

Sea level rise impact on mangrove growth and development in Coral Triangle Ecoregion Southeast, Indonesia

Kangkuso Analuddin^{1*}, Andi Septiana¹, Jamili², Idin Sahidin³, Usman Rianse⁴, Sahadev Sharma⁵, Kazuo Nadaoka⁶, Eka Diaz Anjani⁷

¹Department of Biotechnology, Faculty of Mathematics and Natural Sciences, Universitas Haluoleo, 93232 Kendari, Sulawesi Tenggara, INDONESIA

^{2,7}Study Program of Biology, Faculty of Mathematics and Natural Sciences, Universitas Haluoleo, 93232 Kendari, Sulawesi Tenggara, INDONESIA

³Faculty of Pharmacy, Universitas Haluoleo, 93232 Kendari, Sulawesi Tenggara, INDONESIA

⁴Faculty of Agriculture, Universitas Haluoleo, 93232 Kendari, Sulawesi Tenggara, INDONESIA

⁵Institute of Ocean and Earth Sciences, University of Malaya, MALAYSIA

⁶Graduate School of Transdisciplinary Sciences and Engineering, Tokyo Institute of Technology, Tokyo, JAPAN

*Corresponding author's email: zanzarafl@gmail.com

Abstract. The mangroves are among the most at-risk coastal ecosystems, which are especially vulnerable to sea-level rise. This study aimed to know the growth capacity and biochemical defense of mangrove seedlings of *Rhizophora mucronata* under different sea water logging at experimental condition in Kendari bay, Southeast Sulawesi, Indonesia. Results showed that maximum leaf area, intrinsic rate increase of leaf area and relative growth rate (RGR) of height of the *R. mucronata* seedlings were significantly higher at treatment of 45 cm from the ground than other treatments, whereas RGR of diameter was the higher at treatment of 30 cm from the ground. Meanwhile, half expansion period leaf area was almost similar for all treatment. However, the carbon and nitrogen ratio in leaves of *R. mucronata* seedlings was significantly higher at seawater logging of 0 cm from the ground. The flavonoid and vitamin C concentrations in *R. mucronata* seedlings were higher at higher level inundation indicating protective role of these compounds under seawater logging stress.

1. INTRODUCTION

The mangrove ecosystem is among the most at-risk ecosystems from sea-level rise. Therefore, understanding which mangrove stands are able to survive under sea-level rise, managers can identify and protect refuges that self-seed and act as sources for seeding of future mangrove communities.

However, recent condition of mangrove ecosystems throughout the world are suffered due to global warming and anthropogenic pressures, and are influence the resistance of mangrove ecosystems,

