

CONSERVATION CORNER : THE EFFECT OF CHANGING FIRE MANAGEMENT ON AUSTRALIAN PARROTS

Introduction

One of the most momentous changes to be wrought on the Australian landscape since European settlement has been the alteration in both the frequency and intensity of bushfires. Many habitats, and necessarily their inhabitants have evolved to cope with, if not depend on fires of certain frequency and intensity. Across large areas of the country established rhythms of fire and regeneration have been changed by demands of human activities.

Prior to European settlement, different regions of Australia experienced fires of differing frequency and the plants inhabiting such areas thus vary in their sensitivity to burning and ability to regrow. This variability in local sensitivity to fire means that no one fire management plan can be implemented across the country. Even for a single species, local variation in climatic conditions requires that any recovery program include differing fire regimes for different areas. This is well illustrated by the Ground Parrot *Pezoporus wallicus*, an endangered terrestrial parrot occupying a variety of habitats of both eastern and south-western Australia.

Ground Parrot

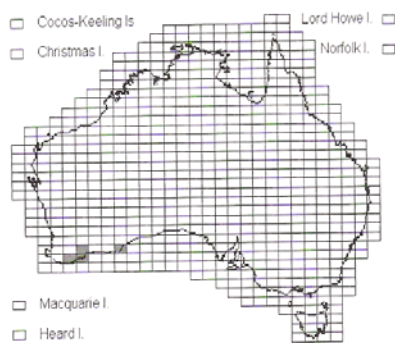
The Ground Parrot is a terrestrial parrot that lives in heathland and swampland. Its main food items seem to be seeds. There are several geographically separate populations of Ground Parrots, those occupying eastern areas of the continent and a separate population occupying south-western Australia and there



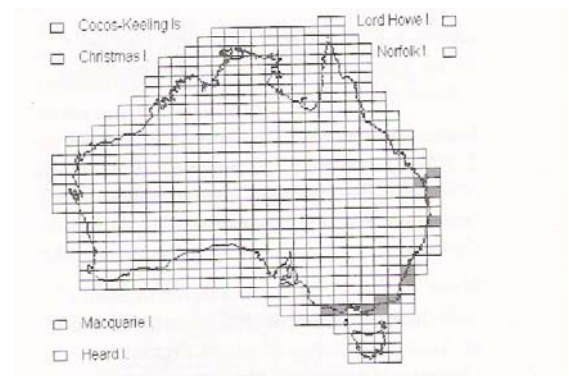
is considerable variation in habitat

characteristics between sites. Fire, whether natural or human motivated, is typical of all areas inhabited by the Ground Parrot, however the fire sensitivity of the various habitats is not the same.

For Ground Parrots to survive in Victorian heathlands, fires of less than 20 year intervals were required, while in southeastern Queensland, a comparable figure was 13 years. No Ground Parrots were found in heathlands with three or more fires four to six years apart in Victoria but parrots apparently survived these frequencies in southeastern Queensland. In Victorian sedgeland - where fires are uncommon - habitats remain suitable independent of fire age.



**Western
(left) and
Eastern
(right)
populations
of the
Ground
Parrot**



Parrots of the Tropical Savannahs

The tropical savannas of northern Australia are home to a large number of seed-eating birds. 55 of Australia's 90 seed-eating species are found there. They include parrots, quail, pigeons and finches.

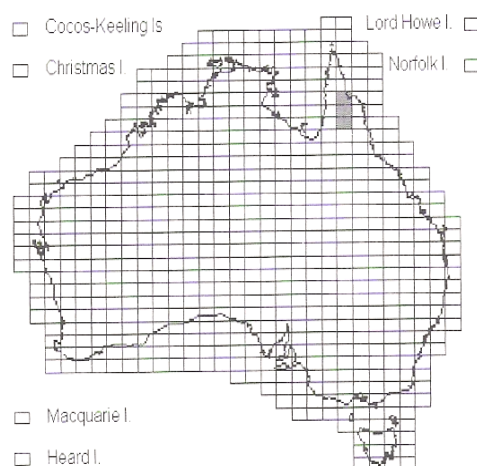
In the northern savannah grasslands of Australia several parrot species listed as extinct, endangered or vulnerable have had their decline in distribution, as well as recovery plans linked to fire management. Examples include the Paradise Parrot *Psephotus pulcherrimus*, Hooded Parrot *Psephotus dissimilis*, and Golden-shouldered Parrot *Psephotus chrysopterygius*.

Ground-feeding parrots are dependent on an abundance of seeding grasses and shrubs, particularly through the breeding season, so changes to ground cover are potentially damaging to local populations. It has been suggested

that the demise and possible extinction of the Paradise Parrot and restriction of range of the Turquoise Parrot *Neophema pulchella* occurred because expansion of the cattle industry and subsequent degradation of grasslands coincided with a period of severe drought. Together these factors caused a substantial change in the ground-cover vegetation of central Queensland. In the tropical savannah grasslands of the northern region of Australia similar changes threatened the persistence of the Hooded Parrot.

Golden-shouldered Parrot

Golden-shouldered Parrots were once found throughout Cape York Peninsula but have been declining in numbers for at least 80 years and now occur only in two small areas near Musgrave. As is the case with much of north Australia, fire plays an important role in the maintenance of ecological systems in Cape York and changed fire regimes are considered the main culprit in the decline of the parrot for a number of reasons.



**Distribution Map:
Golden-shouldered Parrot**

As the fire grass seed germinates with the first rains of the wet season, sprouting grass obscures seeds still lying on the ground. However, if this new growth is burned, un-germinated seeds which remain become visible to the parrots. Fires at this time seem to be vital for the parrots' survival, allowing them access to seed which will keep them going until the perennial cockatoo grass produces seeds about six weeks later. To complicate matters, cockatoo grass which is burned after the first storms produces up to 10 times more seed, later in the season, than the unburnt cockatoo grass. Evidently, a complex mosaic of small areas burned at different times is most likely to provide a sustained source of food for the birds.

Another concern is the trend for grasslands to be invaded by woodland, particularly broad-leaved tea-trees where fires are infrequent. These trees have a tendency to sucker from the base. Frequent fires will keep the suckers below grass level but once the trees have had a long enough fire-free period to grow over a metre in height, only very hot fires will kill them.

The presence of these trees affect the parrots in two main ways. Dense growth cuts out light, thereby reducing grass growth and food resources. They also provide nesting and perching sites for butcherbirds which are major predators of both young and mature birds.

The later in the dry season that a fire is lit, the smaller the tea-trees will be by the next wet season. Only very late dry season fires or storm-burns will keep most re-suckering tea-trees below the grass height. After four or five years with no fire or early dry season burns, the grasslands can be completely lost to tea-tree woodland.

Impacts on birds

A major implication of grassland thickening on Cape York is the ensuing loss of habitat, particularly for granivorous birds such as the Golden-shouldered Parrot, but also the Star Finch *Neochmia ruficauda*, Gouldian Finch *Eythrura gouldiae*, Buff-breasted Button-quail *Turnix olvii* and Black-faced Woodswallow *Artamus cinereus*. The processes involved in loss of loss of perennial grasses such as cockatoo grass, which seed-eating birds rely upon for food at critical periods of the year (especially the early wet season). Vegetation thickening also results in more successful predation by birds such as the Pied Butcherbird and loss of the termite mounds in which the Golden-shouldered Parrots nest.

Fragmentation and Forests

However, any species of parrot can be adversely affected by fire.

Aside from alteration of the frequency and ferocity of fires, European settlement of Australia resulted in many changes including the clearance of land for agriculture, and the introduction of foreign predators and herbivores. Such changes have resulted in the loss, fragmentation and degradation of much of the native habitat. Fragmentation of habitat creates increased sensitivity of remnant patches to fire. Not only are such fragments more vulnerable to destruction through the more extensive fires common in post-European settlement times, but they may also represent the only refuge for the animals and plants. In addition, destruction of old trees, previously invulnerable to fire, affects many species of parrots through loss

of nesting hollows, already in short supply through habitat loss and competition from feral and pest species.

Since European settlement of Australia, the pattern of the firing of the land has changed. Aboriginal fire practices produced a landscape of a mosaic of burnt and unburnt vegetation through frequent fires of small intensity. Unburnt vegetation provided a refuge for escape from a fire, while recently burnt areas represented areas available for re-colonisation. European settlement resulted in the suppression of Aboriginal fire practices as well as fragmentation of the landscape and rampant weed invasion. These changes led to the potential for large fires of extreme intensity, capable of destroying areas previously considered invulnerable to fire, this is particularly a problem for fire-sensitive forests, such as rainforests.

References

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