

Ageing Southern Boobook nestlings and fledglings

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One tool for estimating the age of nestling raptors is to measure wing length and apply a regression model (Olsen and Olsen 1987). For calculating nestling age, researchers place a ruler under the unflattened wing of the nestling and measure from the bend of the wing (carpal joint) to the end of the wing tip (longest digit or primary), then apply the model to predict the nestling's age. Olsen (1997) provided the following model for estimating the age of Southern Boobooks *Ninox novaeseelandiae* based on captive-bred and raised nestlings:

$$A = (W - 0.99) / 0.39 \quad (r^2=0.964, \text{d.f.}= 54, P<0.0001)$$

A = days old, W = wing-length in cm

Southern Boobooks fledge at about 35 days according to Olsen (1997, 1999) or at about 38 to 42 days according to Hollands (2008), Schodde and Mason (1980), Olsen and Trost (1997) and Olsen (2011). We applied the Olsen (1997) model to wing lengths of nine just-fledged (defined as first flight) wild Southern Boobooks from nests we had been observing daily and the date of fledging was known. Wing lengths for the nine fledglings ranged from 17.0 to 24.2 centimetres, with a mean of 19.1 centimetres. This model gave ages for the just-fledged owls ranging from 41.0 to 59.5 days, with a mean of 46.3 days.

We had previously made repeated measures on four known-age wild nestling Southern Boobooks and developed the following regression model:

$$A = (W+0.91) / 0.50 \quad (F = 1370.6; \text{d.f.}= 1,21; r^2=0.985; P<0.0001)$$

We applied this model to wing lengths of the same sample of nine just-fledged Southern Boobooks used in the example above; ages for just-fledged owls ranged from 35.8 to 50.2 days, with a mean of 39.9 days.

The mean fledging age of 39.9 days in this study is close to the 38 to 42 days for fledging age suggested by Hollands (2008), Schodde and Mason (1980), Olsen and Trost (1997) and Olsen (2011). The mean of 46.3 days derived from the Olsen (1997) model gave ages longer than the 35 days for fledging suggested in that and other studies. With the model calculated for this study, and with the Olsen (1997) equation, there was a wide

range of fledging ages among the sample of nine individuals. Fledging age depends on several factors including brood size, individual behaviour and nest site (Olsen 2011). Some nestlings crawled out from the nest hollow and jumped onto a close-by limb 'branching', whereas others from nest hollows in a smooth-barked trunk with no ledge or close-by limbs made their first flight onto a limb in an adjoining tree sometimes four metres away (Olsen and Trost unpublished data).

Given the variability in development of individual nestlings, and the paucity of repeated measures of developing wild nestlings, a larger sample of wild, known-age nestlings and fledglings is needed to test these two equations, and maybe calculate a new model for aging young Boobooks.

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