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**The Behaviour and Development of New Zealand
Falcons (*Falco novaeseelandiae*) Nesting
in Plantation Forest**

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Abstract

Information on the breeding behaviour and development of wild New Zealand falcons (*Falco novaeseelandiae*) is scarce. It has recently been shown that the species frequently uses plantation forests for breeding purposes and a better understanding of falcons breeding behaviour has implications for forestry harvesting practices as well as strategies to conserve the species.

In this study the breeding behaviour and development of New Zealand falcons were recorded at two nests in Kaingaroa Forest, an extensive plantation forest, using direct hide observations. Both nests were observed during the later part of incubation, the entire nestling and early post-fledging periods. Nest observations were recorded during a four-month period between 5 November 2006 and 2 March 2007.

Incubation was shared between parents and it was observed that the male provided about 30% of the total time on the eggs. The male's investment during the incubation period was primarily incubation of the eggs to allow the female time to hunt. Incubation remained constant after the laying of the last egg in the clutch despite a stoat (*Mustela erminea*) attempting to predate the eggs. During incubation, the male provided only occasional prey for the female. Brooding was also shared by both parents. The male, however, contributed only 10% of the total brooding time, mostly during the first seven days of the nestling period. Brooding activity was high for up to the first six days, before gradually declining until the chicks reached 14 days old at which point it ceased. This decline in brooding coincided with the chicks' development of thermo-regulation. The mean prey delivery rate was 0.82 prey items per hour and the mean feeding rate was slightly higher at 0.90 feeds per hour. Assisted feeding of the chicks was almost always undertaken by the female. The male's primary role during the nestling period was prey delivery. During the early nestling period the female spent the majority of the time brooding chicks. As the nestling period progressed, however, this role shifted primarily to hunting for the young.

By establishing a set of guidelines for forest managers and captive breeders, this study makes a strong direct contribution to the management and conservation of the New Zealand falcon. This study establishes development milestones for breeding events, including the duration of the breeding cycle that will assist forestry managers to minimise their impact upon nesting birds.

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