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## Downstream Changes on a Tropical Fish Community Structure by Effluent from Wood Processing Factory

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### ABSTRACT

In order to plan a management programme for ensuring maximum production of fish in Cross River, impacted downstream changes in the fish community structure by effluents from wood processing industry, six years after establishment, was examined. Monthly samples were collected between January and December each year from 2000 to 2006 in three reaches (Upriver: I, Mid-river: II and Downriver: III) along the length of Cross River. Representatives of the fish families Osteoglossidae (i.e. *Heterotis niloticus*), Cichlidae (*Tilapia melanopleura*) and Characidae (*Bryocinus nurse*), Clupeidae (*Cynothrissa* sp), Mormyridae (*Mormyrus deliciosus*), Clariidae (*Clarias gariepinus*), Bagridae (*Bagrus bayad*) and Cyprinidae (*Barbus occidentalis*) were found to have declined in their importance compared to pre-industry period. On the other hand, Bagridae (*Chrysichthys nigrodigitatus*), Cichlidae (*Oreochromis niloticus*), Clariidae (*Clarias anguillaris*) and Mochokidae (*Synodontis clarias*) have currently emerged as most important. Estimated value of growth coefficient (b) of the length-weight relationship changed from isometry (b approx. = 3) to negative allometry (b ≤ 3), condition factor values decreased from range between 0.53 and 1.30 to range between 0.22 and 0.62. Main feeding groups of fish; planktivores, carnivores and insectivores declined in numbers while omnivores and detritivores increased, resulting in dominance of benthic and semi-pelagic omnivores. Values of fecundity distribution varied from 56,012 ± 5234 eggs, mode 12,500 and median 58,345 to mean value 23,122 ± 232 eggs, mode 2500 and median 20,349, egg size from mean value: 1.82 ± 0.07 mm, mode 2.2, and median; 1.8 to values of 0.8 ± 0.04 mm, mode; 1.3 and median 1.1 and Gonadosomatic index from 20.5 ± 3.2, mode 19.1 ± 2.2 and median 21.4 to values of 12.4 ± 2.3, mode 4.5 and median 9.5 respectively. Three species found to have appeared in the river were *Tilapia monody*, *Chrysichthys maurus* and *Synodontis violaceus*. The appearance of these species and disappearance of 36 others indicates the restructuring of the fish community of the Cross River by effluents from the wood processing industry.

### KEYWORDS

Fish Community, Fish Composition and Abundance, Diet Changes, Length-Weight Relationship, Reproductive Biology

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