Florida Fish and Wildlife Conservation Commission (FWC)
GSARP Report October 2013

Annual Standardized Electrofishing Survey for native and nonnative freshwater fish

This program was designed to monitor native and non-native fish populations in southeast Florida urban canals. These one-day surveys are comprised of 3 daytime, and 6 nighttime transects.

Since 1997, FWC has performed 207 surveys from 39 canals. Six "core" canals are sampled every year along with 6 canal other canals of interest.

2012 Core Canal Results

A total of 2,963 fish were collected in 264 electrofishing pedal minutes from 6 core canals (2 each in Miami-Dade, Broward, and Palm Beach counties). Native fish (19 spp.) comprised 65% of the total catch and exotic fish (15 spp.) were the remainder. Native sportfish (primarily bluegill, redear sunfish, and largemouth bass) comprised 85% of the native fish catch. Spotted tilapia, butterfly peacock, Mayan cichlid, and African jewelfish were the principal exotic fish species collected making up 83% of the non-native fish collected in these samples.

This year's catch rate of largemouth bass ≥10 inches (51 fish/hr) was 24% higher than the previous high of 41 fish/hr set in 2011. This was primarily due to exceptionally high catches of bass in the Palm Beach County canals. The nighttime catch rate of butterfly peacock of 26 fish/hr ≥ 10 inches was within the 16 yr average despite a three year absence from one Broward County canal due to the 2010 winterkill. The 2012 composite catch rate of native (bluegill and redear sunfish) and exotic (Mayan cichlid and jaguar guapote) bream (34 fish >6 inches/hr) was lower than in 2011 but within the range of values observed in these canals during the past 16 yrs.

Stomach content comparison between bowfin and bullseye snakehead

Preliminary findings of bowfin collected from several south Florida locations indicate fish, amphibians, and crayfish were the primary prey items found in 249 stomachs containing identifiable food (n = 210 empty) as part of an ongoing study comparing selected life history attributes of bowfin and bullseye snakehead.

Native fish (12 spp.) were found in 27% of stomachs containing identifiable prey and comprised 41% by weight and 14% by number while exotic fish (7 spp.) were found in 15% of the stomachs and comprised 24% by weight and 16% by number of prey items.

Bluegill, warmouth, and largemouth bass were the dominant prey species by volume but bluefin killifish, bluegill , and warmouth were the primary species by frequency and number. Brown hoplo and walking catfish were the dominant exotic species by volume, number, and frequency. Bowfin consumed a variety of prey including water snakes, sirens, and frogs.

Bullseye snakehead stomach contents were similar to bowfin with fish, crayfish and reptiles the primary prey items in 142 stomachs (n = 66 empty). They also consumed a variety of other prey including frogs, and aquatic insects.

Exotic fish (5 spp.) were more commonly found in the stomachs than natives (8 spp., 21% vs 17%) and comprised 40% of the identified prey volume. The number of native and exotic fish recovered in these samples were similar (20 vs 25).

In these samples, small-bodied swamp darters and bluefin killifish were found in the most stomachs (n = 6) but contributed <1% by weight. A single spotted sunfish was the dominant native by weight (12% of the total). Spotted tilapia was the most frequently consumed and numerically abundant exotic fish identified while Mayan cichlid was the primary fish by volume.

Exotic Fish Status report

Croaking gouramis (left) and Jack Dempsey were collected from interconnected sites on several dates from locations centered at the Loxahatchee National Wildlife Refuge. Prior to these collections, croaking gouramis had not been collected for >15 yrs and were thought to be extirpated from Florida. Historically, Jack Dempsey are discovered, persist and reproduce for a short time, then disappear only reappear several years later in a new location.

Arapaima Risk Screen

Arapaima is a large, predatory freshwater fish from South America. There is commercial interest in producing arapaima as a food fish in Florida. This species is regulated by FWC as a conditional species. Current regulations allow for the culture of this species as food on aquaculture facilities certified by Florida Department of Aquaculture and Consumer Services (FDACS) and permitted for conditional species. FWC awarded a grant to UF to conduct a risk screening on Arapaima that included a bioprofile, applying the Fish Invasiveness Scoring Kit (FISK) to estimate level of risk, and provide research and management recommendations.

The FISK results placed arapaima in the medium risk category with SE Florida the area most likely to support arapaima. However, current conditional species regulations (FWC and FDACS) appear adequate to mitigate risk but could be strengthened if deemed necessary. The bioprofile identified data gaps, primarily lower lethal temperature sensitivity, but also potential predation impacts, control options, and invasion history.

Exotic Species Coordination Section Changes In June 2012, Kristen Sommers was hired as the new ESC Section Leader. In May 2013, after 42 yrs at the same location, the doors to the Non-Native Fish Laboratory were closed for the last time. Non-Native Fish staff were relocated to the Loxahatchee NWR in Boynton Beach and the Herp Team moved its headquarters to the University of Florida's Ft. Lauderdale Research and Education Center in Davie. Grants and legislative allotments provided funds to hire 2.5 additional staff for non-native terrestrial species issues. The ESC section absorbed the five Regional Wildlife Assistance Biologists and hired a Biological Administrator to oversee them. These biologists respond to nuisance wildlife calls (>13,000 last year; primarily bears and coyotes but includes many other wildlife species) and conduct site visits and outreach activities. ESC awarded a contract to UF to continue Everglades Invasive Reptiles and Amphibian Monitoring Program and to fund Early Detection, Rapid Response efforts.

Marine Aquatic Nuisance Species

Lionfish

FWC is concerned about potential ecological, social and economic impacts this species may have in Florida. In an effort to have a more coordinated effort between agencies to address lionfish issues, FWC is hosting a 3-day Lionfish Summit in October. Stakeholders including state, federal, academic and non-profit institutions along with dive clubs, commercial fishing interests and interested members of the public will meet to define the current status of lionfish in Florida, identify research and management needs and develop strategies to address these needs.

In 2012, FWC passed an Executive Order that was turned into rule in 2013 governing the take of lionfish by divers to facilitate their removal. This rule allows SCUBA and snorkelers using pole spears, Hawaiian slings, a handheld net or any spearing device specifically designed and exclusively marketed towards lionfish to harvest them without a recreational fishing license. There is no commercial or recreational harvest bag limit for lionfish.

Beginning in 2010, FWC added lionfish questions to their recreational spiny lobster fishing survey to capture additional information on distribution, abundance, and stakeholder opinions. The surveys are collected from people from around the state that participate in the 2-day Mini Season and the first month of the regular season. In 2011 and 2012, >50% of the divers that fished for lobsters during the survey period observed lionfish and reported on locations. This information is being incorporated into outreach materials developed from the surveys.

FWC initiated an offshore monitoring program in 2008 (the SW Florida Shelf Project) using trawls, video and still cameras, and traps to gather data on Gulf Coast fishes. These multi-species surveys are being conducted on soft bottom and reef habitats along the Gulf Coast in 10m-100m depths. Lionfish have only recently been collected and photographed in these surveys and the data is still being analyzed. Lionfish caught in the trawls are being sent to a graduate student at the Gulf Coast Regional Laboratory for further processing. These surveys will provide valuable information on the rate of range expansion, and abundance of lionfish in deep water habitats generally inaccessible to divers.

FWC researchers received two lionfish grants. One grant is investigating the use of the Indian River Lagoon by lionfish and is gathering baseline data on habitat use, demographics, and diet composition. The second is attempting to identify key habitats affected by lionfish and the response of native fishes on these habitats to the removal of lionfish.

Asian Tiger Prawn

Tiger prawns appear to be in low abundance along the Florida coast but FWC has a species profile posted on the website and reporting process in place. A news release providing the reporting information was generated in 2011 after the discovery of a tiger prawn near Panama City. The recent report of a tiger prawn in Port Charlotte Harbor will likely result in an updated news release to increase public awareness of this relatively rare but potentially problematic species along Florida's coastline.

FWC South Florida Herp Team

The Burmese python is a large, semi-aquatic constrictor that has an established population in south Florida, primarily in the Florida everglades. FWC sponsored the month-long Python Challenge in January-February 2013 in an effort to raise public awareness of the Burmese Python in Florida and to assess the effectiveness of an award-based competition as a management tool for problematic non-native species. There were a total of 1,582

registrants that included state permitted hunters and the general public. Despite unseasonably warm temperatures, a total of 68 Burmese pythons were captured and turned over to the University of Florida for data collection. Although this number may seem small, this is the most pythons ever actively removed from these lands within this short of a time frame. A human-dimensions study was also conducted regarding the python challenge. This data will help managers assess the status of Burmese pythons on state lands and develop options for containing and controlling them. We are currently writing up the results on this project for publication. If you would like more information about this project, please contact Kristen Sommers at Kristen.Sommers@MyFWC.com.

Permitting

A total of 264 permits were issued this year for the possession of Conditional, Prohibited or non-native species. The largest number of permits (n = 142) were issued to the Python Patrol. The Python Patrol program trains people, especially employees with state and federal agencies, utility companies, and natural areas that are likely to encounter pythons in their work, to safely and humanely respond to python observations throughout the state.

Education, Outreach, Inter-agency cooperation

Non-native Pet Amnesty Program 10/2012-4/2013

- Five amnesty events were put on during 2012-2013, four were sponsored by FWC (in bold below), one was hosted by outside parties with reduced support from FWC.
    - **Davie (October 2011)**
    - **Jacksonville (November 2012)**
    - **Fort Myers (March 2013)**
    - **Miami (April 2013)**
    - Gainesville (April 2013)
- Everglades National Park grant
    - 4 events held, 1 event remains (Ft. Walton Beach scheduled for October 2013)
- 321 total animals surrendered through pet amnesty program during 2012-2013
    - **125** surrendered via amnesty events (primarily snakes, turtles, lizards, and small mammals)
    - **196** surrendered outside amnesty events via 1-888-IveGot1 hotline
- 13 outreach events were attended to solicit adopters and promote pet amnesty program
- **346** people signed up at these events to receive more information about pet amnesty program.

Other Outreach

This year staff helped organize the annual Everglades Cooperative Invasive Species Management Area summit and participated in the fourth annual Exotic Fish Roundup hosted by ECISMA. Staff collected bulllseye snakehead catch data from four Snakehead Round-Up tournaments and provided fillets that were professionally prepared and served along with green iguana and caiman at two Python Challenge events to promote consumptive use of exotic species.