CHAPTER 4

MITIGATING MORTALITY IN ROAD-KILLED OWLS.

“If man’s influence on wildlife is multi-factoral, a policy to protect wildlife from extinction should be multi-directional”

(Olendorff & Zeedyk, 1978)
Previous authors have suggested some recommendations, but most are impractical, costly and time consuming. Strategies to modify the behaviour of the agent (the animal), the host (the vehicle occupant) and the environment (the car, road and habitat) have been adopted by Weir (2002). If one of these factors could in some way be adjusted, this may in turn reduce mortalities (Figure 4.1).

![Figure 4.1: Relating factors to owl mortalities](image)

All proposed recommendations have their pros and cons and will be discussed separately. Increasing the awareness of motorists using the road (host modifiers) has already been carried out in the area and one of the first proposed solutions was to erect traffic signs warning motorists (the host) of the presence of owls in high-risk zones, something which has also been suggested by Weir (2002). This could only be effective provided drivers comply (refer Figure 3.15). The signs were placed every five kilometers along the busy 30 km stretch of road. Leaflets were also handed out at the tollgate, of schools and to the farmers in the area to inform drivers about the owls and provide road safety tips to help drivers avoid hitting the owls between dusk and dawn, when these birds are most active. To date, the road signs appear to have had little impact on reducing mortalities. Mortality counts after signs
were put up were just as high as opposed to when there were none. One awareness strategy that has attracted many observers has been televising the current situation. Another awareness campaign specifically targeting the transporters of grain may be carried out through the distribution of pamphlets and articles highlighting the plight of the owls and emphasising that less spillage of grain benefits all parties concerned. According to Finnis (1960), requests have been made by some writers for a greater use of the car’s hooter when approaching feeding birds, and others quite rightly, condemn the callous way in which some motorists drive into birds without bothering to slow down at all. Another host modifier would be to reduce the speed of traffic on roads where wildlife are plentiful.

Road and road verge habitat (environmental) modifications include the introduction of rumble strips slowing vehicles, animal overpasses and underpasses, walls, culverts, and fencing. Roadside mirrors and reflectors deflecting headlight beams towards the sides of the road to alert animals could also be used. Vehicles can also be equipped with devices that catch wind currents and produce a high-pitched signal to alarm animals, although their usefulness is disputed (Weir, 2002).

One solution that should be considered involves the maintenance of roadside cover (environment modifier) although this opposes these recommendations of Shawyer & Dixon (1999) who state that it would be neither effective nor practical to recommend the eradication of suitable habitat on the verges of roads by frequent mowing or the planting of bushes and trees. To have any effect in discouraging owls these measures would need to be implemented
over long stretches of road and are likely to act in a negative way on other fauna and flora, which depend on these semi-natural grasslands. However, in the current study only a total of 10 km within the hotspots would need to be maintained. It is however, agreed that sustaining linear stretches of rough grassland should be continuous and not interrupted. This would be achieved by avoiding the growth of dense grasses and sedges that extends the full width of the road verge. A corridor of suitable grassland not less than three meters wide should be left beyond the road verges, parallel to the road to support continuous flight paths in open grassland and to discourage owls from diverting onto the road. Shawyer & Dixon (1999) also suggested that the creation of high hedges or tree screens at locations where Barn Owls regularly cross roads and where hotspots have been identified and are to be recommended where these are considered practical. They can be of value by encouraging owls to rise above traffic, thereby reducing their susceptibility to frequent roads. This may also be a possible solution specifically in the ‘Grass Owl hotspot’ where these owls are in danger of traffic, not by sitting in the road but by flying into traffic.

Shawyer & Dixon (1999) found that Barn Owls are able to hunt open stretches of grassland along road verges in comparative safety but when they arrive at barriers of unfavourable habitat, they divert from their line of flight onto the road itself where they become exposed to traffic. A recommendation given by Shawyer & Dixon (1999), adapted to this study would be to place diversions along the grassy corridors, stream and drainage ditches, which have been identified as important dispersal routes for owls intersecting the road. These
diversions should be placed approximately 100 m from the road by providing additional corridors of rough grassland. According to Shawyer & Dixon (1999) these should be set at right-angles to the natural dispersal routes and parallel to the road in an attempt to encourage owls to utilise pathways on open farmland rather than the verge itself.

Baudvin (1997) reported that owls were attracted to roadsides in France, preying on voles and recommended that the roadside vegetation be managed to make it a less suitable for such prey. However, some species may rely heavily on a good food source and confine their activities to road verges themselves where prey is plentiful. These included many diurnal birds of prey as well, such as the Black-shouldered Kite, Lesser Kestrel and Amur Falcons, which depend on such a food source, and which were rarely influenced by the dangers of roads. It may thus also be an oversight, for owls may rely heavily on such an ecological niche as well. In such a situation it is recommended that these areas be maintained carefully to suit both the needs and the well being of the owls as well as other fauna.

An open type of environment is considered by (Dickerson, 1939) to be many times more hazardous for wildlife than any of the other types of diverse habitats. If this is assumed it suggests an opportunity to apply practical methods of management by modifying these types of roadside environment towards the less hazardous kinds where less mortality occur. In a previous study (Meunier et al., 1999) showed that extensive management of motorway verges (as opposed to intensive mowing) encourages a favourable habitat for small mammals in a landscape of intensive cropland. If the same were to
apply further away from the road, rodents may be attracted to those areas, encouraging owls to rather hunt further away from the risks of the dangerous roads. Reducing prey alongside the road and establishment of owl restaurants away from the dangers of the road are examples of agent modifications in this study.

Based on data such as seasonal counts, hotspots, and features causing owls to frequent roads (see Chapter 3) allows for the postulation of possible solutions relating to the agent, host and environment. The following possible solutions have thus been formulated accordingly (together with their positive and negative aspects):

- **Control of prey and reducing food abundance on roads:**
  - Eradication of prey along the roads using rodenticide not harmful to owls and other fauna such as Racumin® (other pesticides may be harmful and the risk of wiping out food source in the area and poisoning other fauna in the vicinity).
  - Removal of rodent burrows and nests in the vicinity (deterring other birds of prey reliant on such a food source).
  - Diverting prey off the roads, either by digging trenches or culverts parallel to the road forming over and underpasses, placing of fences or placing of walls alongside road verges preventing them from wandering onto the road.
  - Clearing roads of potential food supply for the prey (discussed separately).
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- Changing of suitable habitat along the roads (discussed separately).

- Changing roadside habitat: (with the help and permission of road management):
  - Physically modify or remove habitat that is suitable for the prey species along the sides of the road especially in the hotspot zones.
  - Physically modify or remove habitat cover that allows owls to get close to the roads (i.e. overgrown grass or specific vegetation causing a corridor that the owls follow leading to breaks in cover).

- Changing fire regimes: (with the help and permission of farmers and road management):
  - Patch burning and spreading out the burning period.

- Cleaning of road and preventing grain spillage: (farmers, grain distributors road management and volunteers):
  - Physically sweeping roads of any spilt grain (although it would only take place during May to August and include casual labour it is probably difficult as it is time consuming and costly).
  - Design a plastic lining that would fit into the corners and tailgate areas of trucks and so reduce grain spillage. The possibility of involving previously disadvantaged communities in the manufacture of the ‘plastic corners’ using recycled plastic.
  - Convincing farmers and silo distributors to prevent spillage and protect grain from being spilled during transport of their grain.
onto the roads by covering their cargo and not overloading trucks.

- Grain transporters can be encouraged to use an alternative route that does not transverse the owl breeding areas (however there is the possibility of creating additional hotspots on the alternate roads).
- Continue weighing trucks leaving the silo, and upon arrival at the destination to record the average loss of grain. This information can then be transformed into monetary values, and used for the campaign for less spillage.
- Create an “owl friendly” logo that can be placed onto those trucks that do not spill grain.
- Try work into the requirements of the tender documents as ‘owl friendly transporters’, enforced by silo managers and encourage the different transporters comply with these requirements.
- Create incentives to the transporters such as certificates or prizes for no spillage.

- Reducing speed limit: (with the help of the National Road Agency of South Africa, although this is a long term solution that it would be very difficult to implement):
  - Reduce the speed limit to 80 km/h only in the 10 km hotspot (long term solution).
  - Reduce speeds at different times of the day and night.
  - Placing of speed humps or rumble strips or similar in the 10km hotspot (long term solution).
Placing of “arrive alive” type flash-boards along the hotspot zone alerting motorists of owls and dangerous accident zone.

Placing of stop streets in the hotspots (one of which has been taken away already which was close to the hotspot zone (long term solution).

Restrictions should be imposed on drivers, exceeding speed limits during the evenings. Although this is a short-term solution it may be implemented by having the traffic department place traps or dummies along the road, during nights in winter.

Visibility to man and owl:

- Lighting up of sections (only the 6 km hotspot) with streetlights, which reduces the glare of oncoming traffic.
- Using a concrete road surface instead of tarmac may also increase visibility of a vehicle.
- Use of roadside mirrors and reflectors to deflect headlight beams towards the side of the road to alert animals.
- To develop some kind of warning system for birds. Vehicles have known to be outfitted with devises that catch wind currents and emit high-pitched signals to frighten animals. Although there is much debate about their usefulness and would take many more years of research to confirm their impact on these owls.

Diverting future roads:

- Prevent future problem roads from dissecting through areas where owl populations occur, especially the endangered African Grass Owl of which only 5000 individuals are left.
Conducting full E.I.A. assessments of such future developments.

Creating owl restaurants (with the permission of land owners):

- Situated some distance away from roads (must undergo a testing phase).

In the absence of adequate experimental evidence, which still needs to be conducted, it is recommended that the initial approach would be to modify or remove vegetation along roadsides. The maintenance of bare gravel on highway shoulders has certain suitable features to recommend it in addition to any other modifications which will reduce the presence of prey and thus of owl mortalities. This should be replaced, in another area of suitable habitat further away from the road itself by similar characteristics present along road verges, attracting prey and owls to those areas instead. This may also be achieved by the use of ‘owl restaurants’ with suitable natural hunting grounds for the species involved. Marsh Owls would need perches not higher than 1.2 m and other species would need perches 1.8 m in height. Grass Owls do not utilise perches to the extent that they would frequent these sites. However, as noted in previous chapters Grass Owls were observed to utilise perches at Barberspan Nature Reserve in the Northwest Province. However, these perches were some distance from the closest road and Grass Owls utilising these perches were only observed at brief intervals. Small mammals would also have to be removed from the roads at the same time, otherwise these restaurants will have little impact on the original problem at hand. These advantages, also do not give an indication of what negative factors may be
involved such as if the removal of prey would result in the decrease of offspring in the area. Thus it is recommended in future studies to conduct initial tests before this method is implemented. In the mean time, provision should be made for other potential solutions referred to above.

REFERENCES


