

# Feeding ecology of the relict fish *Gymnocharacinus bergi*, a characid from southern South America

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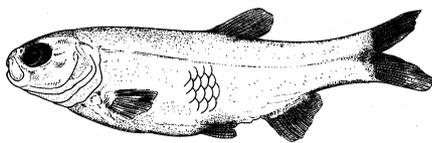
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## Abstract

A food analysis was performed of the southernmost distributed Characidae, *Gymnocharacinus bergi*, the single species inhabiting the thermal headwaters of the Valcheta Creek in northern Patagonia. Chrysophyta were the dominant algae and chironomid larvae and testaceous amoebae the most abundant animal items. Few cladocerans and no copepods were consumed. The diet indicates a benthic feeding habit, though the species usually swims in the water column. Diversity and number of all items are more restricted than those of similar size characids from middle Argentina. The diet of *G. bergi* is similar to that of *Cheirodon interruptus* and *Bryconamericus itheringi* from mountain oligotrophic streams, but differs from tetragonopterine species occurring in richer plain habitats. Feeding traits appear to be related to the environment oligotrophy and agree with regressive traits in the species morphology, presumably associated with harsh environmental pressure.

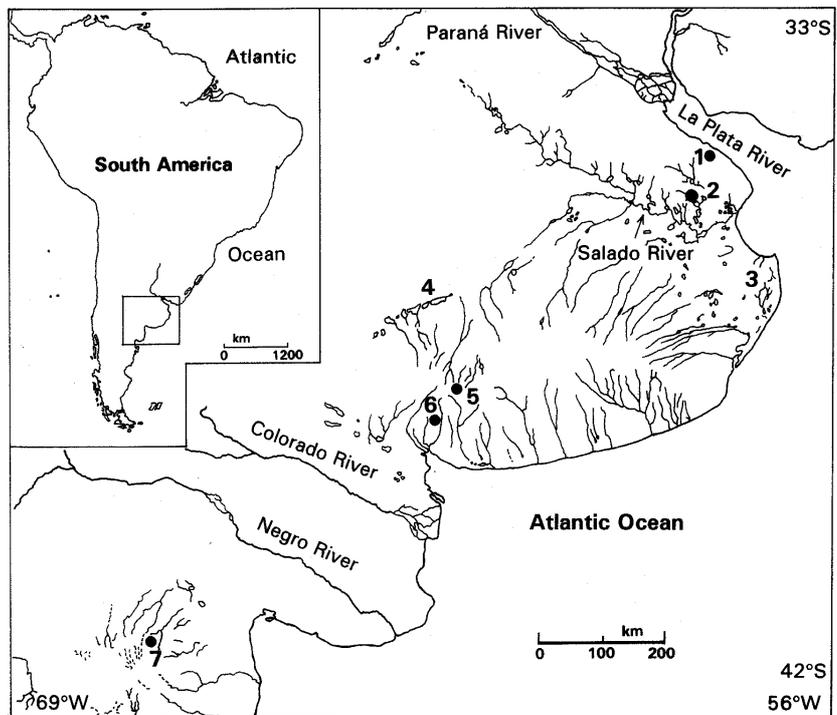
## Introduction



**Figure 1**

*Gymnocharacinus bergi* from headwaters of Valcheta Creek. A juvenile specimen 40 mm in total length.

*Gymnocharacinus bergi* is a characid fish (Fig. 1), remarkable in that the scales are reabsorbed in the adult (Miquelarena and Arámburu 1983; Cussac and Ortubay 1994). It is the only fish species inhabiting thermal headwaters of the endorheic Valcheta Creek in the Somuncurá plateau in northern Patagonia (40°50'S, 66°40'W) (Fig. 2). The introduced trouts *Oncorhynchus mykiss* and *Salvelinus fontinalis* and the cyprinodontoids *Jenynsia* cf. *multidentata* and *Cnesterodon decemmaculatus* inhabit downstream waters at lower temperatures (Ortubay et al., 1997). Headwaters have a constant water temperature of between 18 and 22.6°C while the air temperature has an annual mean below 10°C with winter monthly mean maximum values less than 10°C and monthly mean minimum below 5°C (Menni and Gómez, 1995). *G. bergi* has a high lethal temperature (36.2 to 38.2°C), a paranean adaptation, similar to other Brazilian fishes. Its loss of equilibrium temperature (33.9 to 36.9°C) is higher than in some paranean fishes and is related to the permanent warmth of its



**Figure 2**

Argentinean "pampa" (northward of the Colorado River) and north of Patagonia (southward). 1: man-made ponds at Los Talas; 2, 3 and 4: pampean "lagunas"; 5, 6: highland environments in Sierra de La Ventana; 7: headwaters of the Valcheta Creek. Insert: position of the enlarged area in South America.

habitat. The species has partially lost its resistance to low temperatures and probably cannot extend its distribution to temperate nearby waters nor to water with large temperature fluctuations (Ortubay et al., 1994; 1997).

In this paper we report the diet composition of *G. bergi* and show that feeding, as other traits of the naked characid, is related to its particular habitat. Additionally, we consider the hypothesis

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