REPTILES & AMPHIBIANS

Consumption of a Non-native Walking Catfish (*Clarias batrachus*) by a Florida Green Watersnake (*Nerodia floridana*) in Everglades National Park

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The Florida Green Watersnake (*Nerodia floridana*; Goff 1936) is the largest watersnake in North America (Gibbons and Dorcas 2004) and is commonly found throughout Florida. Generally, *Nerodia* species have been documented eating a variety of prey items, (Mushinsky and Hebrard 1977; Kofron 1978; Camp et al. 2020). Relatively little information is available on the diet of *N. floridana*, yet they are known to primarily feed on amphibians and fishes (Ernst and Ernst 2003; Gibbons and Dorcas 2004; Durso et al. 2013).

During a road survey on 21 October 2023 at 2111 h in Everglades National Park, a road-killed *N. floridana* with a pectoral spine from a catfish protruding from the abdomen (Fig. 1) was collected along Main Park Road by U.S. Geological Survey employees and collaborators. Examination of the spine by colleagues at the University of Florida Biology Department and Invasion Ecology Lab identified the species of catfish as a non-native Walking Catfish (*Clarias batrachus*; Linnaeus 1758) by the shape of the spine and associated striations (see Gayet and Van Neer 1990; Ballen and De Pinna 2021). *Clarias batrachus* is a catfish native to Southeast Asia and was first recorded in Florida in 1965 (Schofield and Loftus 2015). The species has subsequently become well-established in southern Florida. There are four species of watersnakes (*Nerodia*) in Everglades National Park (Rice et al. 2004) and several other native snake species that will predate or scavenge fishes (Kornilev et al. 2023). While other snake species have been documented consuming *C. batrachus* in South Florida (Donini 2018; Metcalf and Herman 2018) and other non-native catfish (Holbrook et al. 2013), a thorough review of the literature suggests that this is the first observation of *N. floridana* consuming *C. batrachus*.

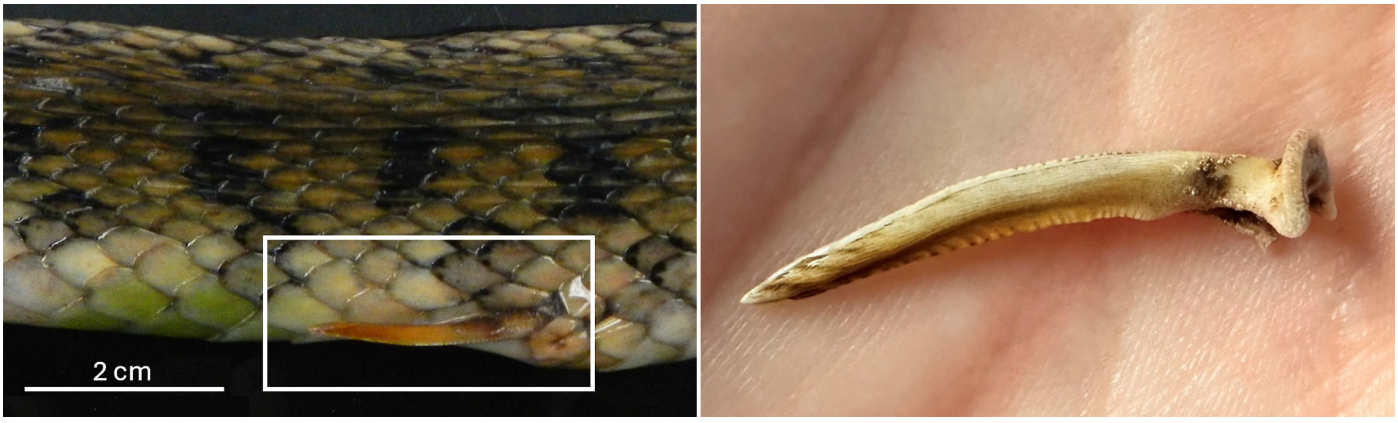

Figure 1. Florida Green Watersnake (*Nerodia floridana*) with the pectoral spine of a Walking Catfish (*Clarias batrachus*) protruding out of the abdomen just above the gallbladder (left, white box) and enhanced view of the extracted spine (right), collected in 2023 from Everglades National Park, Miami-Dade County, Florida, USA. Photographs by the authors.

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Fish, including catfish, are often consumed by *Nerodia* and other snakes, sometimes resulting in the death of the snake as a result of difficulties from ingesting sharp spines or other related issues (Gillett et al. 2017; Kornilev et al. 2023). Since the snake observed was killed by a vehicle strike, it is difficult to determine the long-term health effects of the catfish pectoral spine on this individual. Despite the protrusion, the snake appeared healthy, and the positioning of the spine was near to where it could be successfully expelled from the snake's body, suggesting the snake would have survived otherwise, as seen in reports by Kofron (1978) and Donini (2018). It appears that the introduction and establishment of non-native species in the Greater Everglades Ecosystem may provide additional prey items for some native species. We expect reports of additional novel feeding observations as this region experiences increased allodiversity. However, we do not know the effects the consumption of these non-native fishes may have on native predators, such as potential parasitic spillover to individuals or populations, or whether non-native fishes provide equivalent nutrient values as native fishes. Ingestion of rigid features such as spines could lead to internal perforations to the body cavity of watersnakes, which could alter mobility, increase the risk of infection, and, in turn, increase vulnerability to predation or roadway traffic (Willson and Hopkins 2011).

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