

Piyamas Phongkaew 2012: Genetic Variability and Differentiation of Whisker Sheatfish *Micronema bleekeri* (Günther, 1864) Populations Based on Microsatellite Marker. Doctor of Philosophy (Genetics), Major Field: Genetics, Department of Genetics. Thesis Advisor: Assistant Professor Vipa Hongtrakul, Ph.D. 114 pages.

Microsatellite markers were developed for whisker sheatfish using the enrichment strategy. Forty-two primer pairs were designed at the flanking regions of microsatellite sequences. Thirteen microsatellite markers were polymorphic and eleven markers were selected to investigate genetic variation of seven whisker sheatfish populations, namely the Nong-Han Lake (NH), Nam Kum basin (KB), the Mekong river at the lower area of Nakhon Phanom province (MK), the Mekong river at the upper area of Nakhon Phanom province (MG), Songkhram river basin at Srisongkharm district (SK), Songkhram river basin at Seka district (SE) and Lam Nam Oon (NA). Five whisker sheatfish populations (NH, KB, MG, SE, NA) were conformed to Hardy-Wienberg and linkage equilibrium, whereas the remaining two populations (MK, SK) exhibited Wahlund effect. The average number of alleles per locus for each population ranged from 2.36 (NH) to 5.54 (MK). Mean allelic richness varied from 3.33 (NH) to 5.27 (MK), while NA exhibited two private alleles at MB401 and MB618 loci. The observed heterozygosity ranged from 0.223 (KB) to 0.415 (MK), whereas the expected heterozygosity varied from 0.237 (KB) to 0.657 (MK).  $F_{IS}$  had positive values in NH, KB, MG and SE populations, indicating inbreeding effect. Five whisker sheatfish populations exhibited a great population differentiation with the mean  $F_{ST}$  of 0.263. The decline in recent migration rate of whisker sheatfish and small effective population size were observed. Geographical barrier and over-exploitation were concerned for whisker sheatfish conservation and management in order to prevent the genetic erosion and to sustain this valuable species.

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Thesis Advisor's signature

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