Abstract

Surabaya river and it's floodplain is a unique freshwater ecosystem which have high fish diversity and productivity. Being a unique ecosystem means it is vulnerable to any disturbance that threatens ecological balance. Fisheries Sanctuary Area (FSA) is an effort to conserve fish resources and fish catchment. FSA will manage Surabaya river and its floodplain effectively as an integrated system. Ecological Feasibility study was held in 9 research sites (Mlirip, Perning, Patoman, Sumberame, Wringinanom, Sumengko, Jrebeg, Krikilan, and Wates) by measuring fish diversity species abundance and biomassa. The study is done in October 2011 to April 2012. Two techniques were used to collect fish in Surabaya river, by using fishing nets (throwing fishing nets 100 times) and fishing pole. During the study, fish diversity is recorded to consist of 12 species from 6 family (Bagridae, Pangasiidae, Mastacembelidae, Cyprinidae, Notopteridae, and Channidae). Bronze featherback (*Notopterus notopterus*) is listed as protected species by Government law act number 7/1999 'Conservation of Plants and Animals species'. Bronze featherback is an important requirement for establishing Surabaya river as FSA. The water quality of Surabaya river upstream can support optimum development for fish. The Dissoved Oxygen, Total Dissolved Solid, Turbidity, pH and Temperature fulfills class 2 water quality which means its good for fisheries activity according to Government Regulation Number 82/2001 'Water Quality Management and Water Pollution Controlling'. While macroinvertebrate inventory were done by sweeping method using kicking and hand net with mesh size 500 µm for 3 minutes. Founded 48 families of macroinvertebrate where 6 families are in Ephemeroptera, Plecoptera and Tricoptera (EPT groups), EPT groups being use to indicate human disturbances level in river ecosystem. The Highest Shannon - Wiener diversity index found at Mlirip (2,11). The result from this Ecological Feasibility Study of Surabaya river upstream area were compatible as FSA. There are 3 research sites that should become government main priority. Those 3 sites are Sumberame, Wringinanom and Sumengko, because bronze featherback were found in these area, supported by good stability of substrate, minimum channel modification, 50 - 90% riparian coverage, good water quality, high diversity index of macroinvertebratae, high fish diversity and there are minimum level of human disturbaces.

**Key Word:** Surabaya River Upstream, Fisheries Sanctuary Area, *Notopterus notopterus*