TECHNIQUES

POTENTIAL PROBLEMS IN AGEING AND SEXING SOUTHERN AFRICAN PASSERINES

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In the encouraging attempts to establish ageing and sexing criteria for southern African passerine birds, which are beginning to appear in Safring News, there are a couple of features that might cause problems, and which need to be considered very carefully. These are the use of body measurements to sex birds for which there are no unequivocal morphological clues, and the use of brood patches to recognise adult females.

BODY MEASUREMENTS

I have shown elsewhere (Dowsett 1983) how the amount of overlap in wing measurements of males and females can vary greatly between species. On the Nyika Plateau (Malawi/Zambia) samples of birds sexed with certainty by cloacal examination in the breeding season showed the percentage overlap to range from 96 % in Redfaced Crimsonwing *Cryptospiza reichenovii* and 92 % in the Yellow White-eye *Zosterops senegalensis* to none in the Yellowstreaked Bulbul *Phyllastrephus flavostriatus*, with every variation in between. Of these three species, only the crimsonwing has a distinctive male plumage. In other words, only 8 % of Yellow White-eyes could be sexed with certainty on wing length alone, whereas 100 % of Yellowstreaked Bulbuls could be sexed in this way.

For species which have a broad overlap, the usual bimodal pattern may become difficult to recognise. Moreover, the situation can be confused in species in which there is only an incomplete postjuvenile moult (including the majority of passerine species on the Nyika). Juvenile passerines usually have shorter wings than adults of the same sex, and do not approach adult size until their first moult (which in many species is not until 12 months of age). If such juveniles are not recognised, and excluded from analysis, they could skew the adult male and female means away from the true figures. In species in which the sexes look alike (monomorphic), first-year birds can be totally confusing, while in dimorphic species they may be taken for females.

I believe this danger still exists where secondary sexual characters such as bill colour are taken into account (e.g. Earlé 1983). The only safe assumption to make is that birds are sexed correctly if a cloacal examination is made in the breeding season, and all other hypotheses should follow from this, in order that the possibility of error might be reduced to a minimum.

BROOD PATCHES

Leading on from this, it seems unwise to assume that what appears to be a brood patch necessarily means a bird is an adult female. Firstly, males of a few species in the northern hemisphere are known to have a full brood patch, or one that is at least partly vascularized, e.g. European Starling *Sturnus vulgaris*, see references in Dowsett-Lemaire (1981). These could confuse an unwary observer. Although male birds that incubate do not necessarily have such brood patches (and some with patches do not incubate!), the rather large number of southern African species in which the sexes share this task does suggest a need to watch out for male brood patches. On the Nyika Plateau I found that in most species only females had proper brood patches. However, all six breeding male Fulleborn's Black Boubous *Laniarius fuelleborni* that I handled did have a fully vascularized patch (as did the females). In the following species there were bare patches in a few males that might have been confused with brood patches: Olivebreasted Mountain Bulbul *Andropadus tephrolaemus*, Barthroated Apalis *Apalis thoracica*, Oliveflanked Robin *Cossypha anomala*, Whitetailed Flycatcher *Trochocercus albonotatus* and Yellow White-eye.

It is of interest that some of these species are members of genera or of subfamilies in which males are known to help with incubation. Maclean (1985) lists such species in the following families: Alaudidae (4 lark species, including all three Finchlarks *Eremopterix* spp.); Hirundinidae (Rock Martin *Hirundo fuligula*, House Martin *Delichon urbica*); Campephagidae (cuckoo-shrikes - both species of *Coracina*); Corvidae (three of the four species); Pycnonotidae (Blackeyed Bulbul *Pycnonotus barbatus* - male rarely); Sylviidae (three species in the genera *Chloropeta*, *Sylvietta* and *Prinia* - although note that the latter is excluded by Broekhuysen & Winterbottom, 1968); Muscicapidae (monarchine flycatchers - Wattle-eyed Flycatcher *Platysteira peltata*); Motacillidae (all three breeding wagtails); Malaconotidae (bushshrikes - no fewer than six species); Sturnidae (four starling species, including Redbilled Oxpecker *Buphagus erythrorhynchus*); Zosteropidae (both white-eye species); Ploceidae (several of the monogamous weaver species); Estrildidae (a great many waxbills); Fringillidae (Whitethroated Canary *Serinus albogularis*, Rock Bunting *Emberiza tahapisi*). To these can be added the Helmetshrikes *Prionops*

spp., Greencapped Eremomela *Eremomela scotops* and some other co-operative breeders (Grimes 1976, Vernon & Vernon 1978), as well as Paradise Flycatcher *Terpsiphone viridis* (Little 1964, Dowsett pers. obs.). To what extent these species may have functional or non-functional male brood patches is worth investigation, as would be the apparent link with taxonomic groupings.

Functional brood patches are evident only from just before the start of laying and incubation to shortly after the young leave the nest, (Svensson 1984). They may still be evident up to the time body moult starts, but in my experience females cannot be recognised for certain on this criterion outside this period: it is surprising that Earlé (1985) suggests female South African Cliff Swallows *Hirundo spilodera* can have brood patches other than mid-September to mid-March, itself an exceptionally long time. When not breeding, care must be taken not to confuse the bare breasts of some males and of many juveniles for brood patches.

OBJECTIVE SEXING

The above problems are serious only if ignored. Effective sexing criteria for adults should be possible for most southern African passerines once correct ageing has excluded first-year birds from a sample. During the breeding season, examination of adults' cloacal regions will provide samples of definite males and females. In fact, I found on the Nyika that males showed external signs of sexual activity for at least 3 months, longer than did females (Dowsett 1983). If it is then found that males of the species concerned do not have a brood patch, or have a recognisably non-functional one, then the sexed sample can be extended to any individuals which have clear signs of a patch, but no cloacal activity.

If morphological characters are obvious for sexing at this stage, then all well and good. If not, differences in body measurements may be sought among the definitely sexed birds only. If this produces a clear-cut difference from which a large proportion of adults can be sexed, then this can be applied to a larger unsexed sample with some confidence. Even so, it should be remembered that the larger a sample, the more odd individuals will be found outside the normal range. At all times sample sizes and standard deviations should be given for samples (*contra* Earlé 1985). As far as possible large samples should be sought - although what is large enough will often not become evident until a referee tells you you've examined too few. In practice, 50 definitely sexed adults should go a long way to establish practical sexing criteria for a small passerine, and the importance of breeding season mistnetting cannot be over-emphasised.

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