Density and diversity of water birds and terrestrial birds in man-made marsh, Malaysia

ABSTRACT

Many bird species are highly dependent on natural marsh habitat. Unfortunately this habitat is rapidly converted to other land uses. Therefore artificial or man-made marsh habitat may become an important alternative habitat for marsh dependent bird species. The main objective of this study was to determine the density and diversity of water and terrestrial birds at manï made marsh habitat at Putrajaya using distance sampling point count technique. A total of 20010 bird individuals of 102 species representing 31.05% water birds and 68.95% terrestrial birds were detected from March 2009 to June 2010. Density analysis showed that bird density is 0.64 + 0.02 birds ha-1 and range from 0.60 ï 0.68 birds ha-1 at 95.0% confidence interval. It was found that terrestrial birds had a higher density 0.74 + 0.02 birds ha-1 than water birds 0.54 + 0.09 birds ha-1. For water bird species, the highest density was Black-crowned Nightheron; 2.92 + 1.80 birds ha-1 followed by Purple Heron; 1.55 + 0.93 birds ha-1 and Grey Heron; 1.05 + 0.13 birds ha-1. The lowest density was recorded in Pintail Snipe; 0.08 + 0.03 birds ha-1, Chinese Egret; 0.08 + 0.02 birds ha-1 and Great Egret; 0.07 + 0.08 birds ha-1, respectively. In terrestrial birds, the highest bird density was observed in Rock Pigeon 3.91 + 0.97 birds ha-1, followed by Eurasian Tree Sparrow; 3.72 + 1.03 birds ha-1, House Crow; 3.69 + 0.33 birds ha-1 and Philippine Glossy Starling; 3.38 + 0.53 birds ha-1. The lowest bird density was recorded in Brown-capped Woodpecker; 0.07 + 0.02 birds ha-1 and Lesser Coucal; 0.09 + 0.03 birds ha-1. The result also shows that terrestrial birds had higher species diversity i.e. Shannonï Wiener index (N1 = 3.10), species richness i.e. Margalefôs index (R1= 8.23) and species evenness i.e. Pielouôs J index (E = 0.71) as compared with water birds (N1 = 2.04; R1= 8.23 and E = 0.65). This study indicates that manï made marsh is a suitable habitat for diverse avian species and thus should be protected in order to enhance the population of avian species.

Keyword: Density; Diversity; Marsh; Point count; Terrestrial birds; Vegetation; Water birds