

## Earthworms Morphometric of Banana trees in Contaminated Area with Pb, Cr, Zn and Fe

W. Budijastuti<sup>1\*</sup>, S. Haryanto<sup>2</sup>, A. Soegianto<sup>2</sup>

<sup>1</sup>Biology Department, Faculty of Science, State University of Surabaya, Surabaya, Indonesia

<sup>2</sup>Biology Department, Faculty of Science, Airlangga University, Surabaya, Indonesia

\*Corresponding author: [widowati\\_budijastuti@yahoo.com](mailto:widowati_budijastuti@yahoo.com)

### ABSTRACT

*Earthworm's morphology is important to be developed as potential heavy metals bio-indicators. Morphological characteristics measured in this study were weight, length, diameter, female and male pores size, the distance between male's pores, prostate diameter and vesicles diameter. The purpose of this study was to analyze earthworm distribution by earthworm's morphometric structure in contaminated soil and to determine the structure of earthworm's morphometry influenced by heavy metals. Earthworms sampling were done by purposive random sampling and hand sorting method. Fresh samples were taken and identified. Soil samples were tested for its heavy metal content using AAS. Data analysis was performed using PCA. The results showed that *Amyntas robustus* were highly distributed throughout Gresik and Bangkalan, wherein distinguished morphometric characteristics found in Gresik were body weight, female's pores size, vesicles diameter, clitellum, prostate diameter, body diameter and body length. *Amyntas robustus* morphometric characteristics in Bangkalan centered on Madura area except Bancaran was distinguished by female's pores size.*

**Keyword:** Morphometry, heavy metals, banana tree habitat

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### 1. INTRODUCTION

The role of earthworms in soil ecosystem is very useful for soil organic matter production, making pores, helping soil air circulation and keep the soil remains stable (Bhadauria and Saxena, 2010; Amosse *et.al.*, 2015). The benefits of earthworm in ecosystems is able to strengthen the interaction of the organic substance with plants or animals. This interaction will have an impact on the stability of ecosystem (Johnston *et al.*, 2014; Russell *et al.*, 2015). Earthworm is one of animal species which resistant to habitat containing heavy metals, so this animal can be considered as bio-indicators of certain heavy metals (Calisi *et.al*, 2013; Calisi *et.al*, 2014; Richardson *et al.*, 2015). To develop the potential of local earthworms in Indonesia as bio-indicators of certain heavy metals, it's very necessary to conduct field exploration study that could prove the potential of earthworm species related to certain heavy metals. This study provides an overview of resistant clone diversity with