ARTICLES & REPORTS

POSITIONING OF RINGS ON STORKS

G. Currie

The current practice of banding the White Stork (*Ciconia ciconia*) by the application of a metallic ring to the tibia in preference to the tarsus remains the method recognised and approved by banding authorities. The potentially harmful effects to the tissues and function of the leg in the region of the tibial joint are discussed below and an argument is presented for abandoning the use of metallic tibial rings and for the investigation of alternative materials or methods.

The optimal fit of a tibial ring has to be tighter relative to the tibial shaft than a tarsal ring to a tarsal shaft. A loose fit will allow the ring to slide down over the lower tibia (metaphysis) and settle near the tibial joint potentially causing pressure effects on soft tissues, or limitation of movement of the tibial joint. These pressure effects caused by a tight fit could also result in skin abrasion with resulting infection and swelling and could, in addition, result in occlusion of blood vessels. The degree of these harmful effects would be greater the closer the ring settles to the joint line, and these pressure effects can be demonstrated to be more marked at the position of extreme flexion of the tibial joint. The limitation of movement could affect walking and at the position of extreme flexion, i.e. squatting, the limitation would be more marked and accompanied by discomfort.

The restriction of feeding caused by limitation of walking and the inhibition of incubation caused by discomfort on squatting indicate obvious threats to survival. The optimal fit of a tibial ring should therefore be sufficiently loose to allow the ring to fall no lower than the start of the thickening of the tibial metaphysis. The pressure effects described above are less likely to occur the higher the ring settles above the joint. The possibility of achieving the ideal fit on applying the ring is rendered remote on account of two unfavourable features which are present in the nestling. Firstly, the tibial metaphysis is swollen and extends further up the shaft as a result of the physiological cellular hypertrophy taking place during the process of bone growth. Secondly, the skin around

the shaft is thicker than in the adult as full lengthening of the bone has still to occur resulting in stretching and thinning of the skin. Even at the fledgling stage, from observations at the nest, the tibial joints are still more swollen than those of the parent birds.

In addition to the application of a metallic impediment to a stork's leg with a small chance of a correct fit and, therefore, with a high chance of complication, deposition of particulate debris between the ring and the leg can cause irritation. The tarsus is far more exposed to debris, mainly mud, from the ground and tarsal rings have therefore been abandoned for this reason. A factor with a greater threat of complication is the deposition and encrustation of faeces on the ringed tibia. Storks are frequently observed to have white legs in the hot weather in southern Africa and defaecation onto the legs as a thermoregulatory reflex is well documented as the cause. The extreme southern regions in Africa have a dry summer climate and, in contradistinction to Europe, aquatic feeding habitats are not only sparsely situated but seldom occupied by White Storks, therefore the removal of dry faecal matter by immersion and dissolving in water is very unlikely to occur.

If the occurrence of these harmful effects arising from metallic rings presents a valid argument against their use, the question of continuing this practice should be raised. It would appear that the pattern and distribution of the migratory movements of the White Stork have been adequately established by data from the recovery of rings to date and that further recoveries would more frequently confirm this previously acquired knowledge than add to it. However, the contribution of ringing data to the understanding of distributional biology is of great value and should continue as an ongoing scientific enquiry. The introduction of a mortality factor related to ringing was considered to be negligible when compared to the heavy overall mortality of migration before the decline in the numbers of White Storks began, but at the present day, in view of the decimated world population of White Storks, the priority of conservation assumes greater prominence and the need arises to eliminate any unnatural factors which increase mortality. In view, however, of the value of recovery data already emphasised, ornithologists should feel obliged to accept the challenge of developing methods of harmless marking to replace banding. Colour-staining, with its well-known limitations, is a first consideration and the physical features of the White Stork are eminently suitable for this form of marking. It is a large bird with extensive white plumage permitting the use of many colours. Other favourable features are that they can be identified and observed at a long range and their flocking behaviour introduces the possibility of making multiple recordings of marked birds at a single observation. Marking of the legs with indelible stain would be of value as the staining would probably be longer-lasting than plumage staining but would probably require identification at short range.

Soft yet durable plastic compounds exist which merit thorough investigation for use as rings or tags as an alternative to the metallic ring.

May I propose that if the points that have been raised are acceptable, then a committee of experts should consider revising the current method of banding White Storks.

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FIDELITY TO WINTER QUARTERS BY PALAEARCTIC PASSERINES

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At Nchalo, in the lower Shire valley of Malawi (16 16S; 34 55E), many Palaearctic passerines have been caught since early 1974, a period covering nine summers. The species for which there have been recaptures in successive seasons were Thrush Nightingale *Luscinia luscinia*, Garden Warbler *Sylvia borin*, Willow Warbler *Phylloscopus trochilus*, Great Reed Warbler *Acrocephalus arundinaceus*, Basra Reed Warbler *A. griseldis*, European Reed Warbler *A. scirpaceus*, European Marsh Warbler *A. palustris*, European Sedge Warbler *A. schoenobaenus* and the Redbacked Shrike *Lanius collurio*. Seventeen Spotted Flycatchers *Muscicapa striata*, five Yellow Wagtails *Motacilla flava*, three River Warblers *Locustella fluviatilis*, two Olivetree Warblers *Hippolais olivetorum* and one Icterine Warbler *H. icterina* have also been ringed, but there have been no recaptures in later seasons.

Table 1 (overleaf) shows the number ringed and the number of 'final' recaptures to 30 June 1982 and, in brackets, interim recaptures because birds shown as having been last caught, for example, 6 years after being ringed, have usually also been recaught in previous years. Admittedly no bird has been caught every summer, but considering the size of the trapping area (3-4 ha), that only 60-72 m of net is used and that some thickets are difficult to net, it is a fair assumption that the birds were