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## Successful captive propagation of *Coptodon discolor*: An IUCN red list near threatened fish in Ghana

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### Abstract

*Coptodon discolor*, a cichlid endemic to Lake Bosomtwe (Ghana), and a few river basins of southeastern Ghana and western Cote d'Ivoire, has been recently designated “near threatened” on the IUCN Red List. Due to its endemic status and high value in subsistence fisheries, the decline of *C. discolor* in the wild is both a biodiversity conservation and food security problem. In the light of historical lack of success at breeding and raising the species in captivity, the objectives of this study were to (1) breed *C. discolor* in captivity, (2) assess acceptability and growth of juvenile *C. discolor* to formulated commercial fish feeds, and (3) assess morphometric parameters, growth, and condition of wild *C. discolor* held in captivity for breeding. Three treatments (fertilised-fed and unfed, and unfertilised-fed) were established in a feeding trial to determine the acceptability, weight gain, and food conversion ratio (FCR) of offspring on commercial tilapia feed. Periodic sampling for length and weight of wild broodstock were conducted to determine their growth and condition in captivity. Wild *C. discolor* held in concrete tanks reproduced naturally in grass substrates after two months in captivity. Their offspring readily accepted and grew well on formulated tilapia feed with best FCR (0.8–0.9) observed for the fry and fingerling fed complete diets in unfertilised tanks. The wild brood stock maintained healthy body condition for almost one year, attaining sizes of 100–150 g on a natural diet of algae and aquatic plants, including leaves of water hyacinth (*Eichhornia crassipes*). This study accomplished all the steps necessary for domestication of a species, showing that strategies to recover *C. discolor* from spiraling towards extinction would include captive breeding and artificial propagation for, food fish production, wild population enhancements, and possible translocation to suitable extant habitats. Follow-up genetics studies are recommended to characterise wild population viability and guide selection of broodstock for breeding programs.

**Keywords:** Aquaculture, biodiversity conservation, food security, species diversification