Current Distribution and Status of Blackbanded Sunfish in Florida

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What:
- The Blackbanded Sunfish Enneacanthus chaetodon is a smaller member of the centrarchid family that inhabits low pH waterbodies with dense submerged aquatic vegetation
- Ranges from Delaware to Florida
- Has experienced apparent population declines range-wide
- A species of greatest conservation concern in the Florida State Wildlife Action Plan

Why:
- Not state listed in Florida
- A species of greatest conservation need in the Florida State Wildlife Action Plan
- Current data on Blackbanded Sunfish are limited to sporadic museum collections, which are insufficient to assess the current distribution and status of Blackbanded sunfish in the state
- A range-wide survey is needed to support an updated Biological Status Review (BSR) for Blackbanded Sunfish

Questions:
1. What is the current distribution of Blackbanded Sunfish in Florida?
2. Have populations persisted at historical collection locations?
3. How does detectability of Blackbanded Sunfish compare to co-occurring species?

Introduction

Methods

Site Selection
Potential habitat identified using Google Earth Satellite imagery.

- Sites considered suitable if:
  - Held water through drought
  - High proportion of aquatic vegetation coverage
  - Locations within watersheds with historical collections were prioritized

Sampling Timeframe

- 93 surveys conducted across 87 sites
- Blackbanded Sunfish detected at 5 sites

Results

- No Blackbanded Sunfish detected at any of the pre-2000 collection locations.
- 1 new site discovered in Orange National Forest (Furnace Faire and 2 adjacent ponds)
- 1 new site discovered in Madison County (Sampal Lake)
- Detected at 1 known location (Lake Rachael, Madison Co.)

Discussion

1. Similar to previous surveys, Blackbanded Sunfish were rarely encountered (3 of 93 sites) even during targeted surveys in suitable habitat. However, at occupied sites, Blackbanded Sunfish were easily detected using seine hauls (p < .05) and detectability was not different appreciably from other small-bodied species that occupy similar habitat. Detectability was likely influenced by abundance. Blackbanded Sunfish populations have declined in Florida. Wetlands typically occur in areas that support unusually dense populations of Blackbanded Sunfish, or were singing more effectively than at other sites. In order to better assess these assumptions, repeated surveys at known sites are needed at multiple points in time and additional measures of seine haul efficacy should be included in future models.

2. Based on our data, the best Blackbanded Sunfish occupancy model from our candidate set predicts the presence of Pygmy Killifish and Bluegill Sunfish in a seine-haul is a positive predictor of detection, including the presence of species that require similar habitat as Blackbanded Sunfish allows us to adjust detection estimates to account for hauls that may have been less effective due to depth or vegetation density. The model also predicts that the likelihood of presence in the state will be occupied by Blackbanded Sunfish is higher at sites where Bluegill Sunfish, Bluegill Killifish, and Longear Sunfish have been collected.

Future Directions:

- Our results are heavily influenced by a small number of positive detections. Additional surveying may reveal new populations which would improve our model predictions.
- Our detection results are heavily dependent on the assumption that detectability among some hauls conducted on a single day are independent and that single hauls are equally effective across sites and time. It is possible that our 5 detections were at locations that support unusually dense populations of Blackbanded Sunfish, or were singing more effectively than at other sites.
- Additional surveying at multiple points in time and additional measures of seine haul efficacy should be included in future models.