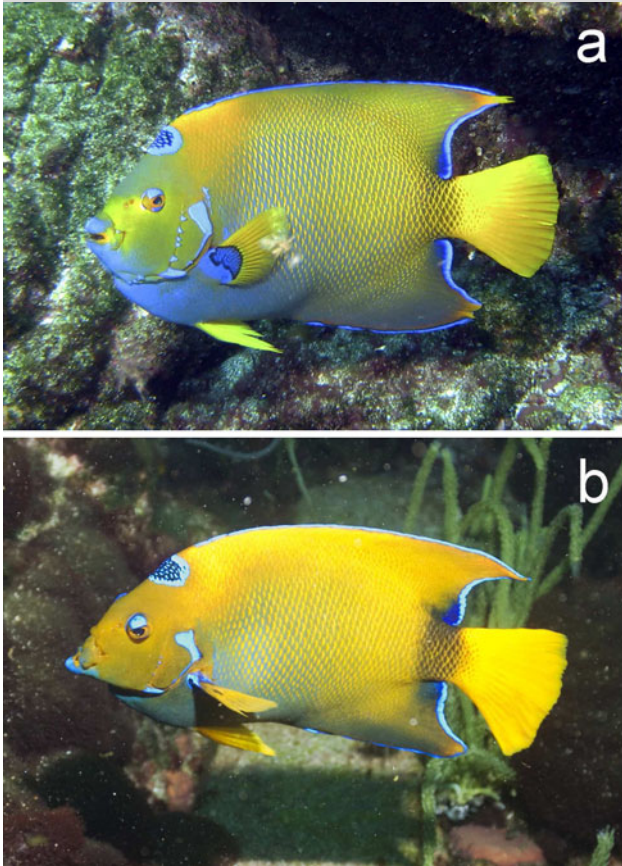


# Reef sites

## First record of pughead skeletal deformity in the queen angelfish *Holacanthus ciliaris* (St. Peter and St. Paul Archipelago, Mid Atlantic Ridge, Brazil)



**Fig. 1** **a** A healthy queen angelfish *H. ciliaris* (about 35 cm total length) and **b** A pughead *H. ciliaris* (about 30 cm total length) at St. Peter and St. Paul Archipelago, Mid Atlantic Ridge, Brazil

Pughead skeletal deformity (i.e., antero-posterior compression of the upper jaw, with the resulting apparent protrusion of the lower jaw) has been recorded in a few reef fish species under natural conditions, generally at a low frequency (Gassman et al. 1994; Macieira and Joyeux 2007). Cranial skeletal abnormalities such as pugheadedness are relatively common in captive fish, with likely causative agents including chemical contaminants, dietary limitations or excesses, temperature variations during larval development, and inbreeding (Gassman et al. 1994).

Between 24 May and 8 June, 2011, two pughead queen angelfish *Holacanthus ciliaris* with small nodules on the snout were recorded at the St. Peter and St. Paul Archipelago, Mid Atlantic Ridge, Brazil. This is the first record of this skeletal abnormality in the family Pomacanthidae (Fig. 1).

Although several factors may lead to jaw abnormalities in captive fish (see above), loss of genetic variability due to inbreeding is the most plausible explanation for the jaw abnormality in *H. ciliaris* recorded here. Inbreeding and low genetic connectivity have already been recognized as the possible causes of the extreme color variation in the isolated population of *H. ciliaris* at the St. Peter and St. Paul Archipelago (Edwards and Lubbock 1983).

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R. B. Francini-Filho (✉)

Departamento de Engenharia e Meio Ambiente, Universidade Federal da Paraíba, Rua da Mangueira, s/n, Centro, Rio Tinto, PB 58297-000, Brazil  
e-mail: rofilho@yahoo.com

G. M. Amado-Filho

Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, Rua Pacheco Leão 915, Rio de Janeiro, RJ 22460-030, Brazil

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