SPATIAL TRENDS IN THE FEEDING HABITS OF *Corydoras ehrhardti* IN A NEOTROPICAL MICRO BASIN

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INTRODUÇÃO

Studies about fish diet are essential for the sustainable management and conservation of aquatic and terrestrial ecosystems. Diet information allows to understanding ontogenetic, spatial and temporal shifts, interspecific relationships and energy and matter flows (Gerking, 1994). Corydoras ehrhardti Steindachner, 1910 is a small armored catfish that lives in Southeastern Neotropical region (Paraná and Santa Catarina states, Brazil) (Reis, 2003). It is a benthic fish that consumes high diversity of vegetal and animal preys (Aranha & Caramaschi, 1999). The Verde River (VR) is inside two important conservation areas, the Devonian Escarpment Environmental Protection Area and the Campos Gerais National Park. Despite of it, the VR is negatively influenced by agriculture, urban zoning and sewage treatment station in the surrounding landscapes. Top predators and larger fishes (e.g. fisheries targets) have become scarce, tending to disappear (Silveira *et al*. 2018a). In this way, the study of VR ichthyofauna is imperative for the basin management, preserving their ecosystem.

OBJETIVO

Describe the diet of C. ehrhardti in the VR, evaluating spatial trends in its feeding habits.

MATERIAIS E MÉTODOS

Monthly samplings were performed from May/2016 to June/2017 in the VR (25°04’42.30”S, 50°04’20.11”W) in four sampling areas (headwater, middle stretch 1, middle stretch 2, mouth river). Active (cast net and scoop net) and passive (gillnets with 1.2, 1.5, 2, 3 and 4 cm mesh sizes) fishing gears were used in synoptic samplings (details in Silveira *et al*. 2018a). Specimens were anaesthetized (250 mg/L benzocaine) and sacrificed in situ (license of the Chico Mendes Institute for Biodiversity Conservation no. 40132-2 and no. 51797-1; Certificate of the Ethics Committee in the Use of Animals UFPR—Palotina Sector no. 38/2015). At laboratory, the specimens were dissected and their stomachs were fixed in formalin 4%. Stomach contents were analyzed under optical stereoscope and microscope. The consumed preys were identified at the lowest taxonomic level possible, and grouped into food categories. The excess water trapped around the food categories were removed using filter paper. The food categories were weighted using an analytical balance (0.0001 g). For diet description, the gravimetric frequency (%Wi) and the frequency of occurrence (%Oi) were calculated (Silveira *et al*. 2018b). Spatial differences were tested using the standardized weight of each food category (Wi) in a PERMANOVA one-way with 9999 permutations (Anderson, 2001).

DISCUSSÃO E RESULTADOS

A total of 306 specimens of C. ehrhardti were caught at middle stretch 1 (68 individuals, total length range 18-72 mm, average±standard deviation 51±11 mm) and middle stretch 2 (238 individuals, 16-66 mm, 51±6 mm). No specimens occurred at headwater and mouth river. Between headwater and middle stretch 1, a riffles series and a cascade with 10 m height constituted insuperable barriers for small fishes (Silveira *et al*. 2018a). The absence of C. ehrhardti at the mouth river was due to the high degree of water pollution and environmental homogeneity of the area, a result of human activities in the landscapes surrounding the VR (Silveira *et al*. 2018a). Eighty-nine individuals showed stomach contents, representing 29.1% of the total sample. In general, C. ehrhardti consumed 21 food categories, being Chironomidae larvae (%Wi = 36.5%; %Oi = 86.5%), sand (%Wi = 25.4%; %Oi = 32.6%) and insect fragments (%Wi = 19.8%; %Oi = 40.4%) the most important. Although these food categories have being the most consumed in both sites, the consumed proportion of each one and the exploration/absence of other food categories in each middle stretch revealed a significant spatial difference in the fish diet (PERMANOVA: F = 1.4690; p = 0.0207). The differential consumption of Chironomidae larvae (%Wi MS1 = 67.7%; %Wi MS2 = 36.5%) and sand (%Wi MS1 = 4.8%; %Wi MS2 = 25.4%) was related to habits of C. ehrhardti and Chironomidae larvae, as well as to environmental structure of middle stretches. Corydoras and Chironomidae larvae present benthic habits (Oliver, 1971; Sazima, 1986). In this niche, Chironomidae consume a large variety of autochthonous and allochthonous resources, performing an important role in aquatic trophic webs by linking producer organisms with secondary consumers (Oliver, 1971; Henrique-Oliveira *et al*. 2003). To access this prey, Corydoras use buccal suction and can accidentally ingest substrate particles. Middle stretch 1 is located in a rural area, surrounded by agriculture crops and presenting degraded riparian vegetation. The riverbed is heterogeneous, showing rocky outcrops, gravels, branches, trunks and others allochthonous organic matters. Middle stretch 2 is located in an urban zoning on sloped terrain, presenting relatively preserved riparian vegetation. Although the riverbed presents rocky outcrops, gravels and plant debris, there is also great amounts of sand originated from the degradation of the soil due to the human occupation. These riverbed differences influenced the sand consumption observed in C. ehrhardti. The riverbed and riparian vegetation features also influenced the consumption of other food categories. Trichoptera larvae and terrestrial insects (Formicidae and Coleoptera) were most consumed at middle stretch 2, while Ephemeroptera and Podostemaceae were exclusive consumed at middle stretch 1.

CONCLUSÃO

Corydoras ehrhardti presented insectivorous feeding habit. The spatial trends detected in its diet constitute responses to the different environmental features observed in each sampling area. These results indicate negative influence of human activities on the VR and the biota associated to it, reinforcing the need of more rigorous policies concerning the landscape uses. It is essential for the preservation and management of the aquatic and biotic resources of the basin.

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