Managing Perceptions

Can a change in attitude towards fire and its management ameliorate environmental problems in Australia's north?

by Gabriel Crowley and Peter Thompson

One of the most striking features of northern Australia in the late dry season is the amount of recently burnt country. Each year millions of hectares of Cape York Peninsula, northwest Queensland, Top End of the Northern Territory and Western Australia's Kimberley region are burnt. The 2004 season was particularly severe (see box p. 14), but in most years up to one-quarter of northern Australia is burnt. Unsurprisingly, fire management is one of the biggest environmental issues in the north. John Woinarski's article (see pp. 7–9) describes how failure to manage fire affects the environment and its inhabitants. Intense fires mean tree loss, and extensive dry season fires not only render vast areas of habitat unsuitable for fire-sensitive birds, but also prevent the lighting of fires needed later in the year for habitat maintenance. Tropical fires are also one of Australia's biggest producers of greenhouse gas.

A state of indifference

Effective fire management requires an understanding of complex environmental issues, adequate resources, and cooperation between land managers across the north. The problem is not simply one of too much fire, but a failure to manage fire. As in southern Australia, not enough importance has been placed on preventing wildfires for effective management to be instituted or adequately funded. But in contrast to southern Australia, the apathy is more likely to result from familiarity than from infrequent experience. To many northern Australians, fire is no more than an inconvenience that brings days of unpleasant smoke and blackens the countryside. As the intensity of heat is generally far lower than in the south, people are rarely killed or even injured by bush-fires. Economic costs are usually restricted to loss of pastures for a few weeks to a few months, depending on how late the wet season rains set in. The country will green up again, so why worry? That apathy is beginning to change.

Good fire, bad fire: shifting perceptions

The push for change has not come from people who have suffered heavy losses, but from a real concern for the environment, and recognition of the impact that removal of the Indigenous people has had on the land. In 1969, Rhys Jones caused a stir by insisting that far from being firebugs, by burning wherever they went, Aboriginal Australians effectively managed the country. But it was not until 1985 that it was demonstrated why this was good for the land. Chris Haynes, intending to spend time convincing a group in Arnhemland to burn less, found instead that the more burning they did, the less country got burnt. Fires lit soon after the wet season were small and patchy. As the country dried out, the fires spread a little further, and as the people moved about more, networks of fires produced fire-breaks. Late in the dry season the country was tinder dry, but the mosaic of burnt and unburnt areas stopped any fires that were lit from travelling far. Soon came the appreciation that the more work put into burning country early in the dry season, the more country remained unburnt into the next wet.

This appreciation underpinned fire management on Kakadu National Park from the late 1980s. But it has not always been successful. Proper fire management requires planning and resources, substantial financial and time commitments, and has to be done properly every year. But in this country, most environmental management is funded poorly or briefly, with the assumption that problems needing recurrent funding can't be fixed, so aren't worth the effort.

Expanding rainforests and thickening woodlands

In Queensland, a different picture was emerging. It was found that grasslands and wet sclerophyll forests were being invaded by more fire-sensitive, fire retarding ti-tree woodlands and rainforests. Similar changes have now been observed in other parts of northern Australia. Important habitats are being lost because of ineffective fire regimes. Rather than disproving claims of too much fire, these changes indicate that lack of fire and too much fire can and do co-exist. In the past, mosaics that stopped fire spreading uncontrollably also left pockets of fuel right until the first lightning storms. Those pockets tended to be in places too wet to burn earlier in the year. On Cape York Peninsula, long grasses in drainage depressions typically won't burn before September. By then, they should be surrounded by a network of fire-breaks. If not, a fire sweeping through the country in October will consume such grassland along with the rest of the country. But, if protected, these grasslands will burn readily as the first storms arrive. The closer the fires to the wet season, the more grasses are favoured over trees, so the grasslands are maintained.

How hot?

There is one more contributing factor, and that is the type of fuel available to burn. In most northern environments, fires travel through the grass layer only. Changes in fire regimes through the drier savanna woodlands of the Top End of the Northern Territory have promoted heavy fuel loads of the annual, native sorghum. In places, African Gamba Grass introduced for cattle grazing has led to even heavier fuel loads. Repeated fires in pastures dominated by these heavy grass loads can eventually eliminate all canopy trees.

In wetter areas, fuel loads have probably been reduced. Cattle collect in these areas as the dry season progresses. The heavier the grazing pressure, the lower the fuel loads, and the less effective fires are at maintaining open vegetation. And the less grass there is, the easier it is for trees to invade. Some ecologists believe that the wet sclerophyll forests of northern Queensland will never burn hot enough while cattle are allowed to graze in them.

A different north

Clearly, without effective fire management, the north Australian landscape will gradually change. In drier areas, where fires are frequent and intense, savanna woodlands could become treeless. Heath plants, which can take years to produce seed, may disappear. In wetter areas, where early fires are ineffective at retarding invading trees and shrubs, and the grass is heavily grazed, reduced fire intensity will continue to allow wet sclerophyll forests and grasslands to disappear under rainforests and ti-tree woodlands. These vegetation changes will advantage some common birds and other wildlife, but specialised species such as the Golden-shouldered Parrot and Yellow-bellied Glider will continue to decline.

Failure to manage

Three different sectors control most of the lands of the north: conservation, pastoralism and Indigenous land use. The reasons these groups aren't controlling fire as well as they might comes down to lack of understanding, motivation, cooperation and capacity.

One would think that loss of pasture, and potential loss of stock would encourage pastoralists to limit the amount of country burned, and it does. But pastoralists are reluctant to burn green, nutritious grass at the start of the dry season, and would rather risk the loss of crisp dry fodder at a time when rain may be just around the corner. Besides, the best of the sleek, fat cattle have been sold by the middle of the dry season, and most of the bony beasts that collect around water holes at the end of the year seem to get through, even if fires remove the last skerrick of grass.

National Parks managers, on the other hand, are not worried about turning off a profit, so should be able to burn at whatever time of year is appropriate. But that time has to fit in with other Park duties, such as visitor management, toilet cleaning, road maintenance, meetings and paperwork, and the availability of staff and of helicopters to get to remote areas. Funding cycles may mean plans can't be made until well into the financial year, when burning programs need to start in April and continue un-interrupted until the end of July. Critically, greater political kudos is gained from buying properties for National Parks, than for managing them well; budget allocations reflect this.

Many hope that the simplest answer is a return to Indigenous burning patterns. But in the vast expanses of traditional lands across the north, mosaic burning persists mainly in places where the traditional owners have never left the land: where hunting, fishing and collecting bush tucker are not just part of the lifestyle, but an integral part. Returning to country does not often mean returning to constant broadscale use of country. Much of the country is too remote to get to, and the fires lit around outstations and along access tracks are inadequate to pull up wildfires. A more important problem for traditional owners is gaining access to the land, and deriving a means of earning a living on it.

Top left: Across northern Australia, the Red-backed Fairy-wren favours dense ground vegetation, which can be destroyed by frequent, widespread fires. Photo by **Graeme Chapman**

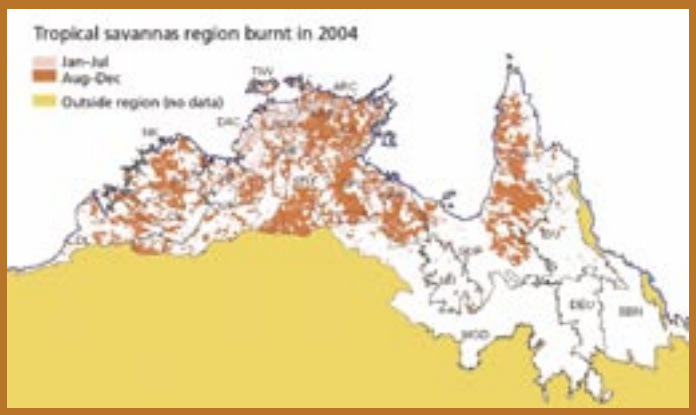
Centre: The aftermath of fire in tropical woodland near the Drysdale River, Western Australia, habitat of the endangered Crested Shrike-tit (northern subspecies). The species feeds on insects under the bark, which is damaged by the too frequent, hot fires that are now more prevalent than under Indigenous burning regimes. Photos by **Graeme Chapman**

Below: Grazing by cattle, and introduced pasture grasses, have changed the ground rules for fire management over much of the north. The Australian Bustard prefers the early successional stages after fire; often moving to newly burnt grasslands and spinifex. Photo by **Michael Todd**

A landscape of fire

In 2004, fires burned 25% of Australia's tropical savanna region. Most of the early season fires were lit as part of dedicated land management, of which a major objective is to stop the spread of later fires. But this burning was not enough. Much of the Kimberley (regions NK and CK), Arnhemland (ARC, ARP and CA), Sturt Plateau (STU), NT Gulf (GFU and GUC) and Cape York Peninsula (CYP and GUP) were burnt in extensive late dry season wildfires. This pattern is similar year in year out, and the consequent loss of trees and of plants dependent on fire for seeding is a particular concern in parts of the Northern Territory.

Areas that weren't burnt tend to be more intensively managed, with smaller block sizes and fuel sparse on the ground by the end of the year. These include parts of Queensland that are subject to vegetation thickening, attributed to a combination of overgrazing and inadequate use of fire.



Map compiled from: (i) Moderate Resolution Imaging Spectroradiometer (MODIS) mapping undertaken by the Bushfires Council of the Northern Territory and the Cooperative Research Centre for Tropical Savannah Management, and (ii) Advanced Very High Resolution Radiometer (AVHRR) satellite sensor data, containing 250 m and 1.1 km, on-ground pixel resolution, mapped by the Remote Services Unit of the Department of Land Information, Western Australia. Explanations for the abbreviated names of the bioregions can be found at: http://www.deh.gov.au/parks/nrs/ibra/

Kimberley Fire Project

The Fire Control Team (FCT) project (www.kimberley-fire-project.com.au) has been operating since January 2003 under the Kimberley Regional Fire Management Project. The FCT has built relationships with two Aboriginal language groups in the Fitzroy Valley to develop fire management teams that can assist landholders with on-ground preventative burning. The teams are now looking to strengthen the project through a Business Plan that takes into account cultural boundaries.

Kurungal Fire Team use a station map to plan fire management on Bohemia Downs in the Kimberley of Western Australia. Photo by **Will Philippiadis**

Good management: putting fire on the agenda

The problems of the different sectors may vary. But many of the solutions are the same. In remote areas, good fire management needs adequate resources and people with the necessary knowledge and skills. Across the north there are many projects trying to develop cooperation between all landholders. These have recently combined into The North Australia Fire Project of the Cooperative Research Centre for Tropical Savanna Management (http://savanna.cdu.edu.au/information/fire_knowledge_project.html). The project has four elements. The first is helping with immediate fire management by providing up-to-date information on where fires are, and assisting with putting in fire-breaks. The second is building the capacity of communities to plan and manage by providing jobs in fire management and training (in everything from incident management to use of computers, geographic positioning systems and geographic information systems). The third is to provide access to information required for long-term planning, such as the response of plants and animals, fire behaviour and cattle management, and to develop appropriate fire strategies to guide planning. The fourth is to provide information about fire through dedicated websites.

Seeing the fire problem as more than just an environmental issue is already having positive results. Rural fire brigades are providing training for jobs in natural resource management tasks that may include fencing, weed and feral animal control, as well as fire management. Cooperation between landholders in the Kimberley in Western Australia has resulted in the traditional owners being invited on to cattle stations to undertake fire management (see box below left). The Cape York Peninsula Sustainable Fire Project has been successful at convincing increasing numbers of landholders to undertake preventive fire management, assisting them with the information, skills and resources to do so. And as mosaic burning is also an effective means of reducing carbon emissions, there is the prospect for substantial funds to be committed towards fire planning and management well into the future.

Despite the 2004 fire season being one of the worst in recent years for the north, cooperative programs for managing fire are starting to show results. Land managers are beginning to appreciate just how much effort needs to go into fire management, and it will be some years before effective systems are in place. The most important thing now is for the momentum to be maintained.

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Below and inset: The grassy habitat of the Golden-shouldered Parrot needs a hot burn to stop encroachment by dense woodland formerly held at by Indigenous burning practices. Photos by **Michael Todd**