

NESTING THYME

The use of aromatic plants in Cape Sparrow nests

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In general, birds are very particular about the materials they select for nest building and the care and attention they pay to their nest construction. So at first glance the rather messy-looking ball nests of the Cape Sparrow *Passer melanurus* are surprising as they appear to have been built with little discrimination. But on closer inspection it becomes evident that every part of the structure has been selected for properties such as flexibility, interlocking projections, softness, colour and even smell.

The outer structure of the nest is a mass of interlocking twigs bound together with various types of twine. In natural Karoo vegetation, where Cape Sparrows often locate their nests in thorny trees along dry river beds, the outer wall of the nest is usually built with flowerheads of the 'peperbossie' *Lepidium africanum* mixed with white woolly strands of 'voëltjienes' *Galium tomentosum*. The inside of the nest is lined with all sorts of soft material such as seeds of 'kapokbossies' (*Eriocephalus* species), feathers, hair and wool. All Cape ▷

A female Cape Sparrow at her untidy, but carefully constructed nest.

Right *A Cape Sparrow nest in a favoured site in a sweet-thorn tree.*



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Above *A Cape Sparrow nest sliced lengthways through the hollow centre to show the nest lining. The woolly, grey-leaved twigs belong to the aromatic 'wolbossie'.*

Sparrow nests follow this general design, except that along roadsides and in villages the sparrows improvise by using man-made fibres such as string, fabric and carpet sweepings.

When a pair of Cape Sparrows nested on our veranda in the Karoo village of Prince Albert, we noticed that as a final touch in the nest-building operation the sparrows carried sprigs of fresh green plants into their nest. When the fledglings left, we opened up the nest and found that the inner lining included large quantities (20–60 per cent) of aromatic leaves and shoots. These were mainly 'wolbossie' *Helichrysum pumilio*, an indigenous aromatic herb, and thyme *Thymus vulgaris*, the European culinary herb. Although Cape Sparrows in both rangelands and village gardens have a wide variety of plants to choose from, it appears that they intentionally select relatively uncommon, aromatic species which they invariably collect as freshly-picked green material. We have since seen Cape Sparrows breaking off stems of thyme and taking these to their nests. The selection of this herb and of 'wolbossie' for nest lining could not have been by chance, because neither was very abundant near the Cape Sparrow's nest. In fact we found only one little

grey 'wolbossie' out of 10 000 plants when we searched surrounding gardens, vacant lots and the hillside where the sparrows foraged.

Our curiosity now awakened, we examined other Cape Sparrow nests in the village and in natural habitats in surrounding Karoo veld, and found that almost all of them included some aromatic plants such as 'bergankerkaroo' *Helichrysum rosum*, 'vaaltee' *Leysera tenella*, and 'stinkkruid' *Pentzia pilulifera* in their nest linings. Moreover, Cape Sparrows were not the only birds to collect fresh sprigs of thyme, camphor or curry-scented plants as nest material. We have found these 'smelly' plants in nests of such diverse species as Grey-headed Sparrow, Namaqua Prinia, Chat Flycatcher, Fiscal Shrike and White-throated Canary. In some instances the plant use may have been entirely by chance, but in the case of the Cape Sparrow it is so consistent that there must be a good reason – some real benefit to the birds.

The function of green aromatic plants used by African passerine birds has never been explored, but observations and experiments with European Starlings and Great Tits in Europe suggest that the use of strong-smelling plants in nest linings improves fledgling health or survival. Physiologists, parasitologists and pharmacologists are still arguing about how this works, and there may be more than one reason why birds collect aromatic plants. Some plants contain volatile compounds that are released when the plant is warmed by the incubating bird. The chemicals emitted adversely affect moulting and breeding in parasitic mites, and this improves nestling survival by reducing the numbers of blood-sucking ectoparasites.

When scented green plants were experimentally removed from European Starling nests, the numbers of parasitic mites in the nests increased a hundred fold.

Quite apart from parasite control, aromatic plants may confer health benefits on fledgling birds. A paper presented at the International Ornithological Conference in Durban in 1998 showed that aromatic plants increased the haematocrit levels in the blood of fledgling European Starlings, improving immunity to diseases. Collecting aromatic plants is part of the courtship display of European Starlings and takes place during pair formation and nest lining, but stops when the first egg is laid. These starlings select suitable plants by smell, apparently matching the odour of the plants that they examine as potential nest material to that of the nest in which they were raised. Significantly, the olfactory sense of European Starlings is enhanced during the breeding season.

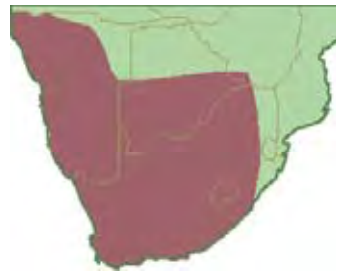
Birds that maintain nests throughout the year and roost in their nests when not breeding, and birds that make use of second-hand tree cavities rather than chipping out their own nest holes, probably suffer more from parasites and infectious diseases than birds that build their own nests and use nests for incubation only. One would therefore expect Sociable Weavers, waxbills, penduline tits, woodhoopoes and many of the cavity-nesting African starlings to use aromatic plants in their nests. We can find no written records that these birds incorporate green plants in their nest linings, but look forward to hearing from others who might have noticed this behaviour.

At present we know too little about the behaviour of the Cape Sparrow to say how, when or why it lines its nest with pungent-smelling

plants, but we strongly suspect that the behaviour has benefits for chick health. Our evidence comes not from observations of sparrow fledglings, but from information on the uses of *Helichrysum* species in African traditional medicine and of thyme in European traditional medicine to treat wounds and respiratory infections, and to rid the body of parasitic worms. The medicinal powers of these herbs have nothing to do with magic or superstition, but derive from antibiotic and anti-fungal chemicals contained in the volatile oils that give the plants their characteristic aromas.

Through trial and error over thousands of years birds and people have learned which plants have medicinal value and have come to associate disinfectant properties with certain aromas. So effective is the use of taste or smell to identify medicinal plants that birds and people alike can add unfamiliar and foreign plant species to their pharmacopoeia by matching the new aroma with that of more familiar plants. It is quite likely that birds are already using medicinal plants whose properties are as yet undiscovered by people. In the same way that traditional medicinal knowledge has been the basis for the development of modern medicines for treating infection, relieving pain and treating heart and digestive problems, so observations on the use of plants by birds could lead to the discovery of compounds with curative properties new to human medicine. □

If you have observations about the use of aromatic plants in sparrow nests, Sue Milton and Richard Dean can be contacted at their respective e-mail addresses: SMilton@botzoo.uct.ac.za
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ALBERT FRONEMAN

The male Cape Sparrow. The behaviour of this abundant resident clearly deserves more in-depth study.