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THESIS ABSTRACTS

ENERGY REQUIREMENTS AND FOOD RESOURCE OF THE CAPE VULTURE *Gyps coprotheres* IN THE MAGALIESBERG, TRANSVAAL

This study describes the energy requirements and food resource of the Cape Vulture (*Gyps coprotheres*) around the Magaliesberg escarpment range in the Transvaal Province, South Africa.

The investigations of this study were concerned with growth, energy requirements and nutritional status of hand-reared and wild nestlings, and the energy requirements of captive adult and immature Cape Vultures. From these data annual food requirements of the Magaliesberg Cape Vultures were estimated. Growth and food requirements were interpreted in terms of an adaptive breeding strategy consistent with existing hypotheses in the fields of avian breeding biology and ecology. The potential food resource of the Magaliesberg Cape Vultures was inferred from agricultural, pastoral and veterinary census data for an arbitrary potential foraging area (PFA) around the Magaliesberg escarpment range. Food requirements and food resource of the Magaliesberg Cape Vultures were evaluated, and compared with other factors in terms of the possible limiting effect of these factors on the continued existence of Cape Vultures in rural areas.

Body mass and wing length are similar for hand-reared and wild nestlings of known age, and wing length is a reliable measure of age and growth. The rate of growth in nestlings is intrinsic and shows very little geographic or seasonal variation except in severely emaciated nestlings. The nutritional status of nestlings, as determined by lipid reserves, "sets" the maximum body mass at any stage of growth. From hatching to about 60 d of age lipids and other body constituents are rapidly deposited. Thereafter, lipids are primarily deposited as a nutritional reserve, and other constituents are directed to the development of functionally important tissues such as the pectoral muscles.

Hand-reared nestlings consume about 80 kg meat from shortly after hatching to fledging age (about 136 d). Between 60 and 100 d of age (September–October) nestling food consumption is roughly double the quantity of food estimated for active adults to satisfy daily energy expenditure (DEE). In 1982 the Magaliesberg colonies required 1156 cattle carcasses annually, or roughly four carcasses/d.

The potential food resource (livestock carcasses) of the PFA around Magaliesberg, and similarly, that of the apparently favourable southwestern and western sectors within the PFA, exceeds the food requirements of Magaliesberg Cape Vultures by a wide margin.

This study has a valuable bearing on management programmes for the Cape Vulture in rural areas of southern Africa and presents testable results for future conservation-oriented research. **Komen, Joris. 1986. M.Sc. Thesis. Department of Zoology, University of the Witwatersrand, 1 Jan Smuts Avenue, Johannesburg, SOUTH AFRICA. Present address: c/o Bird Department, State Museum, P.O. Box 1203, Windhoek, NAMIBIA.**

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ECOLOGICAL RESEARCH ON THE JAPANESE GOLDEN EAGLE *Aquila chrysaetos japonica* DURING THE POST-FLEDGING PERIOD IN THE HAKUSAN RANGE

Five pairs of Golden Eagles in the Hakusan Range of central Japan were studied for seven yr (1978–84). The Hakusan Range is located in the west part of the Japan Alps and consists mostly of deciduous forest. The mean fledging date and age at fledging were 10 June and 76 d, respectively (N = 5). From a few days before fledging eaglets began to walk out of and return to the aerie. Eaglets fledged without any coaxing from their parents. During one to two wk after fledging, juveniles seldom flew and had poor flight ability until ca three to four wk after their first flight. Development of flight ability varied according to topography near the aerie. Juveniles roosted in the vicinity of the aerie until three to four wk after fledging. Thereafter juveniles perched most frequently in trees on ridge tops. Expansion of home range of juveniles was related to development of flight ability. Juveniles were fed by their parents until at least three to four wk after fledging. Prior to being fed by the parent, "dueting" (mutual calling) and "postponement of prey delivery" (the parent with prey flew in front of its offspring time after time) were performed. Duetting facilitated