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LITERATURE REVIEW

Compiled by B. Baker

This section is compiled from journals which are often not available to non-professional ornithologists in Australia. The following criteria are used to select papers for review:

- They relate to species which occur in Australia and its Territories;
- They provide details of techniques and equipment that may be of use in Australia;
- They provide details of studies that may be of general interest to Australian ornithologists.

This Literature Review is a selection taken from the following journals: *Biological Conservation, Emu, Canberra Bird Notes, Wildlife Research, Australian Bird and Banding Scheme, Environment, Safring News, Journal of Field Ornithology, CSIRO, Polar Biology, Wildfowl, Journal of Wildlife Management, Polar Record, Proceedings, Royal Society of London, Behavioural Ecology, Behavioural Ecology and Sociobiology, Journal of Raptor Research, ANCA project FPP 110, In.*

CONSERVATION

The impact of two exotic hollow-nesting birds on two native parrots in savannah and woodland in eastern Australia. Pell, A. S. and Tidemann, C. R. (1997). *Biological Conservation* **79**: 145–153. (Examines factors which could influence the breeding success of native parrots in areas in which substantial populations of the hollow-nesting sturnids, myna *Acridotheres tristis* and starling *Sturnis vulgaris*, are present. The two sturnids were shown to be the dominant users of available nest resources. The myna was successful in most aggressive encounters with starling and two native parrots during the period of nest site selection and occupancy. There was evidence of partitioning of nest resources between species in the different areas and habitats available. The exotic sturnids, particularly the myna, demonstrated the potential to reduce the breeding success of the native parrots studied — eastern rosella, crimson rosella, red-rumped parrot.)

Food of some birds in southern Australia: Additions to Barker and Vestjens, Part 2. Lepschi, B. J. (1997). *Emu* **97**: 84–87.

Observations on the superb parrot within the Canberra district. Davey, C. (1997). *Canberra Bird Notes* **22**: 1–14.

Relationships between hydrological control of River Red Gum wetlands and waterbird breeding. Briggs, S. V., Thornton, S. A. and Lawler, W. G. (1997). *Emu* **97**: 31–42. (Aims to determine relationships between water level control and breeding of waterbirds. Precocial waterbirds (mainly ducks in this study) did not breed at wetlands with highly controlled water regimens. In altricial waterbirds (Pelecaniformes, Ciconiiformes) breeding was not directly related to water level control, but depended on areas of River Red Gums that flooded for at least four months.)

AUSTRALIAN SPECIES

The nesting biology of the Chowchilla *Orthonyx spaldingii* (Orthonychidae). Frith, C. B., Frith, D. W. and Jansen, A. (1997). *Emu* **97**: 18–30. (Peak nesting activity during July–December, and only one egg was laid. Fresh egg weight represented 10.6% of adult female weight. Hatching success 75%, fledging success 67%. Only female incubated, brooded and fed young, although she was often provisioned by one, or rarely two male members of her group. Because no group members other than the female parent provision the nestling/fledgling, chowchillas cannot be considered co-operative breeders although all group members help defend the group territory.)

A survey of the South Australian glossy black-cockatoo *(Calyptorhynchus lathami halmaturinus)* and its habitat. Pepper, J. W. (1997). *Wildlife Research* **24**: 209–223. (Confirms that the population is critically small, and vulnerable to local events such as wildfires. Both habitat quantity and quality are limiting factors for the subspecies.)

Continued on page 129

LITERATURE REVIEW

TECHNIQUES AND ANALYSES

Report on the Australian Bird and Bat Banding Scheme, 1984–95. Baker, G. B., Dettmann, E. B., Scotney, B. T., Hardy, L. J. and Drynan, D. A. D. (1997). *Australian Bird and Banding Scheme, Environment Australia:* Canberra. (ABBBS annual report series.)

Flipper bands on penguins: why newer is not always better. Klages, N. T. W. and Spencer, K. D. (1996). *Safring News* **25**: 9–12. (Temporal differences in the properties of bands used to mark penguins at times violated assumptions that the band did not disadvantage birds or that birds lost bands. These findings have important implications for long-term studies of population dynamics of the species studied.)

BioRap, rapid assessment of biodiversity priority areas. Margules, C. R. and Redhead, T. D. (1995). CSIRO: Dickson, ACT. (Describes a method employing field survey and analytical tools suitable for the rapid assessment of biodiversity.)

Capture methods for crested caracaras. Morrison, J. L. and McGehee, S. M. (1996). *Journal of Field Ornithology* **67**: 630–636. (Describes a successful capture method which takes advantages of the aggressive behaviour of breeding birds to intruding adults. The technique uses a Q-Net, similar to a large bow net, and a live lure caracara set in the nesting territory.)

A colour band for spotted owls. Forsman, E. D., Franklin, A. B., Oliver, F. M. and Ward, J. P., (1996) *Journal of Field Ornithology* **67**: 507–510. (Describes a plastic colour band made from laminated engraver's plastic suitable for large birds. Hundreds of unique combinations can be obtained by routing geometric patterns into the plastic band and by attaching a short flexible coloured tab to the band.)

Satellite remote sensing in monitoring change of seabirds: use of Spot Image in king penguin population increase at Ile aux Cochons, Crozet Archipelago. Guinet, C., Jouventin, P. and Malacamp, J. (1995). *Polar Biology* **15**: 511–515. (The penguin colony at Ile aux Cochons, is the largest in the world. The satellite picture enabled the authors to locate the colony and to determine that the surface area occupied by the colony has increased by 56% between 1962 and 1988.)

Guidelines for estimating the feeding performance of diving birds. Carbone, C. (1995). *Wildfowl* **46**: 119–128. (A method of assessing the feeding performance of wild diving birds is presented that relies on the use of field data on diving behaviour and environmental conditions, and of additional information on underwater behaviour obtained from captive diving experiments. Two components of feeding performance are considered; diving efficiency (measured as the ratio of the time spent feeding over the dive cycle time) and the rate of food consumption. These two components can be used to assess habitats that differ both in water depth and food concentration.)

Determining food intake by great cormorants and European shags with electronic balances. Gremillet, D. and Dey, R. (1996). *Journal of Field Ornithology* **67**: 637–648. (Develops a model based on time budget and published data that transforms the masses of birds delivering food to nests (collected by automatic weighing units) into the total amount of food taken at sea.)

Using candlers to determine the incubation stage of passerine eggs. Lokemoen, J. T. and Koford, R. R. (1996). *Journal of Field Ornithology* **67**: 660–668. (Describes the use of candlers, in the field to determine the incubation stage in eggs of small birds with an incubation period of 11 to 13 days. Candling was accomplished easily using simple tools and did not involve the destruction of eggs or lengthy disturbance of nests. Candling is often preferable to other methods that rely on egg mass, mass-growth curves, or immersion of eggs in water.)

EFFECTS OF MARKING and RESEARCH TECHNIQUES

Neck bands reduce survival of Canada geese in New Jersey. Castelli, P. M. and Trost, R. E. (1996). *Journal of Wildlife Management* **60**: 891–898. (Mean annual survival rate for geese with leg bands only was 82.77%, compared with 69.21% for geese banded with leg bands and neck bands ($P < 0.01$). Neck bands should be used judiciously and, when possible, with a leg-banded only control group.)

Effects of harness-style and abdominally implanted transmitters on survival and return rates of mallards. Dzus, E. H. and Clark, R. G. (1996). *Journal of Field Ornithology* **67**: 549–557. (Adjusted return rates were lower ($P < 0.025$) for females with harnesses (22.6%) than those with implants (55%). These findings provide further evidence of the adverse effects of harness-style transmitters.)

Effect of flagging on predation of artificial duck nests. Hein, E. W. and Hein, W. S. (1996). *Journal of Field Ornithology* **67**: 604–611. (Nests marked with plastic flagging had a higher mortality rate than unflagged nests between day 8 and 14 after flagging. It is recommended that nests not be marked with flagging and that natural objects be used to aid in nest relocation.)

SEABIRDS

Biology of the Heard Island Shag *Phalacrocorax nivalis*. 1. Breeding behaviour. Green, K. (1997). *Emu* **97**: 60–66. (Many of the typical signal patterns of the Pelecaniformes were observed. Despite the isolation of Heard Island Shags from their nearest relatives in the *P. atriceps* grouping the behaviour patterns were virtually identical.)

Biology of the Heard Island Shag *Phalacrocorax nivalis*. 2. Breeding. Green, K. (1997). *Emu* **97**: 67–75.

Biology of the Heard Island Shag *Phalacrocorax nivalis*. 3. Foraging, diet and diving behaviour. Green, K. and Williams, R. (1997). *Emu* **97**: 76–83. (Feeds mainly on scale worms and fish. Scale worms are unusual in the diet of shags; they were taken by all birds in the non-breeding season but in the breeding season those feeding young changed to a diet of fish.)

Satellite tracking of high-arctic northern fulmars. Falk, K. and Moller, S. (1995). *Polar-Biology*. 1995. **15**: 495–502. (Three *Fulmarus glacialis* were tracked with satellite transmitters while they dispersed from a colony in high-arctic Greenland. The longest cumulative distance recorded was 2 043 km in 14 days, giving an average daily movement of 143 km; maximum distance covered in one day was 369 km.)

Human influences on breeding of south South Polar skuas in the eastern Larsemann Hills, Princess Elizabeth Land, East Antarctica. Wang, Z., Norman, F. I., Burgess, J. S., Ward, S. J., Spate, A. P. and Carson, C. J. (1996). *Polar Record* **32**: 43–50. (Breeding activity of pairs of *Catharacta maccormicki* in East Antarctica, was recorded in five of six austral summers between 1988 and 1994. Although relatively few skuas nest in the study area, data suggest that there was inter annual variation in numbers and locations of territories and chicks fledged. This variation is discussed in relation to increased human activities in the area and to an enhanced access to human derived foods.)

SOCIAL BEHAVIOUR

Ectoparasites reduce long-term survival of their avian host. Brown, C. R., Brown, M. B. and Rannala, B. (1995). *Proceedings, Royal Society of London, B.* **262**: 313–319. (In the colonially nesting cliff swallow *Hirundo pyrrhonota* the authors manipulated ectoparasite load by fumigating adults and comparing annual survivorship of fumigated and non fumigated control birds. Over an eight year period non-fumigated birds had an annual survivorship 12% less than that of fumigated birds; effects did not vary with colony size. Parasitized individuals had an annual survivorship of 0.38, compared with 0.57 for non-parasitized birds.)

Acceptance by the splendid fairy-wren of parasitism by Horsefield's bronze-cuckoo: further evidence for evolutionary equilibrium in brood parasitism. Brooker, M. and Brooker, L. (1996). *Behavioral Ecology* 7: 395–407. (Suggests that a long coevolutionary history of brood parasitism and nest predation has favoured adjustment to the host's life-history pattern, to the point where total acceptance of the cuckoo egg is now an evolutionary stable strategy.)

Increased opportunities for cuckoldry may be why dominant male fairy wrens tolerate helpers. Green, D. J., Cockburn, A., Hall, M. L., Osmond, H. and Dunn, P. O. (1995). *Proceedings, Royal Society of London, B.* **262**: 297–303. (The highest known rates of extra pair fertilization (76%) occur in the superb fairy wren, a bird that lives in both breeding pairs and in co-operative groups where 2–5 males assist a single female. Males living in groups are cuckolded more often than males in pairs, apparently because females can rely on helpers as an alternative source of care, and so do not need to allow their mate fertilizations. Dominant males with helpers provides less parental care during the nestling period, and in turn use this reduced workload to make extra territorial forays which are used to court extra group females. DNA fingerprinting suggests that this increased display rate provides them with an advantage in obtaining extra group copulations.)

Intraspecific brood parasitism in the moorhen: parentage and parasite host relationships determined by DNA fingerprinting. McRae, S. B. and Burke, T. (1996). *Behavioral Ecology and Sociobiology* **38**: 115–129. (Parasitic female *Gallinula chloropus* lay 1 to 6 eggs in the nests of conspecific neighbours. Moorhen hosts accept all parasitic eggs laid after the second day of their laying period. Natal philopatry by both sexes was relatively common, the probability that a neighbour of either sex was a first order relative (parent offspring) was 0.18. Although first order relatives were not preferentially chosen as hosts over individuals that were not first order relatives, even through random host selection there is almost a one in five change that brood parasites in this population are closely related to their hosts. This may facilitate host tolerance of parasitic eggs.)

RAPTORS

Influence of radio transmitters on prairie falcons. Vekasy, M. S., Marzluff, J. M., Kochert, M. N., Lehman, R. N. and Steenhof, K. (1996). *Journal of Field Ornithology* **67**: 680–690. (No effect of radio tagging using backpack radio transmitters was detected on nesting success and brood size. The sex of the falcon tagged did not affect productivity.)

Survival and population size estimation in raptor studies: a comparison of two methods. Gould, W. R. and Fuller, M. R. (1995). *Journal of Raptor Research* **29**: 256–264. (Suggests that Jolly Seber estimation of survival and population size is less biased than simple counts in studies with marked birds.)

Spotted owls: resource and space use in mosaic landscapes. Carey, A. B. and Peeler, K. C. (1995). *Journal of Raptor Research* **29**: 223–239. (Home ranges of 14 pairs of spotted owls *Strix occidentalis* were studied over four to six seasons in three SW Oregon landscapes that differed in prey base and degree of forest fragmentation. Ratios of use categories and costs of use based on distances to units from activity centers revealed that spotted owls adopted different tactics depending on prey base and degree and type of fragmentation. Strategies were in accordance with predictions for central place foragers exploiting patchy environments. Owls generally concentrated their foraging in old forests, but selectively used particular young forest units, especially when dusky footed woodrats *(Neotoma fuscipes)* were present.)

Modelling raptor populations: to ring or to radio-tag? Kenward, R. E. (1993) In, J.-D. Lebreton and P. M. North (eds), Marked individuals in the study of bird population, Birkhauser Verlag: Basel/Switzerland. (Compared with banding, radio tracking can provide comparatively rapid and less biased assessment of mortality and survival for large raptors.)