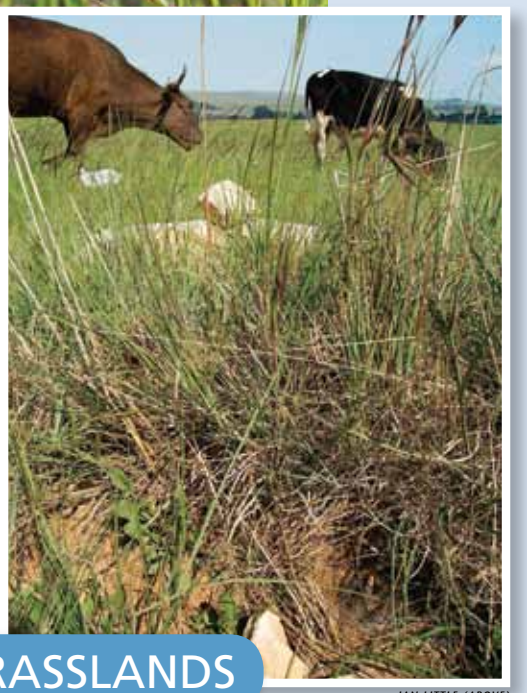

BIRD-FRIENDLY FARMING IN HIGHLAND GRASSLANDS

IAN LITTLE (ABOVE)
WARWICK TARBOTON (ABOVE, LEFT)

South Africa's grasslands host five Ramsar wetland sites, more than 3 300 plant species, 15 of the country's 34 endemic mammals, and 12 of its 40 endemic birds (five of which are Globally Threatened).

Above, left *The globally vulnerable Yellow-breasted Pipit, an endemic grassland specialist, is the species most severely affected by current farming practices.*

Above, right *The generalist African Pipit (nest and brood shown) is one of the few species that regularly breed successfully in communally grazed lands.*

Sixty per cent of these grasslands have been irreversibly transformed. Moist highland grasslands in South Africa (of which only 1.5 per cent are conserved) were historically maintained naturally by winter and spring fires, probably at intervals of four years or more, and through summer grazing by migratory, medium-sized antelope. Today, these grasslands are managed by livestock farmers, who in most areas burn annually at the beginning of the rainy season in early summer, which coincides with the onset of breeding in birds. The two major disturbance agents in these grasslands (fire and grazing) have therefore been altered dramatically. Ian Little's PhD research set out to understand how fire and grazing interact to influence communities of plants, arthropods and, ultimately, birds.

The project included a nature reserve, various farming practices and communal lands that lack a managed fire regime. In terms of vegetation quality, burn frequency has an overriding effect. Plant species diversity and vegetation structure are both negatively impacted by annual burning, and a combination of frequent fires and heavy grazing results in a low, lawn-like sward. Communal lands look much the same, even though fires are not managed, simply because grazing pressure is so high. Frequent burning also affects the diversity of arthropods, which is lowest in annually burned areas. However, in terms of food for birds, the pattern is somewhat different. Grasshoppers, which are the favoured food for many insectivorous species, dominate the arthropod fauna. They also respond positively to burning and are most abundant at sites that have been burned in early summer, reaching a peak towards late summer.

The different responses of vegetation and arthropods to management practices create a conundrum for birds. Food is most plentiful in areas burned in that breeding season, yet the short grass sward provides little concealment for nests. These grasslands are rich in predators (snakes being the main marauders of eggs and chicks). If birds aggregate where food is abundant, their density may not mirror reproductive success, because the nests in these sites are easily located by predators. In other words, bird density may not be an accurate reflection of performance.

After studying more than 400 nests, Ian found that nest-site selection and nest success are dictated by vegetation structure, which in turn is driven by management. For birds that build cup nests on the ground, nest success rates increase through the season, because predation rates fall as vegetation grows.

By incorporating plant, insect and bird diversity data in analyses, Ian confirmed the importance for birds of conserved areas in moist highland grasslands. He showed unequivocally that current farm management practices have significant negative repercussions for bird abundance, species richness, nest density and fledgling output. On the plus side, however, his research also demonstrated that some simple changes to current management could translate into immediate biodiversity benefits without compromising the economics of livestock farms. If managers burn biennially or every three years in a patchwork so that their farms contain grasslands of different 'ages', biodiversity benefits will be demonstrable and immediate.