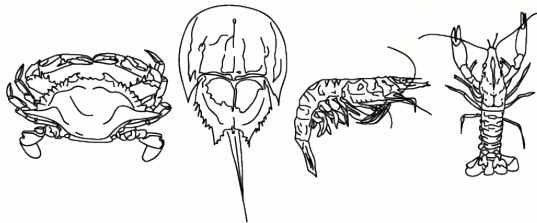


Patterns of host-symbiont associations in native and non-native crayfish

Greg Rothman¹, Graham Wagner¹, Kristina M. Hill-Spanik²,
Isaure de Buron² & Michael Kendrick¹

¹South Carolina Department of Natural Resources, Marine Resources Research Institute

²College of Charleston, Department of Biology

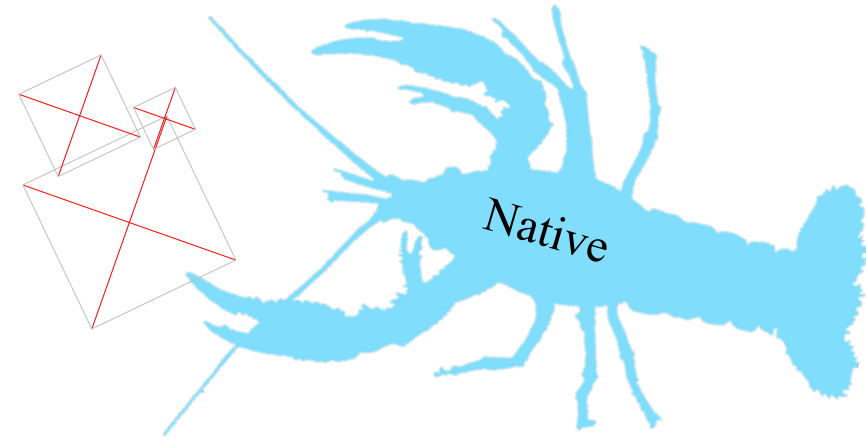


crustacean research & monitoring section

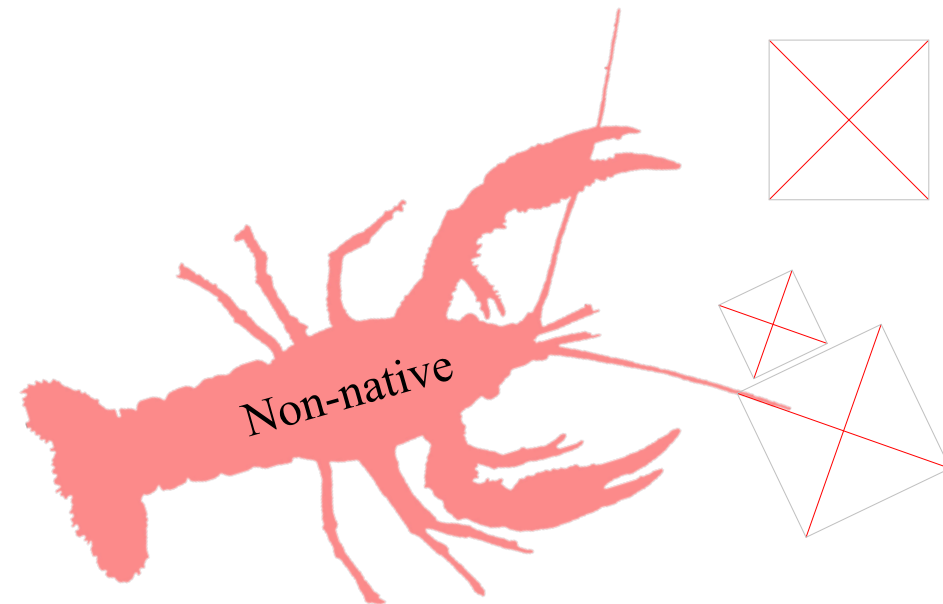
- **Non-native species can alter ecosystems**



- Non-native species can alter ecosystems

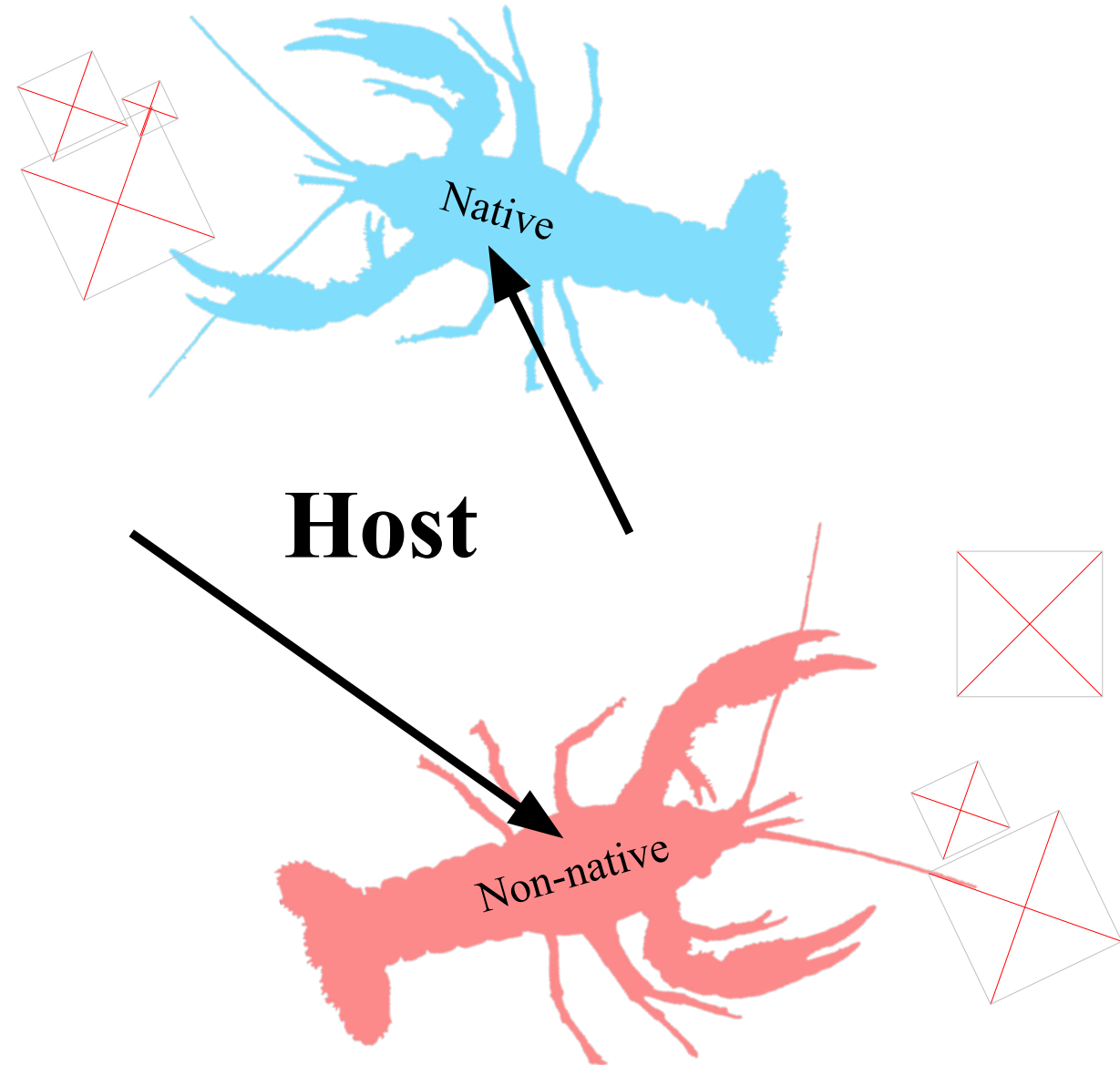


- **Introductions can alter symbiont communities**



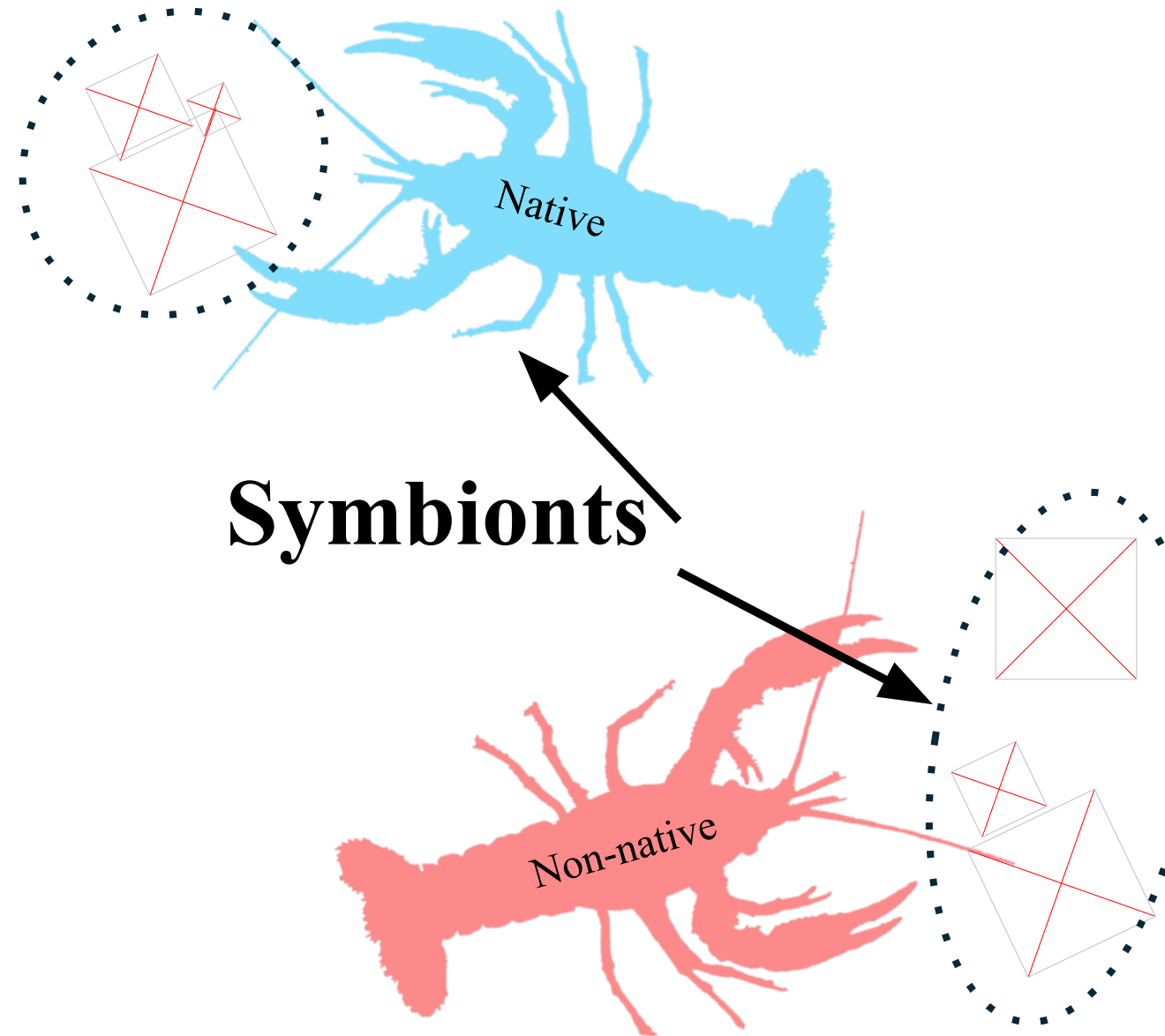
- Non-native species can alter ecosystems

- **Introductions can alter symbiont communities**



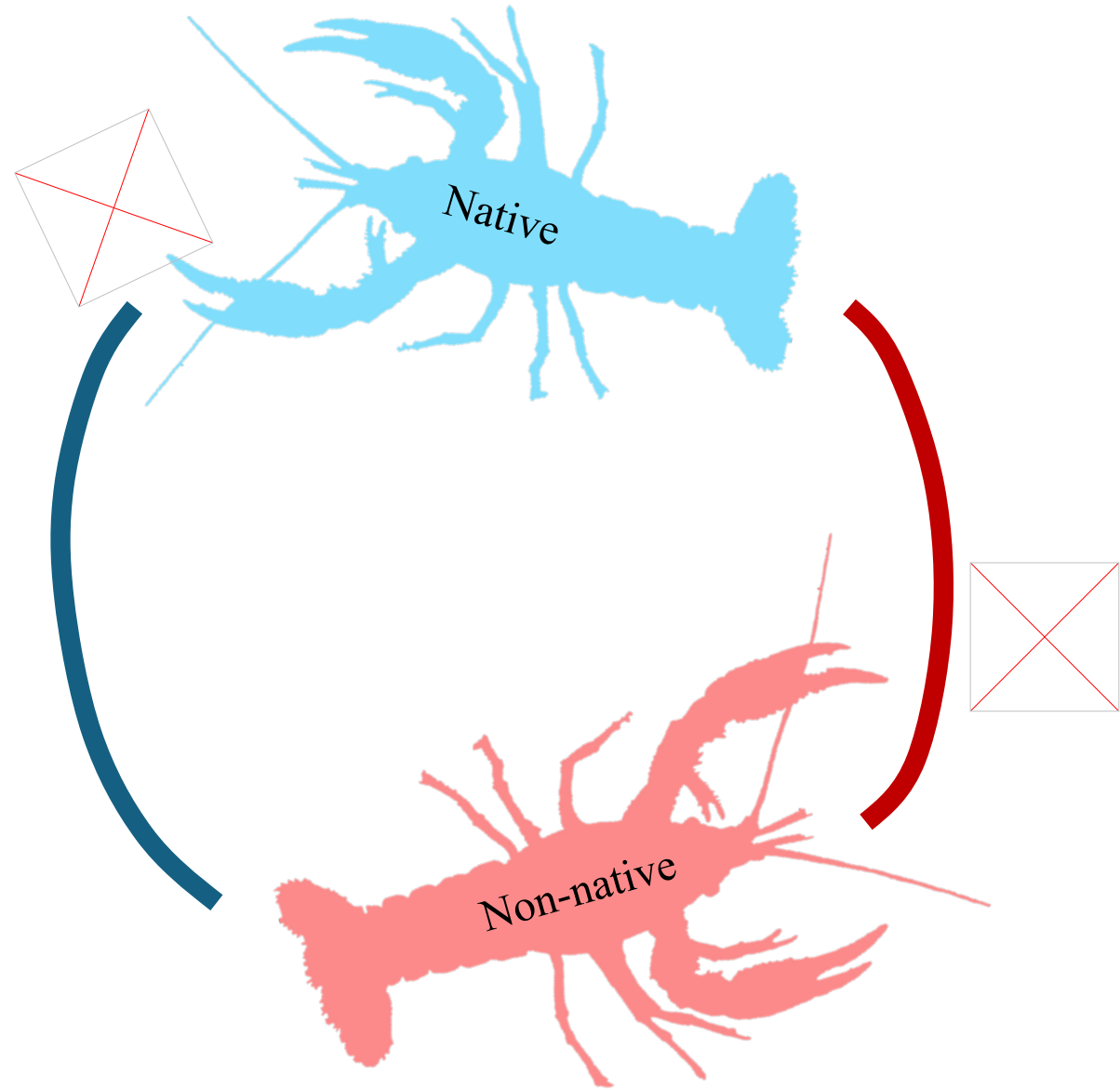
- Non-native species can alter ecosystems

- **Introductions can alter symbiont communities**



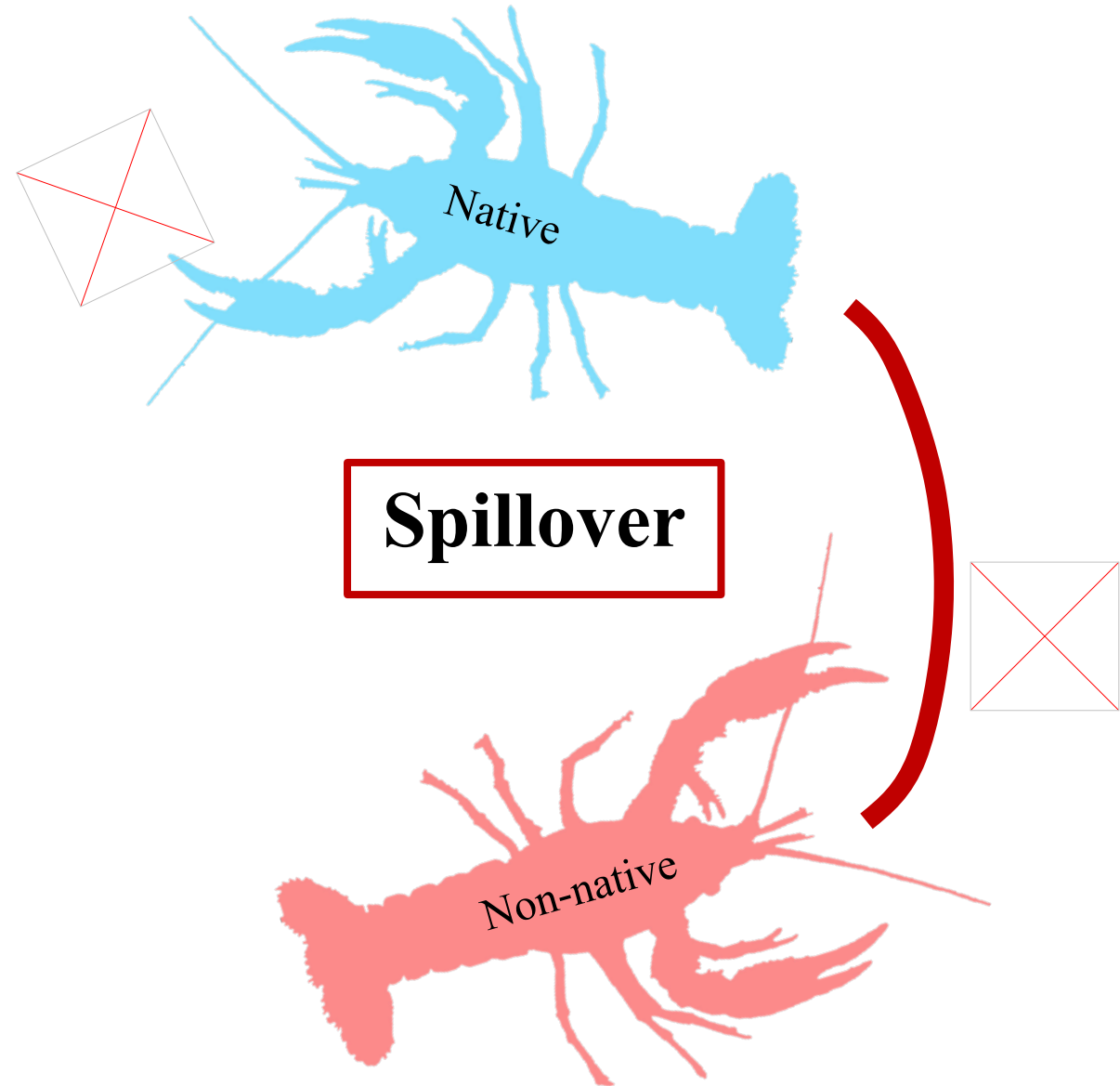
- Non-native species can alter ecosystems

- **Introductions can alter symbiont communities**

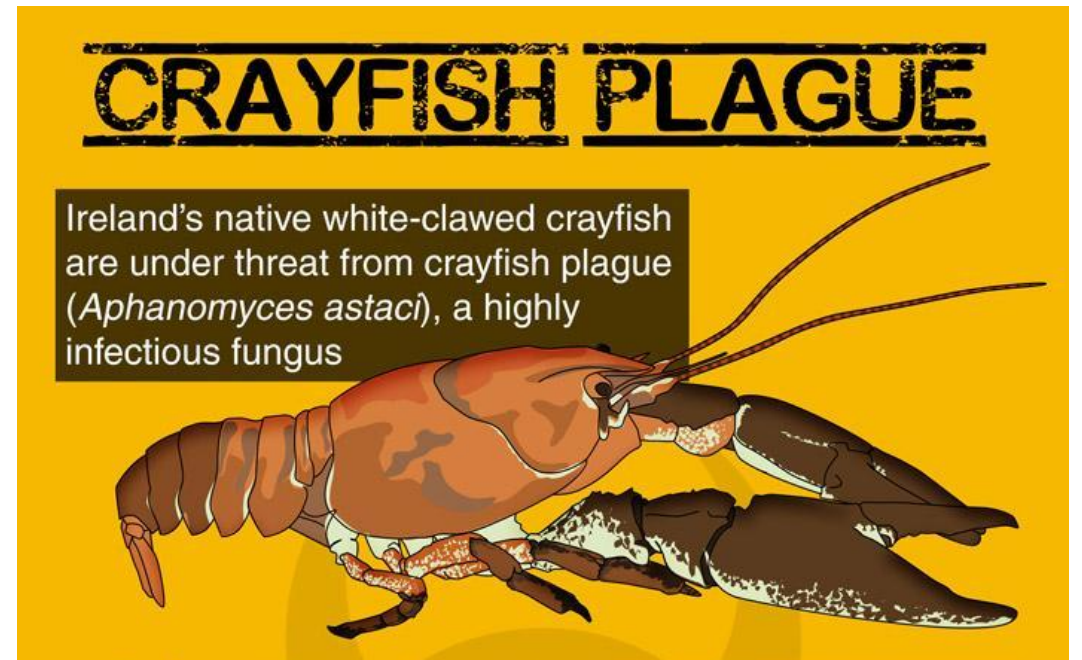


- Non-native species can alter ecosystems

- **Introductions can alter symbiont communities**

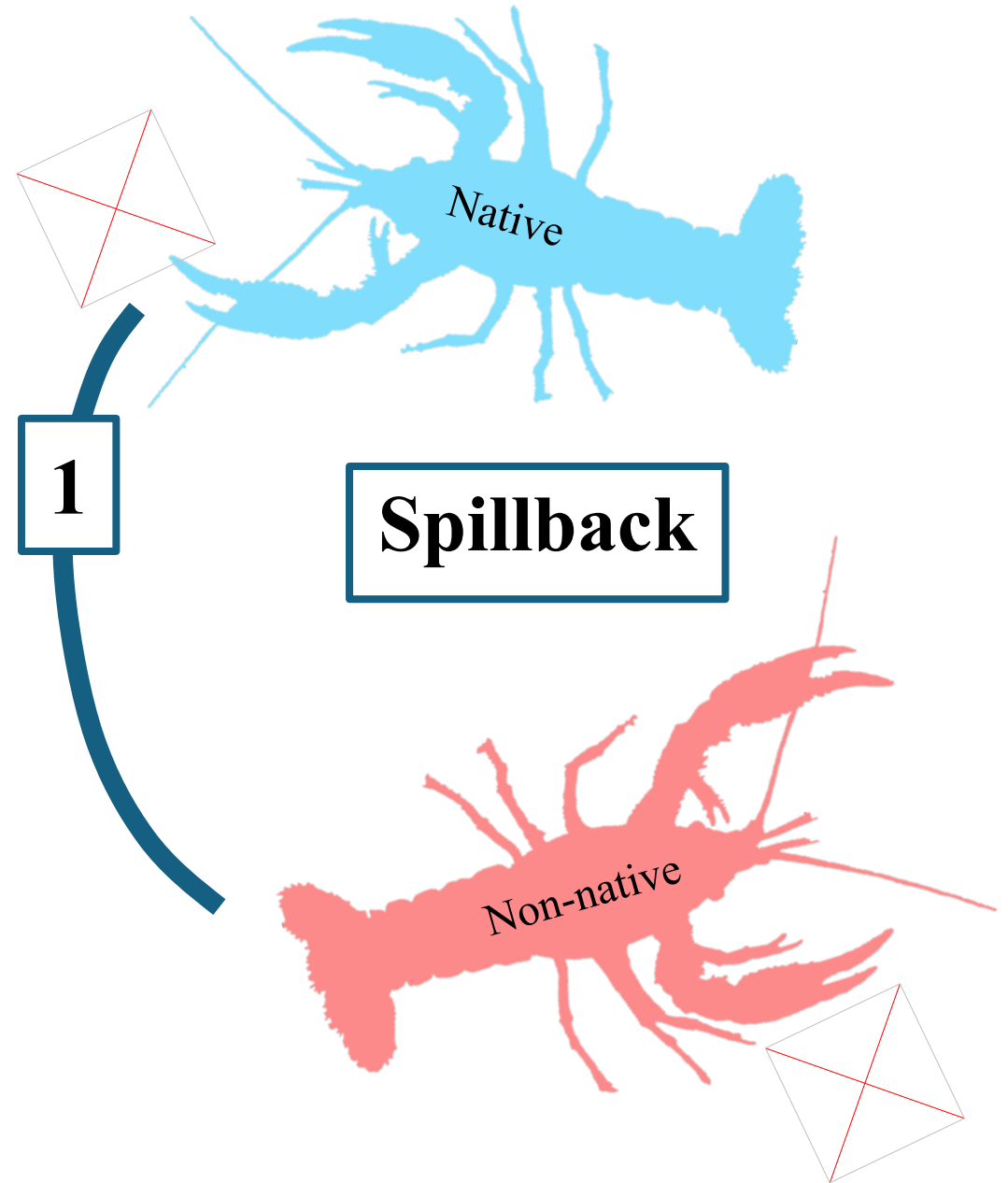


- Non-native species can alter ecosystems
- **Introductions can alter symbiont communities**

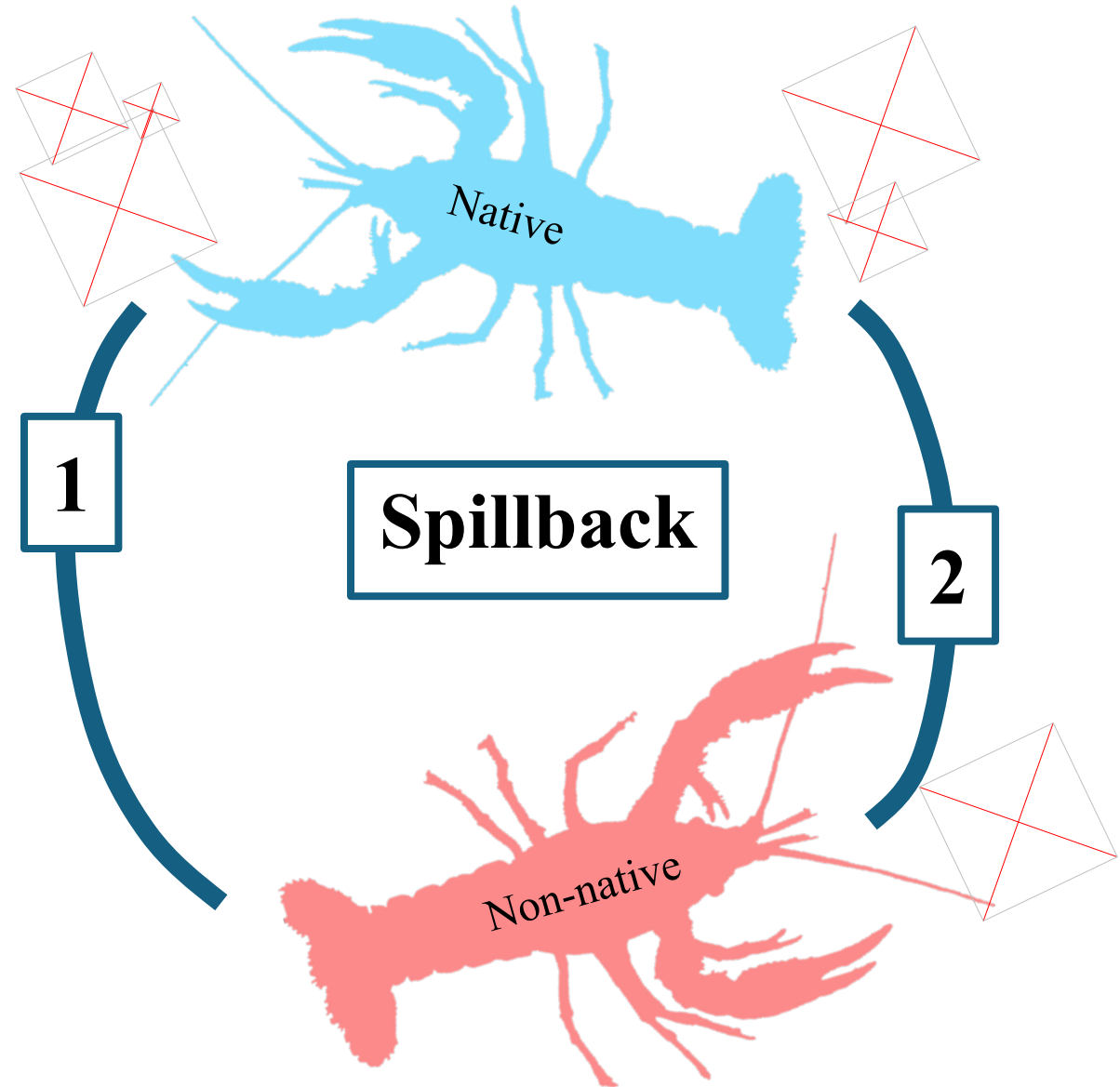


Linda Pitkin (2020) Freshwater Habitats Trust

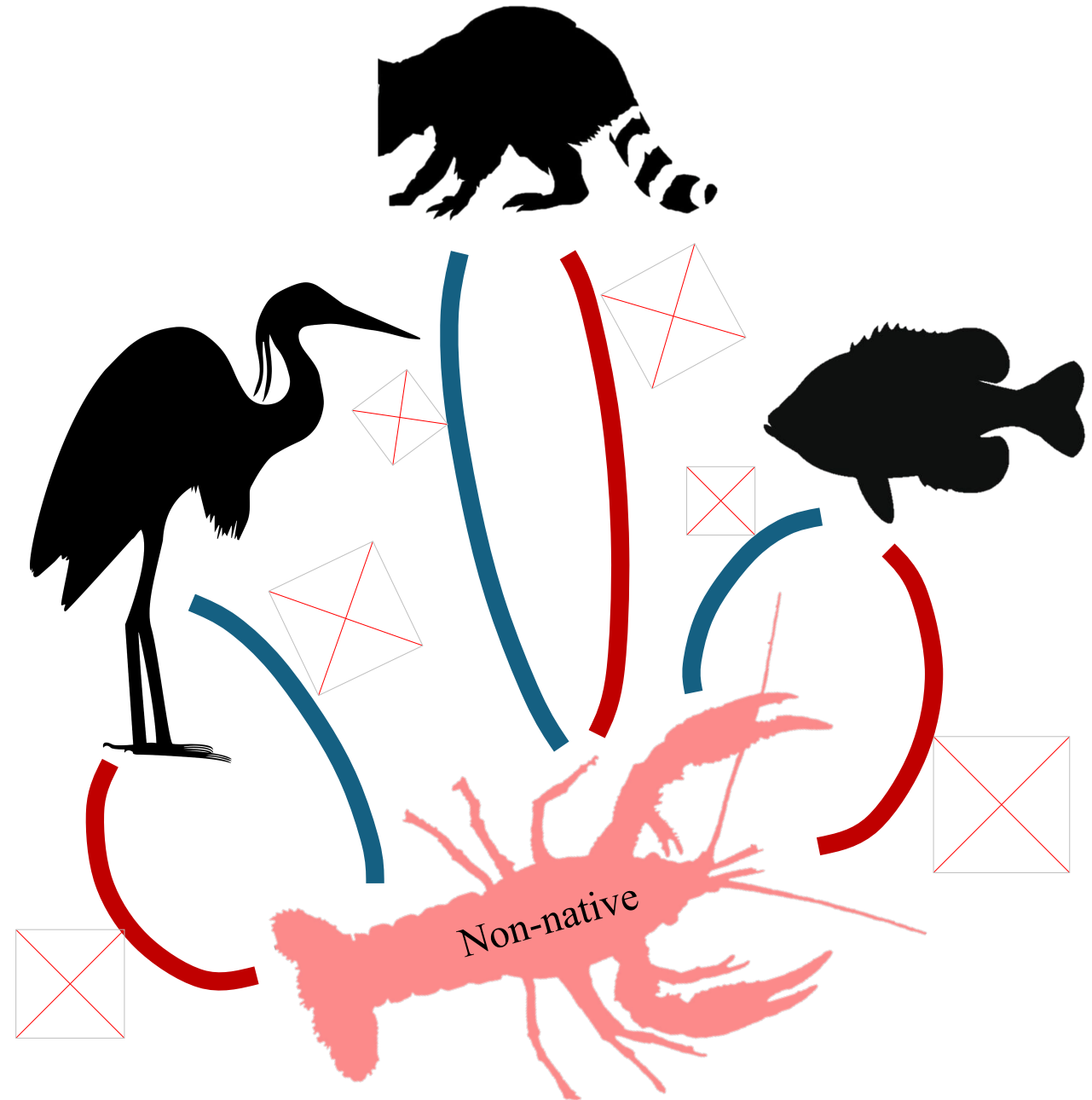
- Non-native species can alter ecosystems
- **Introductions can alter symbiont communities**



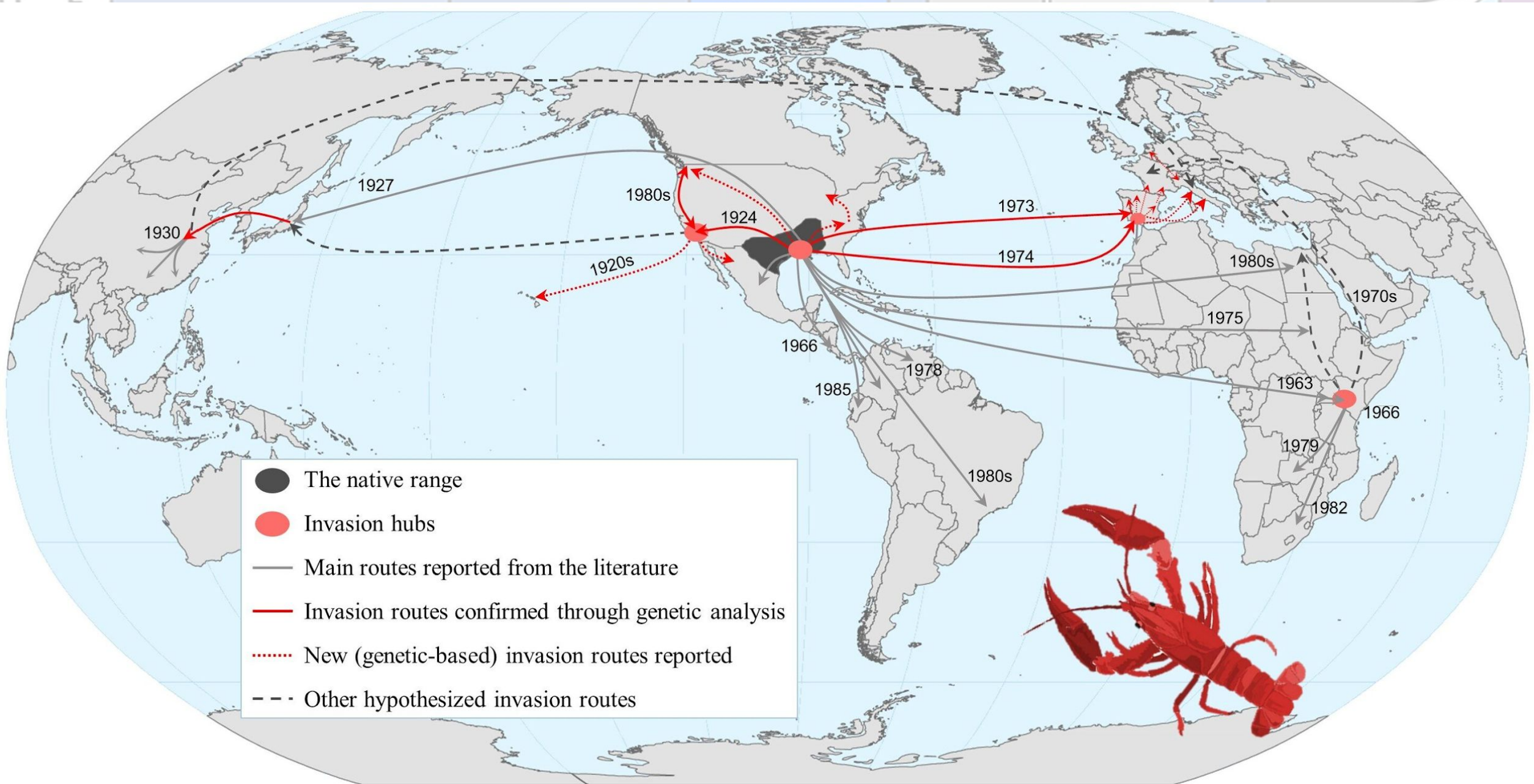
- Non-native species can alter ecosystems
- **Introductions can alter symbiont communities**



- Non-native species can alter ecosystems
- Introductions can alter symbiont communities
- **Trophic transmission adds complexity**







- The native range
- Invasion hubs
- Main routes reported from the literature
- Invasion routes confirmed through genetic analysis
- ⋯ New (genetic-based) invasion routes reported
- - - Other hypothesized invasion routes

A large, vibrant red crayfish is the central focus, standing upright in a swampy forest. The forest is filled with tall, thin trees and a ground covered in green algae. The crayfish's large claws are raised, and its body is a bright, textured red. A red-bordered box is superimposed over the middle of the image, containing the text "Non-native" and "*Procambarus clarkii*".

Non-native

Procambarus clarkii

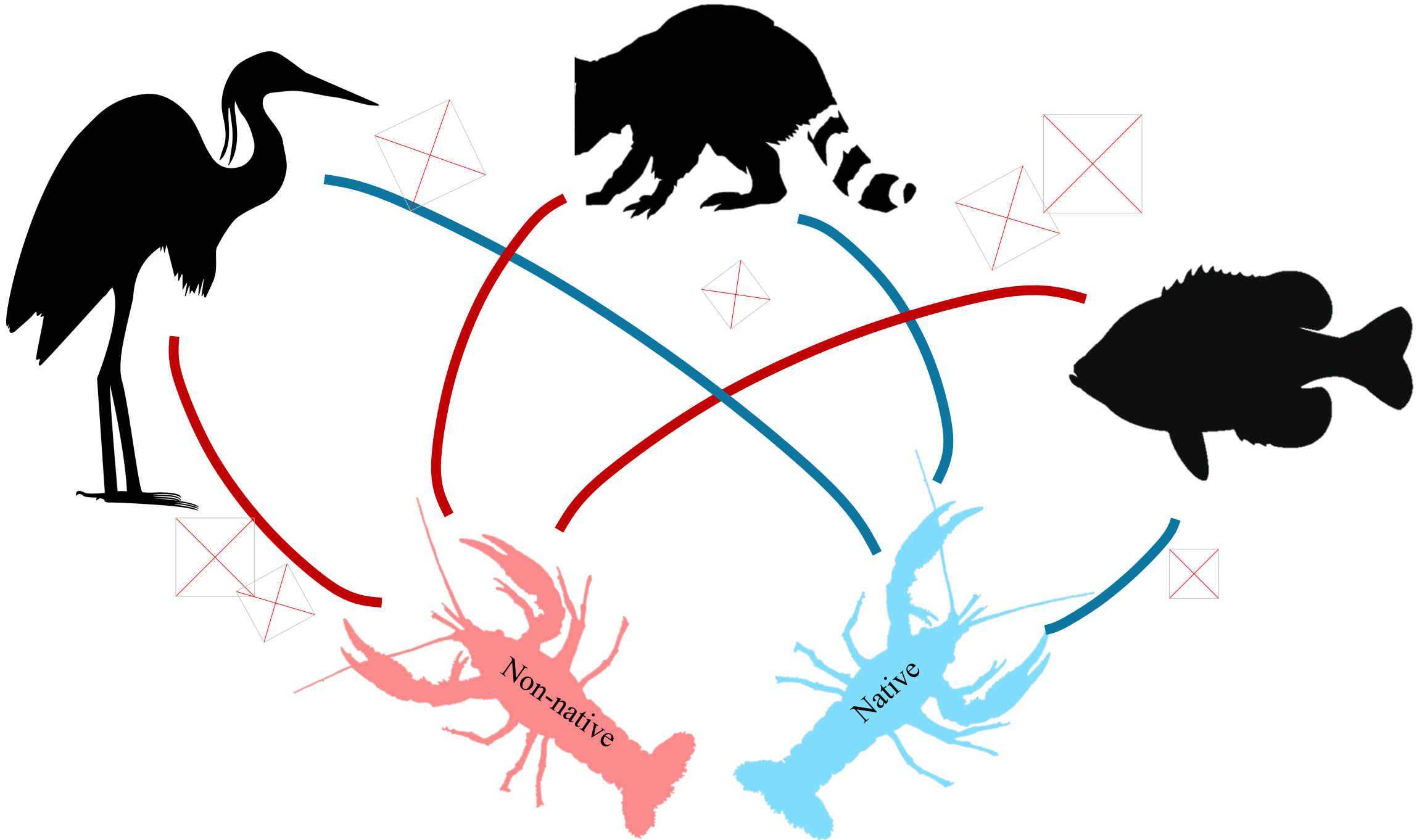


Native

Procambarus troglodytes

Non-native

Procambarus clarkii



Objectives



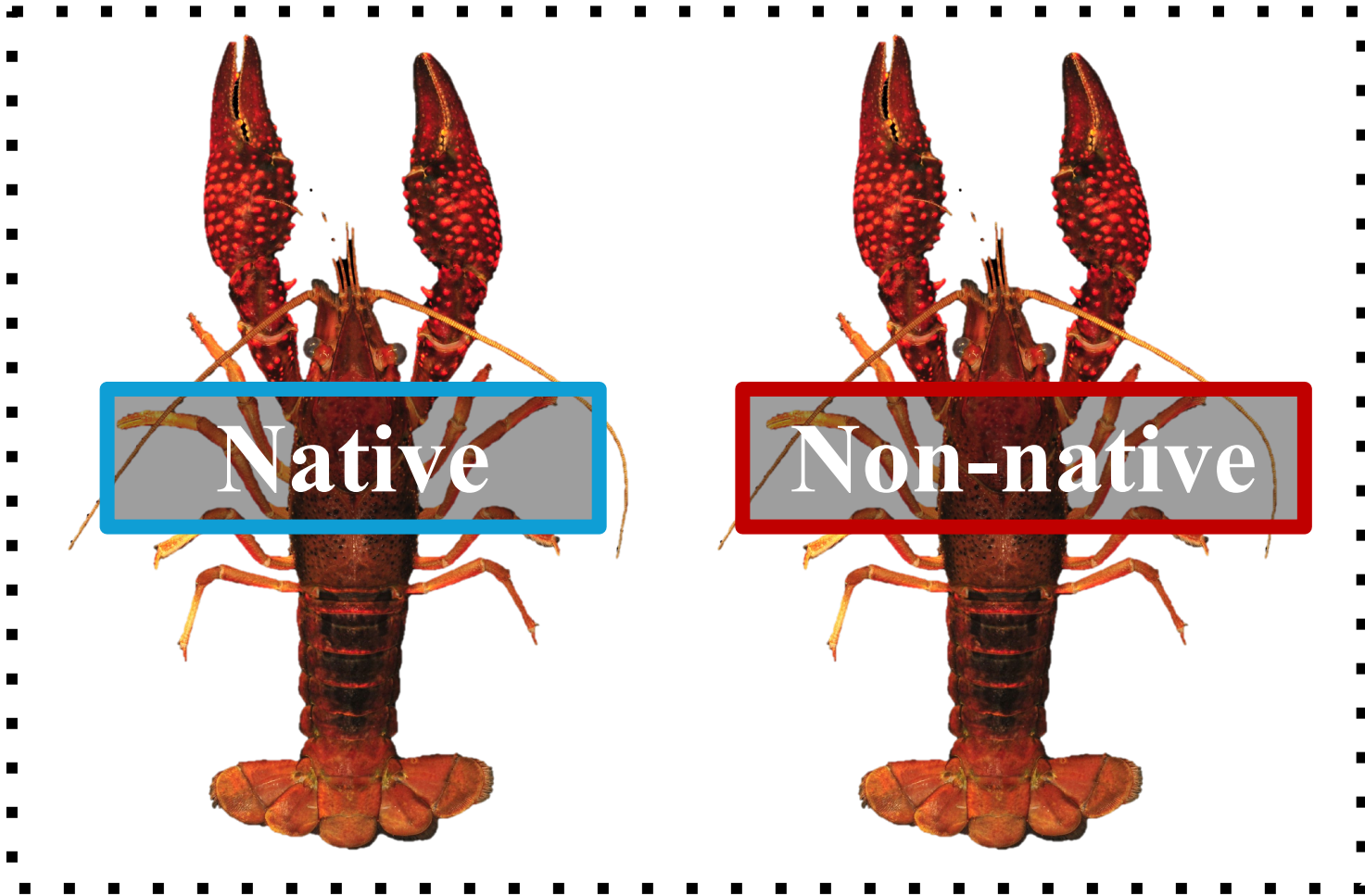
1. Identify symbionts of congeneric crayfish in native and non-native ranges
2. Compare infection by trophically-transmitted symbionts in syntopic crayfish populations

Objectives



- 1. Identify symbionts of congeneric crayfish in native and non-native ranges**
2. Compare infection by trophically-transmitted symbionts in syntopic crayfish populations

Review known symbionts of both crayfish species

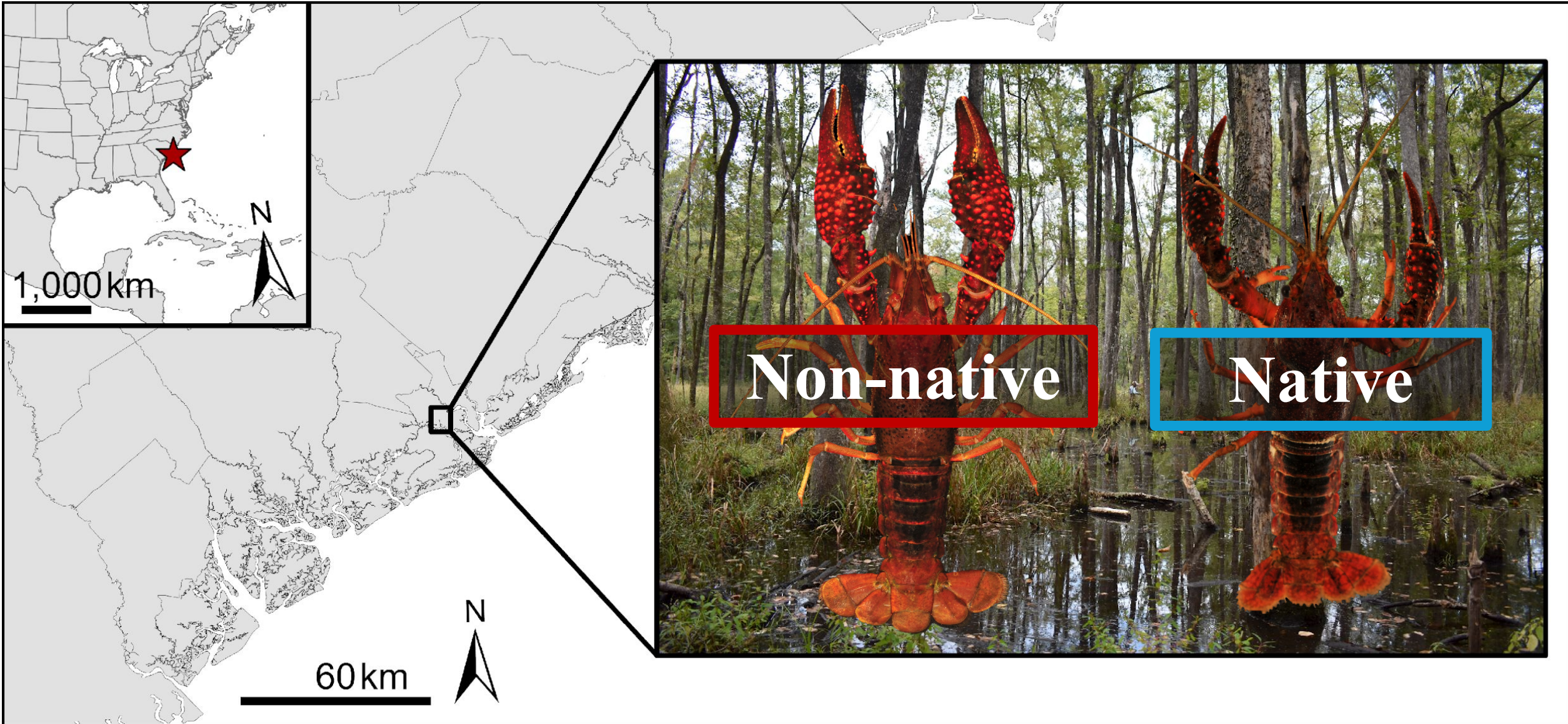


P. clarkii

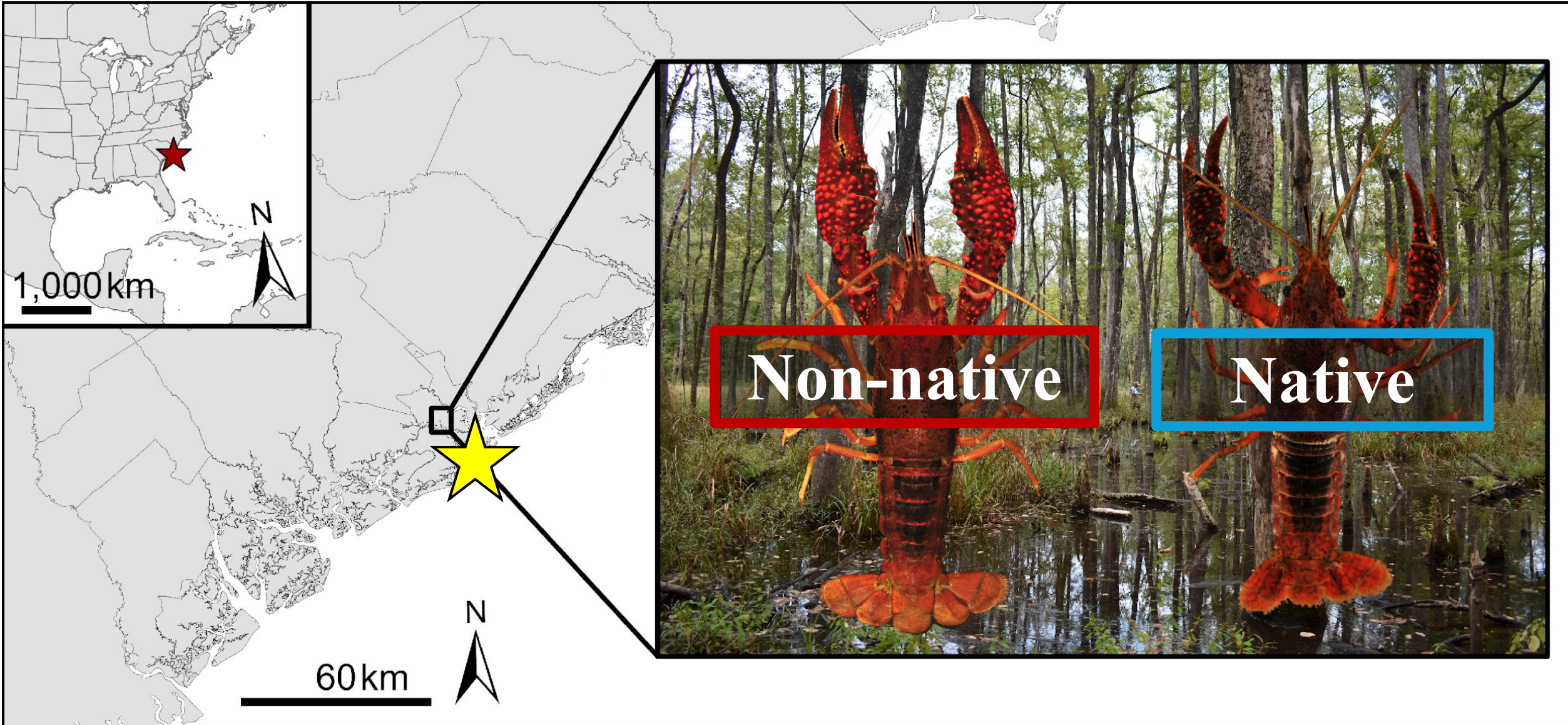


P. troglodytes

Screen for symbionts in syntopic crayfish system



Screen for symbionts in syntopic crayfish system



Native

36



P. clarkii

Non-native

85



P. troglodytes

Native

18

Native

36

Shared

14

85

Non-native



P. clarkii

Native

36



P. clarkii

Native

18



P. troglodytes

Shared

8

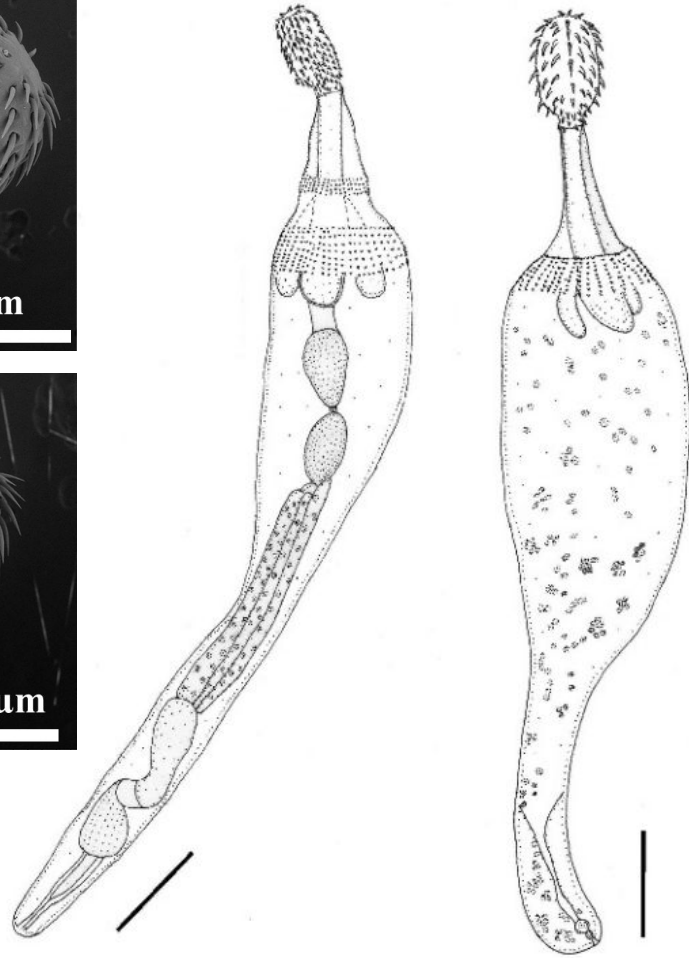
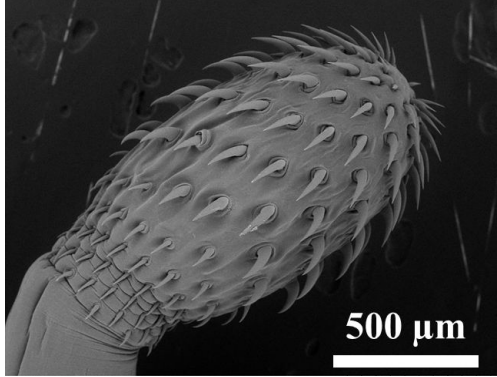
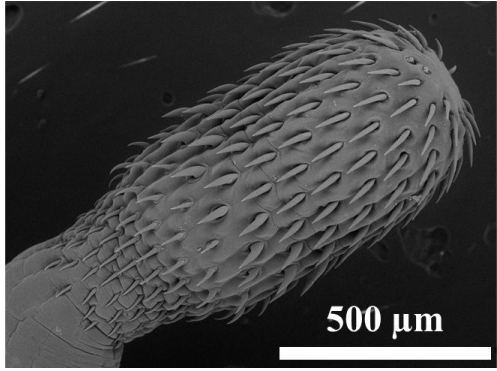
85

Non-native

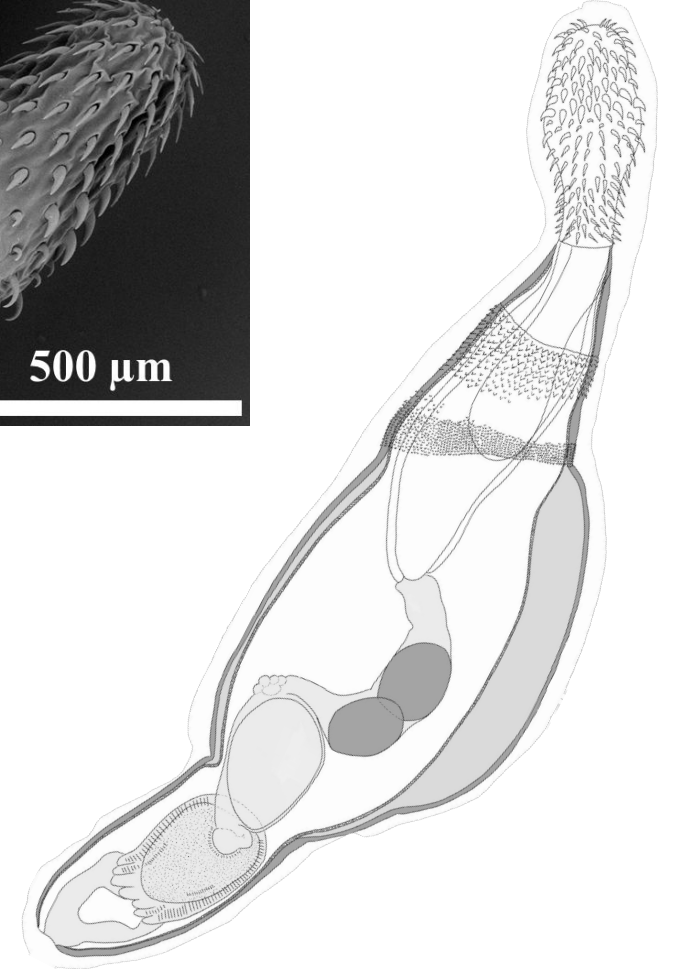
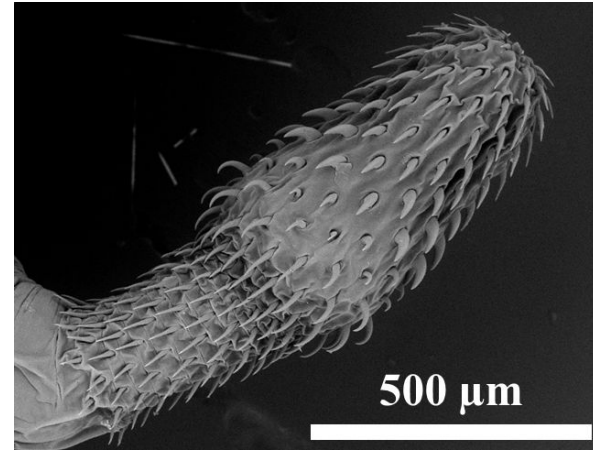
Objectives

A detailed illustration of a crayfish, showing its characteristic red and brown coloration, large pincers, and long antennae. The crayfish is positioned centrally, resting on a large pile of small, yellowish, irregularly shaped pellets, likely representing its food source. The background is a plain, light color, making the crayfish and its food stand out.

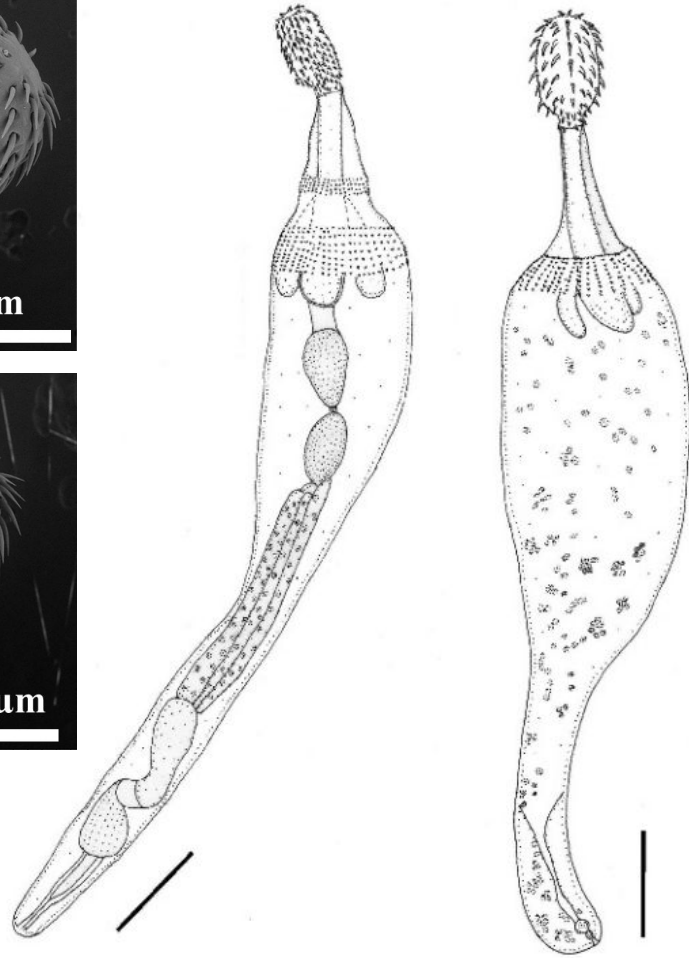
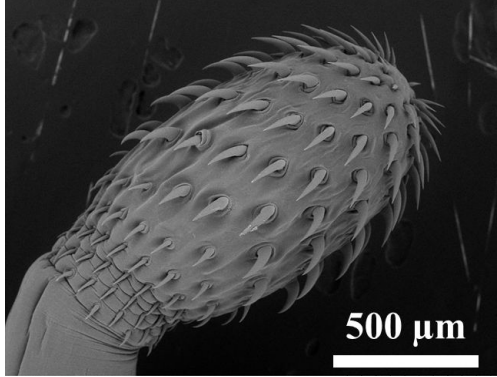
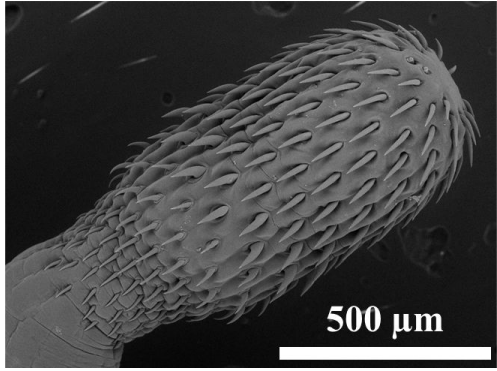
- Identify symbionts of congeneric crayfish in native and non-native ranges
- **Compare infection by trophically-transmitted symbionts in syntopic crayfish populations**



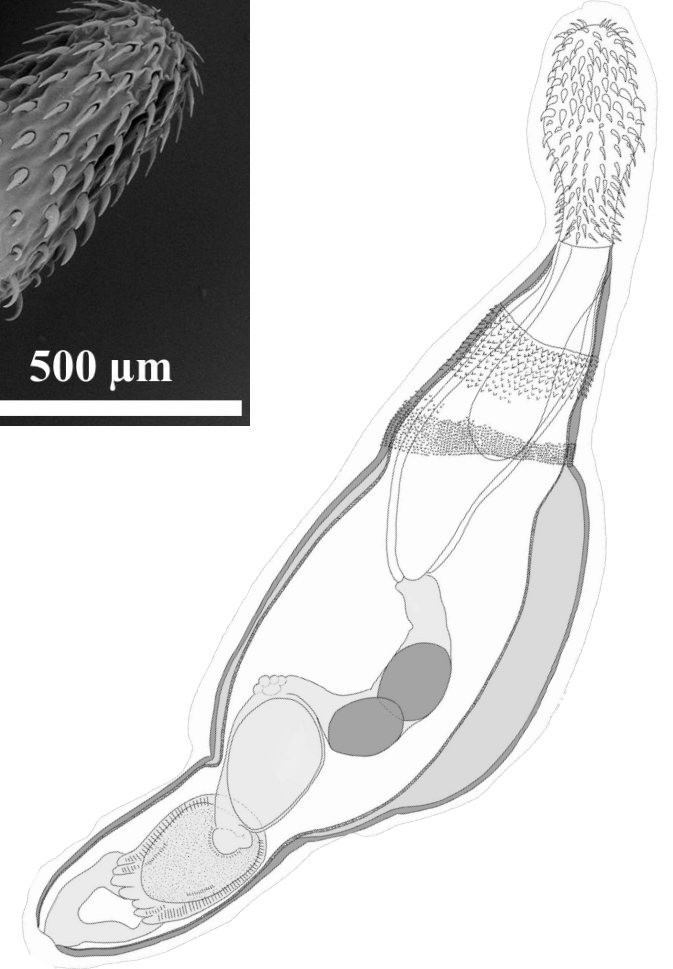
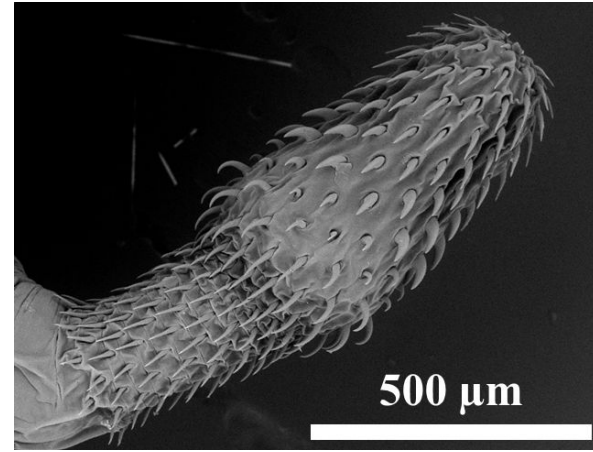
Ibirhynchus dimorpha



Heterospinus mccordi

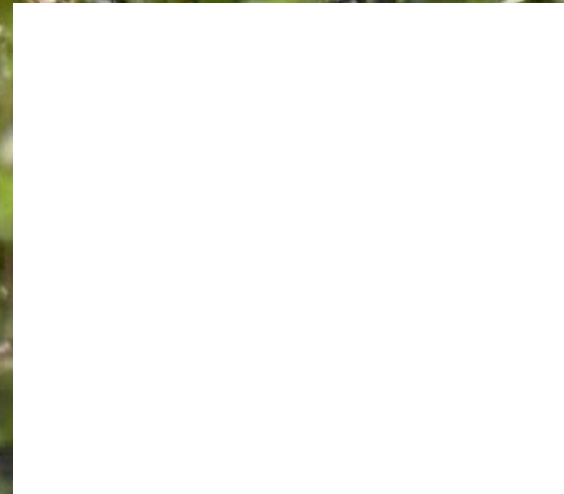


Ibirhynchus dimorpha

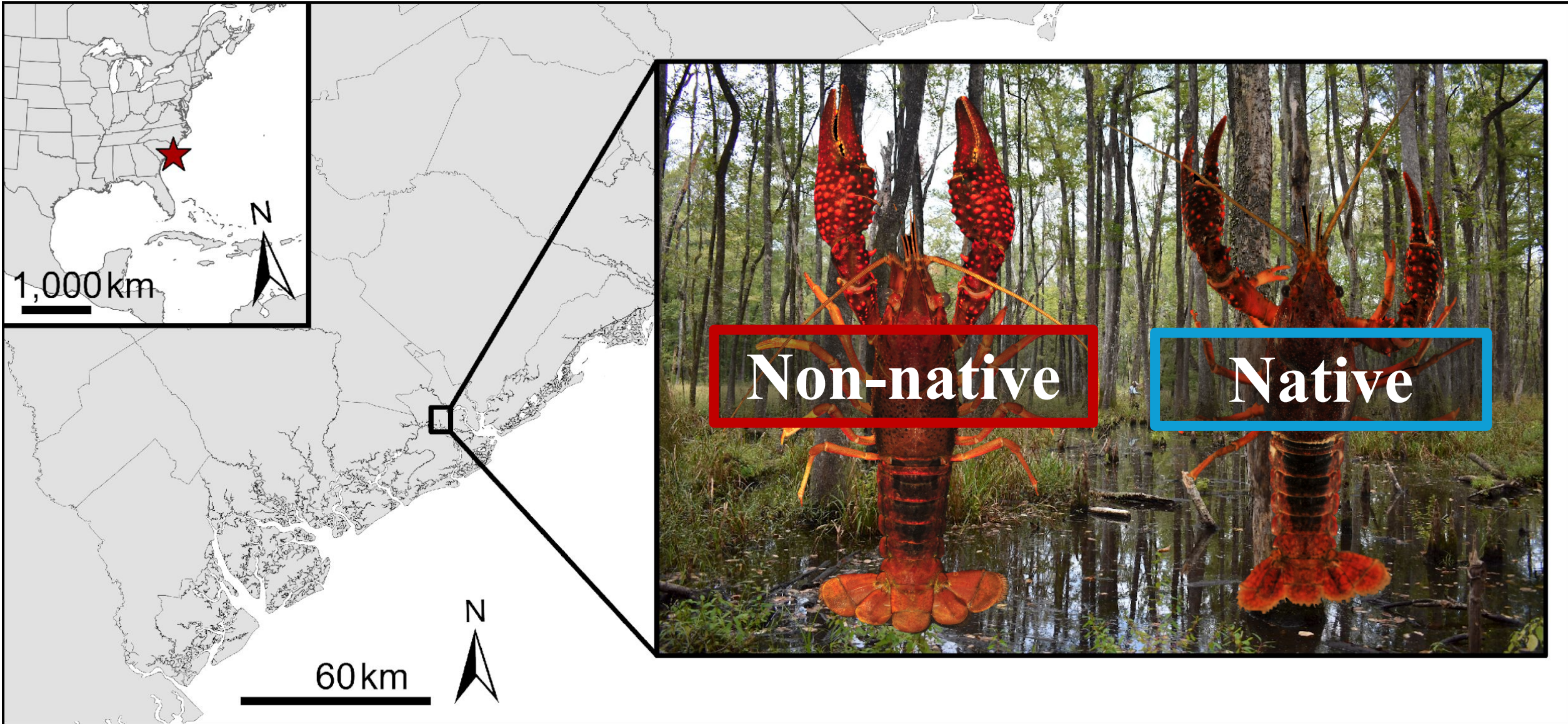


Heterospinus mccordi

Ibirhynchus dimorpha life cycle

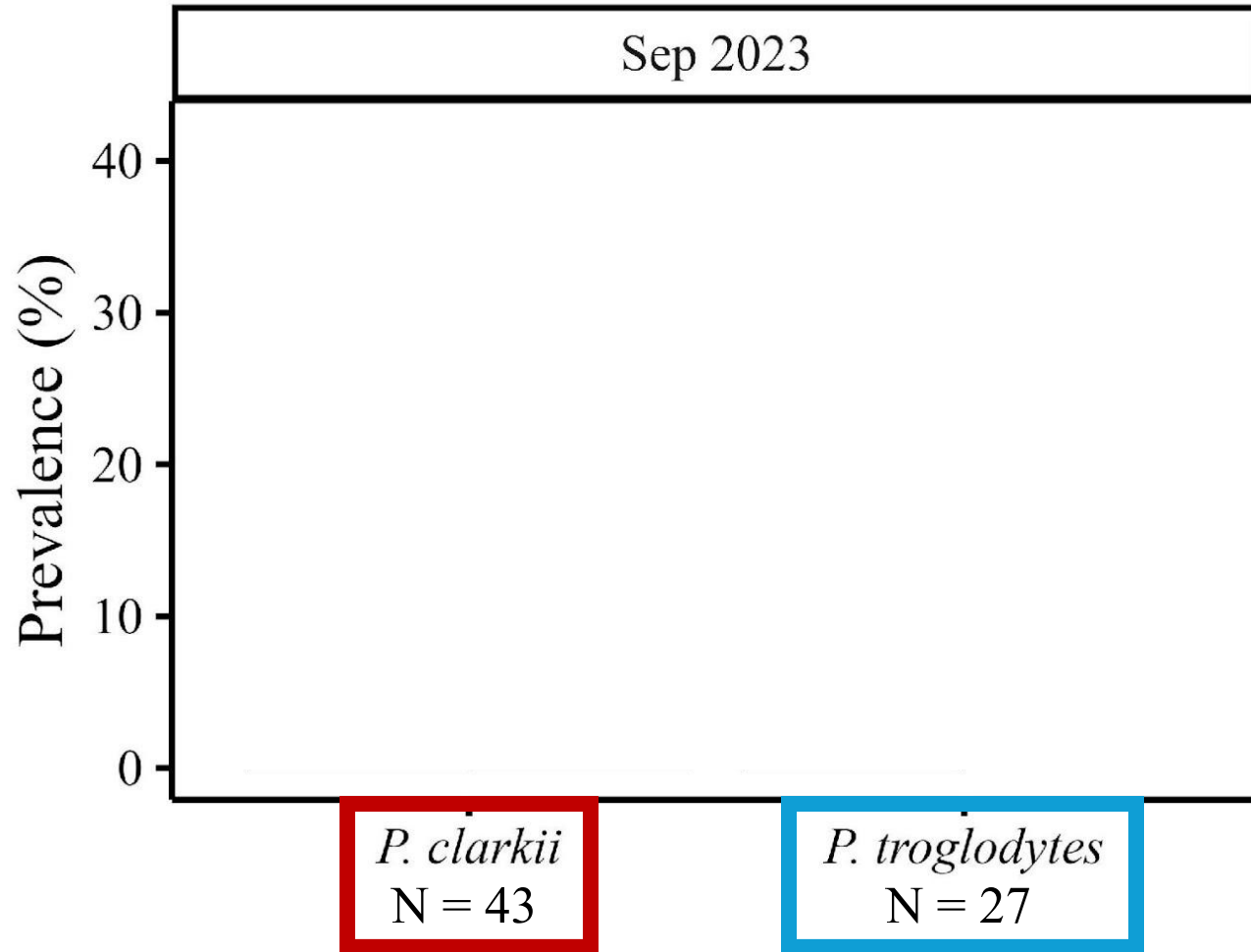


Compare acanthocephalan infection in syntopic crayfish



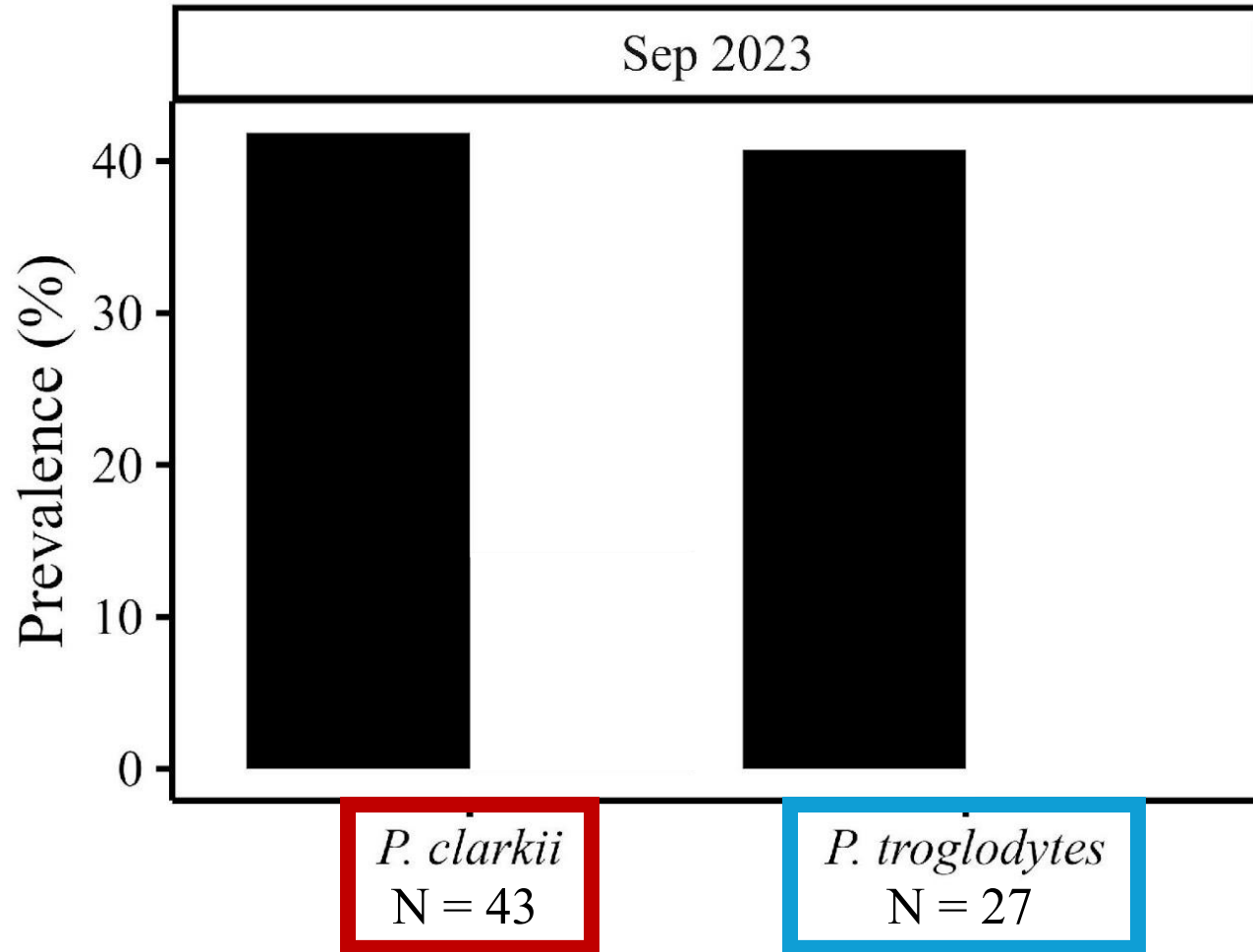
Prevalence

Acanthocephalan species ■ *Ibirhynchus dimorpha* ■ *Heterospinus mccordi*



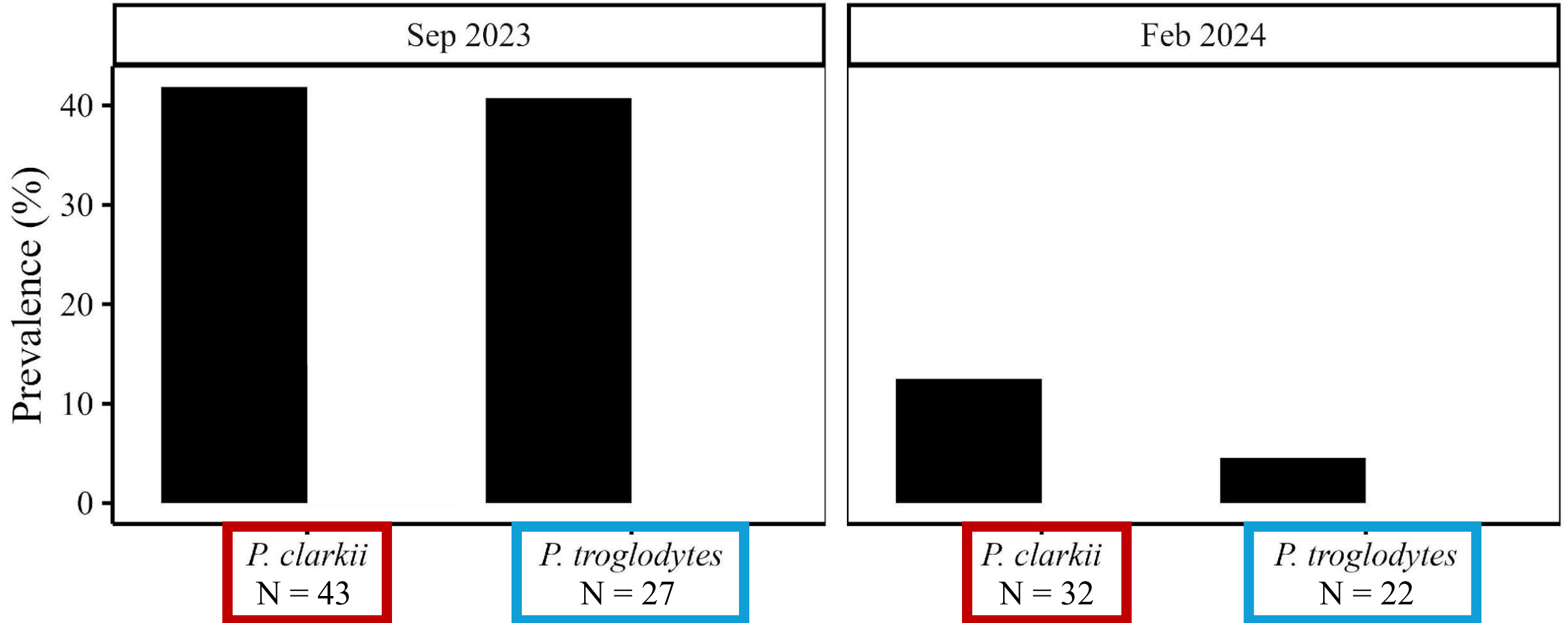
Prevalence

Acanthocephalan species ■ *Ibirhynchus dimorpha* ■ *Heterospinus mccordi*



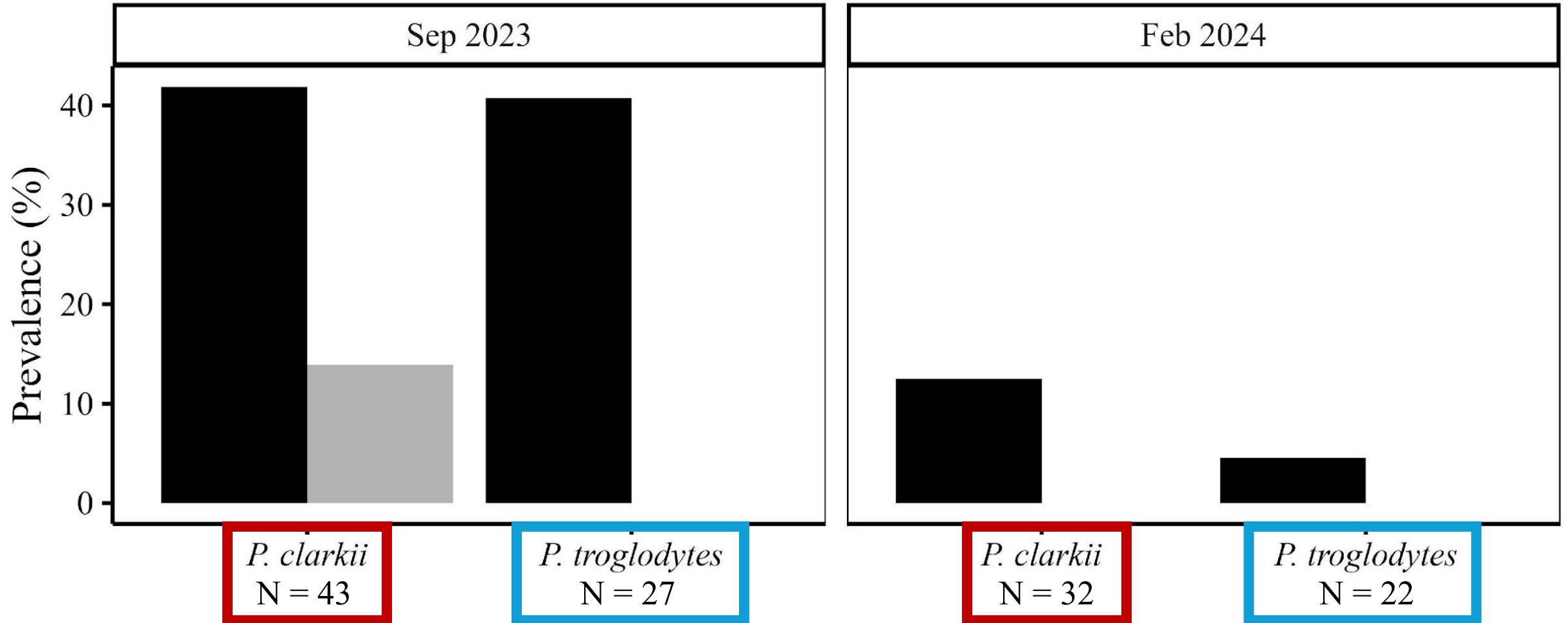
Prevalence

Acanthocephalan species ■ *Ibirhynchus dimorpha* ■ *Heterospinus mccordi*

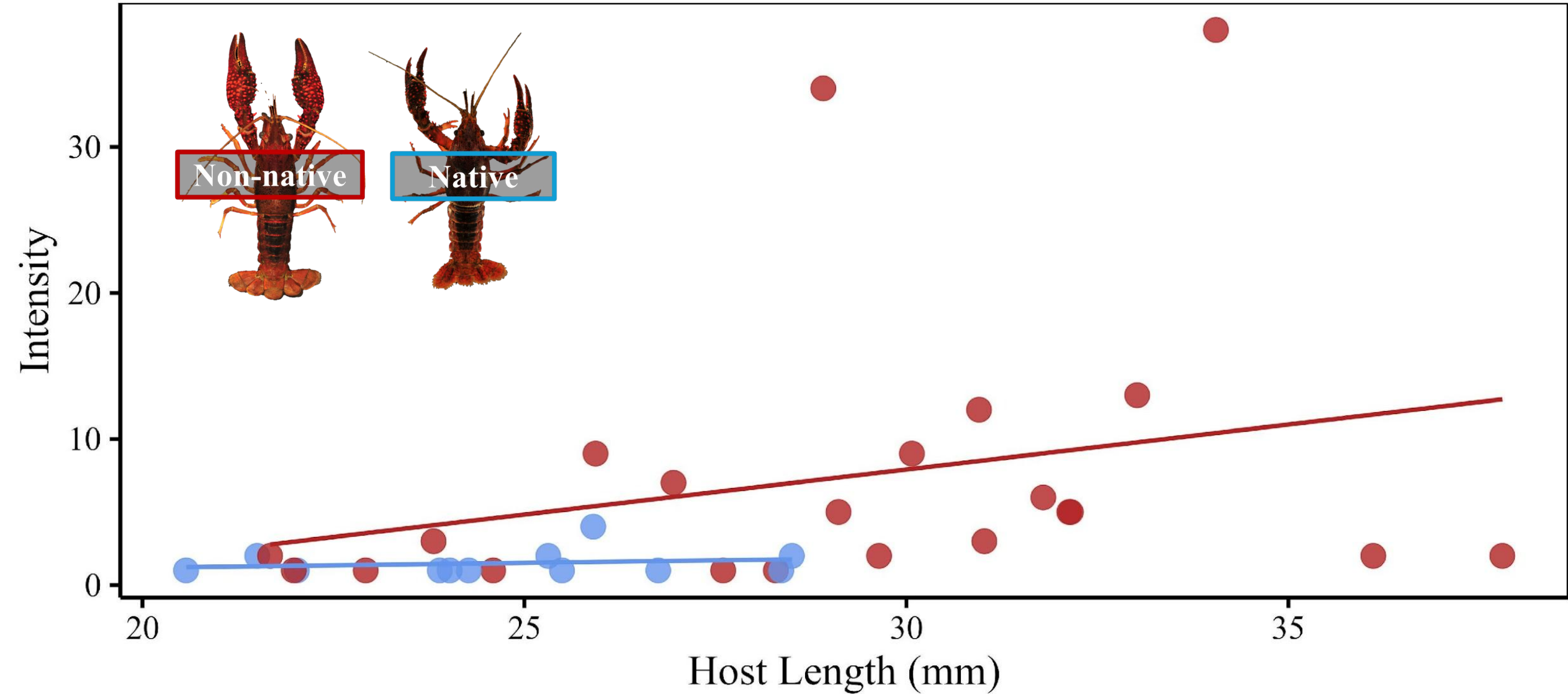


Prevalence

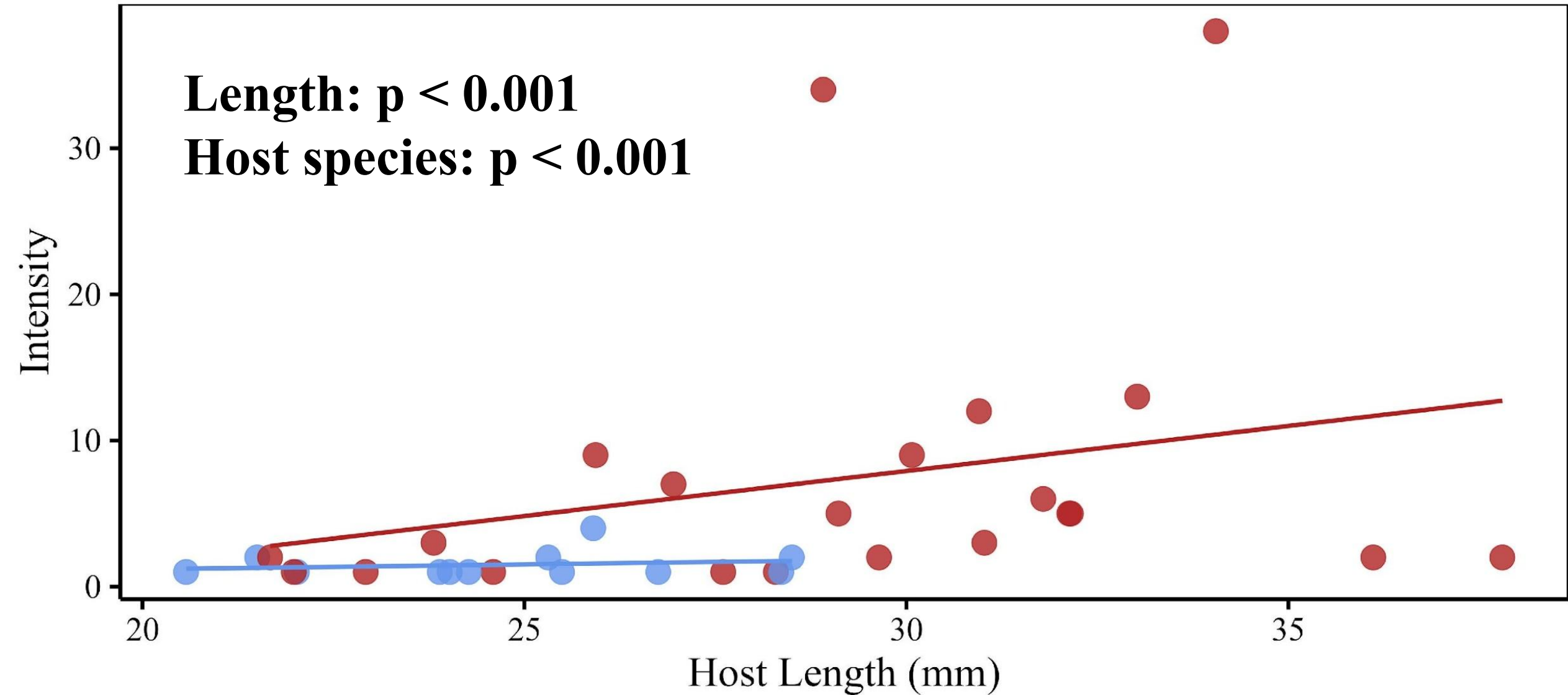
Acanthocephalan species ■ *Ibirhynchus dimorpha* ■ *Heterospinus mccordi*



Intensity of infection (*I. dimorpha*)



Intensity of infection (*I. dimorpha*)

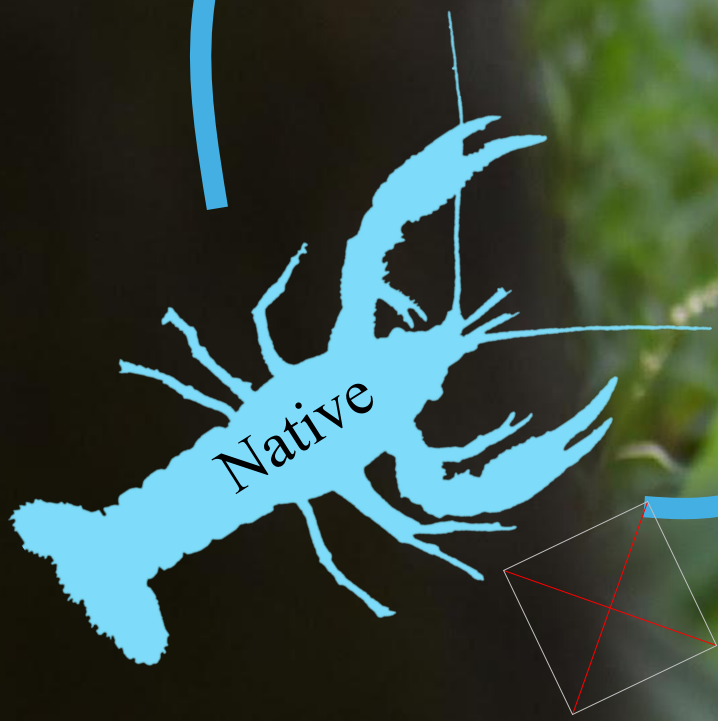




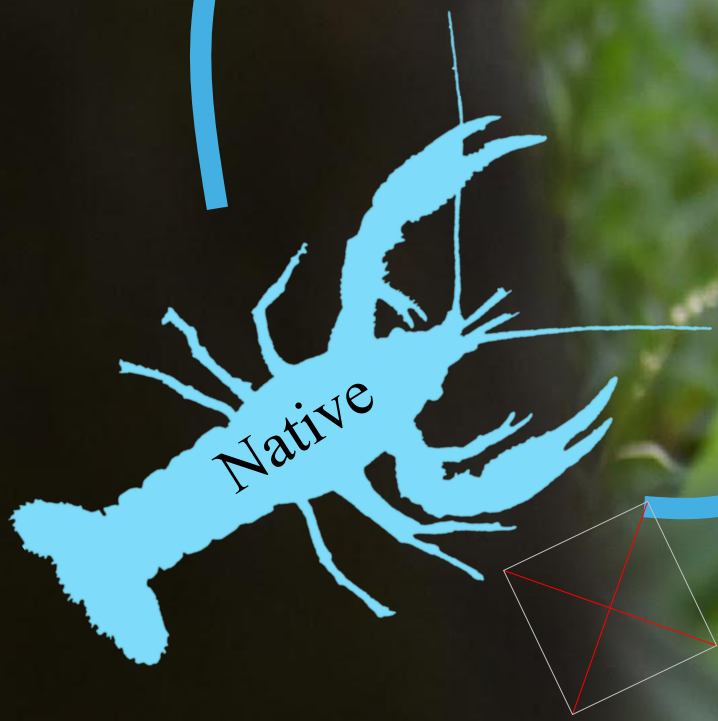


Spillover



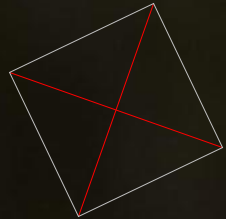


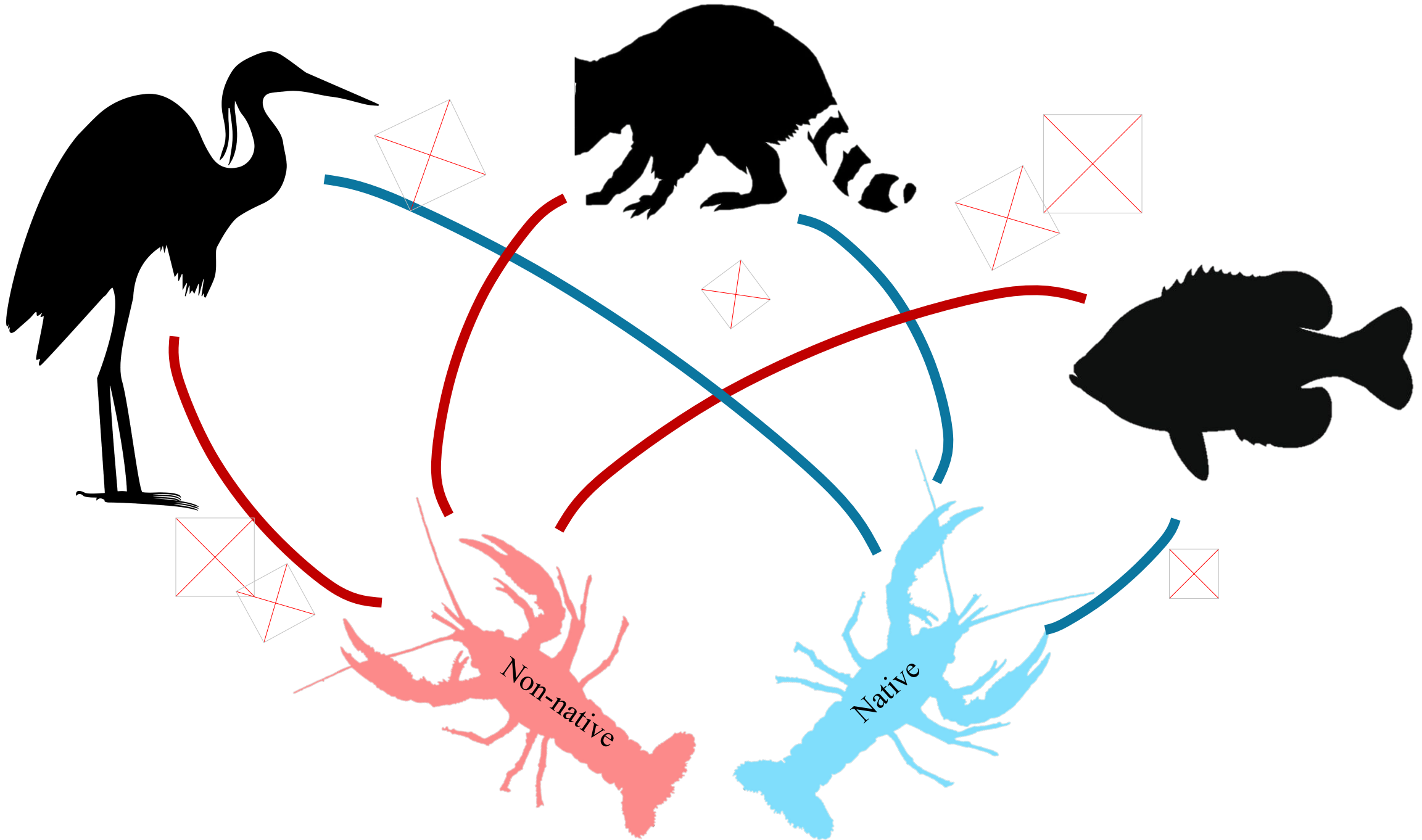
Native





Spillback





**Thank you!
Questions?**

Acknowledgements

- Shellfish Research Section
- CofC Grice Marine Lab
Molecular Core facility
- Bronwyn Williams
(NCMNS)



rothmang@dnr.sc.gov