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Diet of Southern Boobooks *Ninox boobook* and its relationship with breeding in Canberra, Australian Capital Territory, 1993–2019

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The breeding and non-breeding diets of the Southern Boobook *Ninox boobook* were studied in 16 breeding and 12 non-breeding territories in Canberra, ACT, from 1993–2019 by analysis of regurgitated pellets and prey remains under roosts and nests. The aim of the study was to investigate possible differences in diet composition over time (>20 years), in the breeding versus non-breeding season, across the phases of the breeding cycle and as a function of brood size. Breeding owls captured more insects than non-breeding owls, but dietary biomass of breeding owls was dominated by birds. Non-breeding owls captured more mammals than breeding owls by both number and biomass. Ground prey contributed 67.8% of dietary biomass for non-breeding owls, whereas bats, birds and flying insects constituted 77.8% of the diet of breeding owls. Non-breeding owls took fewer, but larger, mammals in 2006–2019 than in 1993–2005, specifically Black Rats *Rattus rattus* (12.8% of total biomass in 1993–2005 versus 54.5% in 2006–2019). Owls raising larger broods captured more arachnids, larger mammals (when feeding broods of 3), and birds (when provisioning broods of 4), together with a substantial component of invertebrate biomass. These patterns suggest that female Boobooks adjust their foraging to accommodate the demands of large broods. The temporal, seasonal, activity and brood size-related dietary variation observed variously may reflect (a) the abundance and activity of insects, (b) the contribution of agile males to food provisioning during the breeding cycle, (c) supplementation of the brood's diet with insect prey by female owls, (d) seasonal differences in foraging energetics (e.g. more perch-hunting in winter), (e) the female-bias in non-breeding samples (larger females taking larger, less agile, terrestrial prey), and (f) prey abundance in winter.

Keywords: Southern Boobook; owl; *Ninox boobook*; diet; seasonal; temporal; brood size; non-breeding