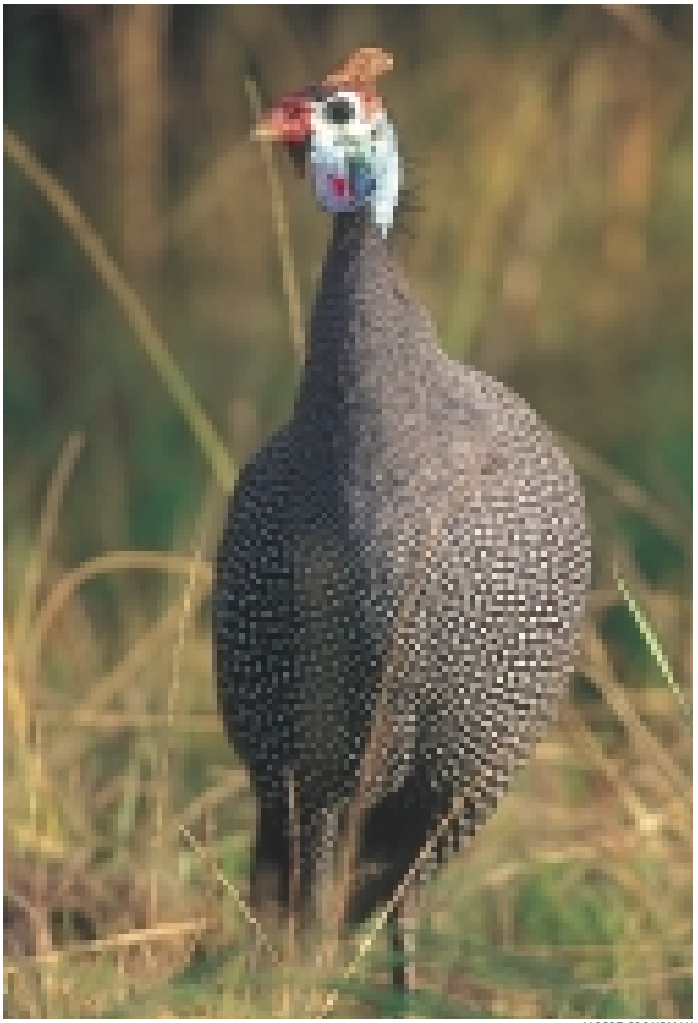
Mining for birds

Habitat transformation by humans is one of the major threats to biodiversity, and results in a conflict between the resource needs of an ever-increasing human population and the 'rights' of natural systems to exist and function. One of the most severe forms of transformation is open-cast mining, which causes almost complete destruction of terrestrial ecosystems. Open-cast coal-mining in South Africa dates back to the 1970s and has developed into an economically highly important industry, centred in the grassland biome on the eastern Highveld of Mpumalanga and KwaZulu-Natal. The grasslands are ancient, complex and slow-evolving systems of diverse plant communities, and they support a suite of endemic birds.

The various grasses, particularly the climax species, largely reproduce vegetatively rather than by seed production and are highly sensitive to disturbance. Consequently, restoring areas to their original condition after mining is an extremely slow, if not impossible process.

Fortunately, however, the news is not all bad. The Middelburg Coal Mine, for example, is making a major effort to re-vegetate mined-out areas to a condition that will support a range of biodiversity. Fitztitute researcher Professor Tim Crowe and student Ian Little have recently completed a survey of the birdlife at a range of such sites within the mined area, as well as in undisturbed grassland in the nearby Witbank Nature Reserve. Their research has revealed some interesting responses of bird populations to re-vegetation.



ALBERT FRONEMAN

Helmeted Guineafowl are 100 times more common on re-vegetated coal mines than in natural grassland.

First the good news. Even though the mine's environmental managers have chosen to plant re-vegetated sites with a domesticated alien grass mixture comprising Rhodes grass *Chloris gayana,* Smuts finger grass *Digitaria eriantha* and teff *Eragrostis tef*, 34 of the 44 bird species found in undisturbed grassland have colonised one or more of the re-vegetated sites. Furthermore, sites with trees, small dams and edge habitat have species (such as Swainson's Spurfowl, Namaqua Dove, Green Woodhoopoe, Red-capped Lark and Common Waxbill) not observed in the undisturbed grassland. Perhaps the most dramatic difference between undisturbed and re-vegetated grassland concerns Africa's most popular gamebird, the Helmeted Guineafowl.

During an average survey in undisturbed grassland approximately one guineafowl was counted, whereas at two of the re-vegetated sites nearly 100 individuals were observed per survey. This is because the re-vegetated sites had all the key habitat 'ingredients' required by guineafowl: tree roosts, drinking water and cover containing their preferred food of insects, seeds and underground bulbs.

Less fortunate are certain grassland specialists such as Shelley's Francolin, Grass Owl, Rufous-naped Lark, White-bellied Korhaan, and Wattled, Blue and Crowned cranes, which were not seen in the re-vegetated sites. Most of these species are uncommon to rare in undisturbed grasslands, and some are globally threatened. Furthermore, at re-vegetated sites surrounded by active mining, insectivores such as Spike-heeled Lark, Long-billed Pipit and Eastern Clapper Lark are scarce or absent. This may be a result of the mining acting as a barrier, isolating sites and preventing the immigration of insects and birds.

The highland grasslands have a high priority for conservation action. They are among the most challenged vegetation types in southern Africa, with impacts ranging from agricultural transformation and afforestation to acid rain and water abstraction. Our surveys show that even the most severely transformed landscapes can recover a diverse assemblage of birds with minimal cost and effort. The next step in this restoration process is to find ways to attract the balance of the grassland birds to the re-vegetated sites. □

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