Modelling the impact of fire on the population dynamics of the Splendid Fairy Wren

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Abstract

During a 20-year study of a population of Splendid Fairy-wrens near Perth, nine wildfires have impinged on the area. Although the fires did not directly affect the survival of wrens, they had a major effect on reproductive success in the following years. On average, 19 per cent of female-years experienced fire in the 12 months prior to nesting and 33 per cent of

female-years in the two years prior to nesting. The fires had a dual impact. Most importantly, the rate of nest predation almost exactly doubled in the years following fire and secondly the onset of breeding was delayed by up to a month, presumably because the wrens had trouble finding suitable vegetation in which to hide nests.

In addition to fire frequency and nest predation, population growth is influenced by brood parasitism, seasonal fluctuations and patch-size, presently a complex picture of demographic-environmental interactions. These data have been incorporated into a computer simulation model which can be used to make predictions of likely outcomes from a variety of landscape and management scenarios.