

Incidence of Gill Asymmetry in *Oreochromis niloticus* (L.) and *Clarias gariepinus* (Burchell, 1822) from Asejire Reservoir, Southwest Nigeria

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Abstract

Gill rakers and filaments were analyzed for asymmetry in a small sample of *Oreochromis niloticus* (n = 33) and *Clarias gariepinus* (n = 37) from Asejire reservoir, Southwest Nigeria. *O. niloticus* (9%) recorded a higher incidence of asymmetry in gill filaments whilst *C. gariepinus* (6%) in gill rakers. In both species, the gill rakers exhibited higher fluctuating asymmetry (FA) and are, therefore, more sensitive for environmental health evaluations compared with filaments.

Introduction

Fish are sensitive to trace levels of contaminants in aquatic media because gills, representing 60-75% of total surface in contact with water, are the first critical organ systems to encounter the impact (Powers, 1989; Lauren, 1991; Jobling, 1995; Tuossaint *et al.*, 2001). Gill perturbations and asymmetry have proved a simple, inexpensive and rapid assessment tool of previous and current aquatic conditions and has been used extensively in laboratory assessments of contaminant effects. The contrary has been the case with field or *in situ* evaluations of natural populations (Bengtsson *et al.*, 1985; Lauren, 1991; Poleksic & Mitrovic-Tunlundzic, 1994). Van Valen (1962), Palmer & Strobeck (1986) and Graham *et al.* (1993) described the principles and the bilateral traits used in evaluating asymmetry. This study attempts to provide information on field evaluation of gill asymmetry in a small sample of the Nile tilapia, *Oreochromis niloticus* (L.) and the African catfish, *Clarias gariepinus*

(Burchell, 1822) as indicators of environmental health of Asejire reservoir, a man-made tropical lake. The Nile tilapia and African catfish have been used extensively in both laboratory and field studies and their cosmopolitan nature makes for ease of universal data comparison.

Asejire reservoir (04° 05'E and 07° 21'N), a man-made lake on River Oshun, has an impounded area of 2342 ha and located about 30 km east of Ibadan, Southwest Nigeria (Egborge, 1972; Ekpo, 1993). The highest temperature recorded in the area was 33.9 °C (Department of Geography, University of Ibadan, 1990). Both the reservoir and the parent river have not been reported as polluted.

Materials and methods

Seventy fish specimens comprising 33 *O. niloticus* (mean SL = 11.74±2.59; mean BW = 57.91±70.94) and 37 *C. gariepinus* (mean SL = 21.67±4.53; mean BW = 92.22±63.97) were purchased from fishermen at Asejire fishing jetty between