

## Comparative study on distribution of conserved birds in open and vegetated area in Wonorejo, Surabaya

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**Abstract**— Surabaya is one of the metropolitan city which have an Important Bird Area (IBA) namely Wonorejo, specifically for bird species conserved by Indonesian law. This research aimed to access the distribution and abiotic factor which influencing it. The research had been conducted on February to April 2013 in Wonorejo, Surabaya. Distribution study of conserved birds analyzed by Poisson distribution models and visual illustration. Environmental factors affecting distribution were analyzed by RDA (Redundancy Analysis) with CANOCO for Windows 4.5. The results show that there are 20 species of conserved birds, which representing 9 families (Alcedinidae, Ardeidae, Scolopacidae, Laridae, Nectarinidae, Rhipiduridae, Charadriidae, Cuculidae and Recurvirostridae; respectively). The distribution of conserved birds in Wonorejo are uneven on the overall area. The abiotic environmental factors in Wonorejo varies among areas with average temperatures ranging from 31-33.50C, light penetration ranged between 6355-18877 lux and humidity ranges between 70-80%. Profile of the sediments that make up the region of Wonorejo is dominated by sandy mud and deposits of biogenous sediment. From RDA diagram, it is known that environmental factor such as light penetration and humidity were not influencing the distribution of conserved birds. In contrast, temperature affects the distribution of birds conserved.

**Keywords**— bird, distribution, environmental factor, canonical analysis

### I. INTRODUCTION

Distribution is an important study in ecology to understand about species biogeography. The distribution can be seen from how the utilization of the space and layout of a species known as the spatial distribution. Birds distribution is important study to know how the utilization of bird in landscape area specially on wetland. Wetland also present in urban area like large town in Java, Surabaya. This research aims to know abiotic factor: temperature, light penetration, humidity and sediment profile, landscape (the type of habitats), distribution and abiotic factor which influence the distribution of birds.

### II. MATERIALS AND METHODS

The research to study about spatial distribution of bird conserved by Indonesian law had been conducted on February-April 2013 in Wonorejo, Surabaya Eastcoast.

The parameters analyzed are abiotic factors (Light penetration using Luxmeter, Temperature and humidity using Thermolygrometer), the type of habitats and birds species using mapping method. Distribution study of Birds conserved analysed by Poisson distribution models, Chi Square, map and visual illustration. Environmental factors are more influential analyzed by using RDA (Redundancy Analysis) through CANOCO for Windows 4.5. Here is the map of research from Wonorejo, Surabaya eastcoast.

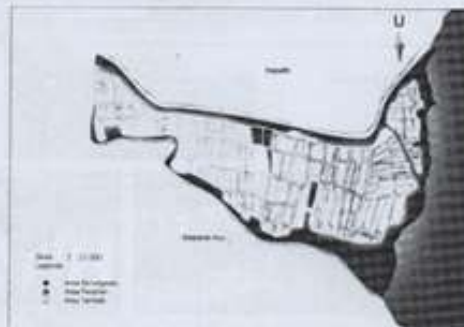


Figure 1. Map of research from Wonorejo, Surabaya eastcoast

### III. RESULTS AND DISCUSSIONS

#### A. Birds conserved by Indonesian law and Environmental factor

Birds conserved species found in Wonorejo covers 20 species are included in the 9 families from Alcedinidae, Ardeidae, Scolopacidae, Laridae, Nectarinidae, Rhipiduridae, Charadriidae, Cuculidae and Recurvirostridae. Here is the table 1 of Birds in Wonorejo, Surabaya Eastcoast. The type of habitats in Wonorejo, Surabaya East Coast include habitat marshes, mangrove, bosc, fishponds, and the coast.

The results showed that the factors of abiotic environmental in Wonorejo, Surabaya East Coast varies among areas with average temperatures ranging between 31-33.50 C, light penetration ranged between 6355-18877 lux and humidity ranges between 70-80%. Profile of the sediments that make up the region of Wonorejo is dominated by Sandy mud and sedimentary deposits of biogenous derived from invertebrates (mollusca) and worms. Here is the RDA diagram from birds distribution