

Observation of apparent tool use by an Abyssinian White-eye *Zosterops abyssinicus* on Socotra, Yemen

RF PORTER

On 27 October 2007 whilst carrying out a survey of breeding birds on Socotra I saw an Abyssinian White-eye *Zosterops abyssinicus* carrying a short thin stick or spine in its bill. My colleague Ahmed Saeed Suleiman and I were systematically surveying a well-vegetated wadi at 260 m asl in the central part of the island as part of a joint Socotra Conservation and Development Programme and BirdLife International project.

At first I thought the white-eye might be carrying material for nest building but then it started to probe with the end of the stick or spine into holes or spaces in the bark of a frankincense tree *Boswellia elongata*. The stick was thin and very short, about twice the length of the bill, and when using it as a probe it was held almost straight as if it were an extension of the bill. It poked it into the bark of both the trunk and a branch, in at least six different places, before flying off still carrying the stick in its bill. I was not able to see if it found any invertebrates, nor did a cursory examination of the bark a few minutes later reveal any. However, the bark of *Boswellia* is known to host a wide range of invertebrates including ants, crickets and molluscs that could be dislodged with the aid of a stick (Kay Van Damme pers comm).

This is the first time I have witnessed such behaviour by any bird species on Socotra (or elsewhere) despite having made ten visits to the island for detailed bird observation and recording since 1993. Subsequent to the observation I took care to observe the behaviour of white-eyes October and November 2007 and in the same period 2008.

The Abyssinian White-eye is a common and widespread bird on Socotra with a population provisionally assessed at 24 000 individuals (Porter & Suleiman in prep). In the 1960s this species was reported as trapped and eaten by the local people but this practice has presumably discontinued since a wider diet has become available to the islanders (Jennings 2010).

Whilst it is one of only five species of insect-eating passerines on the island, and the only white-eye, competition for insect food particularly during the dry and inhospitable southwest monsoon of the summer months might give white-eyes with a habit of using tools a competitive advantage—but this is pure speculation. Typically, Abyssinian White-eyes search for invertebrates on leaves, in flowers or on the bark of trees (pers obs, Jennings 2010). Their diet on Socotra also includes seeds and fruits, especially date palm *Phoenix dactylifera* fruit (Jennings 2010, Ahmed Saeed Suleiman pers comm), and probably nectar from *Trichocalyx* flowers (AbdulRahman Al-Sirhan pers comm).

Tool use in birds is rare. Amongst the passerines the best-known example is 'Darwin's' Woodpecker Finch *Camarhynchus pallidus* on the Galapagos islands which uses a cactus spine or wooden splinter to dig invertebrates out of holes (Grant 1986). Caledonian Crows *Corvus moneduloides* can also use sticks as tools (Hunt 2000) and Green Jays *Cyanocorax yncas* in Texas have been observed using twigs to extract food from crevices (Gayou 1982). The only North American bird to habitually use tools is the Brown-headed Nuthatch *Sitta pusilla* which uses bits of bark to pry off other bits of bark when it searches for insects; these nuthatches have been observed flying from place to place carrying the tools (del Hoyo *et al* 2008). Australian sittellas, Neosittidae, which look and behave like nuthatches in many

ways but are not related to them, also use tools. They dip strips of wood into cavities to evict hiding insects (Green 1972).

Among the non-passerines the best example of a tool-using species is the Egyptian Vulture *Neophron percnopterus*, which throws stones to break open ostrich *Struthio* eggs (van Lawick-Goodall & van Lawick-Goodall 1966). Interestingly, Socotra probably holds the highest concentration in the world of this globally-endangered vulture, with a population in the order of 1700 individuals (Porter & Suleiman in prep). Such egg-breaking behaviour is unlikely to be observed on an island where ostriches are not part of the fauna, although, interestingly, Egyptian Vultures have been seen throwing stones at the eggs of captive ostriches in an enclosure near Riyadh (Jennings 2010). Insights and discussion of tool-using behaviour and the way it may have developed can be found in Bird & Emery (2009) and Hansell & Ruxton (2008).

ACKNOWLEDGEMENTS

I would like to thank Kay Van Damme and Ian Dawson for helpful discussion, and Ahmed Saeed Suleiman for his companionship in the field.

REFERENCES

- Bird, CD & NJ Emery. 2009. Insightful problem solving and creative tool modification by captive nontool-using rooks. *Proceedings of the National Academy of Sciences of the United States of America* 106: 10370–10375.
- Gayou, DC. 1982. Tool use by Green Jays. *Wilson Bulletin* 94: 593–594.
- Grant, PR. 1986. *Ecology and evolution of Darwin's Finches*. Princeton University Press, NJ.
- Green, C. 1972. Use of tools by Orange-winged Sittella. *Emu* 72 (4): 185–186.
- Hansell, M & GD Ruxton. 2008. Setting tool use within the context of animal construction behaviour. *Trends in Ecology & Evolution* 23: 73–78.
- del Hoyo, J, A Elliott & DA Christie (eds). 2008. *Handbook of the Birds of the World*. Vol 13. Lynx Edicions, Barcelona.
- Hunt, GR. 2000. Tool use by the New Caledonian crow *Corvus moneduloides* to obtain Cerambycidae from dead wood. *Emu* 100: 109–114.
- Jennings, MC. 2010. Atlas of the Breeding Birds of Arabia. *Fauna of Arabia* 25: in press.
- van Lawick-Goodall, J & H van Lawick-Goodall. 1966. Use of tools by the Egyptian vulture *Neophron percnopterus*. *Nature* 212: 1468–1469.
- Porter, RF & AS Suleiman. In prep. *The population and distribution of the breeding birds of Socotra*. BirdLife International/SCDP.

Porter RF, c/o BirdLife International, Wellbrook Court, Girton Road, Cambridge, CB3 0NA, UK. richardporter@dialstart.net