

OBSERVATIONS ON THE NATURALISED DISTRIBUTION OF THE RED-VENTED BULBUL IN THE PACIFIC, WITH SPECIAL REFERENCE TO THE FIJI ISLANDS

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ABSTRACT

The present and past naturalized distribution of the Red-vented Bulbul, *P. cafer*, in the Pacific is described. The species was first recorded in Fiji at the turn of the century and probably arrived with indentured Indian labour. Its restricted distribution in the Fiji Islands coincides with that of several weed species which constitute its main food supply and probably limit its spread.

NATIVE DISTRIBUTION

P. cafer consists of a group of clinally graded races stretching from Ceylon in the south, across India to Pakistan in the west and to eastern Burma in the east. Ali and Ripley (1971) distinguished seven sub-species, of which the Pacific representative is *P. c. bengalensis* Blyth, 1845 (hereafter referred to as the Bulbul). Its native range stretches along the Himalayas from eastern Uttar Pradesh eastward through Nepal and Bhutan, to eastern Assam (north of the Brahma-putra), and southward into northern Bihar and Bengal (Peters 1960).

THE NATURALIZED DISTRIBUTION OF THE BULBUL AS A POST-EUROPEAN INTRODUCTION TO THE PACIFIC (Fig. 1)

FIJI

The earliest record of the Bulbul in the Pacific area is from Fiji where it was introduced about 1903 (Parham 1955). It was not a deliberate introduction, but it can be linked with the arrival of indentured Indian labour around that period. As with the early English settlers in New Zealand, who brought with them many English birds for sentimental reasons, so the Indian immigrants might be expected to have brought the Bulbul, because it holds a special place in Indian poetry, folklore and literature. Most of Fiji's Indian immigrants came from Uttar Pradesh with large numbers from Bengal and Bihar, the main port of embarkation being Calcutta (Gillion 1962), areas which coincide with the distribution of *P. c. bengalensis*. Possibly the strongest reason for the immigrants bringing the Bulbul to Fiji was its widespread use as a fighting bird (Ali & Ripley 1971; Whistler 1928; Finn 1906). Fighting birds were fed on a special diet and highly prized by their owners. During a fight, the adversaries were

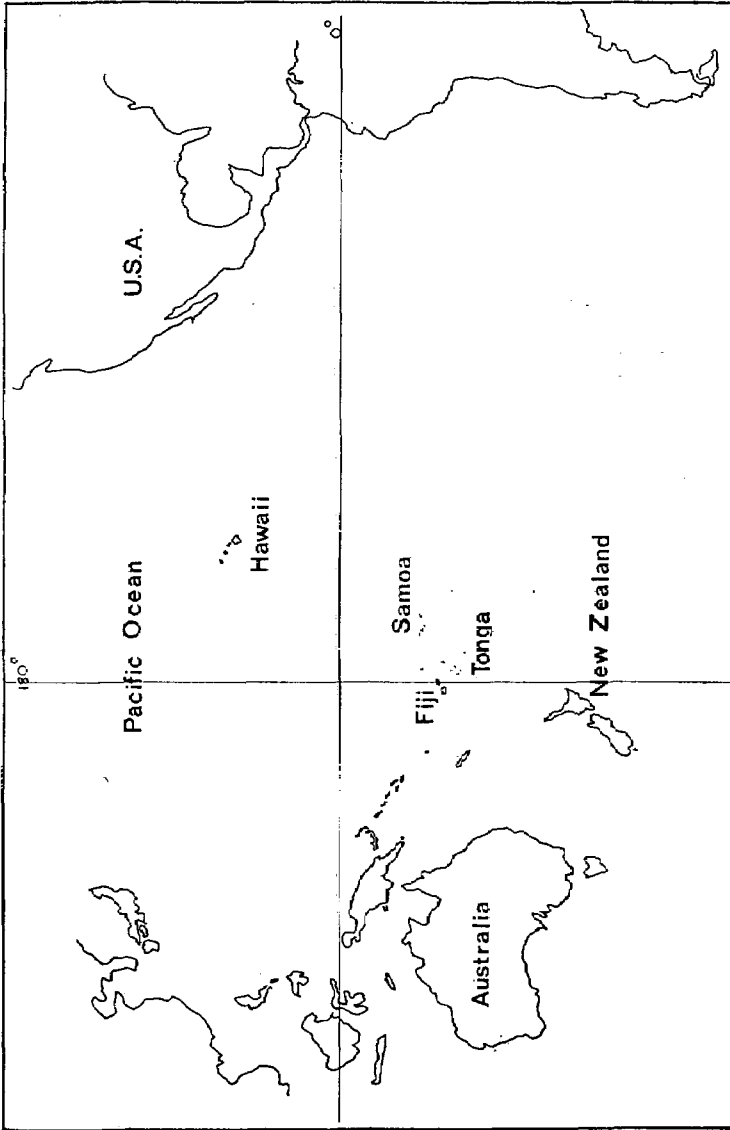


FIGURE 1 — The Pacific, illustrating the island groups where the Bulbul is at present or has in the past become established.

tethered on a T-shaped perch by a cord fastened to a soft string around the body to prevent them escaping. Heavy bets were placed and occasionally fights continued until the death of one of the combatants occurred. Although animal fighting is now prohibited in India, Bulbul fighting still continues as a popular rural sport in some provinces (Ali & Ripley 1971). The sport is not practised in Fiji today.

At present the Bulbul is common only on the main island of the group — Viti Levu, and its small adjacent islands (pers. obs.). It is present at a reduced density on Ovalau (pers. obs.) and on Wakaya (Clunie, pers. comm.) and Beqa (Fijian resident, pers. comm.). A small population exists on Taveuni - Wairiki (Beckon, pers. comm.) and Waiyevo (Pernetta, pers. comm.). It is absent from Vanua Levu, Kadavu, the Yasawas and Mamanuca groups (pers. obs.), and is reported as being absent from Vatulele, Lakeba, Ono (Clunie, pers. comm.), Gau and several islands of the Lau group (Fijian residents, pers. comm.) (Fig. 2).

On Viti Levu, the Bulbul is an abundant bird in agricultural and suburban habitats and is commonly observed in clearings and patches of secondary growth in the forests. It can sometimes be found in mature forest but is generally associated with immature secondary habitats.

TONGA

The Bulbul is resident on the islands of Tongatapu, 'Eua and Niuafu'ou (Carlson 1974). Although not listed as present in Tonga by Mayr (1945), the introduction and spread of the Bulbul in Tonga can be traced from a pair of birds which were either released or escaped on Niuafu'ou in 1928/9. In the 1940's they were brought to Tongatapu by Prince Tungi to control unwanted insects, from where they spread to 'Eua (Carlson 1974).

Although recorded as abundant on Tongatapu by Dhondt (1976a), I found it nowhere near as common, on a visit in June 1976, as it is in Fiji, an observation confirmed by Dr B. Robinson (pers. comm.). It is found all over Tongatapu (pers. obs.), an island which is devoid of any large areas of natural habitat

SAMOA

The Bulbul is established on the islands of Savai'i and Upolu in Western Samoa and on the island of Tutuila in American Samoa (Dhondt 1976b; Stunzner pers. comm.; Amerson pers. comm.).

The Bulbul was not listed as occurring in Samoa by Armstrong (1932) or Mayr (1945). Stunzner (pers. comm.) stated that the Bulbul was introduced into Western Samoa by the U.S. Marines in

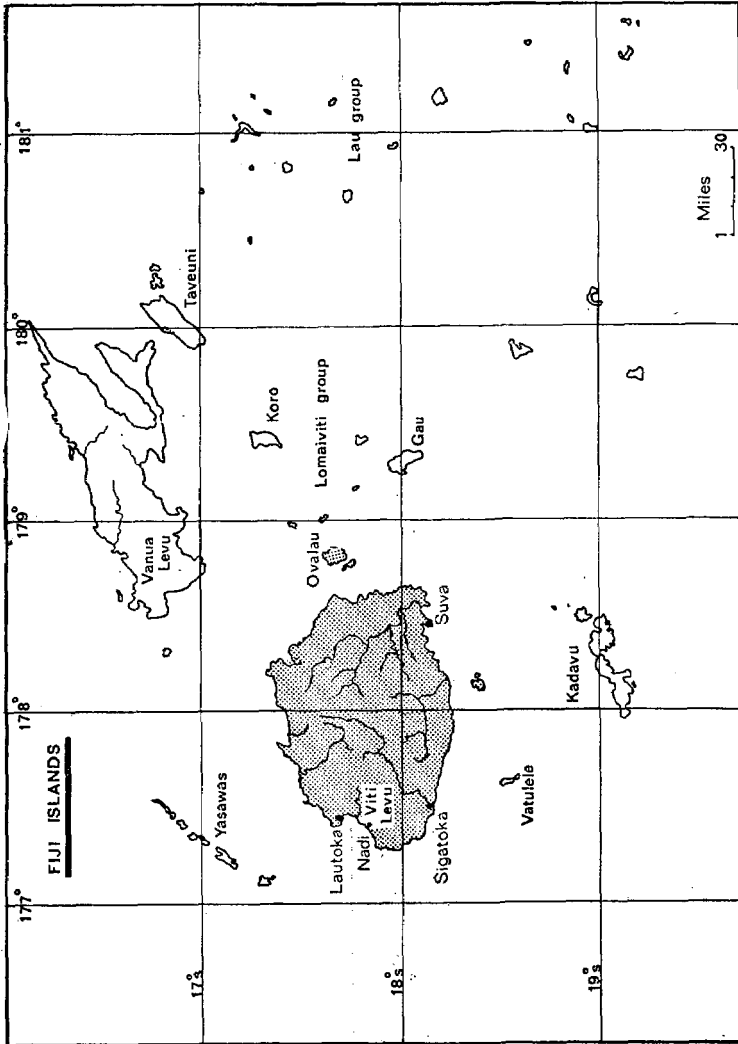


FIGURE 2 — The Fiji Islands, illustrating the present distribution of the Bulbut (stippled).

1943.* These birds were collected in Fiji and were originally sent on an American troopship to a bird dealer in New Caledonia. It was, however, re-routed to Apia where the birds were subsequently released. Keith (1957) found the Bulbul only on Upolu. By 1963, it had reached Tutuila (Clapp & Sibley 1966), but it probably arrived in the late 1950's (Amerson pers. comm.). It was not recorded on Savai'i until 1974 (Dhondt 1976b).

On the islands of Tutuila and Upolu the Bulbul is common only in residential and agricultural areas. It is less numerous on the island of Savai'i (Stunzner pers. comm.; Amerson pers. comm.; Dhondt in press).

HAWAII

The Bulbul (subspecies not determined) was first recorded in Hawaii on Oahu in 1966 and is now well established although still confined to that island (Berger 1975). Another closely related alien, the Red-whiskered Bulbul, *P. jocosus*, is also established on the island of Oahu where both species are confined to residential areas (Berger 1975).

NEW ZEALAND

The Bulbul became established in the Auckland city area in 1952, probably from escaped cage birds. By 1954 the New Zealand Agriculture Department was pursuing an eradication policy (Turbott 1956). This was evidently successful as no birds have been seen since 1954-55. The decision to eradicate the Bulbul was made on the grounds that it "had undoubtedly proved to be something of an agricultural and orchard pest in Fiji" (Turbott in litt.).

AUSTRALIA

There is a small population of wild *P. cafer* in the suburbs of Melbourne which has been established since 1918 (Lendon 1952; Slater 1974). *P. jocosus* is found more commonly in both the suburbs of Melbourne and Sydney.

DISCUSSION

Throughout its naturalized range in the Pacific, the Bulbul is associated with man-modified habitats. In the temperate areas which it has colonized — Melbourne and formerly Auckland — it is confined to residential localities where it probably subsists on the fruit of

* There is an unconfirmed report that the Bulbul first appeared in W. Samoa in 1912 as a self introduction and the German Governor of the time, Dr Solf, ordered its eradication (Stunzner pers. comm.). This report has not been substantiated by a search of German Colonial Government records (U. Beichle pers. comm.).

ornamental shrubs and trees. In tropical areas, it occupies residential, agricultural and immature secondary habitats; it has not been able to colonize mature forest although it will readily visit it. As such, it occupies the same habitat in its naturalized range as it does in India (Ali & Ripley 1971; Stuart Baker 1932; Vijayan 1975; Whistler 1928). Its avoidance of primary forest and association with forest clearings and cultivation is emphasised by Stuart Baker (1932) and Vijayan (1975). In Fiji the Bulbul is a mixed feeder, specializing on the fruits of a few primary plant colonists, all of which are introduced (Watling 1977, in prep.). Several of these are recorded foods of the Bulbul in India, for example, Lantana, *Lantana camara*, *Physalis* sp., *Solanum torvum* and Guava, *Psidium guajava* (see Henry 1955; Mason & Maxwell-Lefroy 1912). The study of the feeding ecology of *P. cafer* in Southern India by Vijayan (1975) indicates that although its annual diet is more diverse in this habitat, with a constant succession of different foods being eaten, the type of fruiting plants utilized is the same as that in Fiji. Of nineteen principal foods, eleven are fruits of shrubs or creepers — typical primary colonists — and only three are fruits of large trees.

The Bulbul has a restricted distribution in the Fiji Islands, being confined to all intents and purposes to the main island of Viti Levu and a few small adjacent islands. The distribution of native birds within the group shows many of the anomalies that are characteristic of oceanic archipelagos (Cain & Galbraith 1956; Darlington 1957; Lack 1947; MacArthur & Wilson 1967). Several species have discontinuous distributions and are absent from some islands where one might expect to find them, for example the Silktail, *Lamprolia victorinae*; the Red-throated Lorikeet, *Charmosyna amabilis*; the Pink-billed Parrotfinch, *Erythrura kleinschmidti*; the Woodswallow, *Artamus leucorhynchus*; the Versicolor Flycatcher, *Mayrornis versicolor* and the Giant Forest Honeyeater, *Gymnomyza viridis*. Geographical replacement occurs in the Fruit Pigeons, *Ptilinopus* (= *Chrysoenas*) *luteovirens* group and in the following genera: Musk Parrots, *Prosopelia*; Fantails, *Rhipidura*, and the Honeyeaters *Myzomela* and *Foulehaio* (*Xanthotis*). Thirteen species have three or more distinct subspecies. Finally there are three 'supertramp' species (Diamond 1974) — the Pacific Pigeon, *Ducula pacifica*; the Crimson-crowned Fruit Dove, *Ptilinopus porphyraceous* and the Blue-crowned Lory, *Vini australis* — whose distribution is confined to outlying islands.

The distribution of the Bulbul, which is common only on one island — Viti Levu (Fig. 2), might be considered normal in comparison with some of the indigenous birds of Fiji. However, several of ten other introduced birds have become widespread, and although the dispersal ability of one species cannot be used to assess that of another, one might expect that a species as opportunistic as the Bulbul would have no problem in crossing the usually short distances between the islands. Williams (1953) recorded the dispersal of 21 European

passerines introduced into Australia or New Zealand. Within 30-40 years, many had established themselves on small islands in Australasian seas (*i.e.* between 320-800 kms). Although a few cases were direct introductions by man, most were self-introductions. A. Berger (*pers. comm.*) has recorded the natural inter-island dispersal of two introduced species in Hawaii. In Fiji, the Fijians themselves often take birds between islands as pets (F. Clunie *pers. comm.*; *pers. obs.*). Lack (1976) has argued convincingly that ecological limitations, rather than dispersal difficulties are more important in determining the composition of insular avifaunas.

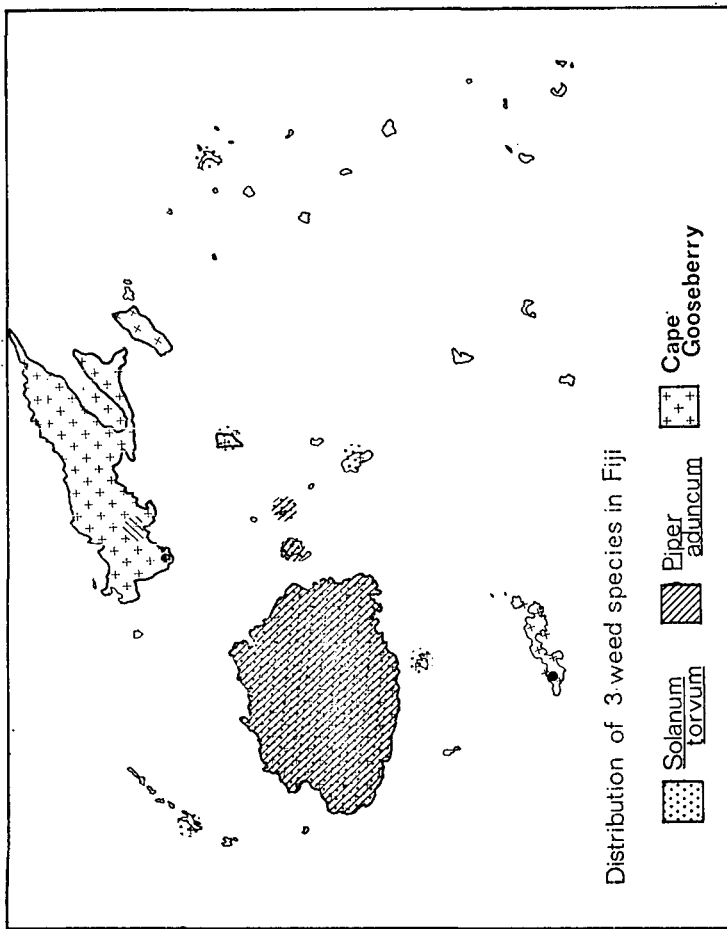


FIGURE 3 — The distribution of the principal food plants of the Bulbul in the Fiji Islands.

Fig. 3 illustrates the distribution of the three weed species which were found to be the principal diet of the Bulbul in Fiji (Watling 1977; in prep.). Only on Viti Levu and Ovalau are all the weeds found growing abundantly together. *P. aduncum* and *S. torvum* are effectively absent from the other main island of the group — Vanua Levu (although *P. aduncum* is present in one small area on the south coast and a few plants of both species were seen near Nabouwalu). All the other major islands lack at least two of the main food plants of the Bulbul and it may well be that the distribution of these plants determines the distribution of the Bulbul. Vijayan (1975) after surveying 54 localities in India, concluded: "it is evident that vegetation is the most important single factor which determines the distribution of Bublubs." Morton (1973) believed that the patchy distribution of many tropical bird species can be explained by habitat characteristics.

It may be envisaged that since *P. aduncum* and *S. torvum* have now gained a foothold on Vanua Levu, they will probably spread quickly, particularly *P. aduncum* which is dispersed by Fruit bats — *Pteropus* species. In consequence it would seem likely that the Bulbul will be able to colonise Vanua Levu in the future.

The Bulbul has been held "largely responsible for the spread of the noxious weed, Guava *P. guajava*" (Mercer 1966). This it certainly is not. Guava is a seasonally fruiting plant and is only a minor food of the Bulbul (Watling 1977 and in prep.). It is present and abundant on all the major islands of the group, many of which lack the Bulbul. People, together with cattle and horses, are probably the main dispersal agents (Watling 1977).

LITERATURE CITED

- ALI, S.; RIPLEY, D. 1971. Handbook of the Birds of India and Pakistan. Vol. 6. Oxford University Press.
- ARMSTRONG J. 1932. Hand list to the Birds of Samoa. London: J. Bale & Sons, Danielsson Ltd.
- BERGER, A. 1975. Red-whiskered and Red-vented Bublubs on Oahu. *Elepaio* 36 (2): 16-19.
- CAIN, A.; GALBRAITH, I. 1956. Field notes on birds of the Eastern Solomon Islands. *Ibis* 98: 100-134; 262-295.
- CLAPP, R.; SIBLEY, F. 1966. Notes on the birds of Tutuila, American Samoa. *Notornis* 13: 157-164.
- DHONDT, A. 1976a. Bird Notes from the Kingdom of Tonga. *Notornis* 23: 4-7.
- 1976b. Bird Observations in Western Samoa. *Notornis* 23: 29-43.
- (In press). Notes on the breeding and postnuptial moult of the Red-vented Bulbul *Pycnonotus cafer bengalensis* in Western Samoa. Condor.
- CARLSON, E. 1974. Avifauna of Tonga. Unpubl. mss.
- DARLINGTON, P. 1957. Zoogeography: the Geographical Distribution of Animals. 675 pp. New York: Wiley.
- DIAMOND, J. M. 1974. Colonisation of exploded volcanic islands by birds: the supertrap strategy. *Science*, N.Y., 184: 803-806.
- FINN, F. 1906. Garden and Aviary Birds of India. London.
- GILLION, K. 1962. Fiji's Indian Migrants. Melbourne.
- HENRY, G. 1955. Guide to the Birds of Ceylon. 432 pp. Oxford University Press.
- KEITH, A. 1957. Bird observations in Fiji and Samoa, as furnished to E. H. Bryant, Jr. *Elepaio* 18: 25-27.
- LACK, D. 1947. Darwin's Finches. Cambridge University Press.
- 1976. Island Biology, illustrated by the land birds of Jamaica. 445 pp. Oxford: Blackwell Scientific Publications.
- LONDON, A. 1952. Bublubs in Melbourne. *Emu* 52: 67-68.
- MacARTHUR, R.; WILSON, E. 1963. An equilibrium theory of insular zoogeography. *Evolution* 17: 373-387.
- MASON, C.; MAXWELL-LEFROY, H. 1912. The food of birds in India. *Mem. Agr. Dept. India. Entom. Ser.* 3.

- MERCER, R. 1966. A field guide to Fiji birds. Fiji Mus. Spec. Publ. Ser. No. 1. 31 pp. Suva: Govt. Printer.
- MORTON, E. 1973. On the evolutionary advantages and disadvantages of fruit eating in tropical birds. *Am. Nat.* 107: 8-22.
- PARHAM, B. 1955. Birds as pests in Fiji. *Fiji Agric. J.* 25: 9-14.
- PETERS, J. 1960. Check list of birds of the world. Vol. IX. Eds. Mayr, E. and Greenway, J. Cambridge, Massachusetts.
- SLATER, P. 1974. A Field Guide to Australian birds. Passerines. 309 pp. Melbourne: Rigby.
- STUART BAKER, E. C. 1932. Nidification of the birds of the Indian Empire. Vols. I-IV. London: Taylor & Francis.
- TURBOTT, E. G. 1956. Bulbuls in Auckland. *Notornis* 6: 185-192.
- VIJAYAN, V. S. 1975. The ecological isolation of Bulbuls (Pycnonotidae) with special reference to *Pycnonotus cafer cafer* and *P. luteolus luteolus* at Point Calimere, Tamil Nadu. Ph.D. Thesis, University of Bombay.
- WATLING, D. 1977. The ecology of the Red-vented Bulbul in Fiji. Ph.D. Thesis, University of Cambridge.
- WHISTLER, H. 1928. Popular Handbook of Indian Birds. 438 pp. London: Jackson.
- WILLIAMS, G. R. 1953. The dispersal from New Zealand and Australia of some introduced European passerines. *Ibis* 95: 676-692.

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SHORT NOTE

A MYNA MATTER

Dhondt (1976, *Notornis* 23 (1): 29-43) gave notes on bird observations made in Western Samoa during 1973-74. He reported the breeding of a recent arrival — the Common Myna (*Acridotheres tristis*) — which had been established in Upolu since at least 1972.

During a brief visit to Western Samoa in January 1978, no observations of the Common Myna were made, despite extensive travelling on Upolu. However, in several localities the Jungle Myna (*A. fuscus*) was observed. It was not common, localised small flocks being seen in the suburbs and environs of Apia, generally in association with cattle or horses or on pasture or playing fields.

Two aggressive interactions with the Samoan Starling (*Aplonis atrifuscus*) were seen, the latter being victorious on both occasions. There appears to be scope for competition between the two species and it will be interesting to see if the Hill Myna is able to flourish on Upolu as it has in Fiji. *A. fuscus* was introduced into Fiji at the turn of the century to combat armyworm (Mercer 1964, *Field Guide to Fiji Birds*, Suva) and both it and the Common Myna (*A. tristis*) are abundant on the main islands of the Fiji group (Watling 1975, *Notornis* 22 (1): 37-53).

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