. Impacts of various weeds were identified in qualitative terms, and are best considered in relation to particular land uses.

## Pastoral weeds

Plants may be weeds of pastoral lands for a number of reasons. They may be poisonous or unpalatable to livestock or they may be edible but provide less or poorer quality forage than other species. Various woody species are widely perceived to reduce the herbage supply through competition. They may also inhibit movement of livestock, reducing their access to water or forage, and make it more difficult to muster livestock. Shrubs can also provide harbour for feral animals such as pigs, which can in turn be a problem for livestock enterprises.

## Crop weeds

The small area of cropping within the Burdekin Rangelands means that crop weeds are not a major threat on a regional basis. However, some plant species present in the rangelands are a potential threat to adjacent cropping areas. One example is the threat that hymenachne (*Hymenachne amplexicaule*) poses as a crop of sugar cane in the Lower Burdekin region. It is likely, however, that hymenachne already present in the Lower Burdekin poses a far greater threat than plants that could be transported downstream from the Upper Burdekin.

## Weeds that increase risk of fire

A weed impact being realised elsewhere in northern Australia is that from bulky, perennial pasture grasses apparently altering fire regimes. In the Northern Territory's Top End, species such as mission grass (*Pennisetum polystachion*) and gamba grass (*Andropogon gayanus*) produce greater above-ground biomass, which cure later in the year, compared with the native annual or perennial grasses they have replaced. Consequently, there is the risk of more intense fires than would otherwise be possible. This is especially problematic in areas of more intense rural development and at the rural-urban interface. There is little evidence of this phenomenon in the Burdekin Rangelands, though species such as buffel grass may contribute to changed fire regimes.

### Weeds of national significance in the Burdekin Rangelands

<b>Hymenachne</b>	patchily distributed in wetland situations; sown as a ponded pasture species
<b>Lantana</b>	especially abundant in the north east of the catchment
<b>Rubber vine</b>	prevalent in riparian habitats
<b>Parthenium</b>	widespread but most abundant in southern part of the region
<b>Prickly acacia</b>	sporadic, but a major weed further west; common around Bowen
<b>Parkinsonia</b>	common on some floodout areas and along the Burdekin River itself
<b>Mesquite</b>	not common within the Burdekin Rangelands but presents a major threat



## Environmental weeds

A large number of plant species threaten various environmental values, hence the term ‘environmental weed’. By definition, invasive species have the potential to alter the structure and composition of the communities that they invade, though clearly species differ in their capacities to do so. Some may invade and yet remain minor components of the community, while others bring about dramatic structural change with far-reaching consequences for many components of the ecosystem.

The alien stoloniferous grass Indian couch has come to dominate the herbaceous layer across large sections of the Burdekin Rangelands. This is evidenced by data collected during the Dalrymple Land Resources Survey. Indian couch dominated the herbaceous layer at 56 per cent of sites in granodiorite landscapes of the Dalrymple Shire (Rogers et al. 1999). Small areas of the region show very strong dominance by buffel grass though this is usually in places where the species has been sown. It is less clear what environmental or ecosystem impacts dominance by these alien grasses may have. It has been argued that the abundance of Indian couch, for example, has reduced the risk of soil erosion. On the other hand, alien pasture grasses may not adequately replace the resources available to wildlife from native perennial tussock grasses. For example, a short sward of Indian couch may not provide adequate shelter for ground-dwelling reptiles and the seed produced by some alien grasses may not be suitable for granivorous birds (Woinarski and Tidemann 1991).

Some of the most obvious changes to the structure of native vegetation communities are those associated with invasions by woody species. An extreme example is provided by rubber vine, which dominates extensive areas of riparian vegetation along the Burdekin River and some of its tributaries. Rubber vine can make up a very high proportion of the above-ground biomass of these systems, which are naturally dominated by species such as tea-tree (*Melaleuca leucadendron*), river she-oak (*Casuarina cunninghamiana*), Moreton Bay ash (*Eucalyptus tessellaris*) and blue gum (*Eucalyptus tereticornis*). These communities provide important habitat for other animal and plant species and there is a

perception that they may be threatened by rubber vine dominance (Humphries et al. 1991). The Burdekin Rangelands provide other examples of invasive woody species that can become dominant, and so potentially threaten environmental values of the invaded communities. They include parkinsonia, which can colonise flood-ways, becoming the dominant woody species in formerly open areas or forming a shrubby understorey beneath stands of, for example, Reid River box (*Eucalyptus brownii*).

Often, communities are threatened by a mix of alien species of a variety of life forms, as is occurring, for instance, in the riparian zones of the Burdekin River. In these situations, the invasive species may include, rubber vine, chinee apple, lantana, parkinsonia, bellyache bush (*Jatropha gossypifolia*) and various other understorey species. Invasion by ‘weed complexes’ may result in newly emerging vegetation communities. However, their environmental impacts have not been thoroughly explored. While there have been considerable speculation and casual observation on the impacts of weeds, there have been few attempts to systematically measure those impacts.

## References

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Category P1 Introduction into Queensland is prohibited.	Category P2 To be destroyed throughout the state or relevant parts thereof.	Category P3 To be controlled on land under control of govt. dept. or local govt.	Category P4 To be prevented from spreading.	Category P5 Numbers and/or distribution to be reduced through state or parts thereof.
Prickly acacia Mesquite	Prickly acacia Rubber vine Mesquite	Chinee apple Mesquite Parthenium Parkinsonia Prickly pear Thornapple Noogoora burr Giant rat's-tail grass	Sicklepod Parthenium	Sicklepod

**Table 1**  
Five categories of declared plants in Queensland and the declarations relevant to the Burdekin Rangelands. (DNR Pest Fact Agdex 647, 1998).