

## **A Preliminary Survey of Weed Species on Two Rural Lakes in Kepala Batas, Pulau Pinang**

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### **Abstract**

A survey of the distribution of weeds was carried out in two rural lakes in Bumbung Lima, Kepala Batas, Pulau Pinang. A total of 36 taxa representing to 22 families have so far been identified. The results showed that Gramineae notably *Phragmites communis* was dominant at the sampling station followed by *Scirpus grossus* and *Polygonum barbatum*. The vegetation of weed species in the area was studied primarily towards identifying of plant species present and their distribution. The objectives of this study are to describe the species composition and diversity of weed species around the lakes.

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### Introduction

Weeds are familiar plants in our environment that are seen on banks, ponds and waterways, roadside, garden and forest. In general, weeds adversely affect the use, economic value and aesthetic aspect of the land and waters they infest. Nevertheless, weeds provided shelter and food for birds, reptilians and serve as hosts for insects and other wildlife. In fact, weed ecology is concerned with the interrelationships between weed species and the environment.

Weeds grow luxuriantly under tropical conditions of high rainfall, warmer temperature and abundance of soil moisture and nutrients. Weeds compete with the crop for nutrients, water and light. Some affect the crop indirectly by their thick coverage and as alternative hosts to some pests and diseases. As a result, the yields of crops such as oil palm, rubber, cocoa, paddy and fruits decreases and significant in loss. Various studies have been conducted on weeds by a number of scientists. Engel (1990) have indicated the problem weeds in America, Pancho and Soerjani (1978) had written on aquatic weeds of Southeast Asia while Mansor (1996) carried out the survey on floating weeds as well as noxious weeds of Malaysia. Four problematic weeds are *Eichhornia crassipes*, *Salvinia molesta*, *Lemna perpusilla* and *Pistia stratiotes*. These species have become a serious problem throughout many aquatic places such as in natural or artificial lake, streams, irrigation and drainage systems.

### Site Description

Bumbung Lima is located in Kepala Batas, which is in district of Seberang Perai Utara, Pulau Pinang and approximately 5 kilometers from Kepala Batas. Bumbung Lima covering an area of 255 hectares and consists of six villages. One of the villages is Pantai Kamloon and there are situated two rural lakes, which have been selected as study site. About 20 years ago, it was an area of sand-mining activities. Abandoned over long periods of time, these pools have changed into lakes and found secondary land uses, which provide natural habitats for freshwater fishes and other aquatic organisms.

The lakes consist of 7 lakes but only two lakes have been chose as study sites namely Lake 3 and Lake 6. The maximum depth of both lakes is 6 meters. Lake 3 and Lake 6 have a surface area of 1.53 hectares and 0.66 hectares respectively. In fact, the Muda River is only about 20 meters from the lakes.

### Methods and Materials

A survey of vegetation diversity of two rural lakes has been conducted by areal survey and visually. All plant colonies spotted in the area were recorded and identified. The unidentified species were collected and deposited at the School of Biological Science's herbarium. Taxonomic identification follows Gilliland (1962), Henderson (1974), Soerjani *et. al.* (1987), Barnes & Chan (1990) and Yusof (1988).

### Result and Discussion

A total of 36 species of weed plants have been recorded from the survey. Most of which belonged to the two families, Gramineae and Leguminosae. By far, the most dominant species was *Phragmites communis* and the other relatively dominant species were *Scirpus grossus* and

*Polygonum barbatum*. These weeds were classified according to their types into 4 groups; the broad-leaves, grasses, sedges and ferns (Table 1). Figure 1 shows the distribution based on major weed plants.

The lakes could be classified as clean and free from the invasion of noxious aquatic weedy species. *Eichhornia crassipes* as the most problematic aquatic weed in Southeast Asia including Malaysia is well documented (Soerjani *et. al*, 1975, Lim & Salleh, 1983) but fortunately, there is no *Eichhornia crassipes* observed in the site. Other common aquatic weeds recorded were *Polygonum barbatum*, *Cleome rutidosperma*, *Grewia tomentosa*, *Cyperus iria*, *Fimbristylis globulosa* and *Scirpus grossus*. Table 2 showed the genus and species count of vegetation recorded in study sites.

From the result of the survey, both lakes have low number of aquatic plants reflected the condition of the lakes. This phenomenon can be explained by recent flood occurred on this area. In fact, Pantai Kamloon has been hit by flood on October 2003 ago. The water from Muda River inundated the lakes and the surrounding areas around these lakes. Although this disaster very uncommon, it will affect the weeds and other aquatic organism in the lakes. Water current of Muda River has washed most of the ground vegetations away.

Several plants, for example, *Eugenia grandis* and *Acasia auriculiformis* were found on the lakes bank.

### Conclusion

The survey data serve as a database for designing proper weed control program for the people in this area. The knowledge on the dominance of the weed species will help us to prepare effective approach integrated weed control in Bumbung Lima.

### References

- Barnes, D.E and chan, L.G. 1990. *Common weeds of Malaysia and their control*. Ancom Berhad. Malaysia.
- Engel, S. 1990. Ecological impacts of harvesting macrophytes in Halverson Lake, Wisconsin. *Journal of Aquatic Plant Management* 28: 4 – 45.
- Gilliland, H.B. 1962. *Common Malayan Plants*. University of Malaya Press. Kuala Lumpur.
- Henderson, M.R. 1974. *Malayan wild flowers dicotyledons*. The Malayan Nature Society. Kuala Lumpur.
- Lim, W.C. and Salleh, A. 1983. *Eichhornia crassipes*: A serious weed in the Muda Irrigation area. *Proceeding of Weed Science in the Tropic* Rajan A. & M. Rosli (eds): 12-18.
- Mansor, M. 1996. Noxious floating weeds of Malaysia. *Hydrobiologia J.* 340: 121-125.
- Pancho, J.V and Soerjani, M. 1978. *Aquatic weeds of Southeast Asia*. National Publication Corporation. Philippines. pp 125.
- Soerjani, M., Pancho, J.V. and Voung, N.V. 1975. Aquatic weed problems and control in Southeast Asia. *Hyacinth Control Journal.* 13: 2-3.
- Soerjani, M., Kostermans, A.J.G.H. dan Tjitrosoepomo, G. 1987. *Weed of rice in Indonesia*. Balai Pustaka Jakarta.
- Yusof, A.A.M. 1988. *Rumpai-Panduan berilustrasi*. Dewan Bahasa dan Pustaka.

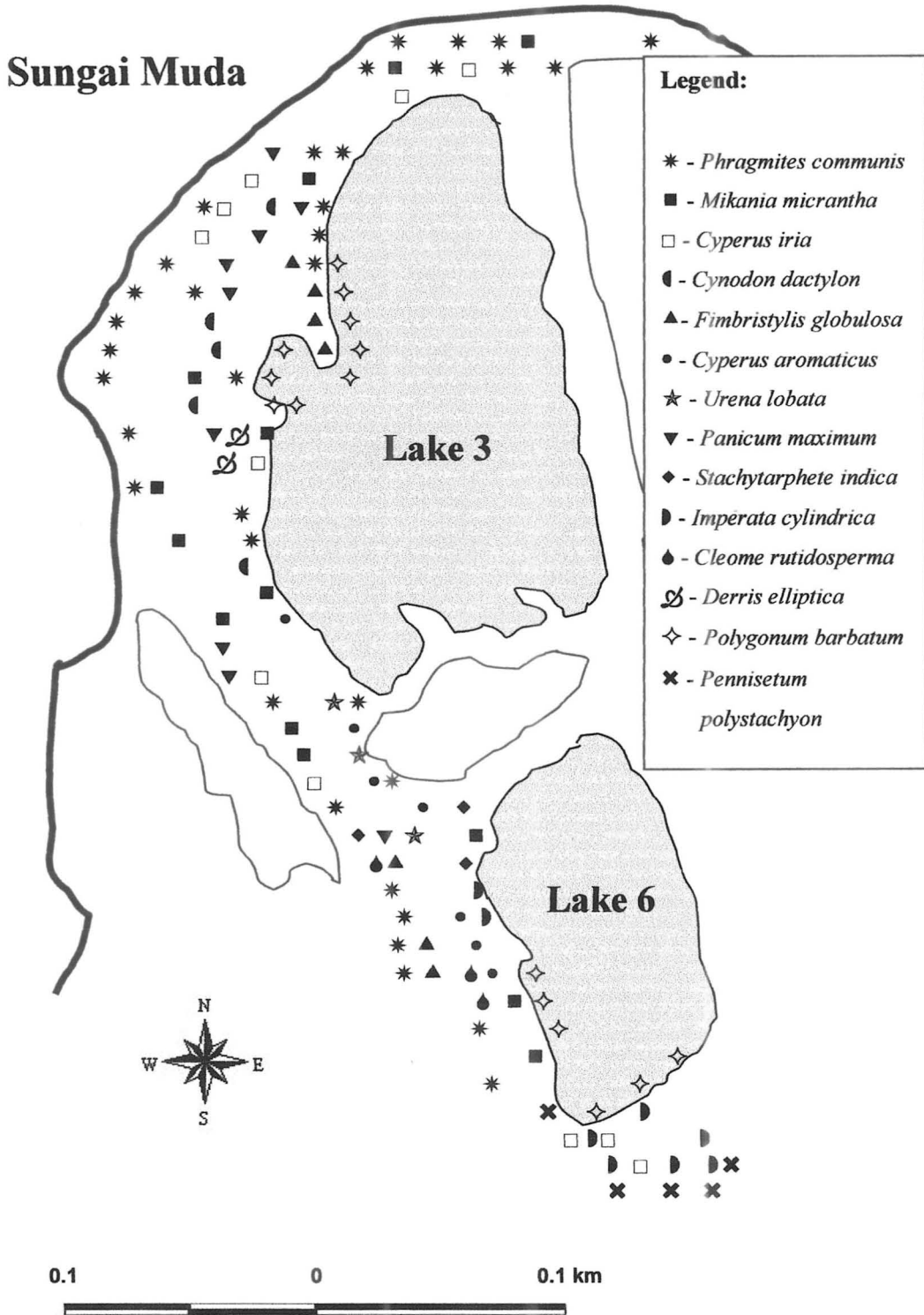


Figure 1: Weed distribution of Lake 3 and Lake 6 in Pantai Kamloon

Table: Distribution of weed species in study area

Type/Family	Species	Frequency
<b>Broad-leaves</b>		
Amaranthaceae	<i>Althananthera sessilis</i> Linn.	*
Boraginaceae	<i>Heliotropium indicum</i> Linn.	*
Capparidaceae	<i>Cleome rutidosperma</i> DC.	***
Compositae	<i>Mikania micrantha</i> (Willd.)	***
Convolvulaceae	<i>Merremia hederaceae</i> (Linn.)	**
Euphorbiaceae	<i>Manihot esculenta</i> (Crantz.) <i>Phyllanthus</i> sp.	* *
Lamiaceae	<i>Leucas lavandulaefolia</i> J.E. Smith	***
Leeaceae	<i>Leea rubra</i> Blume ex Spreng	*
Leguminosae	<i>Aeschynomene indica</i> (Linn.) <i>Clitoria rubiginosa</i> A. Juss. ex Perss. <i>Desmodium</i> sp. <i>Mimosa pudica</i> (Linn.)	* ** * ***
Malvaceae	<i>Urena lobata</i> Linn.	**
Onagraceae	<i>Ludwigia hyssopifolia</i> (G. Don) Exell	*
Papilionaceae	<i>Derris elliptica</i> (Wallich) Benth.	*
Polygonaceae	<i>Polygonum barbatum</i> (Linn.)	***
Rubiaceae	<i>Borreria alata</i> (Aubl.)	**
Sapindaceae	<i>Cardiospermum halicacabum</i> Linn.	***
Tiliaceae	<i>Grewia tomentosa</i> Juss. <i>Triumfetta</i> sp.	*** **
Verbenaceae	<i>Stachytarpheta indica</i> (Linn.) Vahl.	*
Zingiberaceae	<i>Alpinia mutica</i> Roxb.	*
<b>Grasses</b>		
Gramineae	<i>Cynodon dactylon</i> (Linn.) <i>Eragrostis tenella</i> (Linn.) Beauv. ex R & S <i>Imperata cylindrical</i> (Linn.) Beauv. <i>Panicum maximum</i> Jacq. <i>Paspalum conjugatum</i> (Berg.) <i>Pennisetum polystachyon</i> (Linn.) Schult. <i>Phragmites communis</i> Linn. <i>Sporobolus diander</i> (Retz.) P. Beauv.	*** *** *** ** *** *** *** ***
<b>Sedges</b>		
Cyperaceae	<i>Cyperus iria</i> (Linn.) <i>Fimbristylis globulosa</i> (Retz.) Kunth <i>Scirpus grossus</i> L.f.	*** *** ***
<b>Ferns</b>		
Schizaeaceae	<i>Lygodium flexuosum</i> (Linn.) Sw.	*
Thelypteridaceae	<i>Cyclosorus aridus</i> (Don) Ching	***

\*\*\* - Numerous \*\* - Moderate \* - Rare

Table 2: Genus and species count of vegetation recorded in study sites

<b>Family</b>	<b>Genus and species</b>
Amaranthaceae	1
Boraginaceae	1
Capparidaceae	1
Compositae	1
Convolvulaceae	1
Cyperaceae	3
Euphorbiaceae	2
Gramineae	8
Lamiaceae	1
Leeaceae	1
Leguminosae	4
Malvaceae	1
Onagraceae	1
Papilionaceae	1
Polygonaceae	1
Rubiaceae	1
Sapindaceae	1
Schizaeaceae	1
Thelypteridaceae	1
Tiliaceae	2
Verbenaceae	1
Zingiberaceae	1



# PROGRAMME & ABSTRACTS

## 2<sup>ND</sup> LIFE SCIENCES POSTGRADUATE CONFERENCE

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