Thesis Title The Studies of the Asiatic Clams (*Corbicula*, Mühlfeld, 1811) in Thailand : Electrophoretic Estimates of Enzyme Variation and the Use of Anatomy as a Species Indicator.

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Abstract

Freshwater bivalves of the genus *Corbicula* found in forty localities throughout Thailand were compared in regard to morphology, anatomy and biochemistry.

Shell morphological study revealed twenty two species of Brandt's taxa and one unknown taxon. One form has a white nacre with purple highlights ('the white form') and the other form has a deep purple nacre ('the purple form').

The basic plan of the gross anatomy based on mantle, siphons, pigmentation, digestive and

reproductive systems is closely similar in all species.

Biochemical study was made using the technique of horizontal starch gel electrophoresis. Genetic variation detected for the enzymes included Aspartate aminotransferase, Alkaline phosphatase, Esterase, Glucose-6-phosphate dehydrogenase, Isocitrate dehydrogenase, Leucine aminopeptidase, Malate dehydrogenase, Malic enzyme, Peptidase, 6-Phosphogluconate dehydrogenase, Phosphoglucose isomerase, Phosphoglucomutase and Xanthine dehydrogenase. The average individual heterozygosity varies widely across species from zero to 0.025. The occurrence of low individual heterozygosity attributed to facultative self-fertilization. Nei's genetic distance (D) was calculated to estimate interspecific divergence. Genetic distance average value of $D < 0.01$ is very low, demonstrating that Thai *Corbicula* are almost identical to one another.

Differences in ecological habitat preference were also noted in this study.

In view of these data, the shell characters can be used to distinguish the bivalves into various species, but typically do not correlate with anatomical characters and genetic data. With the support by anatomical and electrophoretic similarities, a single species concept of Thai *Corbicula* is proposed.