

SHORT COMMUNICATIONS

USE OF TOOLS BY THE WHITE-WINGED CHOUGH

McDonald (Sunraysia Nat. Res. Trust Seventh Rep. 1970: 61-63) recorded the use of tools for opening mussels by the White-winged Chough *Corcorax melanorhamphus*. His mention of the distinct tapping sound made by choughs hammering at mussels led to my own observations.

On 14 May 1970 at Marthaguy Creek, north of Warren, NSW, I watched from a car at a distance of 10 m a flock of thirteen choughs feeding on fresh-water mussels *Velesunio ambiguus*. The birds were partly obscured by a fallen branch, but their activities were clearly observed.

The creek had recently dropped in level and was bordered by about 3 m of soft mud. The choughs probed the mud until a mussel was found, about 25 mm below the surface. It was then extracted, the bill being inserted over and under the shell which was hooked out; mud was removed by downward or stroking movements of the bill and the mussel was carried to dry ground. After more cleaning, the bird tried to open the mussel, which was held down by either foot, hammering it with the bill or trying to insert the bill between the margins of the valves. The birds often appeared impatient, running round with mussels, dropping them and picking them up, or others previously discarded.

During this activity the birds eventually came across empty shells. Immediately, if the bird was carrying a mussel, it dropped it and picked up the empty valve. Holding it so that it pointed downwards, with the convex side away from its breast, the bird repeatedly struck the unopened mussel with it. Usually the blows were made with a slight side-to-side movement of the head so that the mussel was struck a double blow; when broken valves were used, direct downward blows were made. The blows did not appear to be aimed at any particular part of the mussel. Occasionally an unopened mussel was used as a hammer, also with an attempt at the double stroking blow; sometimes the target was missed; at others the bird simply dropped the 'tool' on the mussel, after holding it high with outstretched neck. The impression was that the weight of the unopened mussel was too great for them to be used effectively. During hammering, the 'tool' often broke; the chough either continued to hammer with the remaining part until it was reduced to about 10 mm in size or picked up and used other pieces. When a valve had become useless, the chough reverted to probing or hammering with the bill and, if still unable to open

the mussel, picked it up and ran round until another suitable hammer was found.

During this search, the mussel was often knocked against suitable objects, such as a fallen branch, an exposed tree-root or another unopened mussel. The bird held the mussel across the middle and usually with a double stroking blow struck the posterior and anterior ends of the mussel against the anvil. Once or twice, the ventral edge of larger mussels was struck directly downward on the anvil.

The mussels did not break or open easily. Unfortunately, because the birds were very active and the branch partly obstructed my view, I could not follow the whole process from finding to opening a mussel. One bird rained forty-two blows on one mussel before its tool completely disintegrated; it then was lost to view among the other birds. However, I saw mussels opened several times, the breach being made near the posterior or anterior end, along the ventral margin or at the umbo. I examined many opened shells scattered along the creek and found that they had been breached at any part of the valve. I also saw mussels open, apparently of their own accord, before the valve was broken, perhaps having been weakened by continuous hammering. One chough inserted its bill into a partly opened mussel which then closed on the bill. The chough ran round trying to shake off the shell, and finally removed it by using its foot.

When a mussel was breached, the bird removed fragments of the animal through the hole. If a mussel had been opened along the margin of the valves, the bird removed it, stroked it vigorously on the ground and swallowed it whole, though this was only done sometimes with apparent difficulty. Pieces of muscle or ligament usually remained attached to an opened valve and the birds tried to remove them by holding the valve in the bill and rubbing it against the ground or a branch.

I watched the birds for about one hour and in this time they opened eighteen mussels, and six others were left unopened. Mussels opened were between 25 and 76 mm in length.

While searching for and trying to open the mussels the choughs became covered with mud and mucus, particularly around the head and neck. They preened thoroughly after feeding. All thirteen birds seemed to be able to open the mussels, but one bird often tried to steal a mussel from another and

some birds, perhaps immatures, with whining food-begging calls, such as the young give for some time after leaving the nest, often pestered others that were feeding on mussels.

At the end of an hour interest in the mussels waned and the flock moved into adjoining grassland where they were watched dragging House Mice *Mus musculus*, then in plague proportions, from under grass tussocks. When caught, the mice were not hammered as had been the mussels but were held by the neck and knocked on the ground with the same side-to-side movement of the head that had been used to hammer mussels, until they were so smashed that they could be swallowed whole or in parts.

McDonald, who only recorded birds hammering the umbo of mussels, made his observations at Lake Hattah in north-western Victoria, some 650 km south-west of Warren. Because the White-winged Chough is a resident species (Rowley 1965, Aust. nat.

Hist. 15: 81–85) this suggests that the habit is widespread; it could have originated when the bird was collecting mud for its nest, and discovered the mussels. It usually feeds on insects obtained on dry ground, raking through litter with its bill to find them.

A few other species use tools, the best-known being the Galapagos Woodpecker-Finch *Camarhynchus pallidus* which uses a cactus spine to probe crevices and remove grubs (Lack, Darwin's Finches, 1947); the Egyptian Vulture *Neophron percnopterus* throws stones at ostrich eggs (Van Lawick-Goodhall 1966, Nature, 212: 1468–1469) and the Black-breasted Buzzard *Hamirostra melanosternon* has been said to drop stones on emu eggs (Chisholm, Ibis 1954: 380), but the use of an anvil on which to smash items of food is known for several species, particularly the Song Thrush *Turdus philomelos* and the pittas *Pitta* spp.

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FURTHER NOTES ON EGGS OF NEW GUINEA BIRDS

Recently, Harrison and Frith (1970) described a collection of nests and eggs of New Guinea birds, collected by F. Shaw Mayer. Through the kindness of Mr J. E. DuPont, the British Museum (Natural History) has received more eggs relating to this collection. In the earlier account the nests of *Machaeirhynchus nigripectus*, *Pachycephala rufinucha* and *Lophorina superba* were described, but the eggs were said to be missing; these are now described below. In addition, three other species not in the previous list are included. All the present specimens are from Boneno, Mt Mura, 50 km north-west of Mt Simpson, Eastern Papua.

EUDYNAMIS SCOLOPACEUS Koel Cuckoo.

A single very large egg (Cl. No. 1970.5.1) was found in the nest of the Slaty Thicket Flycatcher *Peneothello cyanus* on 24 December 1940. A female of the latter species was on the nest. The egg measures 38.0×24.9 mm. It is fairly elongated, glossy and pink, closely marked with fine ticking and streaking and irregular elongated markings in reddish brown and lilac. A note on the data-slip suggests that this is a cuckoo's egg, and this species appears to be the only likely one.

MACHAEIRHYNCHUS NIGRIPECTUS Black-breasted Flatbill Flycatcher.

The two eggs, which are damaged, measure approximately 20.5×14.5 mm (Cl. No. 1970.5.8).

They were collected on 20 December 1940, and are white with fine speckling and irregular patches of purplish brown and grey, mainly concentrated in a zone around the larger end.

PENEOTHELLO CYANUS Slaty Thicket Flycatcher.

A nest in a low bush, found on 27 December 1940, at 1,500 m, on which the parent bird was seen but not collected, contained a single egg, 23.6×19.0 mm (Cl. No. 1970.5.10). It is slightly glossy and dull olive-green with sparse poorly defined olive-brown markings which are more concentrated in a zone around the larger end where some dark hair-streaks are also present. There is a reddish tint over the larger end. A second nest on which the female was collected (Reg. No. 1970.2.32, Collector's No. 560) on 2 January 1941 at 1,200 m also contained a single egg, 23.4×17.0 mm (Cl. No. 1970.5.9), more slender than the previous specimen. It has similar sparse dull-brown markings and blotches, but the whole egg is tinted reddish buff, deepest at the large end where there are one or two black specks. Several other nests of this species with a single egg or young were noted by the collector.

PACHYCEPHALA RUFINUCHA Rufous-naped Whistler.

An egg (Cl. No. 1970.5.7) was taken on 27 December 1940. It measures 28.9×20.4 mm, and is white with small black and grey specks and spots, mostly concentrated at the larger end. It is fairly

glossy, a little discoloured by incubation, and contained a small embryo.

COLLURICINCLA (MYIOLESTES) MEGARHYNCHUS
Brown Shrike-Flycatcher.

Two eggs (Cl. No. 1970.5.6) were collected on 20 December 1940. They measure 26.8×17.4 , 27.2×17.7 mm. They are glossy and white, finely speckled with dark-brown, black and grey. The larger end is wreathed with a zone of heavy speckling.

PITOHUI NIGRESCENS Black Pitohui

A nest was found at 1,200 m on 25 December 1940 and the female caught on the nest (Reg. No. 1970.2.34, Collector's No. 550). Shaw Mayer notes that the nest was high up in a forest tree and not seen by him. The single egg (Cl. No. 1970.5.4) contained an embryo. It measures 33.2×22.6 mm and is fairly glossy, a deep and slightly buffish pink with numerous small spots and blotches of dark reddish brown or purple.

This egg probably establishes the identity of two

earlier specimens in the Museum collection. One (Cl. No. 1907.7.4.15) collected on the Aroa River, south-eastern New Guinea, in 1899–1900 by Weiske, measures 32.0×23.7 mm and has a paler ground-colour and sparser markings. Another (Cl. No. 1941.1.2.44) was taken at 1,800 m in the Owen Stanley Mountains by A. Anthony and originally attributed to *Parotia lawesi*. It measures 33.3×24.5 mm and is very similar to Shaw Mayer's specimen, but with an additional zone of heavy blotching around the larger end.

LOPHORINA SUPERBA MINOR Superb Bird-of-Paradise.

One egg (Cl. No. 1970.5.5), taken on 5 January 1940, measures 31.8×22.3 mm and has a pale creamy buff ground-colour with some very fine speckling all over the shell and with heavy longitudinal streaking of dull-brown and lavender.

REFERENCES

HARRISON, C. J. O., and C. B. FRITH. 1970. Nests and eggs of some New Guinea birds. *Emu* 70: 173–178.

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THE NEST OF THE WHITE-LINED HONEYEATER

Results of the Harold Hall Australian Expedition No. 28
The previous number in this series appeared in *Emu* 70: 193–195.

When William Maclellan returned from the King River area of Northern Territory, H. L. White (*Emu* 16: 165) described the White-lined Honeyeater *Meliphaga albilineata* from the specimens he had collected. Though similar to the Singing Honeyeater *M. virescens* it has a prominent white stripe running from the bill below the eye to the earcovert and soft-brown markings on the upper breast. The chief distinction between the two species is ecological and not morphological. *M. virescens* inhabits open savanna woodland while *M. albilineata* haunts the sandstone gorges of the Arnhem Land plateau. Occasionally it ventures out from the cover of the rock-face and associated vegetation to feed in the tops of blossoming trees that grow in the narrow intervening gorges. It is probably best identified by its strong clear whistling calls.

The nest of the White-lined Honeyeater remained undiscovered until the fifth phase of the Harold Hall Australian Expedition in 1968. On 2 October Major Brian Booth found a nest approximately 18 km south of Oenpelli Mission ($12^{\circ} 20' S$, $133^{\circ} 04' E$) on the northern edge of the Arnhem Land escarpment in Northern Territory. It contained one nestling.

The country in this area is immensely rugged and

the heavily eroded rock assumes the most remarkable shapes, lying in tiered terraces cut through by deep and narrow fault-lines overgrown with tropical vegetation. The nest was found in one such gully about 260 m above sea-level. We called up the adult birds by whistling their long clear notes, but they remained only for a moment before disappearing. With large drops of an imminent storm already falling, one bird suddenly appeared in the tree, dropped down and settled on the nest. We were both able to have a good look and, being certain of its identification, decided against collecting. We had already obtained a series of specimens from neighbouring gorges where we considered this to be among the commonest species in sandstone country.

The nest (BM Reg. No. N265.1) (Fig. 1) was 5 m above ground-level in the extreme outer twigs of a small thinly branched tree (*Parinari nonda*: Rosaceae), and, though not well concealed, presumably relied for its protection upon the security of its surroundings—a boulder-strewn corridor of rock some 9 m across and with vertical walls of sandstone 16–18 m high. The nest is almost entirely made of fine interwoven strands of vine-like creeper. Some of these strands are 330 mm long, and the nest being without

any other lining light passes easily through the bottom of the structure. The upper parts are reinforced with spiders' web and a fine cotton-like vegetable matter which together bind the nest to two supporting stems. These could move independently and would probably have endangered the nest in a high wind. Although it is a deeply cupped structure there would then have been a real danger of eggs breaking against each other or of young being tipped out onto the ground. Measurements of the nest were: internal diameter, 62 mm; external diameter, 96 mm; internal depth, 50 mm; external depth, 58 mm. The nestling (BM Reg. No. A1969.15.350) is preserved in alcohol. It is naked except for a fine body-down and could not have been long hatched. Bill, mouth and gape-flange were orange-yellow.

ACKNOWLEDGMENTS

I should like to thank Major Booth, leader of this phase of the Expedition, who made such detailed notes concerning the discovery, and also Dr R. Melville of the Royal Botanic Gardens, Kew, London, who kindly identified the tree in which the nest was constructed.

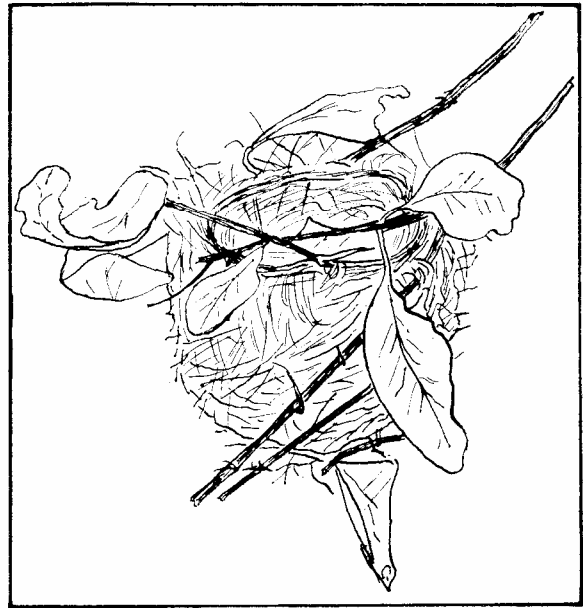


Figure 1. Nest of White-lined Honeyeater (traced from photograph).

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