

## ABSTRACT

A Study on biodiversity phytoplankton and periphytic algae and correlation with water quality in the vicinity of the Lotus Museum, Rajamangala University of Technology Thanyaburi, during 12 months between December 2010 to December 2011. (flood disaster on October 2011). The samples were collected from 5 sampling sites such as the large size of lotus pond (sampling sites 1), the medium size of lotus pond (sampling site 2) and the small size of lotus ponds (sampling sites 3, 4 and 5). forty-two species in 6 divisions of phytoplankton were found in sampling site 1. The dominant species were *Gymnodinium* sp., *Cylindrospermopsis raciborskii* (Wolosz) Seenayya & Subba, *Phormidium* sp., *Anabaena* sp. and *Oscillatoria limosa* Ag ex Gomont Ag ex Gomont respectively. Forty species in 6 divisions of periphytic algae that attached to the lotus were found *Pseudanabaena galeata* Böcher, *Nitzschia palea* (Kützing) Smith, *Pseudanabaena limnetica* (Lemmemann) Komárek, *Pseudoanabaena* sp.1 and *Oscillatoria limosa* Ag ex Gomont were the dominant species. Forty species in 6 divisions of periphytic algae that attached to *Hydrilla verticillata* were found and the dominant species were *Pseudanabaena* sp.2, *Pseudanabaena* sp.1, *Cylindrospermopsis cuspidis* Komárek et Kling, *Cylindrospermopsis raciborskii* (Wolosz) Seenayya & Subba and *Nitzschia palea* (Kützing) Smith respectively. In sampling site 2, sixty species in 7 divisions of phytoplankton were found and the dominant species were *Cyclotella meneghiniana* Kützing, *Pseudanabaena* sp.1, *Pseudanabaena galeata* Böcher, *Trachelomonas volvocina* (Ehrenberg) Ehrenberg and *Oscillatoria limosa* Ag ex Gomont. Forty-nine species in 6 divisions of Periphytic algae that attached to the lotus were found. *Nitzschia palea* (Kützing) Smith, *Closterium parvulum* Nägeli var. *parvulum*, *Anabaena* sp.1, *Melosira* sp. and *Oscillatoria limosa* Ag ex Gomont were the dominant specise. forty-four species in 6 divisions of Periphytic algae that attached to *Hydrilla verticillata* were found and the dominant species were *Anabaena* sp.1 and *Nitzschia palea* (Kützing) Smith, *Oscillatoria limosa* Ag ex Gomont, *Cosmarium* sp.2 and *Pseudanabaena galeata* Böcher respectively. In sampling site 3, fifty-nine species in 6 divisions of phytoplankton were found and the dominant species were *Peridinium* sp., *Oscillatoria limosa* Ag ex Gomont, *Pseudanabaena* sp.1, *Phacus pleuronectes* (Müller) Dujardin and *Euglena acus* Eherenberg nach Skuja. Fifty-three species in 6 divisions of periphytic algae that attached to the lotus were found and the dominant species were *Nitzschia palea* (Kützing) Smith, *Oscillatoria limosa* Ag ex Gomont, *Cyclotella meneghiniana* Kützing, *Peridinium* sp. and *Fragilaria crotonensis* Kitton. thirty-two species in 6 divisions of periphytic algae that attached to *Hydrilla verticillata* were found and the dominant species were *Hydrilla verticillata* were found with *Nitzschia palea* (Kützing) Smith, *Pseudanabaena* sp.2, *Oscillatoria limosa* Ag ex Gomont, *Chlorella* sp. and *Pseudanabaena* sp.1 respectively. In sampling site

4, forty-two species in 6 divisions of phytoplankton were found and the dominant species were *Cylindrospermopsis raciboskii* (Wolosz) Seenayya & Subba, *Euglena acus* Eherenberg nach Skuja, *Nitzschia palea* (Kützing) Smith, *Gymnodinium* sp. and *Peridinium* sp. forty-eight species in 6 divisions of periphytic algae that attached to the lotus were found and the dominant species were *Anabaena* sp., *Nitzschia palea* (Kützing) Smith, *Chlamydomonas* sp., *Cyclotella meneghiniana* Kützing and *Pseudanabaena limnetica* (Lemmemann) Komárek. forty-three species in 6 divisions of periphytic algae that attached to *Hydrilla verticillata* were found and the dominant species were *Hydrilla verticillata* were found with *Nitzschia palea* (Kützing) Smith, *Oscillatoria limosa* Ag. ex. Gomont, *Cyclotella meneghiniana* Kützing and *Fragilaria crotonensis* Kitton respectively. In sampling site 5, fifty-two species in 6 divisions of phytoplankton were found and the dominant species were *Peridinium* sp., *Cyclotella meneghiniana* Kützing, *Fragilaria crotonensis* Kitton, *Gymnodinium* sp. and *Euglena velata* Klebs. forty species in 6 divisions of benthic algae attaching to the lotus were found with *Nitzschia palea* (Kützing) Smith, *Cyclotella meneghiniana* Kützing, *Oscillatoria limosa* Ag. ex. Gomont, *Pseudanabaena limnetica* (Lemmemann) Komárek and *Mougeotia* sp. Forty-three species in 6 divisions of periphytic algae that attached to *Hydrilla verticillata* were found with *Hydrilla verticillata* were found and the dominant species were *Nitzschia palea* (Kützing) Smith, *Cyclotella meneghiniana* Kützing, *Pseudanabaena limnetica* (Lemmemann) Komárek, *Anabaena* sp. and *Aulacoseira* sp. respectively.

According to the standard water quality defined by National Environmental Committee of Thailand (1994) based on physico-chemical factors and biological factors especially in the dissolved oxygen, biochemical oxygen demand, nitrate-nitrogen and ammonia-nitrogen. The water quality of sampling site 1 (a large of the lotus pond) could be classified into the second to third category. It could be suitable for household consumption after being properly treated. Sampling site 3 and 4 could be classified into the third category. It could be suitable for household consumption after being properly treated. Sampling site 2 and 5 could be classified into the third to fourth category. It could be suitable for household consumption after special treated.

When comparing the water quality between 3 size of lotus pond. It was found that the large size of lotus pond was meso-eutrophic status, eutrophic status in the medium and small size of lotus pond.

According to the flood disaster in the area of Rajamangala University of Technology Thanyaburi between October to November 2011, it was found that the water quality in the lotus pond were polluted. It is necessary to solve this problem as soon as possible.

The study of isolation of freshwater algae from all sampling sites in the Rajamangala University of Technology Thanyaburi. Sixteen strains of freshwater algae were isolated and classified in 3 division.

The majority of them were *Achnantheidium* sp., *Eunotia* sp., *Navicula* sp.1, *Navicula* sp.2, *Navicula* sp.3, *Nitzschia* sp., *Pinnularia* sp. and *Sellophora* sp. in Division Bacillariophyta; followed by *Chlorella* sp.1, *Chlorella* sp.2, *Chlorella* sp.3, *Botryococcus* sp. and *Monoraphidium* sp. in Division Chlorophyta and 3 strains in Division Cyanophyta that were *Oscillatoria* sp., *Phormidium* sp. and *Pseudoanabaena* sp.

**Keywords :** Phytoplankton, Periphytic algae, Water quality and The Lotus museum area