



Red alert for red-eyed pigeons

Before European settlement, fire in the Top End often originated near Aboriginal campsites. Lit early in the dry season, these fires tended to be small and slow burning, creating a fine scale patchwork of burnt and unburnt savanna.

Today, a decline and change in land management practices has seen large hot fires, late in the dry season, become more prevalent. These fires can burn extensive areas of savanna, and tend to destroy the seed on which grain-eating animals feed.

Dr Fiona Fraser, from the Key Centre for Tropical Wildlife Management at the Northern Territory University, says changes in savanna understorey caused by altered fire regimes, and grazing by cattle and buffalo, affects many savanna fauna.

One such species is the ground-dwelling, seed-eating, red-eyed partridge pigeon (*Geophaps smithii smithii*), which has become extinct from vast areas of its former range.

To try and confirm the reasons for this decline, in 1996 Fraser began looking at the ecological needs of the pigeon and the effects of fire and grazing on those needs. The research was based primarily within Kakadu National Park, which still maintains a 'healthy' population of partridge pigeons.

'The project explored the ecological requirement of the red-eyed partridge pigeon, Fraser says. 'These included the structural and floristic characteristics of their habitat, seasonal variations in their home range and the availability of seeds, and their nesting habitat.

'I then looked at the effects of fire and grazing on the savanna understorey,

focussing on understorey characteristics that were important for partridge pigeons. For example, were there different amounts of seed in burnt or unburnt areas and grazed or ungrazed areas, and where was the nesting habitat more suitable?'

To gather information on the pigeons' ecological needs, Fraser radio-tracked at least 20 pigeons for up to three years.

'The radio-tracking gave me all sorts of information I wasn't expecting,' she says. 'For example, I found that they walk long distances – up to 10 km in one case – to find water. I also found that their home range varies from about eight hectares in the early dry season to 31 hectares in the early wet.'

Fraser believes this large increase in home range at the start of the wet season is due to the sudden decline in available seed, and the need to search further afield for food.

'Up to 80% of surface seed germinates following the first storms of the wet season, so within a few days, all the seed becomes unavailable to the birds,' she says.

Fraser found that at this vulnerable time the pigeons relied on a few species of perennial grasses, which set seed early in the wet season. But these grasses are very sensitive to grazing pressure, which can reduce seed set or destroy grass clumps. As partridge pigeons rarely eat anything else but seed, a shortage will quickly affect their numbers.

Fraser's research also revealed that in all seasons, partridge pigeons prefer to feed in open areas, but use vegetated areas for nesting, roosting and shelter. These needs require a structurally patchy savanna

Red-eyed partridge pigeons, also known as 'Ragul' by the Aborigines, are found throughout the lowland woodland of Kakadu National Park. They prefer to walk rather than fly, nest on the ground and feed on a variety of seeds, including perennial grass seed during the wet and sorghum during the dry. For these reasons they are vulnerable to predators, and the effects of fire and grazing on their food supply.

understorey, which is best achieved through a fire management regime that ensures small-scale patchy fires.

'Hot fires late in the dry season destroy seed and remove large areas of vegetation. But earlier dry season fires expose seed by clearing away some of the leaf litter,' she says. 'And if they're small patchy fires, they also leave vegetation for the pigeons to nest and shelter in.'

Fraser is now working with park rangers and Aboriginal traditional owners in Kakadu, trialling different burning regimes in a small area of the park.

By implementing small changes in land management practices now, Fraser hopes to prevent the red-eyed partridge pigeon from going the way of so many other species.

'It's best to know what the correct management strategy is for a species, before it declines or goes extinct,' she says. 'We have taken a "learning by doing" approach to management, so that as we learn more about the habitat requirements of the pigeon, management can be refined.'

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