

Red Swamp Crayfish *Procambarus clarkii*

Renovation Efforts in Florida

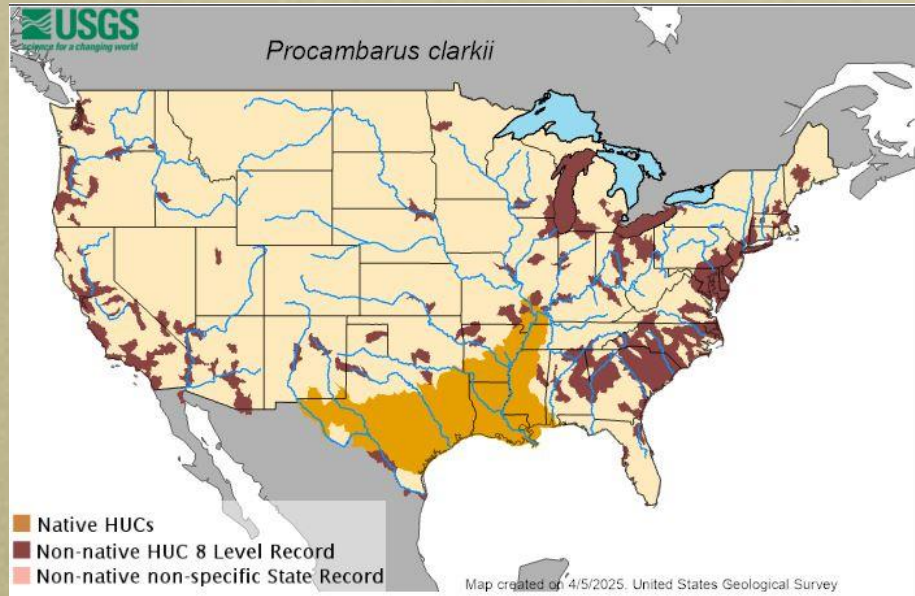


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Nonnative Fish and Wildlife Program

Florida Fish and Wildlife Conservation Commission

Background



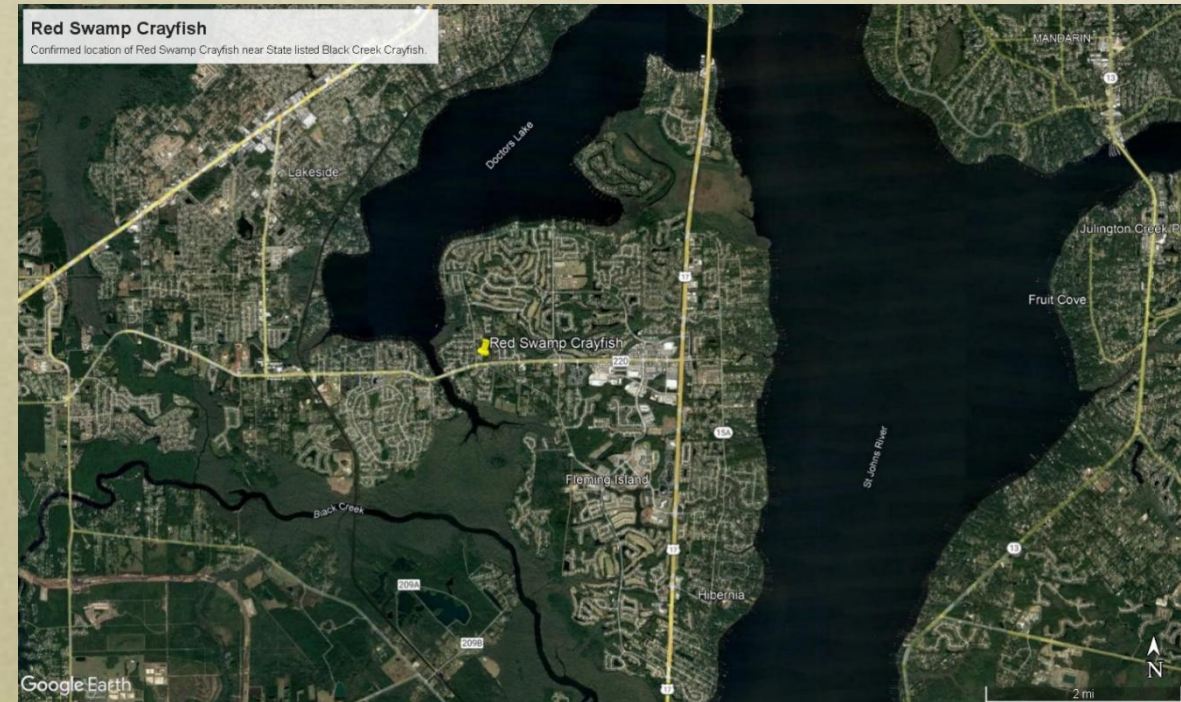
Native (gold) and introduced (brick red) ranges of Red Swamp Crayfish in the United States.

- Red Swamp Crayfish are native to Gulf Coast states including Escambia River drainage in FL and Mississippi River drainage to Illinois
- High socioeconomic value as food
- At least 21 states with introduced populations
- Global invader
- Competition with native crayfish, bio-engineers, opportunistic feeders
- Erode shorelines, levees, reduce macrophytes,
- Parasite vectors, etc.



Fleming Island Red Swamp Crayfish

- First observed in drainline access in August 2022
- Immediately reported through EDDMapS
- Confirmed by SMEs in FWC
- In close proximity to State Listed Black Creek Crayfish (BCC)
- BCC threatened by native White-tubercled Crayfish
- Developed FWC EDRR team (NFWP, IPM, HSC, FWRI, CR, LE)



Florida Crayfish Species of Interest

Black Creek Crayfish (*Procambarus pictus*)

- State Designated Threatened Species



Field Identification

- Areola (space between the two sections of carapace immediately behind the head)
- Much wider in native species (ex. *Procambarus paeninsularis*, left) than *P. clarkii* (RSC), right

White-tubercled Crayfish (*Procambarus spiculifer*)

- Large, white tubercles on chelae
- “Candy-striped” markings on legs



Introduction Site



Crossroads Lutheran Church Stormwater Drainage System 9-3-2022



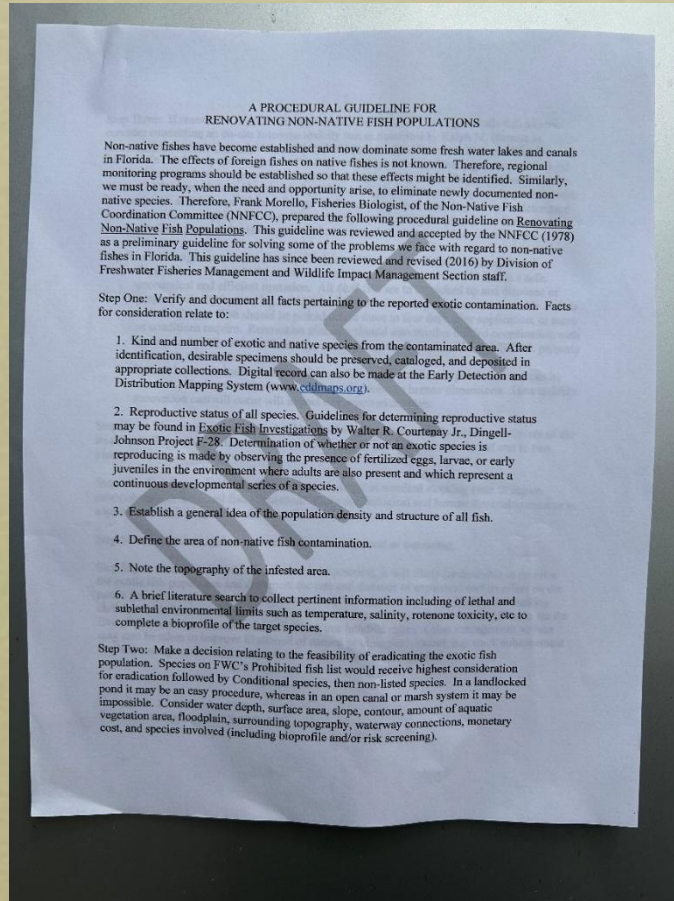
<https://earth.google.com/web/@33.10781219,-81.7401813,14.5264157z,71.6664366d,367.0h,0.0t>

- Crossroads Church
- <0.25 ac retention pond and drain lines
- Drain lines with access covers



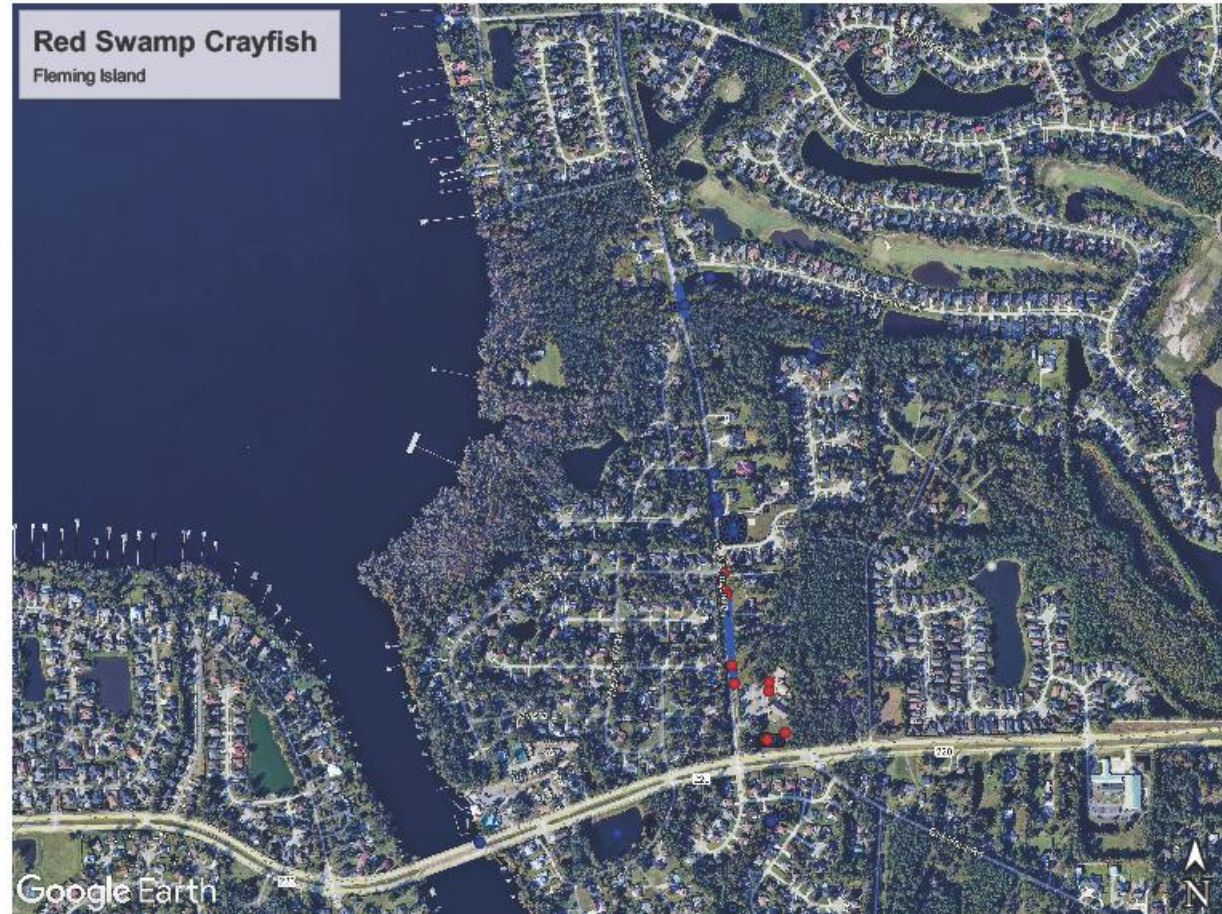
Population Assessment

August-September 2022



Distribution

August-September 2022



Red circles = Red Swamp Crayfish collected; Blue circles = sampled but no Red Swamp Crayfish collected



Renovation Preparation in September 2022



Copper Applications In September and October 2022



Copper Applications in September and October 2022





Copper Results

- 1st treatment (Sept 2022) – target of 4 ppm; 0 sentinels died, collected live and dead RSC from drains
- 2nd treatment (Oct 2022) – target of 4ppm; 4 of 6 sentinels dead, **almost** all in drains dead
- Pond trapping catch rates dropping
- **December 2022 trapping yielding juveniles!**



Next Steps

- Met with Michigan researchers
- Obtained EPA and NDPES exemptions for pyrethrins (not approved for aquatic use)
- Pond is small and not for angling
- Partially plug all drains
- Treat drains and pond with 2 ppm pyrethrin and piperonyl butoxide
- Monitor pond by trapping, dig up or treat any burrows
- Keep fingers crossed!



Pyrethrin Applications in December 2022



Pyrethrin Application Results From December 2022

- No live RSC recovered from drains and pond
- Monitor pond by trapping, dig up any burrows (none found post-treatment)
- Pond trapping did not yield any RSC 6 weeks post-application
- No RSC in February and June 2023 pond sampling efforts
- **Collected in pond only September 2023 and February 2024**



Pyrethrin Application Results From April 2024

- Due to continued collections only in pond, decided to renovate again
- Repeated December 2022 methods
- Found 2 RSC in burrow post-treatment (may explain recolonization of pond)
- Pond trapping did not yield any RSC 12 months post-application
- Will continue to monitor pond
- Cautiously optimistic!

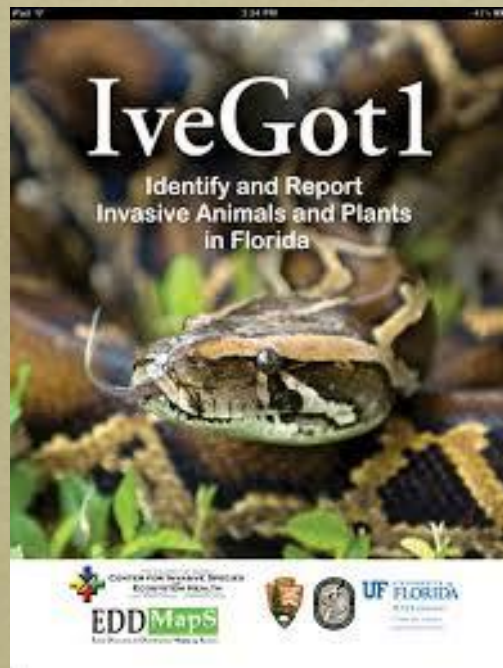


Reporting

By phone: 1-888-Ive-Got1; (888-483-4681)

Online: www.IveGot1.org

App: download the IveGot1 reporting app.



Some Take Home Points

- Early reporting, confirmation, and response critical
- Develop good rapport with landowner
- It takes a village – cooperation from Crossroads Church, many FWC groups, UNF
- If at first you don't succeed, try, try again!
- Species specific challenges, e.g., burrowing

Thank you!

