



Life history and larval density of *Cheumatopsyche digitata* Mosely (Trichoptera: Hydropsychidae) in Opa Reservoir spillway, Ile-Ife, southwestern Nigeria

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Abstract

The life history and density of *Cheumatopsyche digitata* Mosely (Trichoptera: Hydropsychidae) were examined below Opa Reservoir in Ile-Ife, southwestern Nigeria. This caddisfly is the only species that occurs immediately below the impoundment auxiliary spillway where it closely associates with an aquatic bryophyte, *Fontinalis* sp. We collected larvae every month between July 2004 and June 2005 as long as larvae were available in the study site. The instar growth ratio was fairly constant and ranged from 1.198 to 1.402 (mean \pm standard error = 1.285 ± 0.073) but mean head capsule width increased with larval development. The frequency distribution of head capsule width of larvae clustered into 5 size classes, suggesting 5 larval instars for *C. digitata* in the study site. Density of larvae ranged from 1,100 to 11,150 inds.m⁻² (mean \pm SE = $6739 \text{ inds.m}^{-2} \pm 3904.70$), the highest densities occurring in October 2004 during the bloom of *Fontinalis*. The first larval instar appeared in July 2004. Adult emergence occurred mainly in December 2004 through January 2005 at the onset of reservoir draw-down and death of *Fontinalis*. These patterns indicate that *C. digitata* tended to show a univoltine life cycle in the study site.

Key words: impoundment, larvae, instars, growth, bryophyte

Introduction

Nigeria's freshwater ecosystems are characterized by diverse aquatic insect communities, of which caddisflies (Trichoptera) constitute a significant part, and various species inhabit varying habitats ranging from small streams to large rivers (Mbah & Vagime 1989, Ogbogu 2001a). The Opa stream-reservoir system is a habitat for a number of Trichoptera species (Ogbogu 2001a, 2006) of which members of the family Hydropsychidae in particular are common. The caddisfly species *Cheumatopsyche digitata* Mosely (Hydropsychidae) is ubiquitous and has been recorded at the Opa reservoir, particularly in areas with stable stream bed and where aquatic bryophytes occur (Ogbogu 2001b). Functionally, like in other genera (Wells 1990, Ohkawa & Ito 2002), the larvae of *Cheumatopsyche* species are collecting filterers, feeding on suspended algae and detritus (Cummins & Kluge 1979, Wiggins 1996). They contribute to the energy flow and thus represent an important link between primary producer communities and higher trophic levels in freshwater ecosystems.

Many studies have been conducted on *Cheumatopsyche* species in the Afrotropical region (e.g., Kimmins 1960; Gibbs 1973; Statzner 1982, 1984; Scott 1983; Statzner *et al.* 1985; Kjaerandsen & Andersen 1997; Andersen & Kjaerandsen 2001; Kjaerandsen 2005) but very few of these studies were on the life history of the insect. Data on life history provide information on the environment