

NESTING SEASON OF THE FIJI GOSHAWK

A common misconception that the Fiji Goshawk (*Accipiter rufitorques*) nesting season extends roughly over the first half of the year traces back to Ernst Mayr's (1945: 127) statement that the season lasts from February to June. Mayr apparently drew on Layard's (1875a: 424) firsthand records of "fresh eggs in February and May, and hard set ones in the same months," and (1875b: 29) "young with down on them in May."

While Layard clearly recorded nesting in February and May of one year, this appears to have been exceptional, occurring outside the usual peak breeding season of Fiji Goshawks. My own experience and all other records I know of indicate the usual nesting season as extending from July or August through to November or December, most eggs being laid in September and October. Some pairs may occasionally nest at other times of year, but I suspect that Layard's records may have been of a late renesting, perhaps following disruption of the usual nesting season by hurricane.

Layard himself found evidence of the usual breeding season, regarding eggs brought to him in September (1875b: 29) as "probably a second laying." In August and September he found the hawks "breeding freely" in forests on Taveuni Island, and in October he collected an egg on Ovalau Island (Oates 1902: 246).

September and October egg dates and nest records dominate other literature. MacGillivray (Oates 1902: 246) collected eggs in October 1856. Wood (1926: 109) found a nest with a lone egg on Vanua Levu on 3 October 1923, and Brown & Amadon (1968: 513) give an October egg date. Blackburn (1971: 154) reported nesting on Taveuni and in the Nausori Highlands of Viti Levu in August and September 1970. Two nests were seen on Taveuni in August and September 1973 (B. D. Heather, pers. comm.) and another was found on Vanua Levu, while Bill Beckon (pers. comm.) photographed a Taveuni fledgling with considerable down remnants in mid-November 1976. Working mainly in the Sigatoka Valley of Western Viti Levu, R. J. Watling (pers. comm.) saw nests, three of which had birds incubating in September, another in October.

On Taveuni, which supports a very high goshawk population, I found nine occupied nests between 20 September and 13 October 1972. Three nests were in raintrees (*Samanea saman*) on coconut plantations, four in selectively logged forest, one on the forest verge, and one in a large forest clearing. Incubation was definitely in progress at four of the nests, two of which were within 400 metres of each other. Old abandoned nests were found within 100 metres of two occupied nests, suggesting pairs may return to established nesting territories.

Further evidence of a September-October nesting season peak comes from central Viti Levu. Near Nadrau, at the headwaters of the

Sigatoka River (Clunie 1979), I recorded a nest with two chicks in mid-October 1979, at Tatuba further downstream on the Sigatoka River. I saw a nest attended by a pair of adults in mid-September 1971, and several kilometres upstream, on 1 October, I watched an adult male displaying over grassy hills. He made long, shallow but fast dives at a clump of trees on a hill top, with a sudden jerk down and fling up at the end of each dive, eventually crossing the river at great height to hills further upstream. Here he repeated the manoeuvre 10 times, diving at trees on a ridge crest and making a violent undulation over them. Blackburn (1971: 155) recorded similar display flights with "dives and abrupt upward swoops."

Circumstantial evidence for a nesting season late in the year comes from Suva city. Goshawks all but disappear from the city in late August, reappearing slowly from the end of December with a sudden remarkable influx of young birds in February. The hawks presumably leave the city to breed. Parents and young may associate for a considerable time after leaving the nest, juveniles in company with adults being often seen in February and March. Pairs of apparent siblings also are quite often seen as late as March, playing and roosting together.

Further support for an August to December nesting season is found in the gonads of adult goshawks I have seen dissected. A female killed near Suva in mid-February 1975 was not in breeding condition. The testes of a male on Ono (Kadavu) in mid-May 1975 were slightly swollen and the ovaries of two females showed early signs of development. On Vanua Levu in June 1974, the testes of two males were slightly swollen but the ovaries of a female were not advanced. Testes of a Viti Levu male in August 1973 were markedly swollen and the ovaries of a female were well developed. On Taveuni in September 1972, a female with advanced ovaries and a large naked brood-patch was dissected, two other females having the ovaries less advanced. Three adult males and a male in moult from juvenile to adult plumage were all in full breeding condition.

The Fiji Goshawk nesting season therefore seems to be from August to November or December, records from February to May perhaps being unusually late nests, or renesting due to disruption of the normal nesting cycle.

LITERATURE CITED

- BLACKBURN, A. 1971. Some notes on Fijian birds. *Notornis* 18: 147-174.
 BROWN, L.; AMADON, D. 1968. Eagles, hawks and falcons of the world. 2 vols. Feltham, Middx.: Country Life Books.
 CLUNIE, F. 1979. Rough notes on the birds of Nadrau, Central Viti Levu. *Fiji Heritage*, Nov. issue.
 LAYARD, E. L. 1875a. Notes on Fijian birds. *Proc. Zool. Soc. London*: 423-442.
 species of birds. *Proc. Zool. Soc. London*: 27-30.
 LAYARD, E. L. 1875b. Ornithological notes from Fiji with descriptions of some supposed new species of birds. *Proc. Zool. Soc. London*: 27-30.
 MAYR, E. 1945. *Birds of the Southwest Pacific*. New York: MacMillan.
 OATES, E. W. 1902. Catalogue of the collection of birds' eggs in the British Museum (Natural History). Vol. 2. *Br. Mus. (Nat. Hist.)*.
 WOOD, C. A. 1926. A collection of birds from the Fiji Islands, Part 3. *Ibis*: 91-136.

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