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Management of Southern African Gamebirds: Opportunities and Threats

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Three evolutionarily quite distinct groups of galliforms contribute to a healthy wingshooting industry in southern Africa: guineafowl (*Numida* spp.), francolins (*Scleroptila* spp.) and spurfowls (*Pternistis* spp.). Some species, such as the helmeted guineafowl (*N. meleagris*), Swainson's spurfowl (*P. swainsonii*) and greywing francolin (*S. africanus*), thrive in moderate to heavily disturbed landscapes, mainly agriculture. In fact, helmeted guineafowl and Swainson's spurfowl increased both in abundance and range during the 20th century. Others, such as the redwing (*S. levaillantii*) and Orange River francolins (*S. levaillantoides*) are very sensitive to certain types of land use. These strikingly different responses to land use require equally diverse strategies in order to develop truly sustainable management strategies and policies. These are discussed in detail for each of these five species of gamebirds.

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Introduction

Three phylogenetically distinct groups of galliforms contribute to a healthy shooting industry in southern Africa: guineafowl (*Numididae*), francolins (*Scleroptila* spp.) and spurfowls (*Pternistis* spp.). Some species, e.g. greywing francolin (*S. africanus*), helmeted guineafowl (*Numida meleagris*), Swainson's and cape spurfowl (*P. swainsonii* and *capensis*) thrive in moderately to heavily human-modified landscapes. Helmeted guineafowl and Swainson's spurfowl actually increased both in numbers and range during the first two thirds of the 20th century. Others, e.g. redwing (*S. levaillantii*) and Orange River francolins (*S. levaillantoides*), are very sensitive to certain types of land use. These strikingly different responses to land use require the application of equally diverse management strategies to maintain populations for hunting. These are discussed in brief for each of these five gamebirds.

Here I summarize key points emanating from the results of more than 50 person-years of research on southern African gamebirds by myself and my students: Rob Little (greywing francolin and

cape spurfowl), Ray Jansen (redwing francolin and Swainson's spurfowl), and Lionel Pero, Luthando Maphasa, Gerard Malan, Charles Ratcliffe, Helen Prinsloo and Ian Little (helmeted guineafowl). Much of what I write below is summarized in Little and Crowe (2000) and discussed in detail in the papers listed in the bibliography.

Helmeted Guineafowl

The helmeted guineafowl may use the frequency of heavy rainfall as a cue to initiate breeding, given that year-to-year variation in their populations (and bags) are positively correlated with monthly frequency of rainfall (Crowe and Siegfried 1978). The availability of arthropod food (critical for successful breeding) is also strongly correlated with rainfall. However, population increases were lower following successive years with high rainfall, perhaps suggesting that the population is limited in a density-dependent manner (Crowe 1978).

Starting in the mid-1980s there were reports of wide-scale collapses of guineafowl populations outside of protected areas. I originally attributed these

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to several successive years with lower than normal rainfall (Crowe and Siegfried 1978), but I was wrong.

Subsequent research showed that the number of pesticides used, individual pesticide toxicity levels and percentage of land under cultivation are negatively correlated with guineafowl populations. However, Swainson's spurfowl populations are positively correlated with these same factors (Pero and Crowe 1996). The fundamental cause of guineafowl population declines and collapses in agricultural landscapes was population fragmentation leading to the undermining of meta-population structure (Ratcliffe and Crowe 2001a). In other words, when local fragmented subpopulations came under threat (for whatever reason) they could not be resuscitated by immigration from adjacent subpopulations.

Guineafowl in human-transformed landscapes do not have a home range as traditionally understood. Their daily and seasonal movements are determined by the dispersion of habitat focal points: roosts, drinking water, and habitat for feeding, dusting, and cover (Prinsloo 2003). Indeed, at a revegetated coal mine where all focal habitat components were closely clustered, guineafowl flocks hardly moved during the day (Little et al. 2005). In agricultural areas they also prefer a mosaic of habitats especially with large amounts of edge in proportion to area (Ratcliffe and Crowe 2001a,b,c). So, the critical management strategy for the management of guineafowl as a game quarry species is to cluster habitat focal points and thus maintain multiple local subpopulations in restricted areas.

Orange River Francolin

Unlike that of helmeted guineafowl, the Orange River francolin population in an arid grassland within a protected area collapsed to virtually nil after a five-year bout of overgrazing during the 1930s (Berry and Crowe 1985). This still very poorly studied francolin is one of the most sensitive birds to the grazing and burning of its habitat. Only pristine (rarely burned and ungrazed) arid grasslands can support shootable populations and then at very low levels (Berry and Crowe 1985).

Redwing Francolin

A habitat gradient analysis showed that the abundance of the redwing francolin and other grassland birds in highland wet grasslands is negatively correlated with both grazing pressure and the frequency of burning (Jansen et al. 1999, 2000, 2001a,b). Once again, as with Orange River francolin, it is absolutely essential to minimize the negative effects of grazing and burning (i.e., removal of cover and damage to leguminous food plants) on redwing habitat if a shootable surplus is to be provided.

Greywing Francolin

Unlike the previous two francolins, the greywing francolin thrives under moderate sheep grazing (Little and Crowe 2000) and can even withstand as much as a 50% annual shooting offtake (Little and Crowe 1993a,b,c). For this reason, this francolin is considered as one of southern Africa's champagne gamebirds, earning shoot operators as much as five times the fees paid for other local gamebirds.

Cape Spurfowl

Like the helmeted guineafowl, the cape spurfowl thrives in golf courses with large amounts of edge habitat and the rough dominated by alien trees and brush (Little and Crowe 1994). This spurfowl certainly benefits from habitat transformation by humans through its ability to colonize alien vegetation and suburban parklands. However in agricultural land it requires patches of fragmented, but closely situated, natural (mainly Mediterranean) vegetation for successful roosting and nesting. For these reasons, I believe it is currently underexploited as a gamebird.

Swainson's Spurfowl

Unlike all other gamebirds discussed above, this species has, in most instances, benefited enormously from agriculture; primarily due to the increased food availability found in growing crops, especially maize (Jansen and Crowe 2002). However, Swainson's spurfowl populations have shown declines if its preferred breeding habitat (islands of brush and

trees) is eliminated (Jansen and Crowe 2002). Because of its general prevalence, Swainson's spurfowl is often the focus of what are locally known as community shoots. Some of these community shoots involve 100 or more hunters and may ultimately threaten local populations because of the massive, short term (i.e. over a weekend) offtakes (Jansen, unpublished data).

Summary

Each southern African gamebird discussed above has its own management 'signature' and thus gamebird management is situation dependent, e.g. in protected areas vs human-transformed landscapes. Moreover, like the much more intensively studied grey partridge *Perdix perdix* (Potts 1986), before we can provide an ironclad management strategy for any of these species, situation-specific research is still a necessity.

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