

THE DIVERSITY OF UNDERSTOREY BIRDS IN FOREST FRAGMENTS AND OIL PALM PLANTATION, SARAWAK, BORNEO

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ABSTRACT

Much of the Bornean rainforest has been converted to oil palm plantation. This has resulted in forest fragmentation, which in turn has led to changes in avian assemblages in these fragments. This study: (1) examines the diversity of understorey birds at the edge, in forest fragments, and in neighbouring oil palm plantation; (2) compares the bird assemblages along distance gradients from the forest edge; 3) identifies the species common to both forest and oil palm plantation; and 4) examines seasonal variation (dry and wet season) in bird diversity. Understorey birds were mist-netted from November 2013 to April 2015 (22 680 net-hours). A total of 342 individuals comprising 58 species from 25 families were captured. Sampling effort did not yield an asymptotic species accumulation curve and an estimated 77% of all species were captured. Species diversity was greatest at the edge compared to the forest interior and oil palm interior. Species composition differed along the forest-oil palm gradient, with some species confined to the edge, oil palm and forest habitat. Those edge species that also occurred in the oil palm plantation were relatively abundant. Regular surveys of avian assemblage will aid monitoring of habitat quality and change, as well as ecosystem functionality and the maintenance of vital ecosystem services that benefit both native vegetation and oil palm.

Keywords: agriculture, avian diversity, conservation, forest fragmentation, High Conservation Value Area, mist-netting.

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INTRODUCTION

Bornean rainforest is rapidly disappearing and deteriorating under human-mediated pressures, caused especially by land-clearing, logging and the burgeoning expansion of oil palm plantations (Koh, 2007; Gilbert, 2012). In parts of Borneo, rainforest exists only as isolated and fragmented

secondary forests. Substantial forest conversion and fragmentation have caused an 'extinction debt' resulting in significant biodiversity loss and ongoing extirpation (Aratrakorn *et al.*, 2006; Edwards *et al.*, 2013; Fitzherbert *et al.*, 2008; Koh, 2008a; b; Maas *et al.*, 2009). Fragmented and isolated forest patches are often assumed to have low conservation value because their species communities are depauperate and important ecosystem services may be reduced or absent in small fragments (Miller-Rushing *et al.*, 2019).

Rapid transformation of natural habitats into agricultural lands is a leading global cause of the loss of biodiversity (Myers *et al.*, 2000). Oil palm (*Elaeis guineensis*) is a rapidly expanding crop and a leading

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