AUSTRALIAN BIRD STUDY ASSOCIATION

NEWSLETTER

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From the President

Here is the next step in the "upgrading ABSA publications" process, after the splendid White-bellied Sea-eagle edition in September. Thanks to John Farrell for re-designing the front of the Newsletter. We have gone down to 10 point type. Members should howl in protest if this offends their ageing eyes.

It will probably vary between four and eight pages. If more people sent in accounts such as that by Alan Reid, it would be bigger and even better. I think members will always have an interest in what the rest of us are doing.
Stein Boddington

AGM 2010 & SCIENTIFIC DAY

Members are advised that the Association's Annual General Meeting in 2010 will be held on the 14th March at the Newington Armoury next to Sydney's Olympic Park.

We welcome the return of the famous ABSA Scientific Day, after missing a year. The theme of this year's Scientific Day will be:

"DNA - What secrets does it hold for the study of Australian Birds?"

Exact location details will be on the Association's website soon, and also published in the February Newsletter.

RENEWALS

Members will receive a renewal notice in the post this month. Please assist us by replying early, and by making sure that credit-card details are correct. Each query on a credit card costs us money, as well as the valuable time of our honorary treasurer.

WIERD STUFF

In a presentation to the Annual Meeting of the Society for Neuroscience in Chicago this year, Erich Jarvis (Dept of Neurobiology, Duke University, Durham, North Carolina, USA) outlined his team's production of a chimera - a creature combining parts of two or more species. In this case, it was to explore the way the forebrain of a song bird connects to the hindbrain that controls muscles of song production. These connections are absent in those species that merely chirp or squawk.

All mammalian and avian species that use imitation in developing their vocalisation display this connectivity - from the specialised imitative part of the forebrain to the vocal motor neurons in the hindbrain. In non-imitating species, these vocal motor neurons control the entire production of innate sounds (chirps, squawks etc), without any input from the forebrain.

The work involved the transplanting of the forebrain of a songbird embryo (they used a zebra finch) into the developing embryonic brain of a non-songbird (a japanese quail in this case). They established that long projections (connections) developed from the transplanted tissue into the hindbrain of the recipient, which is exactly what happens in the normal development of the songbird.

The chimeras survived only until one day before hatching, including through the transition to air breathing. Further work will attempt to establish if the projections actually connected to the vocal motor neurons in the hindbrain of the recipient, and whether the chimeras can hatch and survive long enough to study the functional role of chimeric forebrain projections in vocal behavior.

New solution for monitoring cryptic species

British Ecological Society Press Release.
Ecologists have at last worked out a way of using recordings of birdsong to accurately measure the size of bird populations. This is the first time sound recordings from a microphone array have been translated into accurate estimates of bird species' populations. Because the new technique, reported in the British Ecological Society's Journal of Applied Ecology, will also work with whale song, it could lead to a major advance in our ability to monitor whale and dolphin numbers.

Developed by Deanna Dawson of the US Geological Survey and Murray Efford of the University of Otago, New Zealand, the technique is an innovative combination of sound recording with spatially explicit capture-recapture (SECR), a new version of one of ecologists'

oldest tools for monitoring animal populations.

Birds communicate by singing or calling, and biologists have long counted these cues to get an index of bird abundance. But it is much harder to work out the actual density of a bird population because existing methods need observers to measure either the distance to each bird, or whether they are within a set distance from the observer. This is difficult when birds are heard but not seen.

According to Dawson: "We devised a way to estimate population density of birds or other animals that vocalise by combining sound information from several microphones. A sound spreading through a forest or other habitat leaves a 'footprint'. The size of the footprint depends on how quickly the sound attenuates. Mathematically, there is a unique combination of population density and attenuation rate that best matches the number and 'size' of the recorded sounds. We used computer methods to find the best match, and thereby estimate density."

Dawson and Efford developed the method by recording the ovenbird - a warbler more often heard than seen - in deciduous forest at the Patuxent Research Refuge IN Maryland, USA. They rigged up four microphones close to the ground in a square with 21 metre-long sides. Over five days, they moved the microphones to 75 different points across their study area and recorded ovenbirds singing.

They chose the ovenbird as the species from which to develop the method because of its concise song and because the males sing from the lower layers of the forest.

The new acoustic technique gives a more accurate estimate of numbers than using nets to capture birds, which can be stressful for the birds and time consuming for researchers.

Recording the sounds has other benefits, too. "Sound intensity and other characteristics can be measured from the spectrogram - the graph of the sounds - to improve density estimates. Archiving the sounds also makes it possible to re-examine them, or to extract additional information as analytical methods evolve," says Dawson.

D. K. Dawson & Murray G. E. (2009). Bird population density estimated from acoustic signals. Journal of Applied Ecology doi: 10.1111/j.1365-2664.2009.01731.x.

STUDY SHEDS LIGHT ON BIRD NAVIGATION

The ability of migratory birds to sense the earth's magnetic field has long been explained through two hypotheses - that the birds use the iron-mineral-based receptors in their upper beaks, connected to the brain by the trigeminal nerve, or that they use receptors in the eye that use "pair-forming photopigments" that send information to what is called 'cluster N' in the forebrain.

Henrik Mouritsen et al report in Nature (DOI: 10.1038/nature08528) that an experiment that selectively interrupted each of these pathways had surprising results. When the trigeminal nerve was cut, there was little effect on the birds ability to orientate themselves in both the natural and artificial magnetic fields . But when 'cluster N' was destroyed in the robins that were the subjects of the experiment, they lost that ability (they were still able to use sun and star visual clues when available to orientate themselves). Mouritsen concluded that upper bill's iron-mineral-based receptors were "neither necessary nor sufficient for magnetic

compass orientation in European robins."

They postulated that light sensitive proteins called cryptochromes could produce free radicals with negative charge, and that the spin of the excess electrons could be detected, and the information sent to cluster N. The birds could then 'see' the magnetic field, and use it to navigate.

Stein Boddington

HIGHLIGHTS OF 50+ YEARS OF BANDING

Alan J Reid

I was introduced to bird-banding in 1956 when Dr Graham Brown invited me and several others of the newly-formed Colac Field Naturalists Club to join him on an excursion to Lake Thurrumbong, to the north of Colac (~80 Km west of Geelong), to look at the large Silver Gull colony there. The Club then adopted gull banding as a major project and involved junior naturalists in the program. Under Graham's tutelage, I gained my own A grade licence in 1958, with Permit No 100. By June 1959, we had banded over 4000 gull chicks with recoveries from Tooradin, Rye, Port Arlington, Geelong, Black Rock, Lakes Entrance, Queenscliff and Melbourne Botanical gardens in Victoria and Eden, Kiama and Newcastle in NSW and Toogoom in Queensland, 1500km away.

I remember the many hours spent outside the fish shop in Colac with the juniors, throwing chips to the enthusiastic gulls, so that we could read the band numbers through our binoculars. What a surprise to find amongst our own gulls, others from Port Lincoln and Cowell in South Australia, Sisters Islands in Tasmania, and Lake Beaufort in Victoria!

The move to Somers on Westernport Bay 1n 1959 gave me the opportunity to look at the birds on the beaches and in the foreshore scrubs. Red-capped Plovers (then dotterels) and Black-fronted Dotterels became favourite items of study and many former students still remember the display antics of Gertie, a regular nester on the foreshore near the creek mouth. A March 1962 summary in my Casey's Someries newsletter shows that we caught 169 birds of 19 species in our garden that month, 79 of which were Silvereyes. I trapped 22 Yellow Robins passing through that beachside garden before the first re-trap of any of those birds, when previously I thought I had just a resident pair.

Each month I would go to the Hastings waterfront to feed the Silver Gulls there and read the band numbers. One of my Colac gulls, 080-15340, was the dominant adult bird there for over 3 years. On a fishing trip to Geehi River, during the early 1960s, a low-flying White-throated Needletail came into my roadside nets, but unfortunately, 2 hours later, so did several cows – an expensive banding foray! Other highlights during the early 1960s included the regular Australia Day weekend camp-out on Mud Islands in Port Phillip Bay where VORG members joined forces to band the White-faced Storm-Petrels there. Another was joining John McKean in the You Yang Ranges to trap Rainbow Bee-eaters.

During this period I also ran a Common Blackbird trapping program at suburban Camberwell and Blackburn, with dispersal recoveries from up to 15 km from the banding sites. I also started a program of occasional banding at a farm waterhole in the Grampians ranges. On one occasion I forgot my field notebook and recorded banding details with my banding pliers on the trunk of a Red River Gum by the waterhole. Two years later, my brother-in-law, Ivan, presented me with a flaked bark sheet with the details from that day perfectly preserved. Three Red-

browed Finches caught on that day turned up, still together, 9 years later at the same waterhole.

In 1967, I began what turned out to be a 35 year project, looking at bird use of a re-vegetating bush corridor through our Glenburn property [60 Km north-east of melbourne]. In 1983, after the Ash Wednesday bushfires, a small group of Bell Miners, possibly survivors of the burnt out Kinglake colony, arrived at Glenburn. After 5 years they only amounted to 4.7% of the total trapped in the corridor, but by 1992 they represented 59.4% of all birds trapped. New Holland Honeyeaters in the same period dropped from 41% to 4% of the total catch. The greatest excitement was the arrival in late 1998 of a pair of the endangered Regent Honeyeater. When a delighted David Geering arrived to trap and colour-band them, we discovered them nesting just a few metres from our house. All this excitement followed just 7 weeks after I had trapped the first Rainbow Bee-eater to be seen at Glenburn.

Another Glenburn highlight was the involvement in the Flame Robin colour-banding program run by Pauline Reilly. In 1970 it was not uncommon to see 30+ male Flame Robins perched on the bracken in our far paddocks. In 2002, my last year of banding there, only 1 Flame Robin was recorded. But in those early days, I set my hoop traps with mealworm baits in lines across the paddocks to tempt those Flame Robins. Not only did I find Flame Robins in those traps, but an assemblage of other robins – Yellow, Pink, Scarlet and Rose Robins and even Red-capped and Hooded Robins. The latter 2 species I had never recorded on the property before.

Other banding highlights have been overseas.

In November 1978, during a holiday on Lord Howe Island, I had the opportunity to help Dr Ben Miller band 100 Masked Gannet chicks in the Admiralty Islets; In 1982, in Edmonton, Canada, I had the thrill of banding, on my host's verandah, a White-breasted Nut-hatch, Black-capped Chickadees, Dark-eyed and Oregon Juncos, Hairy and Downy Woodpeckers and a large male Evening Grosbeak, which twisted round and fastened onto my finger. During a Swedish holiday in 1988, whilst looking at the Lighthouse ringing station on Øland, I was invited to help band Redstarts, Ortolan Buntings, Red-breasted Flycatchers, Great Tits, Chaffinches, Yellowhammers, Blue-throats, Lesser Whitethroats and Robins. Christian Johansson showed us his special migratory detection device for Robins where trip plates recorded electronically their preferred orientation.

In 2002, we also migrated, this time to Flinders Island, where I now participate in Dr Bill Wakefield's Bass Strait Migration study, banding bush birds on our bushland block. There are the joys still in handling a new array of honeyeaters and robins and monitoring the passing array of migrating flycatchers and silvereyes. So, Bander No 100 is still banding, 50 years on.

Thank you Alan for this fascinating account of your banding 'career'. - Ed.

Dwindling doom

In a paper published online (Biological Conservation, DOI: 10.1016 / j.biocon.2009.09.001), an Adelaide scientist and his colleagues argue that conservation biologists have been deluding themselves in their estimates of the minimum number of individuals needed to ensure the survival of a species. They say that current conservation practices do not fully allow for the dangers posed by loss of genetic diversity. If this is correct, then many endangered species are being allowed to dwindle too far, and they characterise this as "simply managing their short-term persistence.

Lochran Traill et al at the University of Adelaide found that for many species, the minimum number to ensure survival is in the thousands, and not hundreds as is the practice in many conservation projects. These lower numbers will, he warns, lead to an unacceptably high risk of extinction - an embarrassing outcome for a recovery program. He expressed the hope that his work will “encourage greater focus of resources to populations that need attention now”. Based on an article in New Scientist 17 October 2009