

## **'THREATENED BIRDS AND THREATENING PROCESSES' ABSA/BOCA SCIENTIFIC DAY**

MONASH UNIVERSITY, MELBOURNE

SATURDAY 8 MARCH 2008

This Scientific Day, organized jointly by the *Australian Bird Study Association* and *Bird Observation and Conservation Australia* at Monash University in early March, 2008, was the first such joint venture undertaken by the two organizations. The theme was 'Threatened birds and threatening processes' and the speakers were drawn from universities, government departments and private environmental institutions.

Three long-term recovery programs on endangered bird species, the Grey-crowned Babbler *Pomatostomus temporalis*, Black-eared Miner *Manorina melanotis* and South-eastern Red-tailed Black Cockatoo *Calyptorhynchus banksii gratpogyne*, were outlined. Doug Robinson explained how a 17-year conservation program for the Grey-crowned Babbler in Victoria, with a strong emphasis on on-ground action, has led to population increases in managed areas. However, populations have declined in one key area and the causes are not entirely clear, highlighting the need for a strong research component in such recovery programs. Ironically, Mike Clarke illustrated elegantly how research on the critically endangered Black-eared Miner had clearly shown how the risk of genetic introgression could be reduced and isolated populations could be supplemented, but the main impediment to implementing these strategies was the plethora of management agencies and organizations involved in the species' conservation! Research and effective on-ground action seem to have been integrated well in the Red-tailed Black Cockatoo recovery program in Victoria. Richard Hill showed that the small remaining population is limited mainly by availability of two of its three food plants. Key management strategies include maximizing the area of the best feeding habitat and protecting nest sites and paddock trees important for feeding.

Grainne Maguire showed that management (fencing and patrolling nest sites and using educational strategies) was very

important in facilitating breeding success in Hooded Plovers *Thinornis rubricollis* nesting on beaches much used by recreationists. The ultimate aim of her research is to devise a management 'toolkit' that is easy to apply on busy nesting beaches. Jim Radford demonstrated that dramatic declines in bird species richness in the heavily degraded box-ironbark woodlands of north-central Victoria over a four-year period were not the realization of an 'extinction debt' stemming from historical clearing, but rather the result of poor climatic conditions and continuing anthropogenic habitat degradation. Kris French summarised several studies that she and her colleagues have conducted on the effects of urbanization on native bird assemblages in Sydney. She showed that the critical elements limiting the numbers of small native birds in urban areas are the loss of vegetation and the increase in abundance of a native competitor, the Noisy Miner *Manorina melanocephala*. Insecticide use, exotic competitors and domestic pets do not seem to be as important. No consideration of processes threatening our native birds nowadays can ignore climate change effects. Lynda Chambers demonstrated that climate change appears already to be affecting migration timing and possibly breeding success in some Australian land birds. She emphasised the paucity of knowledge on climate change effects on the Australian fauna and the important contribution that amateur naturalists can make in collecting pertinent data. Tim Landsberg, the president of BOCA, drew the themes touched on in the day's proceedings together nicely in his closing remarks.

Convenor:

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### **ABSTRACTS**

Compiled by ALAN LILL

#### **GREY-CROWNED BABBLER *Pomatostomus temporalis* CONSERVATION IN VICTORIA – GAINS, DRAINS AND GAPS**

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The Grey-crowned Babbler *Pomatostomus temporalis* is an endangered species of woodland bird in Victoria that has been the focus of a wide range of conservation efforts, notably by Birds Australia, the Department of Sustainability and

Environment and Trust for Nature, since 1991. During the first research phase, initial data were collected on its distribution, population size and ecology. From that information, a series of legislative, policy and on-ground conservation actions were

begun, culminating in the employment of a state-wide coordinator for five years and implementation of conservation projects in most of the key population areas.

The main gain achieved during this project has been recorded increases in population size, group size or both. In the Violet Town stronghold, population size has increased by 28 per cent in the last 15 years; near Rutherglen, the number of groups has increased by 30 per cent from 13 groups to 17, and average group size has also increased. Overall, increases or population maintenance have occurred in nearly every district where there has been a targeted program of on-ground works to increase habitat extent and condition.

Another gain has been the support of the key local governments. More than 70 per cent of all babbler groups in Victoria live in roadside vegetation and management of those roadsides has been a critical issue in terms of the babblers' long-term survival. Local governments have responded to this issue by developing roadside management plans, developing management actions for babbler roadsides, revegetating many kilometres of roadside, signposting babbler roadsides and introducing planning overlays.

During the same period, however, some babbler groups and populations have become extinct, mostly small populations and isolated groups. In one of the key districts near Euroa, population size has decreased by nearly 60 per cent, despite major efforts to increase vegetation cover there. We think this is

because land use in this district has altered rapidly from low-input grazing to cropping, resulting in extensive habitat or resource loss. It may also be that the habitat restoration efforts have not been as effective as in other districts.

These questions about the causes of the Euroa population's decline highlight one of the major gaps in the babbler conservation project thus far. Because the major funding component of the project has been through the Commonwealth's Natural Heritage Trust (NHT), our emphasis has been on on-ground works, as on-ground outcomes have been the main focus of the NHT program. We have therefore not managed to develop adaptive-management experiments or undertake the conservation research needed to test different conservation solutions. This conservation gap has been exacerbated because of limited state funding for research on species only listed as threatened at the state-wide level.

I would thus recommend that funding programs for biodiversity conservation need to include greater capacity for research as a part of any conservation project. There should also be encouragement of more collaboration between researchers and practitioners to undertake large, natural experiments that achieve on-ground outcomes, but simultaneously provide data to test hypotheses about conservation options. Finally, we need a resurgence in state agency funding to support the conservation of species such as the Grey-crowned Babbler, whose survival is critically threatened at the State level.

## THE INTERFACE BETWEEN SCIENCE AND MANAGEMENT: LESSONS FROM THE BLACK-EARED MINER *Manorina melanotis* RECOVERY EFFORT

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A national recovery program for the critically endangered Black-eared Miner *Manorina melanotis* has been underway for over fifteen years. The species occurs in the Murray Mallee region of Victoria, New South Wales and South Australia. Considerable research studying the taxonomy, conservation status, mating system, social organisation, and threats facing the species has been completed. There has also been research carried out to trial two potential management options. Culling of Yellow-throated Miners *M. flavigula* that have colonised man-made clearings within formerly continuous mallee has proved to be an effective and lasting means of reducing the risk of genetic introgression. Successful trials have also been conducted of the translocation and release of wild-caught and captive-bred birds into the wild. The key findings from this research have clarified the major management actions that need to be undertaken to conserve this species; namely: a) control of genetic introgression by Yellow-throated Miners and the closure of permanent water holes within previously dry continuous mallee; b) provision and protection of extensive areas of long-unburnt mallee (>40 years post fire) from large-scale wildfires and clearing and c) supplementation of isolated remnant populations by translocation of colonies from larger populations.

The major impediment to implementing these management actions is not uncertainty over the science. Rather, it is the increasing complexity of administrative structures among management agencies (e.g. conservation of the Black-eared Miner now comes under the jurisdiction of at least 11 different agencies or land management organisations). The funding priority given to this species' conservation fluctuates between and within these various levels of bureaucracy and government with changing personnel. With this fragmentation of responsibilities, it is not uncommon for agencies to conclude that the Black-eared Miner is someone else's responsibility. This increasing complexity in administration of decreasing funds has also resulted in more time and energy being devoted to complying with ever increasing reporting requirements and less on-ground action. Frequent changes in personnel within agencies also exacerbate the difficulty of maintaining the momentum of a long-term coordinated recovery effort. In this context, the value of long-term commitment to recovery teams by non-government organisations like BOCA and Birds Australia is difficult to overstate.

## CONSERVATION OF THE SOUTH-EASTERN RED-TAILED BLACK-COCKATOO *Calyptorhynchus banksii gratpogyne*: 10 YEARS OF RECOVERY EFFORT

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The South-eastern Red-tailed Black-Cockatoo *Calyptorhynchus banksii gratpogyne* is the rarest and most restricted of five subspecies of Red-tailed Black-Cockatoo, a species that is endemic to Australia. The South-eastern Red-tailed Black-Cockatoo is nationally endangered and is listed under state and commonwealth legislation. It is restricted to a small area of south-west Victoria and neighbouring South Australia. A recovery team has been in existence since 1996 and has undertaken a number of investigations into the causes of endangerment and run a community education and engagement program since that time. The recovery team has concluded that the current normal range of the cockatoo has not markedly changed in historical times; however, its area of occupancy has contracted substantially because of loss of habitat within that range. The current population size is about 1 000 individuals. The recovery team has concluded that the cockatoo is primarily limited by the availability of two of its three food plants, the seeds of the stringybark *Eucalyptus arenacea* and of Buloke *Allocasuarina luehmannii*. Nesting success can be increased by protection of nests from ground

predators. Shortage of nesting sites, large hollows in old eucalypts, is likely to become a threatening process in the future as large old eucalypts die and are not replaced. Management targeting threatening processes include maximising areas of long-unburnt stringybark feeding habitat, legislated protection of dead hollow-bearing trees in both states, protection of known nest sites from ground predators, and lobbying for improved legislative protection of paddock trees and improved compliance at all levels of government. About two million dollars has been spent on protection and enhance of Red-tailed Black-Cockatoo habitats on private land. This has been done by land purchase, market-based instruments, and other incentive programs. Scattered trees in paddocks provide a major component of Red-tailed Black-Cockatoo feeding and nesting habitat. Yet high rates of agricultural intensification have led to the highest documented clearing rates of scattered trees reported in Australia. Trends in resource availability have been modelled and provide clear direction for the levels of protection and restoration required to best manage extinction risk for this cockatoo into the future.

## THE CHALLENGES OF BALANCING RECREATION WITH BEACH-NESTING BIRD CONSERVATION

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Several of Australia's resident shorebirds nest directly on the beach or dunes during late spring and summer and are consequently threatened by beach recreation. These threats include direct crushing of eggs and chicks by people, dogs, horses and vehicles on beaches, as well as impacts of disturbance leading to overheating of eggs, starvation of chicks and increased depredation rates of eggs and chicks. Poor breeding success is leading to species decline along our coasts. The 'Promoting coexistence between recreationists and beach-nesting birds' project, funded by the Australian Government's Natural Heritage Trust, aims to improve and inform decision making for the conservation management of Australia's beach-nesting birds. The project used the Hooded Plover *Thinornis rubricollis* in Victoria as a case study, where 90 pairs were monitored by volunteers across two breeding seasons (August 2006/07–March 2007/08). At each breeding territory, the presence and intensity of threats were recorded per visit, enabling a standardized comparison of the effectiveness of managements across sites. Management strategies included: fencing nesting sites, signage on beaches or at access points, brochure distribution, nest progress noticeboards, ranger patrols, volunteer 'wardening' and media releases. In the 2006–07 breeding season, 41 per cent of 145 monitored clutches hatched, with managed nests having a higher rate of hatching. Overall, 39 chicks fledged from a total of 353 eggs

laid (16% of nests). Most fledglings came from isolated or inaccessible beaches (51%), with 38 per cent coming from heavily threatened sites that were managed and 10 per cent from moderately threatened sites that were unmanaged. In the 2007–08 breeding season, 27 chicks fledged from the same number of pairs monitored. Fewer nests were attempted due to the late start to the nesting season, which potentially relates to storm surges and high tides making most beaches unsuitable for nesting until late November. Of the chicks that fledged, 52 per cent came from highly threatened territories that were managed. No chicks were produced from high threat areas that were not managed. Only 4 per cent came from territories with low-moderate threats that were unmanaged. Another 44 per cent came from isolated or inaccessible sites. These initial figures reveal that management is necessary for successful chick production at busy beaches: however, further analysis standardizing for threat and management intensity is being carried out. Several student projects were also conducted: 1) investigating the effectiveness of artificial chick shelters, 2) trialling conditioned taste aversion for reducing fox depredation of beach-located nests, and 3) identifying barriers to compliance with dog leashing regulations on beaches. The final outcome of this project and associated student research projects will be a user-friendly management toolkit.

## AS TIME GOES BY: DRAMATIC CHANGE IN THE WOODLAND BIRD COMMUNITY OF NORTH-CENTRAL VICTORIA

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Habitat loss and fragmentation is a primary cause of biodiversity loss in agricultural landscapes. However, there is likely to be a time lag between habitat loss and its ultimate effect on faunal communities because populations and species may persist for some time, but unless remedial action is undertaken they will gradually disappear as successive patch-level extinctions occur without re-colonization. That is, landscapes are carrying an 'extinction debt' due to historic clearing. In this study, we examined change in the distribution and incidence of woodland birds in 24 agricultural landscapes (each 100 km<sup>2</sup>) in north-central Victoria that sampled a gradient in total tree cover from less than two per cent to 60 per cent cover. Bird surveys were conducted in 2002–03 and then again four years later in 2006–07, coinciding with five years of prolonged rainfall deficit (drought or climate change?). Large-scale clearing in these landscapes ceased several decades ago, so there was negligible change in tree cover during the study. In 2002–03 we detected a threshold relationship between species richness of woodland birds and landscape-level tree cover: there was an abrupt decline in richness in landscapes with less than ten per cent tree cover. We hypothesized that landscapes with 10–20 per cent tree cover were most likely to be carrying an extinction debt, and thus the threshold would shift towards higher levels of tree cover over time. That is, landscapes with intermediate levels of tree cover would lose proportionally more species. We detected dramatic

changes in the woodland bird community from 2002–03 to 2006–07. Of 114 woodland birds detected in ten or more surveys in 2002–03, the incidence (reporting rate per landscape) of 70 (61%) of them decreased by over 30 per cent in 2006–07. There was a dramatic decrease in species richness per landscape of all woodland birds (mean effect size:  $-8.0 \pm 1.0$  species), insectivores (mean effect size:  $-3.3 \pm 0.6$  species) and nectarivores (mean effect size:  $-3.3 \pm 0.4$  species). However, decreases in species richness were not related to extent of tree cover and the threshold remained at ten per cent tree cover. This suggests that the losses are not the realization of an extinction debt but 'across the board' declines associated with poor climatic conditions and ongoing habitat degradation. The mass exodus of mobile nectarivores from the forests and woodlands of central Victoria during the autumn and winter of 2007 was probably due to the complete failure of eucalypts to flower (climate-related?), an unusual but not unprecedented event. The consistent and substantial declines in the incidence of sedentary (and migratory breeding) insectivores are more alarming. While we expect the nectarivores to return when conditions improve, the declines in insectivores are probably the product of several successive seasons of low breeding success. Recovery of these species depends not only on improved climatic conditions but also on concerted management to alleviate the threats that continue to degrade their habitat.

## CHANGES IN BIRD COMMUNITIES IN GREATER SYDNEY

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We present a summary of recent research into bird communities in urban areas. We have found differences in bird communities between remnant vegetation within urban areas and continuous vegetation. Remnants differ in composition when surrounded by high versus low-density housing. Remnants surrounded by high density housing have bird communities dominated by larger omnivores and honeyeaters which are more likely to cross the remnant urban boundary into gardens. A broad scale survey of gardens across the Greater Sydney Area focused on seven small bird species and their relationship with garden characteristics and some larger aggressive species. None of the seven small species we surveyed were negatively associated with Common Mynas *Acridotheres tristis*: however, all were negatively associated with Noisy Miners *Manorina melanocephala*. Some garden

characteristics influenced the presence of small birds, although the presence of dogs and cats did not affect these birds. Investigations into breeding success in urban areas showed that 13, mostly exotic, species preferred to nest in urban areas. In contrast, despite a preference to nest in remnant vegetation, seven small native species had higher nest success within urban areas, suggesting that nest success is not limiting the presence of these species in urban areas.

We have focused recently on how one small insectivorous species, the Superb Fairy Wren *Malurus cyaneus*, copes in suburban areas. While present in urban areas, this species is not abundant. Using radio-tags on birds we found that territory sizes were larger in non-suburban areas, although there were large areas of unused territory, resulting in an equivalent area utilised

in both suburban and non-suburban habitats. Superb Fairy-wrens require native trees and shrubs, some long grass and dense shrub. Interestingly the presence of lantana was particularly important. The birds do not seem to be limited by food availability, as there were equivalent quantities of insects available in both habitats, although insects were smaller in suburban habitats. This resulted in birds tending to forage for longer.

Overall then, our results suggest that the critical elements limiting the numbers of small birds in urban areas are the loss of vegetation and the increase in abundance of a native competitor, the Noisy Miner. Insecticide use and non-native competitors do not seem to be as important.

## CLIMATE CHANGE AS A THREATENING PROCESS

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Rising land and ocean temperatures have led to resurgence of interest in the impacts of such rises on natural systems, the flow-on effects to human society, and the use of natural systems as indicators of climate change. With the release of the Intergovernmental Panel on Climate Change Fourth Assessment Report, it became clear that changes in the climate system were affecting natural systems. Although the majority of the studies were located in the northern hemisphere (particularly in Europe), six studies were listed for the Australasian region – four relating to plants or animals. The Australian changes included: reductions in snow cover, species range changes, and shifts in flowering, migration and breeding dates.

The Australian studies covered a small number of species and were, generally, fairly localised. They lacked detailed information on local, regional, and national scales (particularly in western and central Australia and the tropical north), and highlighted a paucity of knowledge on the impacts of observed changes in climate on invertebrates, amphibians, reptiles, mammals and agricultural systems. In recent years, additional relationships between Australian avifauna and climate have been documented, most concentrating on changes in migration dates or in breeding timing and success. Examples of migration

timing changes include: south-western Australia, where migration timing in waterbirds was more closely related to changes in local rainfall patterns than to temperature changes, and south-eastern Australia, where short to middle distance migrants arrived earlier and departed later over time, extending the time spent at their breeding grounds.

Additional studies investigated links between timing and success of breeding in birds, including a near-continental study of breeding in the Masked Lapwing *Vanellus miles*, a species likely to be little influenced by changes in climate over most of its range; the endangered Helmeted Honeyeater *Lichenostomus cassidix*, where climate change is not expected to increase its breeding success; and the Australian Magpie *Gymnorhina tibicen*, where breeding is likely to be impacted by changes in climate.

Despite these additional studies, it is clear that further research is needed to obtain a clear picture of how a changing climate impacts on Australian flora and fauna. The role of amateur naturalists in the collection of relevant data, such as daily bird lists and breeding records, should not be underestimated.