Invasive Cup Corals: What is the Risk to Florida’s Coral Reef Ecosystem?

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What Are Cup Corals?

- Azooanthelllate
- Primarily Inhabits Darkened Recesses in Reefs
- Highly Fecund
- Aggressive Spatial Competitors
- Resilient to Environmental Stress
What Are Cup Corals?

- Native to the tropical Indo-Pacific
- Orange Cup Coral (*Tubastraea coccinea*)
  - Introduced into the Caribbean in the 1940’s
  - Now almost circumtropical
    - Gulf of Mexico
    - Caribbean Sea
    - Brazilian coast
Orange Cup Coral in the Gulf of Mexico & Florida

Fig. 1. Northern Gulf of Mexico, showing location of oil and gas platforms present in 2003. Total number of platforms: ~4000, total number of wells drilled since the 1940s: ~40 000

Sammarco et al. 2004
Orange Cup Coral in the Gulf of Mexico & Florida

Flower Banks National Marine Sanctuary

USS Oriskany

INVASIVE SPECIES: ORANGE CUP CORAL

Tab by Michelle Johnson

Flower Garden Banks National Marine Sanctuary
Orange Cup Coral in SE Florida

- www.scubadiving.com
- Port of Miami Mitigation Reef
- C-One Wreck
- Spiegel Grove
- Duane/Bibb
- Aquarius Underwater Habitat
- Long Key Artificial Reef
- Thunderbolt
- Adolphus Busch
Orange Cup Coral --The Issue

- Prized by Marine Aquarists
- Marine Life Collectors have asked FWC’s fisheries managers to consider allowing collection
Our managers asked if collecting would cause the spread of orange cup coral at existing locations and to new locations?
Studies At The Long Key Artificial Reef
Studies At The Long Key Artificial Reef

- Assess the effects of the removal of orange cup coral (Tubastrea coccinea) from the artificial reefs within the FKNMS – Can we detect enhanced recruitment?

- Direct manipulations to assess competition between OCC and native benthic organisms, esp. corals
Manipulative Experiments

- T. coccinea Polyps
- Metal Plates
- Terracotta Plates
- Removal Area
Manipulative Experiments
Manipulative Experiments
Setbacks
So...What Is The Ecological Risk?

- What is the potential for *Tubastraea* to outcompete native species in the shallow water natural coral reef environment
So What Have We Found?

- Morphologically distinct polyps at the Long Key Artificial Reef
Other Cup Coral Species in the Atlantic

- Brazil – *Tubastrea taguensis*

- GOM – *Tubastrea micranthus*
So What Have We Found…

- Genetic evidence suggest that there are multiple species invading Florida waters.
- Two of the species invading Florida waters are also invading Brazilian waters.
- Genetically they are either the same or very similar.
So What Have We Found...

- Tubastroea confined to darkened crevices?
Risk to The Coral Reef Ecosystem

- Largely confined artificial structures; darkened crevices in shallow water
- Has it successfully colonized the darkened recesses of natural reefs?
  - Much of the hard surface area of reefs lies within crevices, caves, and other cavities
Parting Comment

- Be on the lookout for cup corals...we welcome reports!!
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