

The Ecology of the Madagascar Buzzard *Buteo brachypterus*

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The ecology of the Madagascar Buzzard *Buteo brachypterus* was studied from August to December, 1991 in the rainforest of north-eastern Madagascar. It is a medium-sized buzzard with a mottled brown back and white undersides with dark streaking. It is endemic to Madagascar and is common in both wooded and open habitat throughout the island.

The study site was established by the Peregrine Fund of Boise, Idaho, USA on the Masoala Peninsula, which holds the only remaining lowland rainforest in Madagascar. It is currently unprotected, but an area of about 300,000km² has been proposed for a national park. It is the wettest place on the island with annual rainfall exceeding 4,000mm. Most of the peninsula is mountainous terrain with elevations from sea level up to 1200m. The coast is a patchwork of cleared land and secondary growth, and the interior is undisturbed rainforest with very little human activity.

Data were taken on three main aspects of the ecology of the Madagascar Buzzard: nest site characteristics, breeding biology and diet. Nest site characteristics included descriptive and quantitative measurements of the nests, nest trees, and the vegetation surrounding the nest. Breeding biology included behaviours at the nest; dates of egg laying, hatching and fledging; and nesting success. Dietary information was obtained from observations of prey deliveries at the nests.

Nine nests were located by imitating the call of the buzzard and walking in the direction of a response when a response was heard. Elevations ranged from 90m up to 520m (mean = 235m). The three lowest nest sites were at the edge of slash-burn clearings and the others were all in primary forest. Ground slopes at the nest trees ranged from 26° to 51° (mean = 37°). All of the nest sites were on slopes that faced either north, north-west, or west. Reasons for this pattern were unclear as there were no obvious differences in vegetation among slopes facing in different directions.

Nest and nest tree heights were estimated with a clinometer. Nest heights ranged from 14.1 to 20.1m (mean = 18.0m). Nest tree heights ranged from 16.6 to 36.3m (mean = 23.8m). All nine of the nest trees were different species. The nest was at a fork at the top of the main trunk in seven of the nest trees, on a fork in the canopy in one nest tree, and on an epiphyte on the main trunk in one nest tree. The buzzards apparently construct their nests at a fairly specific height and position in the tree, but do not select trees of a specific size or species.

Only one nest was found prior to egg laying and observed for the entire nesting season. An incubation period of 37 days and a nestling period of 48 days were found for that nest and used to estimate laying and hatching dates for the nests found later in the season. Egg laying occurred in late September to early October, hatching in late October to early November, and fledging in mid- to late December. The young fledged in only three of the eight nests observed. One nest fell out

of the tree but the cause of the other four nest failures was not determined. Two eggs, of which one never hatched, were found in one of the nests, but clutch size was not determined for the other nests.

Nest attendance by the female decreased from the incubation period (84.7% of observation time) to the early nestling period (52.8%) to the late nestling period (11.5%). The female spent more time at the nest early and late in the day than in the middle of the day at all three periods of the nesting season. The number of prey deliveries per hour was greatest in the middle of the day and least early and late in the day. These results suggest that the adults spend more time hunting in the middle of the day and attending the nest early and late in the day.

A total of 110 prey deliveries were identified. There were 34 birds (31%), 33 lizards (30%), 13 snakes (12%), 11 frogs (10%), 9 chameleons (8%), 4 rats (4%), 3 crabs (3%) and 3 insects (3%). There were also 71 unidentified prey deliveries. Most of the unidentified prey were too small to identify, so arthropods may make up a larger portion of the diet than the data suggest. There was a diurnal pattern in the two most frequent prey items: 71% of the birds were brought to the nest before 1200 and 88% of the lizards were brought to the nest after 1100. If birds are more easily found in the morning and lizards in the afternoon, the buzzard may be switching its prey preference over the course of the day to take advantage of the most abundant prey.

Another field season will be spent studying the Madagascar Buzzard from September 1992 to January 1993. More data on breeding biology and diet will be gathered, and radio-telemetry will be used to study home range size and habitat use. Based on the number seen, the buzzard appears to be thriving both in undisturbed rainforest and in degraded habitats. It would be interesting to look at differences in the buzzard's ecology in different parts of Madagascar, but that is beyond the scope of this study.

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