Burning in Queensland's Tropical Forests and the consequences.

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This article is in response to a talk by Greg Miles that was republished in the Tablelands Branch newsletter May 2013. I suggest you go here http://www.topendnativeplants.org.au/news.php, open the April 2012 newsletter and read Greg's talk first. Many of the points raised by Greg apply to Queensland as well. There are many reasons for 'burning off', such as:

Protecting life and property
Preventing 'wildfires'
Providing green pick for grazing
Etc

There are numerous ideas on how and when to burn. Burning early to prevent the intense fires that can come from late dry season burns is one of them. Greg mentioned that this severely reduces the termite numbers and this was a problem in relation to the amount of grass they consume. This is only a part of the problem as termites are a major food source - many birds and small mammals gorge themselves on them when they swarm. It also destroys grass seed that is essential for many birds. Early burning also kills almost all the hibernating insects that are not due to hatch or emerge till the first storms in October or November. The insects are in the grass or leaf litter and they are at the bottom of the food chain. If you destroy the bottom of the chain the whole system eventually collapses. I strongly suggest (if you have not yet done so) download and read the Into Oblivion report at:
http://www.feral.org.au/wp-content/uploads/2010/09/into_oblivion.pdf
This strongly links the sharp decline of small mammals with regular burning. You should also see this blog:
http://blogs.abc.net.au/nt/2012/07/kakadu-on-the-verge-of-extinction.html

Greg states that the CSIRO recommends a five year space between burns. I say this is nowhere near enough. What happens when a forest is burnt every year?

1 A seed bed is provided for the tree and shrub species to germinate so every year more and more saplings appear until the forest resembles nothing like it was say 50 - 100 years ago. Early burning means more saplings survive.

2 If there are any fire resistant plants in the area these soon become dominant, such as Casuarinas.

3 All the organic matter is removed, instead of breaking down to maintain healthy soil.

4 The main element that is lost in fire is nitrogen, which is the key element for growth.

5 Any large trees that have some bark burnt never have a chance to heal and each year they burn further through and eventually fall down. Large trees provide the hollows for mammals and birds to breed and shelter.

It takes more than five years for a tree to completely heal a burn scar and I suggest there should be at least ten years between the burning of any individual area of forest.

Studies in New South Wales suggested that in heath country the burn cycle should be fifteen years.

Greg mentioned that when the buffalos were removed from Kakadu this caused a sharp decline in wildlife. A very similar and tragic thing happened when the 40 Mile Scrub (40 miles west of Mt Garnet) was 'saved' by National Parks. In the 60s this area was a magnificent example of dry rainforest

Forest burnt almost every year near Atherton.

Large eucalypt tree on the way out due to regular fire damage.

The end result of yearly burns.

with many large emergent trees such as Figs, Burdekin Plumbs, Ailanthus, Brachychitons and others. In 1970 it was declared a national park and sometime later fenced.

When it was part of a grazing property the cattle sheltered in the rainforest and kept the surrounding grass short, thus reducing fire intensity. At this time the scrub was rich with wildlife, including wallabies, brush turkeys and vast numbers of butterflies. After it was fenced and the cattle removed the grasses (especially exotic species) grew up against the rainforest and fires almost every year ate their way into the scrub. This allowed lantana to become established along the edge and as it usually dies back in these dry areas the fires increased in intensity.

By 2005 the park was in a sorry state and in that summer (2005-6) a fierce fire took out another large area just past the toilets. This fire was so fierce that it even burnt the roots of Gyrocarpus, causing holes in the ground.

It would seem that the park has been abandoned as the fire break is now completely covered in 1.5 m high Grader Grass.

Graham Wood suggested that cattle should be put back into the 40 Mile Scrub to reduce the grass levels and fire intensity. I am sure this would help but they do not eat lantana or Grader Grass so the problem would not be completely solved. The very least that needs to be done is to maintain the firebreaks around the rainforest and help to prevent fires from destroying the remaining areas. **I would go so far as to suggest that cattle be put into all national parks where introduced grasses have become prevalent. This would be the first step in reducing fire damage.**

Many White Cedars are established amongst the grass and lantana and if the fires could be kept out for 10-20 years these would form a canopy and allow the rainforest to come back. These have already been burnt several times and are mostly multi-trunked as a result.

After the fire

One year later

The same area now, swamped with lantana and other weeds. The next fire will put paid to it.

The 'Firebreak'

White Cedars springing up amongst the grass.

Before humans arrived in Australia the only natural fire would have been from lighting strikes. Lighting happens during the stormy season, which is from about mid October till December. What would have

The Grader Grass covered fire break with other exotic grasses, a sea of lantana and one lone fig tree that survived.

mostly happened is that an occasional fire would start from a 'dry' storm then in a day or two be extinguished by the next storm. Fires would have mostly been short and intense with very long periods in between any one area being burnt.

When humans arrived here fire became very common and this changed the landscape forever. Vast areas of monsoon rainforest were changed to open forest and the Mega Fauna became extinct. Both these were in decline at that time because the world was in the grip of the most recent ice age. After the ice age ended and the climate warmed the rainforest in the higher rainfall areas spread rapidly but in the dry areas this would have been prevented by fire. That is why most dry rainforest is amongst boulders or in deep gorges where fire cannot get to it.

The next huge change came when exotic grasses were introduced for grazing and some like Grader Grass, by accident. These introduced grasses have changed everything and fires now can be up to ten times hotter than in the past. In Africa, where a lot of these come from, they have huge numbers of animals that eat them, in Australia we only have Kangaroos and Wallabies. This is why I say that in all national parks where these grasses have taken over cattle should be introduced to cut back on the fuel load. If this is not done, most of the open eucalypt forest of Cape York Peninsula will eventually be destroyed.

When and how often do we burn?

Because of the invasion of introduced grasses it is probably not practical to burn only in the stormy season. There is no way that any government organisation can think far enough ahead to be ready to burn after the first storm and when the next storm front is approaching. This means early burning is probably the only way, even though this destroys the base level of the eco system. Provided the burns are at least ten years apart and vast areas are not burnt in any one place in the one season most wildlife will benefit.

Another major problem with early burning, especially of large areas, is that the grass seeds are destroyed so seed feeding birds suffer. Burning in fairly small areas in any one year is a solution but this is difficult to achieve without creating vast numbers of firebreaks and maintaining them. Using existing roads and streams as firebreaks is the obvious first step.

Perhaps some of the exotic grasses can be somewhat controlled by burning at the time when it will do most damage to their seeds. This should work for Grader Grass as it is an annual but most other grasses simply just shoot back from below ground.

Numerous wildlife surveys prove one thing, there must be a long period between any one area being burnt. Whatever method is adopted this must be achieved to prevent the decline in wildlife and plant species diversity in our open forests.

Above is a great example of some forest that has not been burnt every year. This is in the Herberton State Forest. There are no weeds and many bare patches between the grass where small plants are growing. The fires must come from the Atherton side and the road acts as a firebreak. The picture below is taken from the opposite side of the road.

The forest on this side of the road has been burnt almost every year. It is full of weeds, including lantana and Blady Grass is dominant. This is what happens in the moist and wet sclerophyll forests of the Atherton Table-land. Blady Grass eventually becomes the only grass (if exotic species have not invaded) and this chokes out small plants and greatly increases the intensity of fires.

This area near Atherton shows the high density of saplings, exotic grasses and weeds; all due to burning almost every year. Blady Grass is also spreading rapidly and fire intensity will increase as this dominates the native species.

This area shows how Casuarina numbers can explode - they are almost as thick as the grass. Some of them will die from last year's fire but unfortunately, not enough of them.