

The cost of showing off

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Bird populations with flashier males are at higher risk of extinction

CONSPICUOUS consumption has its price, at least in the avian world. For decades, biologists have presumed that the gaudy plumage sported by the males of many bird species must exact a toll. Indeed, one of the best theoretical explanations for the evolution of such plumage positively requires that it exact a toll: according to this model, the costs of gaudiness are an unfakeable signal to the opposite sex that an individual is otherwise fit and healthy. And there is a fair body of evidence to support the idea that males do, indeed, suffer for their art by leading more perilous and shorter lives.

A new twist to this tale has just been reported by Paul Doherty, of Colorado State University, and his colleagues. They have shown, in a paper recently published in the *Proceedings of the National Academy of Sciences*, that it is not only males who suffer the costs of luxuriant display. Instead, populations that have gaudy males seem to be at greater risk of local extinction than those of their dowdier cousins.

Dr Doherty studied how bird populations have changed in the continental United States and southern Canada over the course of 21 years, from 1975 to 1996. The data came from the North American Breeding Bird Survey (BBS), which is carried out each year by an army of volunteer bird-watchers who travel along predetermined routes, stopping at intervals and recording all the species that they can detect.

Dr Doherty and his team combed the data collected by the BBS to find out how populations of particular species had changed over the years. They picked 153 species in which males and females sport different-coloured plumage (in such cases the male is always the gaudier sex); and 185 species for which male and female plumage looks identical—at least, that is, to the human eye.

The apparent absence of a species from a site during the three minutes that an observer from the BBS spends recording data at each place does not necessarily mean that it is not really there. This is because more colourful birds may just be easier to spot than dull ones. Statistical techniques must be used to correct these problems and estimate how often a recorded absence from a site of a species previously found there is a genuine absence. But once the number-crunching has been done, it turns out that populations of species with gaudy males are 23% more likely to become extinct than are those of their more modestly feathered counterparts.

Exactly why this should be the case remains unclear. Although gaudy males are at individual risk, that need not necessarily harm a population's prospects—particularly if, as is often the case in such sexually dimorphic birds, the male contributes little to the actual raising of the young. One possibility is that the drop in genetic diversity that happens if most females are mating with the same handful of attractive males means that the whole population becomes vulnerable to new diseases.

The good news for bird-watchers is that local extinction caused in this way is generally temporary. Biology abhors a vacuum as much as physics, and the ecological niches vacated by such extinctions are filled by migrants from elsewhere. The bad news, Dr Doherty fears, is that as natural habitat becomes fragmented by human activity, that might not be so easy in future. Being dull may thus be a good response to human intervention.