4. CONCLUSION

The rotifer fauna from five coastal peat swamps, Jik, Jae-Son, Jood, Mai-Khao and Sra-Boua, on Phuket Island were examined. A total of 133 rotifer species was identified. Of these, *Dicranophoroides* sp. was a new record to the Oriental region and *Harringia rousseleti* was new to Thailand. Twenty five, *Anuraeopsis fissa*, *A. navicula*, *Brachionus quadridentatus*, *Cephalodella forficula*, *C. gibba*, *Colurella uncinata*, *Dicranophorus epicharis*, *Keratella tropica*, *Lecane arcula*, *L. bulla*, *L. closterocerca*, *L. curvicornis*, *L. furcata*, *L. hamata*, *L. inermis*, *L. obtusa*, *L. pyriformis*, *L. undulata*, *Lepadella acuminata*, *L. eurysterna*, *L. patella*, *L. rhomboides*, *Polyarthra vulgaris*, *Proales sp.* and *Trichocerca pusilla*, were common species, distributed over the five coastal swamps. The most diverse genus belong to *Lecane* (30.82%), followed by *Lepadella* (12.03%). The highest species richness area was Jae-Son containing 100 species, followed by Jik (84 species), Jood (67 species), Mai-Khao (65 species) and Sra-Boua (48 species), respectively. These results, presently, contributed to the number of peat swamp rotifer in Thailand up to 193 species. Of the 193 species, 14 species had been report as first record to Oriental region and 28 species had been first record to Thailand. In addition, six species were described as new to science. Of these, four (*Colurella sanoamuangae* Chittapun, Pholpunthin and Segers, *C. psammophila* Segers and Chittapun, *Encentrum pornsilpi* Segers and Chittapun and *Lepadella desmeti* Segers and Chittapun from Mai-khao peat swamp) of them were recorded from Phuket province.

To assess rotifer biodiversity in the five coastal peat swamps through extrapolation, the research found that Chao2 was the least bias estimator for rotifer community in peat swamps. Comparison of total species richness among sites, the most diverse area in term of species richness was Jae-Son, followed by Jik, Mai-Khao, Jood and Sra-Boua, respectively. In term of species diversity index, Simpson' diversity index was applied to interpret the result in this study. The most diverse peat swamps was Jik, followed by Jae-Son, Jood, Sra-Boua, and Mai-Khao respectively. Equally abundant species can be achieved in Jik, Jood, Sra-Boua and Mai-Khao, while, Mai-Khao contained a few dominant species. However, species diversity measures have been suggested to be poor indicator of pollution and environmental changes (Hawthorne and and Dauer, 1983 quoted Angsupanich and Kuwabara, 1999). Moreover, the disturbed areas showed discrete species assemblages from the pristine one. This indicates that the three anthropogenic activities result in change of rotifer composition and different human impact affect species composition in different ways. The most severe treat on the rotifer composition in peat swamp areas is discharged saline water from aquatic farms.

Quantitative rotifer data from fives peat swamps was performed on multivariate analysis. Based on rotifer communities, the five areas can be classified into four distinct groups at 80% similarity level; Mai-Khao+Jood (salanisation), Jik (pristine area), Jae-Son (transform to reservoir) and Sra-Boua (eutrophication). Mai-Khao and Jood contain the highest similar in rotifer communities, 99.93% similarity level, and this group was obviously separated and greatly different from the other three areas. According to the other three, Jik showed 78.40% similarity to Jae-Son and they had 46.20% similarity to Sra-Boua. The most significant variables result in different

rotifer assemblage in peat swamps were salinity and conductivity. Considering only on freshwater habitats, the most important factors were percent cover of macrophyte, followed by conductivity, Chlorophyll a, turbidity and nitrate, respectively.

Moreover, the result revealed six indicator species. At first level (λ = 0.4418 at iteration 4), two freshwater indicator species; *Anuraeopsis fissa* and *Trichocerca similis* and three saline indicator species; *Brachionus plicatilis*, *B. urceolaris* and *Colurella sanoamuangae* are specified. In addition, *Hexathra mira*, a noneutrophication indicator species was indicated at second level (λ = 0.3410 at iteration 4).

All studied types of anthropogenic activities have an effect on rotifer composition among five coastal peat swamps. The most significantly influence is anthropogenic salinisation, followed by eutrophication. The first visible effect in salinisation process is the disappearance of macrophytes and riparian trees from fresh water undergoing salinisation in Mai-Khao and Jood peat swamps. Such event is a common feature involved in the process of increase salinities (William, 2001). In addition, it causes a big change of species composition in the two areas. This has consequence to decrease biodiversity in peat swamp areas, because of the reduction of number of linkage food webs.

Since rotifer can survive under hard condition by producing resting eggs, they can recover after favorable condtions return. However, our results demonstrate a strong effect of duration on diversity both in term of species richness and in number of specimens hatching. Exposure conditions start having significant effects after periods as short as 6 months. This contrast with general views that rotifer resting eggs are effective for long-term survival of rotifers (e.g., see Nogrady et al., 1993). This

may result in over-estimating the significance of resting egg banks as source for re-establishing populations in nature. The results presented here show that rotifer resting eggs have a limited viability, and may not be effective in serving as source for recovery of rotifer diversity, even for short-term disturbances.

From the findings, the research hypothesis can not be rejected. Therefore, anthropogenic activities around the peat swamps have exerted their influence on the decrease of rotifer diversity and the recovery of rotifer communities from sediment egg banks in the disturbed peat swamps can only be effectively attained when restoration is implemented within a relatively short period after perturbation.