

Studi morfometrik dan keragaman genetika pada populasi ikan lele (*Clarias batrachus*) di Sungai Musi dan Bengawan Solo

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Abstrak

Studi tentang variasi genetik dan truss morphometric telah dilakukan pada dua populasi ikan lele di Sungai Musi dan Bengawan Solo dengan tujuan untuk mengetahui hubungan kekerabatan antara keduanya. Populasi yang diamati adalah lele lokal (*Clarias batrachus*) untuk kedua habitat dan lele keli (*Clarias meladerma*) di Sungai Musi sebagai pembandingan.

Sampel ikan lele diambil dari masing-masing habitat sebanyak 100 individu populasi untuk pengukuran truss. Pengukuran morfometrik dilakukan dengan ukuran komersial konvensional yakni panjang total (PT), panjang standar (PS), panjang badan (PB), dan panjang kepala (PK), serta rasio termakan (edible portion). Pengukuran secara truss morfometrik dilakukan dengan membagi menjadi 4 truss cell dan 6 titik homologus (dengan 21 variabel truss). Analisis elektroforesis protein (protein electrophoresis) dilakukan pada 12 enzim dari 40 individu masing-masing populasi. Jaringan yang dianalisis berasal dari hati dan otot daging bagian dorso ventral di belakang insang sebelah kid. Waktu yang digunakan untuk proses elektroforesis adalah 4 jam pada kekuatan 80 mA.

Dengan menggunakan 21 variabel truss ($P < 0,05$) populasi *Clarias batrachus* di S. Musi dengan *Clarias meladerma* mempunyai kemiripan yang lebih tinggi dan terpisah dengan populasi *C. batrachus* dari B. Solo. Demikian pula dengan ukuran komersial konvensional yakni PK dan edible portion. Pengetahuan ini dapat digunakan untuk meningkatkan mutu genetik terutama untuk budidaya.

Dari 12 enzim yang dianalisis diperoleh 16 lokus dan 4 (25%) diantaranya heterozigot. Heterozigositas pada tingkat populasi (H) adalah 0,029 (populasi Bengawan Solo), 0,063 (populasi Sungai Musi), dan 0,167 untuk *Clarias meladenna* dari Sungai Musi. Jarak genetik *C. batrachus* dari S. Musi lebih dekat kepada populasi Bengawan Solo daripada populasi *C. meladerma* yang juga berasal dari Sungai Musi.

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Clarias batrachus, or Catfish, is a popular fish, especially in Java, where they serve as a natural food resources in most villages. Catfish comprises several species included in 30 families found world wide, with 7 families widely distributed throughout Asia, including Indonesia. At least four species are known in Indonesia, each having a different local name. Nevertheless, information concerning the genetic variation/diversity and phenotype of *C. batrachus* in Indonesia is not yet available.

The aim of these study is to established the relationship between morphometric and enzymatic haracters of *C. batrachus* from different geographic distribution, namely from the Musi river in Sumatra and Bengawan Solo river in Java. The results obtained from these studies will serve as a basic information for further research and development of this species.

The studies were conducted on two different populations of *C. batrachus* in the Musi and Bengawan Solo river, and a population of *C. meladerma* of Musi. The truss morphometric study was conducted on 100 fish from each species collected by fishing and trapping. The fish was divided into 6 truss length and 4 truss cells. Fourty fish were then frozen at -24°C for analysis of enzymes polymorphisms.

Genetic variation based on enzyme polymorphisms and multivariate analysis of truss morphometric characters suggest that catfish populations from Bengawan Solo and Musi river do not form panmictic population. Electrophoretic analysis of 12 enzymes using aqueous muscle and liver tissues revealed the product of 16 loci. Genetic variation among these enzymes in this species was observed in 4 loci (Mdh, Pgm, Gpi, and Me) at 25% of the total number of loci. Avarage heterozygosities for *C. batrachus* was 0.029 (Bengawan Solo) and 0.063 (Musi river), while avarage heterozygosity of *C. meladerma* (Musi river) was 0.167.

Truss morphometric measurement have successfully shown to be a good technique for distinguishing catfish originated from different geographic areas. Most of the significant variation in morphological shapes of catfish population were found in the anterior (head) rather than the posterior part of the body. The information obtained from these studies may be used in aquaculture for strain improvement through selection and testing.