CURRENT STATE OF THE INVASION:
50 YEARS OF THE BLACK ACARA IN FLORIDA

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FishMap.org

The Black Acara or Two-spotted Cichlid (*Cichlasoma bimaculatum*) is one of the earliest and best established of the invasive freshwater species in south Florida. It currently is known to be established in 11 watersheds and is likely established in many more (Figure 1). The Black Acara is established in the Kissimmee (03090101), Western Okeechobee Inflow (03090103), Lake Okeechobee (03090201), Everglades (03090202), Big Cypress Swamp (03090204), Caloosahatchee (03090205), Manatee (03100202), Tampa Bay (03100206), and Crystal-Pithlachascotee (03100207) watersheds (USGS 2015). It has also been reported in the Charlotte Harbor watershed (03100103) and Myakka watershed (03100102) (Nunziata and Skidmore 2014). The second edition of the *Peterson Guide to Freshwater Fishes* states that the Black Acara is established in Florida south of Lake Okeechobee (Page and Burr 2011).

Native to South America, the history of the Black Acara in Florida begins when it was first reported in 1965 as being established in Fort Lauderdale in Broward County (Rivas 1965), although it is thought that the populations started showing up in Miami in the late 1950s (Kahn 1980). It was identified at the time as *Aequidens portalegrensis* which is an obsolete name for *Cichlasoma portalegrensis*, known as the Port Acara, Porthole Cichlid, Port Cichlid, or Red Port Acara. This species is also sometimes called the Black Acara and it is possible that the shared common name as well as similar appearance was the reason behind this identification. Up until the 1950s the Black Acara were farmed in Florida for the aquarium trade because it was a popular fish, but when

Several Black Acara from Hillsborough County, Florida, showing the variation within the species.

Photos by the author.

Ryan Crutchfield is an angler, explorer, archaeologist, and software developer living in the Tampa Bay area. He graduated from Auburn University with a bachelor's degree in anthropology and graduated from the University of Alabama with a master's degree in archaeology. He is an avid species hunter and has caught 146 species of fishes to date with hook and line. He founded and developed FishMap.org in 2013 to help anglers, aquarium hobbyists, scientific researchers, and anyone with a passion for fishes to learn about the species near them and to visually explore their ranges. A Florida native, he has become recently interested in the many invasive fish species in the state and documenting and understanding their expansion.

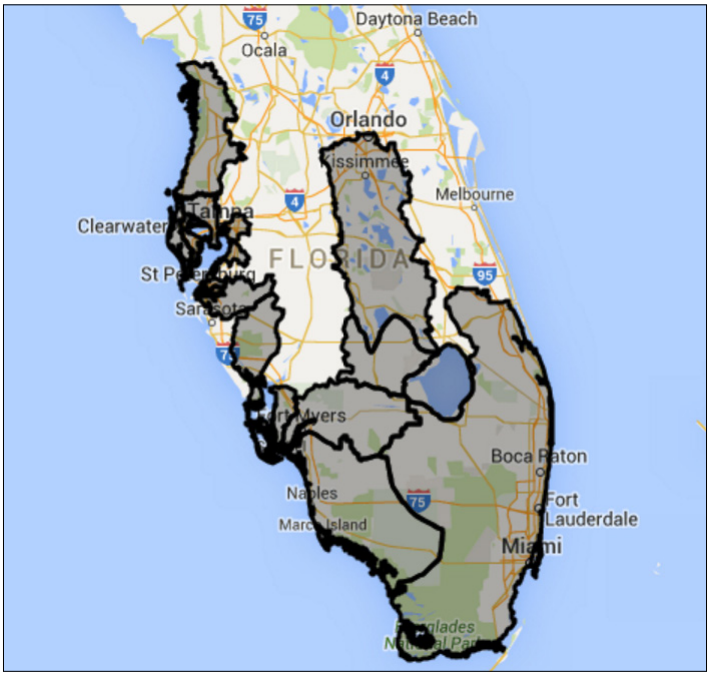

Figure 1. Current reported watersheds with established populations.

air cargo shipments made more colorful fishes readily available, the dull Black Acara were abandoned by the farmers and released (Courtenay and Stauffer 1990; Helfman 2007). They were referred to in the aquarium trade as a very drab fish that is too common to stock (Kahn 1980). From these initial releases the fish has spread steadily through the state from Ft. Lauderdale and Miami into the Everglades and up through Lake Okeechobee and finally up along the western coast of Florida as far north as Pasco County (FishMap.org 2015).

For current Black Acara collection records there are 183 records from FishNet 2 (FishNet 2, 2015), 317 records from the Nonindigenous Aquatic Species (NAS) database (USGS 2015), and 51 records from the Early Detections & Distribution Mapping System (EDDMapS 2015). Many of these records are shared between the agencies and the USGS NAS records are the most thorough and include data from both EDDMapS and FishNet 2. Using the USGS NAS collection data we can map the spread of the Black Acara from the 1960s to today (Figure 2).

The reasons for the success of the Black Acara's spread through the state is its year-round breeding cycle and ability to withstand low oxygen. (Lee et al. 1980). Additional reasons have been reported as high fecundity, parental care of young, a prolonged spawning season, and adaptability towards spawning sites (Courtenay et al. 1974). These traits have enabled the Black Acara to establish and maintain high populations across the state. Additionally, they have been located in almost every type of habitat outside of deep water. They are found in canals, sloughs, ponds, rivers, mixed swamp forest, freshwater marsh, cypress forest, cypress prairie, herbaceous prairie, coastal marshes, and all wetlands (Ellis et al. 2006). However, the Black Acara is susceptible to cold weather as was seen in 2010 during cold weather in Everglades National Park when many dead Black Acara and other species were found. The water temperature fell below 6°C and the lethal temperature for Black Acara is

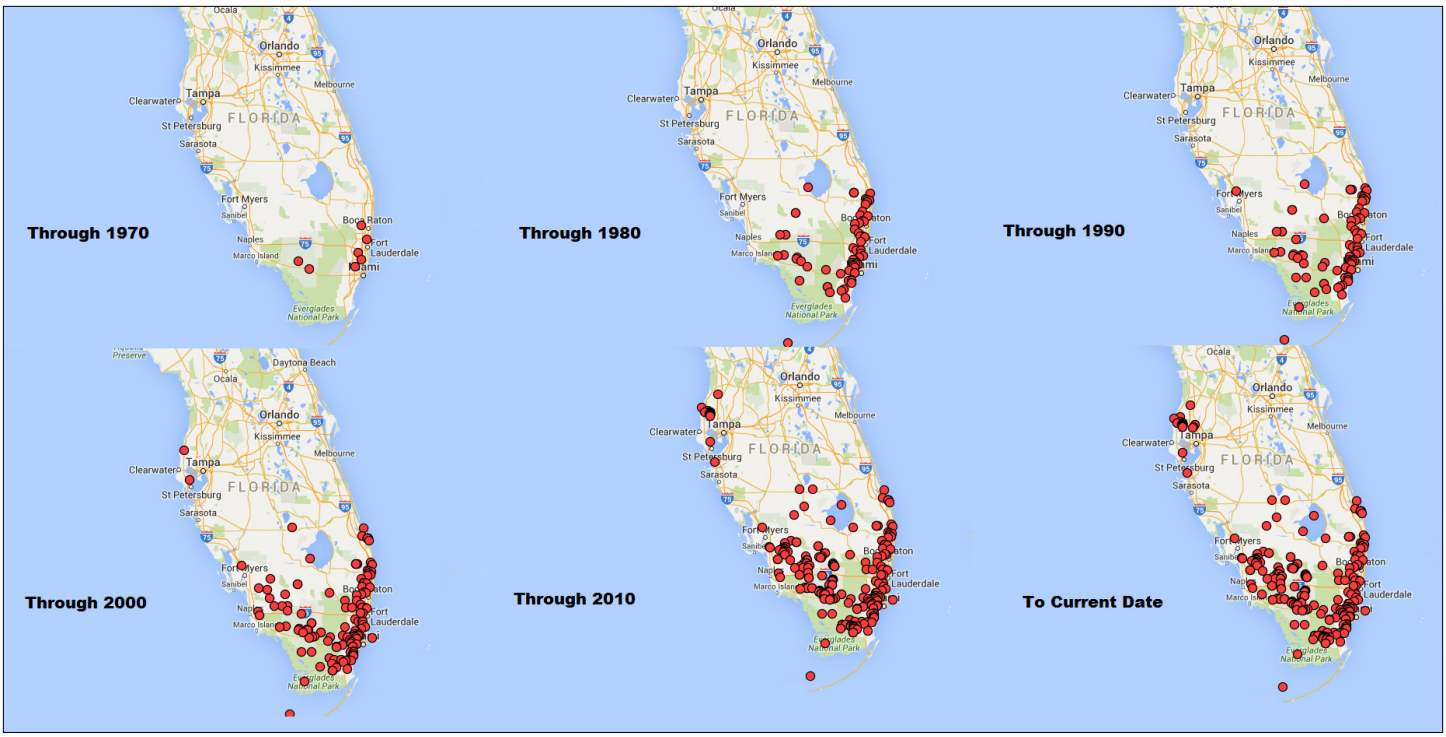

Figure 2. Black Acara locations to date.

listed as 8.9°C (Hallac et al. 2010). Cold weather is likely the only thing that will stop the spread into the northern Florida counties.

Initially, due to the species rapid expansion, it was feared that the Black Acara would become the dominant species across the southern part of the state. Courtenay predicted that at the turn of the century that Black Acara and other cichlids would be the dominant freshwater fishes in Florida. He is quoted as saying, "You can't get rid of them. They have spread too far." (Kahn 1980). It was also predicted that every indication pointed to the Black Acara becoming the dominant freshwater fish in South Florida within a decade (Courtenay et al. 1974). However, more recent studies have actually found that the Black Acara has declined in some locations after an initial population explosion. In the Everglades, it was found that the Black Acara and Pike Killifish (*Belonesox belizanus*) both displayed patterns of rapid population growth followed by decline and a stable lower population (Trexler et al. 2000). They are certainly established and expanding, but they have not taken over the waterways as of yet.

My own experience with Florida's Black Acaras comes mostly from Hillsborough County, although I have also captured some in the Big Cypress National Preserve. Many guides and species descriptions will say that Black Acara prefer ditches and other disturbed habitats but I have found them in almost every habitat in Hillsborough County including headwater streams, ditches, and lakes (Figures 3-4). I have always also found them heavily intermixed with native species, particularly Spotted Sunfish (*Lepomis punctatus*) and Bluegill (*Lepomis macrochirus*). They prefer heavy vegetation and can be found closer to the shore. Additionally, I have never found them to exist except in huge numbers. It is not hard to capture 25 or more within a short span of time.

My future endeavors are to explore the watersheds where the Black Acara has not been reported, but where it most likely exists. I will start with the watersheds to the east and south of Tampa and also examine the watersheds northwest of Lake Okeechobee. I will also try and see if I can find the northernmost range of the Black Acara. I hope to clarify the actual range and add data to the records.

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Figure 3. Black Acara habitat: Sweetwater Creek, Hillsborough County, Florida.

Figure 4. Black Acara habitat: retention pond, Hillsborough County, Florida.

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