

CHAPTER 5

CONCLUSIONS

Annual changes in various sizes of zooplankton communities in Thale-Noi lake, Phatthalung province, were analysed over three periods: the light rainy period (July, August 2004), the rainy period (November, December 2004), and the dry period (March, April 2005); and in four different zones: the peat swamp zone, the small inlet zone, the resident zone and the pelagic zone. The present study can be concluded as the following:

1. The average total zooplankton abundance was $7.9 \times 10^6 \text{ ind.m}^{-3}$. Two seasonal zooplankton abundance peaks were found: one during the rainy period ($22.0 \times 10^6 \text{ ind.m}^{-3}$) and the other in the dry period ($16.4 \times 10^6 \text{ ind.m}^{-3}$). On average, approximately 95.4% (6.4 S.D.) of the total zooplankton density was microzooplankton. Mesozooplankton made up about 5% of the total zooplankton.

2. Zooplankton in different size fractions was composed of five phyla, namely Protozoa, Rotifera, Arthropoda, Mollusca and Chordata. The microzooplankton community was composed of 22 genera of Protozoa, 32 genera of Rotifera, 13 genera of Cladocera, and 3 genera of Copepoda. Ostracod juvenile, crustacean nauplii and copepodite of copepods were also found in the communities. The mesozooplankton community was composed of three genera of Protozoa, two genera of Rotifera, three genera of Ostracoda, 26 genera of Cladocera, 11 genera of Copepoda, and other invertebrates such as shrimp larvae, gastropod larvae, bivalve larvae, crab larvae and vertebrate fish larvae were also found. There was apparent seasonal variation of zooplankton species caused by hydrodynamics and rainfall.

The highest number of zooplankton species, both microzooplankton and mesozooplankton, was recorded in the peat swamp and resident zones during the rainy period.

3. There were two genera represented by season, the first was *Floscularia* found only in the dry period, and the second was *Macrochaetus* found only in the light rainy period. Additionally, we found that *Acartia* cf. *southwelli* might be new recorded to Thailand.

4. Microzooplankton abundance was highly variable within the study period, ranging between 1.47×10^4 ind.m⁻³ and 1.57×10^6 ind.m⁻³. Seasonal variations in microzooplankton density among stations were shown in Figure 32. The highest microzooplankton density was recorded at station 6 (the small inlet zone) during the rainy period while the lowest density was recorded at station 4 (the small inlet zone) during the light rainy period. Mesozooplankton abundance showed a clear peak in the rainy period, the abundance was highest (3.2×10^6 ind.m⁻³) in late November 2004. Seasonal variations in mesozooplankton density among stations were shown in Figure 33. The highest mesozooplankton density was recorded at station 6 (the small inlet zone) during the rainy period while the lowest density was recorded at station 10 (the pelagic zone) during the dry period.

5. Among the microzooplankton community, protozoans (8.6-94%) and rotifers (4.9-90.0%) alternated in dominance during each period. *Trachelomonas* spp. were the most frequently dominant of the protozoans in all zones, followed by *Peridinium* sp. and *Stentor* sp., respectively, whereas *Polyarthra* spp. were the most frequently dominant of the rotifers in all zones, followed by *Anuraeopsis* spp. and *Keratella* spp., respectively. Among the mesozooplankton community, cladocerans

and copepods alternated in dominance in each period. *Bosminopsis deitersi* was the most frequently dominant species of cladocerans in the peat swamp zone while *Chydorus* spp. were the most frequently dominant species of cladocerans in the remaining zones. Several species such as *Acartiella sinensis*, *Metacyclops* sp., *Mesocyclops* spp. and *Neodiaptomus yangtsekiangensis* were dominant among the copepods in all zones of Thale-Noi.

6. Rainfall and hydrodynamics controlling a combination of several environmental factors are the main causes affecting seasonal variation patterns of zooplankton in Thale-Noi. CCA analysis revealed that most of a significant variables influencing different zooplankton assemblage in the three sampling periods were temperature, pH, transparency, conductivity, total solids, dissolved oxygen. In addition to these factors, Pearson Correlation analysis reveal that chl *a* of < 20 μm fraction size tends to be positively related to the abundance of protozoans, while chl *a* of 20-200 μm fraction size was positively correlated with large cladocerans, ostracods and copepods.

Microzooplankton

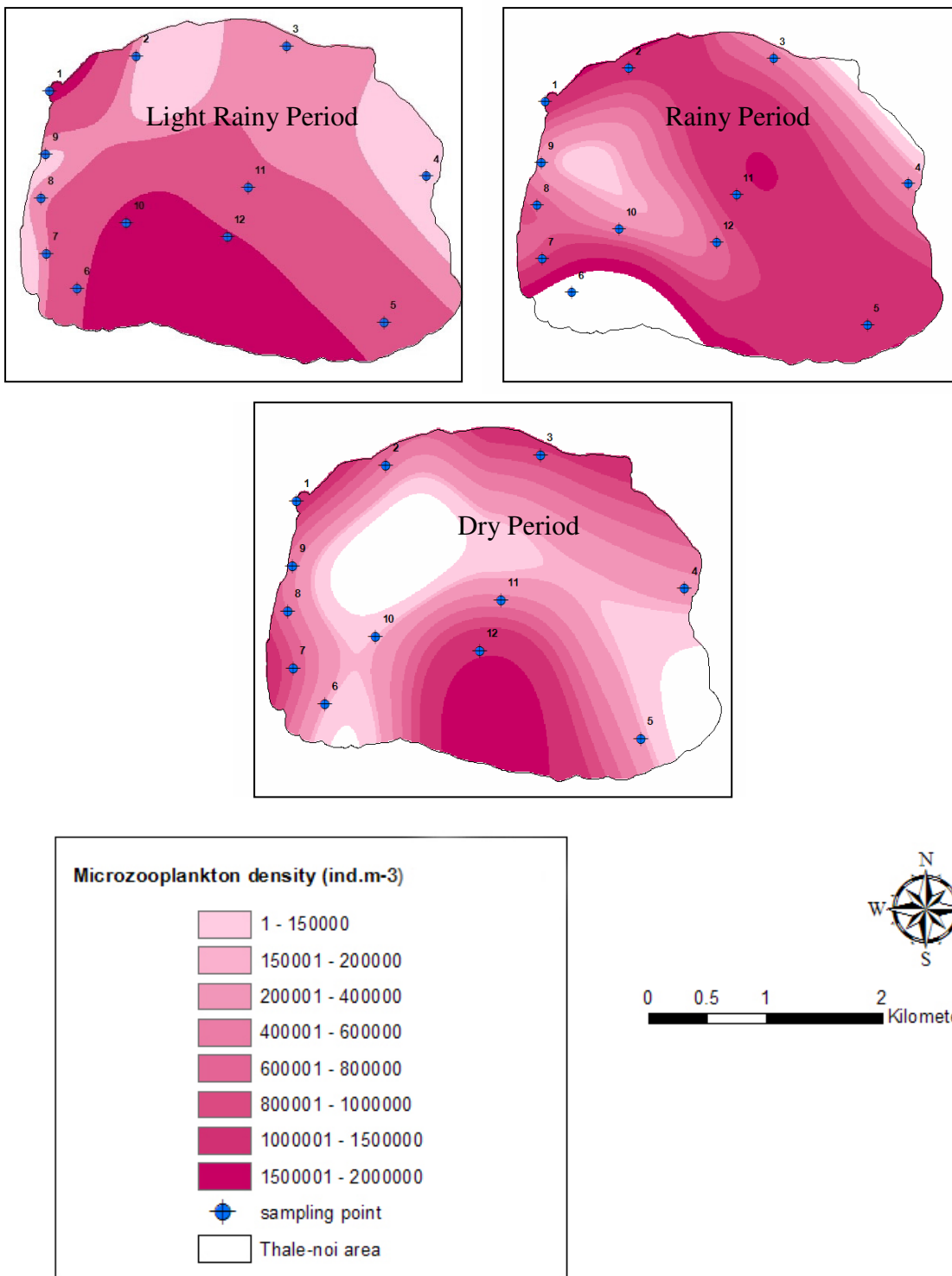


Figure 32. Overview of average microzooplankton density in twelve stations of Thale-Noi in three sampling periods.

Mesozooplankton

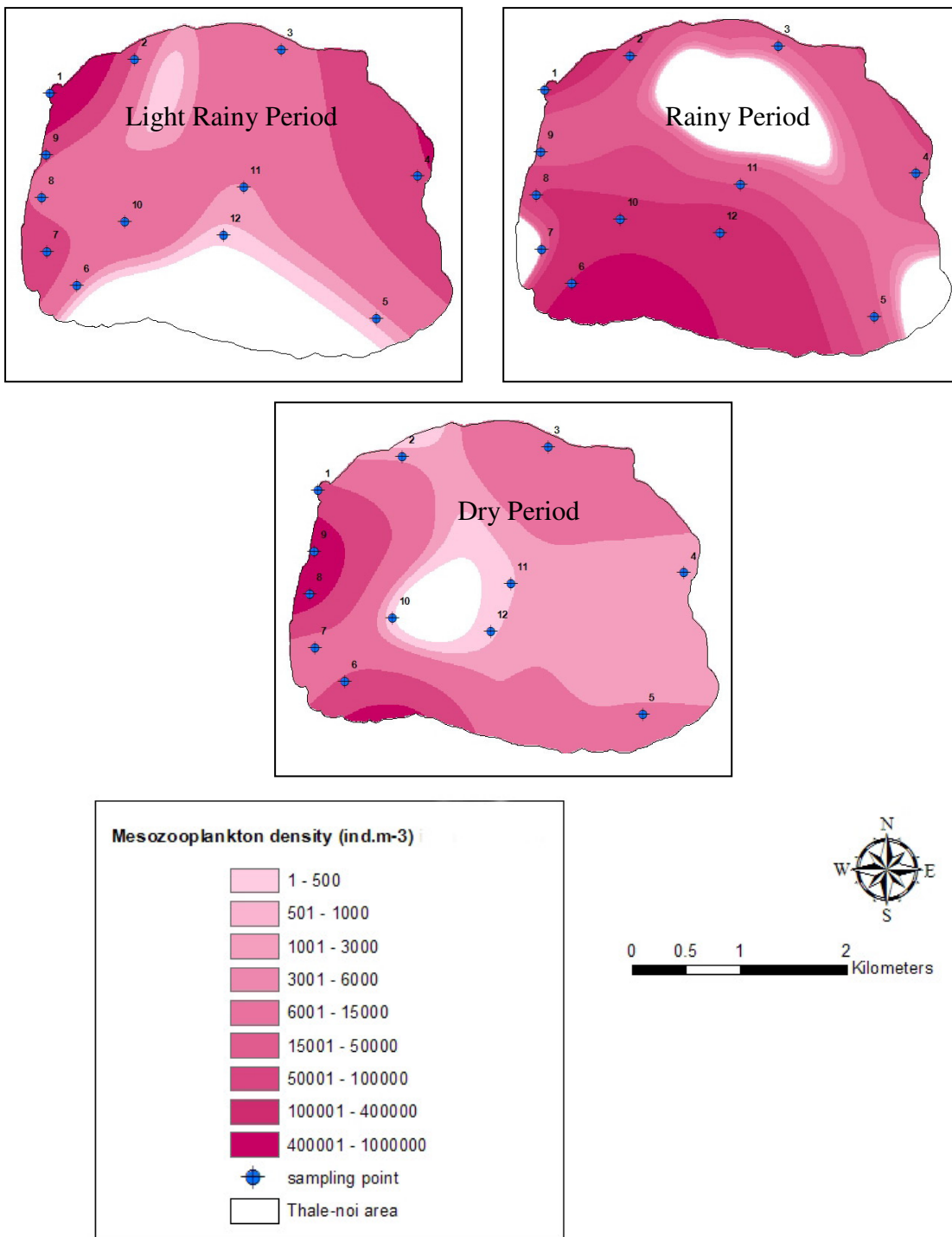


Figure 33. Overview of average mesozooplankton density in twelve stations of Thale-Noi in three sampling periods.