CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS: INCLUDING SOME SUGGESTIONS ON AN ECOLOGICAL MANAGEMENT PLAN FOR THE CONSERVATION OF GRASSLAND AND OTHER ASSOCIATED OWL SPECIES OF SOUTH AFRICA.

“The first tactic for preserving an endangered bird is of course to preserve the ecosystem of which the bird is an integral part”

(Temple, 1978)
With the use of the information from previous chapters, it is possible to come up with a management plan to promote the long-term survival of owls within South Africa. The issue at hand is essentially an ecological one, namely the relationship between owls and the habitat that is available to them. The results from this study have direct implications for conservation planning.

Winter is often a period of food shortage for raptors (Village, 1990) as well as small mammals, such as granivorous rodents and insectivorous shrews. Relatively little management of motorway verges permit the colonisation of natural vegetation and the development of an undisturbed edge-habitat favourable to small mammals and other prey species (Meunier et al., 1999) subsequently attracting raptors to these areas during food shortages often leading to their deaths on the roads. In future, landowners and road management should actively manage open vegetation away from the roadsides during these winter periods, to maintain a grassland habitat suitable for owls and their prey, simultaneously making roadside verges less attractive to both.

Road verges in the study site were particularly narrow, and have to be cut for safety reasons of poor visibility to motorists and veld fires. The width of verges seems to play an important role in other diurnal raptors utilising roadsides. Wider verges, of up to at least 30 m, could therefore be recommended to maximise the number of raptor species and individuals using them in agricultural landscapes. However, prey abundance and availability could be enhanced in areas beyond road verges, especially in winter. For example, a strip of suitable habitat furthest from the road verge could be kept untouched
(i.e. no burning, cutting, farming or grazing) for two to three years to offer a stable habitat for small mammals, thus attracting owls to nest and forage in those areas instead.

Estimating the real benefit of road verges to raptors would involve measuring accurately the threats due to traffic. Clearly it is difficult to deal with the risks posed by birds, especially to vehicle collision, as this hazard is persistent and ever changing. Road kills of raptors seem to have increased in the last few decades (Newton, 1979). However, there have been few studies on the significance of road mortality on raptor populations, except for the Common Barn Owl (T. alba alba) of Europe for which the detrimental effect of roads on local populations is accepted (Illner, 1992; Moore & Mangel, 1996). This study showed that roadsides can be important resources for not only diurnal, but also nocturnal raptors in agricultural landscapes. Their management should be included in a comprehensive strategy for raptor conservation, particularly in counterbalancing the threats due to intensive agriculture. Dickerson (1939) concluded that a practical experimental approach to the solution of the problem of destruction of wildlife on highways by vehicles is not a search for means of eliminating such destruction entirely, but rather of finding means to reduce to a minimum the death toll in each kind of highway environment.

The Grass Owl is of high conservation concern as it is listed in the Eskom Red Data Book of Birds of South Africa (Barnes, 2000) as vulnerable. This is due to its rapid decline in population size and range due to habitat loss. It is a narrow-niche species with well defined habitat preferences and specialised feeding habits that are likely to be affected most by competition with man. A
very recent proposal to extend the study area highway, which would dissect previously undisturbed or lightly disturbed habitat suitable for grassland owls, started during this study. Until then, monitoring of the relevant section of highway is recommended before a greater number of these owls are killed as a result of this proposed road causing another hotspot in the area.

It is important that there is a cooperation of all concerned parties, including the wildlife specialists, the civil and landscape engineers, the grain distributors, the National Roads Agency and more importantly, landowners. Often, there are conflicting opinions arising from these different disciplines. Modification of vegetation alongside roads offers an opportunity to benefit all parties concerned if carried out correctly. According to Dickerson (1939) a definite program of experimental study should thus be undertaken and adequately supported by some progressive highway department that may provide the needed facts on which to base an effort to make our highways less destructive to both wildlife and humans.

The impact of management depends in part, upon a species’ nesting phenology and site fidelity to coincide to that of the landowners farming practices, incorporating a mutual harmonious association between man and owl, allowing owls to thrive on natural and active agricultural lands. This allows for the possibility that farmers and farm workers become fully involved in the conservation of these owls. It is appreciated that the possible impacts of owls nesting in important cultivated lands impair the farmers’ livelihood, but it is emphasised that the presence of these owls within the vicinity is an indication of good farming practises using natural rather than chemical pest
control for rodents occurring on farms. A significant stride forward in education and awareness has been carried out by the Owl Working Group of the Endangered Wildlife Trust, including the implementation of an “Owl Day”, actively getting farmers, children and relevant and interested parties involved, as well as awareness campaigns on the medicinal mythology associated with owls, leading to further unnecessary deaths.

Two factors cause bird populations to decline: factors that reduce fecundity, and those that increase mortality, thus reducing the survival of a population and its ultimate extinction. Factors reducing fecundity include: increased predation and destruction of suitable habitat, leading to increases in intra- specific competition in terms of suitable nesting sites and prey availability, a topic covered in Chapter 2. Factors increasing natural mortality, covered in Chapter 3, include: persecution, secondary poisoning, collision with obstacles, drowning and more importantly, as seen from this study, death due to vehicle collision. All factors are circumstantial and a thorough knowledge of each attribute is necessary, if conservation problems are to be anticipated.

From the findings of this study, it is apparent that the overall population size is larger than previously thought within the study area. This is indicated by the persistent high mortality counts. The habitat quality within the area remains suitable for the breeding and foraging for these owls, allowing for such a high density. It is also known that raptors, which have a fairly stable, but often varied food supply, show fairly stable breeding densities (Newton, 1979). Nonetheless, the African Grass Owl still remains severely threatened and
human impacts on its habitat need to be minimised so as to allow empty niches to be filled by this species.

Habitat loss is the cause of 65% of avian endangerment (King, 1978) with today’s endangered birds having invariably been placed in jeopardy as a result of man’s purposeful or unwitting alterations of natural ecosystems (Temple, 1978). Flight paths and foraging grounds of owls are unavoidably altered by the presence of roads through areas of prime importance but conservation of raptors (as with other wildlife species) requires landscape management technique, which allows the best usage of resources by both wildlife and man (Brandle, Utschick & Schmidthe, 1985), considering the path of least destruction to both. Conservation measures regarding the local habitat (increasing the diversity in farmland environments including the supply of appropriate nest sites) certainly offer an opportunity for maintaining and increasing their breeding population within a relatively short period of time.

These results underline the need for restoration plans that include the preservation and enhancement of Gauteng’s important grassland as well as wetland ecosystems. A comment made by the Chairman of the Owl Working Group of the Endangered Wildlife Trust sums up the plight of the Grass Owl “the heavy losses could spell disaster for South Africa’s indigenous owl population and intervention is necessary if the owls’ long term survival is to be ensured” (pers. comm. Verdoorn, 2002).
Recommendations for future studies

Similar surveys should be undertaken in different areas within South Africa to establish whether similar circumstances are applicable to these species and their associated habitat throughout the country, or if it is limited to this particular study area. More detailed studies are required to quantify characteristics of other bird communities on roads of different width and traffic volume in comparison with the general off-road communities. These studies should also include birds nesting along verges, mortality and reproductive success by ringing and recapturing individuals and comparing them to those nesting away from roads in protected areas. This would provide data to quantify the effects of roads, if any, as ‘ecological traps’.

It seems as though a sink is formed whereby individuals of the owl population within the area are being killed rather than those from surrounding areas moving into this specific area, although they may contribute to a few of the mortality counts. This could only be confirmed once more extensive studies have been conducted on hunting and dispersal ranges of the four owl species and when home ranges become more defined. It is hoped to determine such patterns in movement with a combination of radio tracking and ring recoveries. This would include monitoring the resident population in future by ringing all nestlings from nests found in close proximity to the road i.e. a 5 km corridor on either side of the road. This would help measure what proportion of the selected population is being killed by traffic through recoveries of carcasses (similar to a catch and release method). In this way it could be determined at
exactly what age and how many from each brood are being killed. This method has been used in other studies such as Shawyer & Dixon (1999) for Barn Owls killed on roads in Britain and that of Coulson’s (1961) study of post-fledging traffic mortality of the Blackbird also in Great Britain. However, Newton (1979) states that this method should be used with caution when estimating mortality derived from ring recoveries, as it might not be a true indication of mortality counts, as many carcases would not be collected.

Further study is required to establish if the degradation of grasslands and the size and distribution of suitable nest patches on intensively farmed properties have reduced nesting success of grassland owls, and ultimately, contributed to the declining Grass Owl populations.

REFERENCES


