

Tikumporn Arunsripradit 2010: A Study on Some Environmental Factors Influencing Growth of *Avicennia alba* Bl. and *Avicennia marina* (Forsk.) Vierh. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Vipak Jintana, Ph.D. 94 pages.

This study aimed to investigate the influence of environmental factors on growth rate of *Avicennia alba* Bl. and *A. marina* (Forsk.) Vierh. in a mangrove forest at Western Mahachai bay, Samut Sakhon Province. Dendrometer bands were installed at the breast height (1.3 m above ground) of the sample trees. Growth rates were recorded monthly from September 2008 to January 2010. Wood cores above the dendrometer bands were subsequently sampled by Trephor. Annual growth ring formation in 2009 was investigated. The correlation coefficient between the growth rates and various environmental factors was calculated by Pearson's formula and described by the Hinkle criteria.

The results revealed that the average annual growth rate of *A. alba* was 12.97 mm with an average of 4 growth rings. The average width of growth ring was 1.482 mm. *A. marina* performed an average annual growth rate of 8.77 mm with an average of 3 growth rings. The average width of growth ring was 1.174 mm. The annual growth rates of both *A. alba* and *A. marina* were significantly correlated with their growth ring formation. ($r = 0.93$ and 0.63 , respectively, $p < 0.01$). For the environmental factors, it was found that the growth rate of *A. alba* was determined to correlate the climatic and tidal conditions in the previous month such as total rainfall and the maximum daily rainfall ($r = 0.74$ and 0.68 , respectively, $p < 0.01$), number of rainy day, minimum temperature, average relative humidity and maximum temperature ($r = 0.60, 0.56, 0.55$ and 0.49 , respectively, $p < 0.05$), mean high tide level and the highest tide level ($r = -0.57$ and -0.53 , respectively, $p < 0.05$). Its growth rate was also correlated with the current climatic conditions such as number of rainy day and total rainfall ($r = 0.52$ and 0.51 , respectively, $p < 0.05$). Whereas, the growth rate of *A. marina* was determined to correlate the average temperature of the previous month. ($r = -0.49$, $p < 0.05$).

Student's signature

Thesis Advisor's signature