# Quantifying microplastic pollution in *Crassostrea virginica* from the Indian River Lagoon

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## What are microplastics? **Plastics** ≤ 5mm > Macroplastics Microplastics Secondary Primary Bead Nurdle Fragment Fiber 100 μm

#### Mosquito Lagoon

- Waite et al. (2018) found record concentrations (16.5 MP/individual) of oysters from Mosquito Lagoon
  - 23.1 MP/liter of lagoon water
- Sussarellu et al.(2016) studies show oysters are negatively impacted by microplastics

# Oyster Restoration in Mosquito Lagoon

- 13 years
- 93 Reefs
- 3.5 acres



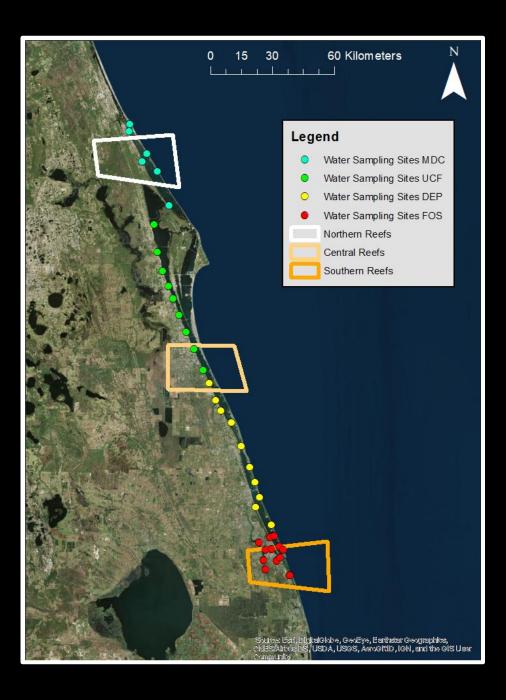


Photo: IRI NFP

## **Expanding Questions**

- 1. What is the importance of location and seasonality when sampling for microplastics in the IRL?
- 2. Are juvenile oysters as vulnerable to microplastic ingestion as adults?
- 3. Are juvenile and adult oysters able to excrete microplastics?





# Sample Collections

12-month sampling schedule

- Monthly water samples
- Quarterly oyster samples



# Progress Update





Sample		
Collections	Scheduled	Completed
Water Sampling		
March	3/2/19 - 3/5/19	10/6/18 - 10/9/18
April	4/6/19 - 4/9/19	11/3/18 - 11/6/18
May	5/4/19 - 5/7/19	12/1/18 - 12/4/18
June	6/1/19 - 6/4/19	1/5/19 - 1/8/19
July	7/6/19 - 7/9/19	2/2/19 - 2/5/19
August	8/3/19 - 8/6/19	8/3/19 - 8/6/19
September	9/7/19 - 9/10/19	9/7/19 - 9/10/19
October	10/5/19 - 10/8/19	10/5/19-10/8/19
November	11/2/19 - 11/5/19	ТВА
December	12/7/19 - 12/10/19	ТВА
January	1/4/20 - 1/7/20	ТВА
February	2/1/20 - 2/4/20	ТВА
Oyster Sampling		
1st Quarter	May-19	5/22/19, 5/26/19
2nd Quarter	Aug-19	8/20/19, 8/21/19
3rd Quarter	Nov-19	ТВА
4th Quarter	Feb-20	ТВА
Feces/Pseudofeces Sampling		
Feces/Pseudofeces	July 2019	7/15/19-7/18/19

#### 3. Are juvenile and adult oysters able to excrete microplastics?





# Sample Processing



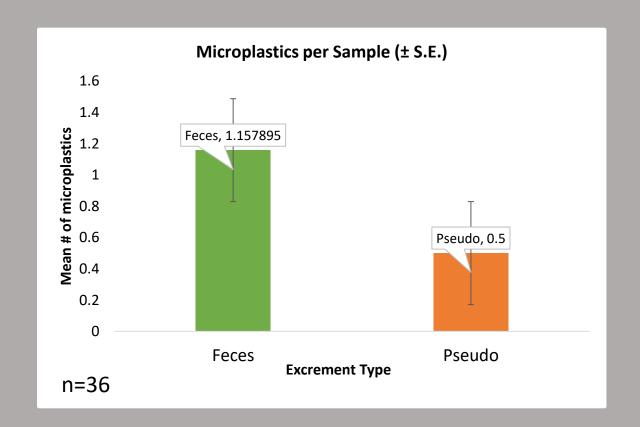


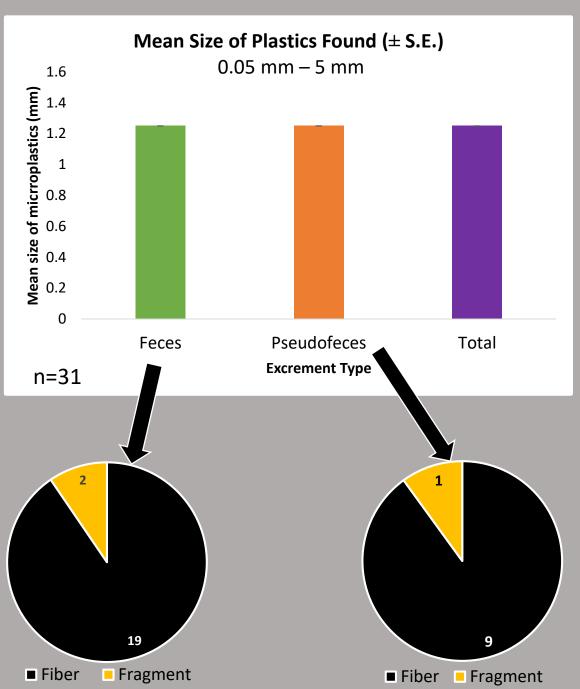
#### Results

• Total microplastics found in...

• Spat: 11

• Adults: 20





#### Conclusions

- Microplastics are an anthropogenic threat to oysters
- Oysters are capable of excreting microplastics through both feces and pseudofeces
  - Microplastic cycling?

#### Next Steps

- Finish analyzing samples
- Inspect collected sediments on/near oyster reefs for microplastics?

#### Citizen Science & Social Media

Volunteer Count: 84

Hours Dedicated: 802

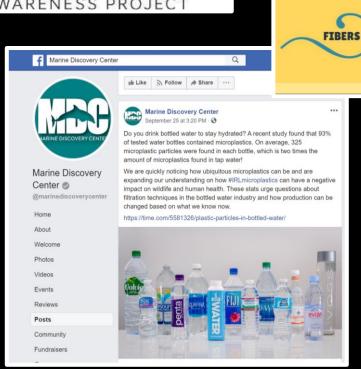


Weekly Social Media Posts

Coastal & Estuarine Ecology Lab

Friends of the Spoil Islands

Marine Discovery Center



FROM SUMMER 2017-2019,

microplastics per liter

PIECES OF PLASTIC

79%

of the microplastics

reported were fibers

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about local #IRLmicroplastics findings? Our friends at The Florida

created this graphic to share the statistics of our area. Environments around the world will experience differing microplastics impacts based

#aquaticpreserves #leavenotrace #microplastics #indianriverlagoon #irl #scienceirl #ucf

#marinediscoverycenter #ceelab #estuary #marineconservation #4ocean #oceanconservation

OQL

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on human action in each locale. Let us know your thoughts below! #IRLMicroplastics #estuary #florida #floridaconservation







# Thank You! #IRLmicroplastics





















