

Prediction on recovery pathways of the cyclone-disturbed mangroves in the Ayeyarwady Delta, Myanmar

T.T. Aung¹, M. Yukira¹ & M.M. Than²

¹Laboratory of Plant Ecology, Graduate School of Environment and Information Sciences, Yokohama National University, 79-2, Tokiwadai Campus, Hodogayaku, Yokohama, Japan. E-mail: toaung02@gmail.com

²Department for International Development, British Embassy, Yangon, Myanmar.

Abstract

This study aimed to predict the recovery potential of community-level mangroves after natural disturbance, called Cyclone Nargis, that attacked the Ayeyarwady mangroves in 2nd May, 2008. Firstly, the sprouting abilities of 1662 individuals representing 13 mangrove species were explored. *Avicennia officinalis* showed the highest number of epicomic sprouts per stem, followed by *Sonneratia apetala*, *Heritiera fomes* and *Sonneratia caseolaris* whereas most of the Rhizophoraceae species had limited ability to reproduce vegetative sprouts. Then, three mangrove communities widely observed in the study area were selected, and each was dominated by either *Rhizophora apiculata*, *Avicennia officinalis*, or *Heritiera fomes*. Permanent plots were set up for them in order to conduct long-term observation since the cyclone disturbance. The life-history stages of all individuals have been monitored yearly so as to understand their recovery pathways. It was observed that the mortality of *A. officinalis* and *H. fomes* trees after the cyclone disturbance was less than 10 %, whereas that of *R. apiculata* trees was more than 90 %. Based on the results analyzed by the stage-structured population model, the predicted trends of *H. fomes* and *A. officinalis* dominated communities showed increasing whereas that of *R. apiculata* was observed decreasing. The effect of Cyclone Nargis, therefore, differed significantly on the types of mangrove communities, and consequently their recovery pathways were also differently observed. Given management intervention is taken into account, the *R. apiculata* community was demonstrated to be highly vulnerable to the cyclone disturbance, and so should be prioritized for restoration.

Keywords

storm, impact, resilience, trajectory, rehabilitation