

SOCIALIST REPUBLIC OF VIETNAM

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REPORT ON CONTRIBUTIONS OF THE THESIS

Thesis title: Identification and application of SNP markers using EzRAD technique for three typical fish species in the lower Mekong river basin

Specialization: Biotechnology

Code: 9420201

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Course: 2020

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Training institution: University of Science and Technology - The University of Danang

CONTRIBUTIONS OF THE THESIS:

❖ **Content:**

This study utilizes the EzRAD technique to identify and select highly efficient and accurate population-specific SNP markers. This approach provides a novel framework for population genetics research on three typical Mekong River fish species, characterized by varying life histories and migratory patterns: the non-migratory *Macrogathus siamensis* (representative of local populations), the short-distance and facultative migrant *Labeo chrysophekadion* (demonstrating regional connectivity and environmental adaptability), and the long-distance migratory *Pangasius larnaudii* (reflecting broader ecological linkages).

❖ **New points and highlights of the research:**

– This study offers a comprehensive analysis of genetic diversity and population structure in three Mekong River fish species, using a large SNP dataset generated by

EzRAD. It significantly improves upon previous studies that used traditional markers or single-species SNP analysis.

– This study, for the first time, employed SNP data and diverse algorithms to accurately predict migration patterns of *L. chrysophakadion* and *P. larraudii* within the Lower Mekong Basin, elucidating migration routes and population connectivity that are consistent with their historical development.

– This study utilizes EzRAD data from multiple individuals to both reconstruct the mitochondrial genome and simultaneously screen high-density polymorphic sites in *L. chrysophekadion*. This data source was effectively applied to assess the genetic diversity and population structure of the target species, opening a new approach for mitochondrial genome research in fish species.

❖ **Scientific and practical significance:**

This research significantly advances our understanding of population genetics, migration patterns, and mitochondrial genomes in Mekong River fish species, providing a robust scientific foundation for effective conservation and sustainable management of regional fish resources.

Da Nang,, 2026

Supervisors

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