

Diet, size and reproductive biology of the silver catfish, *Chrysichthys nigrodigitatus* (Siluformes: Bagridae) in the Cross River, Nigeria

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Abstract:

The silver catfish, *Chrysichthys nigrodigitatus* (Lacépède: 1803) is a highly valued food-fish included among the dominant commercial catches exploited in major rivers of Africa. To provide useful biological data for management, samples were collected monthly between January (2005) and December (2007) in three zones: I: Upper Cross River (grassland), II: Middle Cross River (mixed forest and grassland), and III: Lower Cross River (rainforest)] along 200 km length of the Cross River, Nigeria. Data from 1 248 specimens were processed using: allometric coefficient (b), gonado-somatic index, Fulton's condition factor and diversity indices. Male dominance was observed in all populations; *C. nigrodigitatus* reached maturity at 11.5cm (male) and 16.7cm (female) total length. Gonado-somatic index was higher for females with a peak in the early rains. The breeding period was between April and August with mean fecundity ranging between 4522 ± 1924 eggs and 20321 ± 5543 eggs. This was directly related to total length and weight by the regression models: $F = 2365.88 + 560.22 \log L$ and $F = 5025.81 + 56.34 \log W$ respectively. Exponential equations for length-weight relationships were $Wt = -1.997 Lt^{2.206}$ (Zone I), $W = -2.831 Lt^{3.040}$ (Zone II) and $Wt = -2.245 Lt^{2.995}$ (Zone III). The mean allometric coefficient (b) showed significant departure from cubic value (negative allometry) for Zone I while Zones II and III showed no difference, indicating isometry. Dominant items in the diet were fish and fish parts constituting 21.6%

with Food Richness and Gut Repletion Index of 18 and 100% respectively, in all zones. Diet Breadth of 0.802 (Zone I), 0.922 (Zone II) and 0.910 (Zone III) indicate a high trophic flexibility that enables switching from one diet to another according to availability. Mean condition factor for males varied from 0.718 ± 0.117 minimum in Zone I to 0.996 ± 0.062 maximum in Zone III. Forest inland wetlands (Zone II and III) of Cross River provided better condition for *C. nigrodigitatus*. Rev. Biol. Trop. 56 (4): 1785-1799. Epub 2008 December 12.

Key words:

Assessment, river, reproduction, length- weight, condition factor, diet habit, bagridae.