

# Birds and cattle: predicting woodland bird persistence in a variegated landscape

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Grazing by livestock is the most extensive land use in Australia affecting over 70% of the continent. While the impacts of grazing on vegetation have received attention the effect on fauna is less well known. This study investigates the impact of cattle grazing, independent of tree clearing, on birds of a variegated landscape in southeastern Queensland.

We have taken a predictive approach to examining the role of grazing in shaping woodland bird assemblages. Prior to collecting data we formulated species-specific predictions of bird persistence under grazing. These predictions were derived from three models, two based on bird life history characteristics (foraging and nesting height preferences) and one based on expert opinion. For example, the foraging model relates the height at which a bird predominantly forages with its susceptibility to grazing. This a-priori predictive approach allows us to test possible mechanisms underlying bird species change in grazed landscapes. Given the predictions from the model we then test these against empirical data.

We report on results from a comparison of the foraging model with bird density data collected in grassy eucalypt woodland habitats with three levels of grazing: none/low, moderate (selective) and high (non-selective, producing a lawn-like sward structure) replicated over space and time (see slide). We found that foraging height is a moderately good predictor ( $r^2 = 0.58$ ,  $p < 0.001$ ,  $n = 25$ ) of a bird's susceptibility to grazing. Comparison of the foraging model with the empirical data revealed that birds exhibit both linear and non-linear responses to grazing, with the majority of woodland species showing a negative response.

The formulation of hypotheses with testable predictions facilitates our ability to forecast and these predictions are most convincing if done a-priori. The next step is to compare the predictive power of the foraging model with the nesting and expert opinion models.

**Grazing Design**

Season	Grazing level	Woodland
Summer	No/low	8 Sites
	Moderate	8 Sites
	High	8 Sites

