

(1) Aerial transect sample censuses were undertaken in the Masai Amboseli Game Reserve, counting several species simultaneously. The following comparisons were made between different variants of the census technique:

(a) Flying height 6500 ft (152 m) versus 300 ft (91 m).

(b) Strip-width 6371 m versus 197 m.

(c) Viewing angle 6° inner versus outer half of the wide strip used in (b).

(2) In each comparison, transects representing the two treatments to be compared were randomly interspersed. Two population estimates, with variances, were obtained for each species, one for each of the treatments being compared.

(3) A *t*-test was used to see whether the two estimates for each individual species differed from each other. In addition, a Wilcoxon matched-pairs signed-ranks test was applied to the complete list of pairs of estimates, obtained from each comparison of treatments.

(4) Significant differences were found, indicating that the low flying height gave bigger estimates than the high, and that the narrow strips gave bigger estimates than the wide. No difference was found between the inner and outer strips.

(5) Measurements of variations in the aircraft's angle of bank were made in smooth and in rough air. The amount of upward bias attributable to this source was estimated for the combinations of height and strip-width used, and a general formula is also given, from which this bias can be estimated for other combinations.

(6) A flying height of 300 ft (91 m), and a strip-width of 300 m were finally selected as most suitable for multi-species counts in the partially-wooded habitat of Amboseli.