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Effect of Surface Salt on Density and Distribution of *Bithynia siamensis goniomphalos* in Khon Kaen Province, Thailand Analyzing by Geographic Information System

Apiporn Suwannatrai,^a Smarn Tesana,^a Surat Haruay,^a Supawadee Piratae,^a Panita Khampoosa,^a Chalida Thammasiri,^a Pairat Tarbsripair,^b and Rasamee Suwanwerakamton^c

^a Department of Parasitology, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002 Thailand.

^b Department of Biology, Faculty of Science, Khon Kaen University, Khon Kaen 40002 Thailand.

^c Department of Computer Science, Faculty of Science, Khon Kaen University, Khon Kaen 40002 Thailand

Introduction and Objective

Bithynia siamensis goniomphalos, first intermediate host of *Opisthorchis viverrini*, the human liver fluke widely distributes in north-eastern Thailand. Those liver flukes are important causative agent of cholangiocarcinoma. The aims of study were investigated the effect of various levels of salinity on density and distribution of *B. siamensis goniomphalos* in Khon Kaen province.

Methods

The mollusk survey was carried out in 36 water reservoirs in Khon Kaen province, northeast Thailand for analyzing the distribution and density of *B. siamensis goniomphalos* using geographic information system. The reservoirs were selected based on three levels of percentage of surface salt. The data of percentage of surface salt were obtained from Department of Land Development, Ministry of Agriculture and Cooperatives. Mollusk samples were selectively collected from 20 various ecological stations in each reservoir, 10 stations at the edge by manual or scoop collection and 10 stations in deep water using Ekman dredge. The samples were identified for species and examined for trematode infection.

Results

Thirty four localities presented with *B. siamensis goniomphalos* including 12 sympatric species were found. Density of *B. siamensis goniomphalos* was negative correlation with *Filopaludina (Siamopaludina) martensi* ($r=-0.18$, $p<0.05$) but positive correlation with salinity ($r=0.24$, $p<0.001$) and conductivity ($r=0.22$, $p<0.01$). Its normal habitats of *B. siamensis goniomphalos* were in clear water at the depth level up to 3 m, water temperatures 24.20-30.80 °C, dissolved oxygen 0.23-7.8 ppm, conductivity 0.42-16.69 mS/cm, salinity 0.47-19.00 ppk, turbidity 0.93-213 NTU and pH 6.7-8.12. High density of *B. siamensis goniomphalos* was found in the area with salt surface < 1% of all surface salt.

Conclusion

The density and distribution of *B. siamensis goniomphalos* was correlated with salinity and conductivity. The highest density was found in the area with salt surface < 1% of all surface salt. Potential presence of *B. siamensis goniomphalos* in Khon Kaen province was analyzed by GIS.

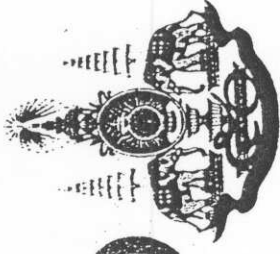
Keywords: *Bithynia siamensis goniomphalos*, geographic information system, surface salt

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1. Donnelly FA, Appleton CC, Schutte CHJ. International Journal of Parasitology 1983; 13: 539-45.



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