

Revisiting the non-native range of the blue land crab, *Cardisoma guanhumi*, in the Southeast United States



Elizabeth Underwood Scott (SCDNR Wildlife Biologist)* and
Daniel Sasson, Michael Kendrick, and Peter Kingsley-Smith
*SCDNR Marine Resources Research Institute,
Crustacean Research and Monitoring Section*
*scotte@dnr.sc.gov





Talk Outline



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1. Potential Impacts
2. Objectives



Talk Outline

1. Potential Impacts
2. Objectives
3. Distribution across southeast United States
4. Distribution in South Carolina
5. Overview of life history, ecology of the species
6. Knowledge gaps/future directions



Potential Negative Impacts

- Large migrations on land across roads
- Extensive burrowing can destabilize sediment
- Destroy crops, lawns, gardens, parks, and golf courses
- Pools of water in burrows can provide breeding ground for mosquitoes





Objectives





Objectives

- Sporadic historical reports from 1997 to 2020
 - 12 reports total
- Influx of reports summer 2022
 - 5 reports in August alone



- **What is the history of distribution across US?**
- **What is the current distribution in South Carolina?**



C. guanhumi in the United States

- Historical reports pulled from iDigBio (museum specimens)
- 1919—Key West, FL
- 1921—Miami, FL
- 1936—Silver Springs, FL
- 1944—Fort Pierce, FL
- 1963—Brownsville, TX





C. guanhumi in the United States

- Reports pulled from iNaturalist
- 2006—Corpus Christi, TX
- 2008—Marineland, FL
- 2017—Elmer's Island, LA
- 2019—Brandenton, FL
- 2021—Galveston, TX
- 2021—Perdido Key, FL
- 2021—Fernandina Beach, FL
- 1997—Charleston, SC





***C. guanhumi* in South Carolina**



C. guanhumi in South Carolina

SCDNR Reporting Form for Blue Land Crabs

On what date did you observe a blue land crab(s)?

11/9/2022

At what time of day did you observe it/them?

☐ Dawn

☐ Morning

☐ Afternoon

☐ Evening

☐ Dusk

☐ Nighttime

Where did you see the crab(s)?*

Find address or place

Can not find your location. Please check your browser to ensure that your location is shared.

Johns Island
Charleston County GIS. Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, U.S. Coast Guard. Powered by Esri

Lat: Lon:



Please provide a detailed description of location.*

We are especially interested in gathering photos of blue land crab sightings. Please upload any photos you took of the animal here.

1 Drop image here or select images

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C. guanhumi in South Carolina

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--- NEWS RELEASE ---
For Immediate Release



Report sightings of non-native blue land crab



Dr. Peter Kingsley-Smith holds a young male blue land crab recently caught in the Charleston area. (Photo: E. Weeks/SCDNR)

CHARLESTON COUNTY, S.C. (September 2, 2022) – If you live near the South Carolina coast and encounter what looks like an enormous fiddler crab, South Carolina Department of Natural Resources (SCDNR) biologists want you to snap a photo.

After a spate of recent reports of the blue land crab (*Cardisoma guanhumi*), SCDNR



Reports: September-November 2022



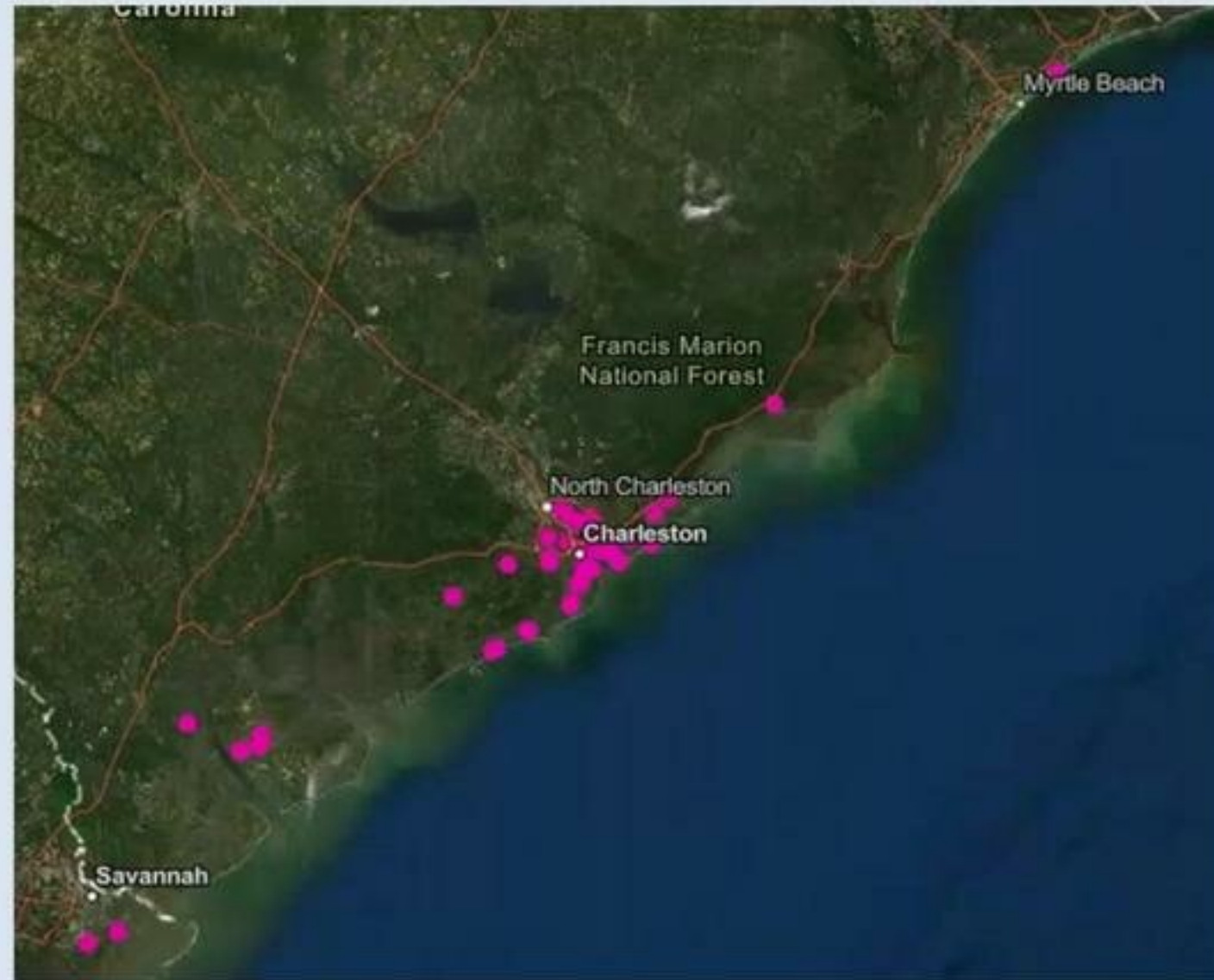
Reports: September-November 2022

- 100 total reports
- 66 confirmed sightings of *C. guanhumi*



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- 100 total reports
- 66 confirmed sightings of *C. guanhumi*
- Savannah to Myrtle Beach
- Concentrated in Charleston area





Reports: September-November 2022

- Variety of habitats:



Reports: September-November 2022

- Variety of habitats:
 - Estuaries
 - Roads/driveways/sidewalks
 - Forest
 - Ditches
 - Beach
 - Garages
 - Lawns





Reports: September-November 2022

- Importance of submitting photos for verification
- Other common species submitted:
 - Ghost crab
 - Fiddler crab
 - Mud crab
 - Stone crab





Cardisoma guanhumi

- Semi-terrestrial crab
- One of four species in the genus *Cardisoma*
- Found along Atlantic coast, from Brazil to South Florida, and throughout the Caribbean, Bahamas, and the Gulf of Mexico
- Distribution confined by water temperature and salinity requirements of larvae





Habitat



Habitat

- Dig extensive burrows 3-5" wide and 6' deep in firm, muddy areas
- Seal burrows with leaf litter during molting
- Near estuaries and riverbanks
- Urban areas
- Can tolerate freshwater and saltwater





Morphology

- Adults reach 6" across the carapace
- Adult males are usually blue-gray





Morphology

- Adults reach 6" across the carapace
- Adult males are usually blue-gray
- Females can be blue-gray or white/ash-gray
- Juveniles dark brown, orange or purple





Morphology

- Both sexes have one larger claw
- Males typically larger than females
- Sexes can be differentiated based on the shape and size of the abdominal apron





Life Cycle

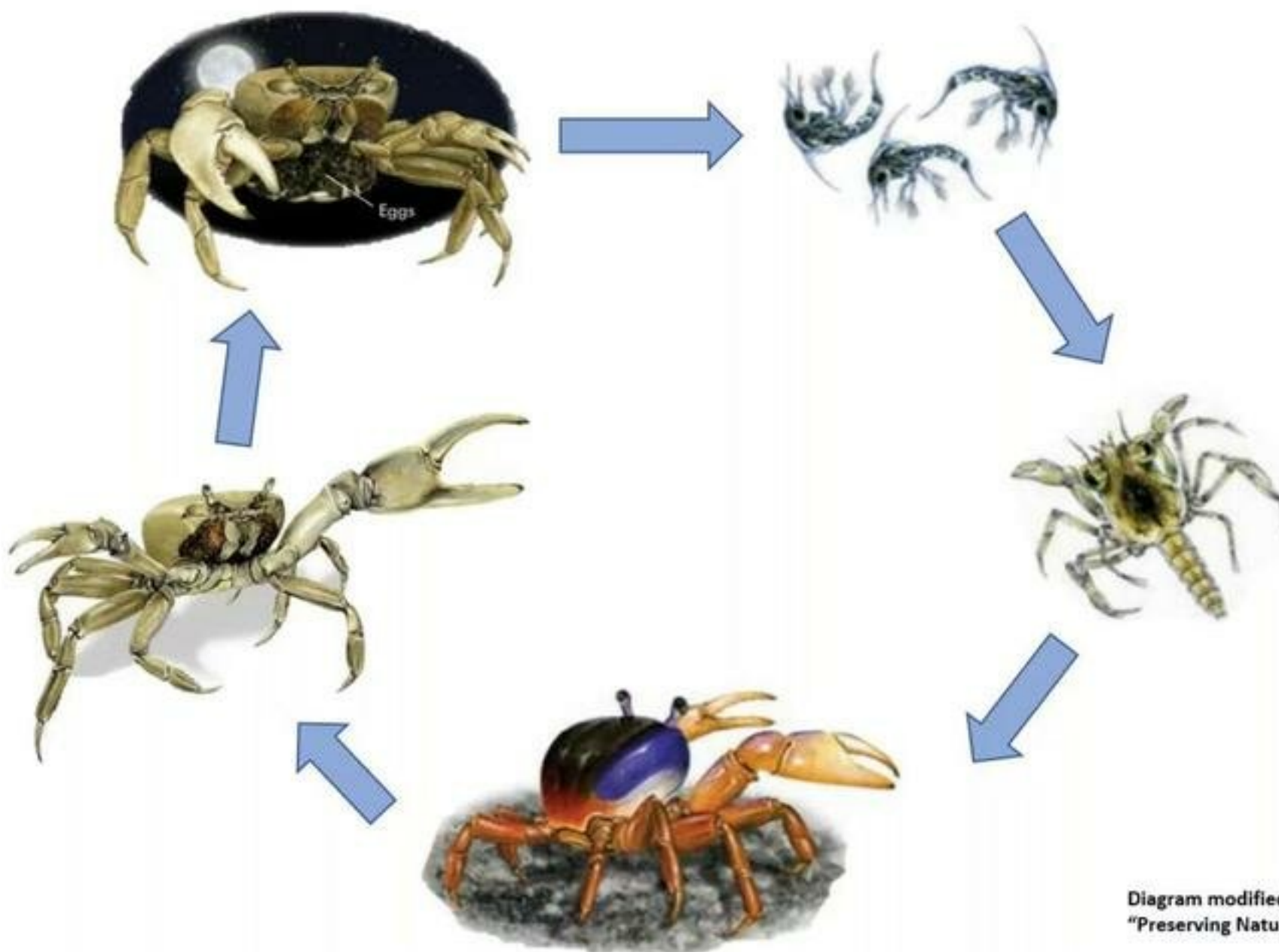


Diagram modified from: Loxahatchee River District,
"Preserving Nature by Design" Poster Series, No. 4



Behavior



Behavior

- Most active at night and after large rains





Behavior

- Multiple life stages in one area
- Individual burrows
- Feed on fruits and vegetables but also insects, carrion, and feces





Economic Impacts



Economic Impacts



Photo credit: Ashely Anguin



Human Connections



Human Connections



ALL ANDROS CRABFEST
CELEBRATES IT'S 15TH ANNUAL CRABFEST
QUEEN'S PARK, FRESH CREEK, ANDROS
JUNE 7TH- JUNE 10TH 2012

"THE ART OF CRAB CATCING IS IN THE HEART OF ANDROSIAINS"
DON'T MISS THIS OPPORTUNITY TO LEARN A HUNDRED AND FIFTEEN WAYS TO CATCH,
PENIN, COOK AND EAT AN ANDROS CRAB.
ENTRANCE TO THE PARK: CHILDREN \$5.00 - ADULTS \$10.00
FOR AIR TRAVEL CALL: LEAIR - 242-225-3267/377-
SEA TRAVEL: M/V SEALINK - 242-323-2166
FOR FURTHER INFORMATION: 242-368-2286 FAX: 368-2285



Human Connections





Human Connections





Ecological Impacts



Ecological Impacts

- Play important role in shaping coastal forests, especially mangroves
 - Leaf litter processing, soil aeration, creation of carbon-rich soil microhabitats
 - Affect tree recruitment by preferential feeding
- Burrows provide habitat for arthropods and other species





Future Questions



Future Questions

❖ Widely distributed and established in South Carolina in a variety of habitats

➤ **How did they get here?**

- Human mediated introduction or range expansion?
- Population genetic studies
- Better understanding of distribution and history of sightings in the United States



Future Questions

➤ Potential impacts?

- Shoreline destabilization?
- How could they affect native species?
- Habitat overlap with species of conservation concern?



Future Questions

➤ **What are their physiological tolerances?**

- Salinity and temperature tolerance
- Multiple life stages—larvae, megalope, juveniles, adults
- Regional differences in tolerances?
- Determining these tolerances can help predict their potential future expansion



Acknowledgments

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Thank you!

