

*Firewood collection and hole-nesting birds*

**E**nergy is a limiting commodity for many human communities in the developing world, and the rural people in Africa are highly dependent on wood as their primary energy source. In South Africa, for example, 12 per cent of the total energy consumption of the country (that is, domestic and industrial) is extracted from wood sources, while in countries such as Ethiopia, Mali, Tanzania and Zambia, this figure is in excess of 90 per cent. Although it is intuitively logical that firewood collection should take place at levels where replacement of the utilized component is sustained, few care to ask the question as to how these practices affect biological entities other than the wood itself.

Morné du Plessis, current director of the Fitzpatrick Institute, made use of an opportunity to record the impacts of firewood collection on hole-nesting bird species by carefully and systematically recording their diversity and abundance over three breeding seasons between 1981 and 1991 in the Kei Mouth and Double Mouth areas of the Eastern Cape. At the former, the Cwili River valley has come under increasing pressure from dead-wood collectors during the study period as a result of exponential human population growth. The growth has seen human numbers of well below 200 inhabitants of the Kei Mouth township in the 1950s grow to more than 1 500 in 1991 – much of it through immigration from the former Transkei. All of these households rely heavily on firewood



*Knysna Woodpecker* *Campethera notata* at its nest-hole

DIRK VERWOERD



*Firewood collectors*

MORNE DU PLESSIS

as a source of energy. As a control, parallel bird censuses were done in an almost identical riverine valley near Double Mouth, an area which was too far from permanently occupied human habitations to make firewood collection a worthwhile activity.

Firewood collectors generally initially collect dry wood off the forest floor before turning to breaking dead branches off trees; the ultimate step, of course, being to chop down live trees. The intensity of firewood collection appears to be greatest along the forest edge, before penetrating

progressively deeper into the forest. These patterns of wood collection were borne out by the disappearance of three hole-nesting bird species. Cardinal Woodpeckers and Southern Black Tits, both inhabitants of dry forest-edge, had disappeared from the Cwili valley by 1988. By 1991, Black-collared Barbets, which rely on the presence of dead wood substrata into which they chisel and chew their nest and roost holes, had disappeared as well. However, these changes were not happening in the unutilized Double Mouth study plots,

suggesting that the removal of dead wood by humans may have been the primary agent of localized disappearance of a few hole-nesting bird species.

Hole-nesting birds are obviously not the only organisms affected by wood collection. The removal of preferred foraging substrata from forests (and possibly most other woodland habitats) may negatively affect a whole host of other species, including those from a wide variety of taxa. For example, numerous invertebrate species make exclusive use of the dead wood micro-environment, and the consequences for them may be considerable. Changes in the diversity and abundance of invertebrates may in turn affect a variety of other vertebrate species that feed on them. Overall, the results from this remarkably simple study highlight the need for natural resource users and conservationists alike to consider the issue of sustainability, not only from the perspective of the resource that is being used, but also from that of other organisms. From the perspective of hole-nesting birds, removal of dead wood from natural habitats may result in changes in the availability of food, feeding sites, nest- and roost-holes, and ultimately, residency. □

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