Communal Species of Australian Birds

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Much of the theory of ornithology has developed in Europe and concerns an essentially European fauna, living in a regular climate with clearly defined summers and severe winters and where rainfall does not vary greatly between one year and another. North America, and the ideas current there, are basically similar. In consequence a general picture is formed of an "average" species, nesting routinely every spring, rearing its offspring to independence and then shedding them either into migratory or nomadic flocks to fend for themselves. Life history studies of Northern Hemisphere species (e. g. Lack 1943; Nice 1937; Hinde 1952; Snow 1958; Curio 1959; Summers-Smith 1963) tend to describe the same basic pattern of reproduction, climaxing with the dispersal of the year's crop of young before winter. There has been a tendency to accept this pattern as universal, whereas the increasing number of studies coming from the tropics and Southern Hemisphere show that many species behave very differently.

Australia is largely an arid continent with only the periphery enjoying rainfalls of over 20 in. per annum. Not only are evaporation rates high, but rainfall is extremely irregular both in regard to the time of year when it is received and the quantity received in any one year. This results in the pattern so familiar to Australians of seasons of plenty interspersed with seasons of drought.

A number of Australian birds have shown interesting adaptations to these conditions. Frith (1959) has shown that ducks breed only when the water-levels reach a suitable height. Serventy and Marshall (1957) have shown that a number of species are capable of responding to unseasonal rainfall by breeding; some species such as the Zebra Finch, *Taeniopygia castanotis*, can respond remarkably quickly (Marshall and Serventy 1958). It should not be surprising, therefore, that other aspects of Australian ornithology fail to conform to the pattern set in other climates. One of these—communal behaviour—is the subject of this paper.

Attention will be focussed on those communal species maintaining social contact above the pair-level and throughout the year.

The wide spectrum of activities that are influenced by social behaviour make it necessary to limit the scope of this paper and for this reason temporary foraging, migratory, and roosting assemblages will not be dealt with.

Successful reproduction essentially involves the rearing of young individuals to independence. Species vary widely in the degree of parental

devotion and filial dependence. The Mallee Fowl, *Leipoa ocellata,* shows an irreducible minimum of dependence. The eggs are incubated by remote control deep in an incubator mound, and hatch unattended, so that as far as we know parent and offspring never meet (Frith 1962). At the other extreme the Royal and Wandering Albatross, *Diomedea epomophora* and *D. exulans,* take so long over the incubation and nestling stages that successful breeders can only breed every second year (Richdale 1952; Ashmole and Tovar S. 1968). Between these two extremes lie most other species.

Skutch (1935), whose studies of Central American species have produced so much of provoking interest, first commented on the fact that some nests that he watched were attended by more birds than the pair responsible for the eggs. The Marquis Yamashina (1938) reported similar events at several nests of the Babbler *Yuhina brunneiceps,* on Formosa. More recently Skutch (1961) has reviewed the subject in detail and has listed over 130 species in which "a bird—assists in the nesting of an individual other than its mate". Many of the cases cited by Skutch (1961) are unique and have every appearance of being abnormal, or at least exceptional events. Species for which the data are comprehensive suggest that certain families are more inclined to communal living than others, and these are listed in Table 1.

Table 1

Families and subfamilies showing communal tendencies[1])

Anatidae	Corvidae	Troglodytidae
Rallidae	Corcoracinae	Turdinae
Crotophaginae	Cracticidae	Malurinae
Alcedinidae	Paridae	Artamidae
Picinae	Sittidae	Prionopinae
Hirundininae	Timaliinae	Thraupidae

Skutch (1961, p. 201) comments on the frequency with which "interspecific helpers" are recorded in the literature and finds this very much at variance with his own observations in Central America. He concludes that this is because the conspicuous difference between two members of different species feeding at the same nest emphasizes the event and strikes any observer as unusual. Within a species, in the absence of sexual dimorphism, it is hard enough to separate male from female, let alone some extra hanger-on. It is therefore not surprising that relatively few cases of extra birds at the nest have been recorded, but this does not mean that it is necessarily a very rare occurrence, only that it fails to be recognized! Intensive studies involving colour-banded individuals of known history are the most likely sources of reliable data, but because of the time and effort involved these are few and far between. Nestlings often are not banded

[1]) Data largely drawn from reviews by Skutch (1961) and Crook (1965).

individually; this is to avoid wasting colour combinations on an age group where the mortality is high (e. g. Nice 1937).

In Australia during the past decade at least one representative from each of seven families or subfamilies has been intensively studied and their social relationships worked out. An eighth subfamily represented in Australia by communal species but as yet unstudied here, has been recently studied in India.

1. Anatidae. Studies of the Magpie Goose, *Anseranas semipalmata,* showed that two females frequently lay in the same nest, that trios are common associations, and that the young stay with their parents in the flock after breeding has finished, and until the next breeding season starts (Frith and Davies 1961).

2. Rallidae. Rails. The detailed study of the Tasmanian endemic Native Hen, *Tribonyx mortierii,* by Ridpath (1964 and in prep.) shows that this species maintains equal numbers of permanent breeding groups of two and three. Trios were often formed by the attachment of two siblings to a third bird. Ridpath (pers. comm.) also found trios in the Eastern Swamphen, *Porphyrio melanotus.*

3. Alcedinidae. The Kookaburra, *Dacelo gigas,* has recently been studied in detail by Parry (pers. comm.) by means of individual marking. She found a high incidence of trios in her population; all birds took part in rearing the young and most of these "aunts" were found to be young birds of the previous season, staying with their parents.

4. Corcoracinae (subfamily of Grallinidae, the Australian mud-nest builders). Both members of this subfamily are usually encountered in groups at all times of the year; single pairs are the exception. *Corcorax melanorhamphus,* the White-winged Chough, may number from 2—20 and averages 8 birds per group (Rowley 1965b), all

Fig. 1.—A group of Apostle-birds foraging.
Photograph by G. S. Chapman.

members of which help to build the nest, to incubate the eggs and to feed the nestlings; sometimes two females may lay in the same nest. An intensive study of this species is nearing completion. *Struthidea cinerea,* the Apostle Bird, occurs in groups of similar size (Mack 1967) and has also been the subject of a banding study (Chapman unpubl.), see fig. 1

5. Cracticidae. Both the Western Australian Magpie, *Gymnorhina dorsalis* (Robinson 1956), and the Black-backed Magpie, *Gymnorhina tibicen* (Carrick 1963), have been well studied and both commonly live in groups throughout the year, and defend a communal territory. Young birds may stay with the group in which they were reared or move out into a non-breeding flock.

6. Timaliidae, tribe Pomatorhinini. Five species of Scimitar babbler (*Pomatostomus* spp.) occur in Australia and all are found usually in small groups throughout the year. No detailed study of this genus has yet been made but the closely related *Turdoides striatus* of India has been studied (Andrews and Naik 1965; MacDonald 1959) and is now known to keep the same group members throughout the year.

7. Malurinae (sub-family of Muscapidae), the Australian wrens. The nominate genus *Malurus* contains 14 species all of which frequently form communal groups although single pairs are frequently found too. The Superb Blue Wren, *M. cyaneus,* has been studied in detail (Rowley 1965a) and of 43 breeding units 14 consisted of more than the single pair.

The genera *Stipiturus* (Emu wrens) and *Acanthiza* (Thornbills) are also recorded as having several birds attending the nest, but no detailed studies are available.

8. Artamidae (Wood-swallows). All the members of this family are well known for their social habits (Immelmann 1966) and in particular for their remarkable roosting behaviour (Hindwood 1956) when they form a cluster or swarm (like bees) usually on the vertical trunk of a tree. A study of colour-banded *Artamus cyanopterus* has shown that several birds sometimes attend at one nest and that the "guild" social ties persist so strongly that feathered nestlings may be left unattended over night while the parents roost in a cluster as much as a quarter of a mile away (Rowley unpubl.), see fig. 2.

Except for the babblers, there is evidence of at least one species of each family, or subfamily mentioned above, retaining offspring within the social group (at least occasionally) long after dependence on parental feeding has ceased. In several cases, the young remain permanently in the group, and this process must inevitably lead to some degree of inbreeding in the species concerned. More recently, particularly because of increased interest in primate social relations, it is becoming increasingly accepted that in-

breeding is quite commonplace (e. g. Lemurs, Jolly 1966) and does not appear to result in decadent species. In agricultural circles, inbreeding has been practised for centuries by animal husbandrymen; studies of human genetics have shown not only that inbreeding is quite common in certain tribes and castes, but that the participating individuals need not show reduced fertility or any other deleterious effects (Darlington 1953).

If the avoidance of inbreeding is not so important as previously thought, then the shedding of independent young from the family group should no longer be regarded as a process automatically selected for in the course of evolution, as has been frequently stated or inferred in the past.

It is not the purpose of this paper to suggest that communal living among Australian species of birds is an adaption to an irregular climate, although it well may be. Rather I suggest that the shedding of the annual crop of young by the parent birds presents certain problems and is by no means so urgent where the winter (or non-breeding season) is not so rigorous as that in the Northern Hemisphere.

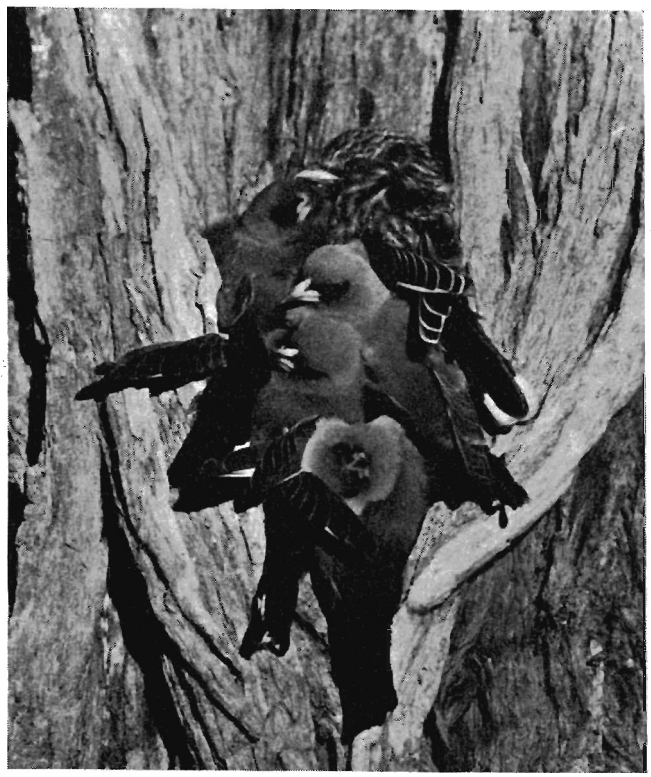

Fig. 2.—A roosting cluster of Dusky Woodswallows.
Photograph by M. S. R. Sharland.

Fig. 3.—A contact species, *Malurus splendens*, roosting.
(Photograph from below by John Warham.)

Many of the Australian species discussed above are "contact" species in the sense of Hediger (1950), so called because they actively seek bodily contact with conspecifics at all times of the year; they frequently clump, allopreen and roost side by side. It does not take much imagination to envisage the conflicts arising in such contact species as the fledglings reach independence, if they are to leave the family group. The ties between individuals are much closer than mere food-dependence and it is, in fact, surprising that more contact species do not develop group-living, see fig. 3.

The value of communal living for birds has been discussed recently by others (Skutch 1961; Selander 1964; Crook 1965). Should we perhaps regard the communal way of life as normal and investigate the different ways by which other species avoid prolonged communal relationships after successful reproduction?

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