

I believe that with more observation hours more species would have been recorded. Even with only four hours observation time, I believe the tree was used by at least one, possibly two, nesting female Raggiana Birds of Paradise. Raggiana Birds of Paradise were nesting in the park at the time of these observations. The tree was also visited by insectivorous species, though none of the birds that fed on the figs were seen to forage for insects.

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FEEDING BEHAVIOUR OF SACRED KINGFISHER *HALCYON SANCTA*.

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On 1 July 1990, at Jais Aben Resort, Madang Province, I watched two Sacred Kingfishers feeding. One of the birds had a more prominent white supercilium which allowed me to keep track of each bird, as they were not in view the whole time. My observations lasted from 11:35 to 12:49 (74 minutes) and only ended when both birds were disturbed by a party of people sitting under the tree from which they were hunting.

Both Sacred Kingfishers employed a "sit and wait" approach. They perched on the lower branches of a rain-tree, c. 8-10 m above the ground. They always perched in the shade, although they did not always use the same perch. At times they were within 3 m of each other although there appeared to be no intraspecific aggression. From their perch they dropped at an angle of between 30 and 45 degrees from the vertical. Six forays were to the ground, which was short grass. Two forays, by the same kingfisher, were into the foliage of a bush on the shoreline. Seven forays out of the nine observed resulted in prey being caught.

Sacred Kingfisher "A" was in view for 53 minutes. During this time it made five forays, all to the ground. All were successful although only three of the prey items were seen for long enough for me to identify them. They were a beetle, a small (c. 3 cm long) lizard and a grasshopper. The kingfisher returned to a perch, not necessarily the one from which it had dropped, to consume its prey. Each of the above prey items was banged against a branch a few times and turned around in the bill before being swallowed. The grasshopper and lizard were swallowed head-first. The other two prey items were small and swallowed too quickly for me to see them. On one occasion, when returning to a perch, kingfisher "A" landed near a Willie Wagtail *Rhidipura leucophrys* which chased it to another perch.

Sacred Kingfisher "B" was in view for 36 minutes. During this time it made four forays, two to the ground and two to the foliage of a bush. Only two were successful, one to the ground and one to the bush. On neither occasion could the prey be identified. It handled its prey much as kingfisher "A", returning to a perch, banging the prey against a branch and turning it around in its bill before swallowing.

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BIRD OBSERVATIONS IN LOWLAND MADANG PROVINCE

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INTRODUCTION

From 19 September to 1 December 1989 I was a resident Fellow at the Christensen Research Institute (CRI), 7 km due N of Madang at the Jais Aben Resort (JAR). My primary research was on the ecology of non-breeding terns. However during my CRI Fellowship I had the opportunity to bird watch in many nearby areas of lowland Madang Province. This paper summarises my observations, in a manner that I hope will be useful to future ornithological explorations of this region.

The seabirds were consistently counted during this period, and these more detailed results will be reported elsewhere. For completeness all species are included in the annotated list of this paper, but the status of seabirds is elaborated only for those birds seen from shore.

I found a total of 224 species. Selected observations by other ornithologists are also noted if appropriate data were available to me, but no species not found by me is reported in this paper. I know of many additional species of land-birds that formerly inhabited this region, and I expect that nearly all of them still occur there.

METHODS

Virtually all observations were made by me alone. Although local residents sometimes accompanied or guided me on my initial visit to a site, I almost invariably found more birds and more elusive birds by returning alone after obtaining the necessary permission. Typically this meant arriving at around dawn and slipping into the forest unseen. I believe only one species in Madang Province was shown to me by a local guide that I would have missed seeing by myself (Hook-billed Kingfisher). Undoubtedly, knowledgeable local guides can sometimes prove very helpful (e.g., Joseph Tano at Ambua Lodge, Tari), but few understand the aims of western birders and ornithologists, and I found that most local people disturbed or tried to kill the birds I was trying to observe.

Birds within several kilometres of CRI were mostly observed opportunistically or in the first two or three hours of the morning. The more distant sites (Naru areas, Malpain, Wasab) were usually birded from dawn to mid-day. On some days I entered the forest at dawn and remained there the entire morning, but often I birded the roadsides from dawn until the hot sunny weather decreased bird activity at forest edge and chased me into the forest. Walking/wading up rivers and streams was not very rewarding except for kingfishers. Occasional observations were made during the afternoon and evening hours. Night drives along the North Coast Road and night walks were all disappointing, probably reflecting the sterility