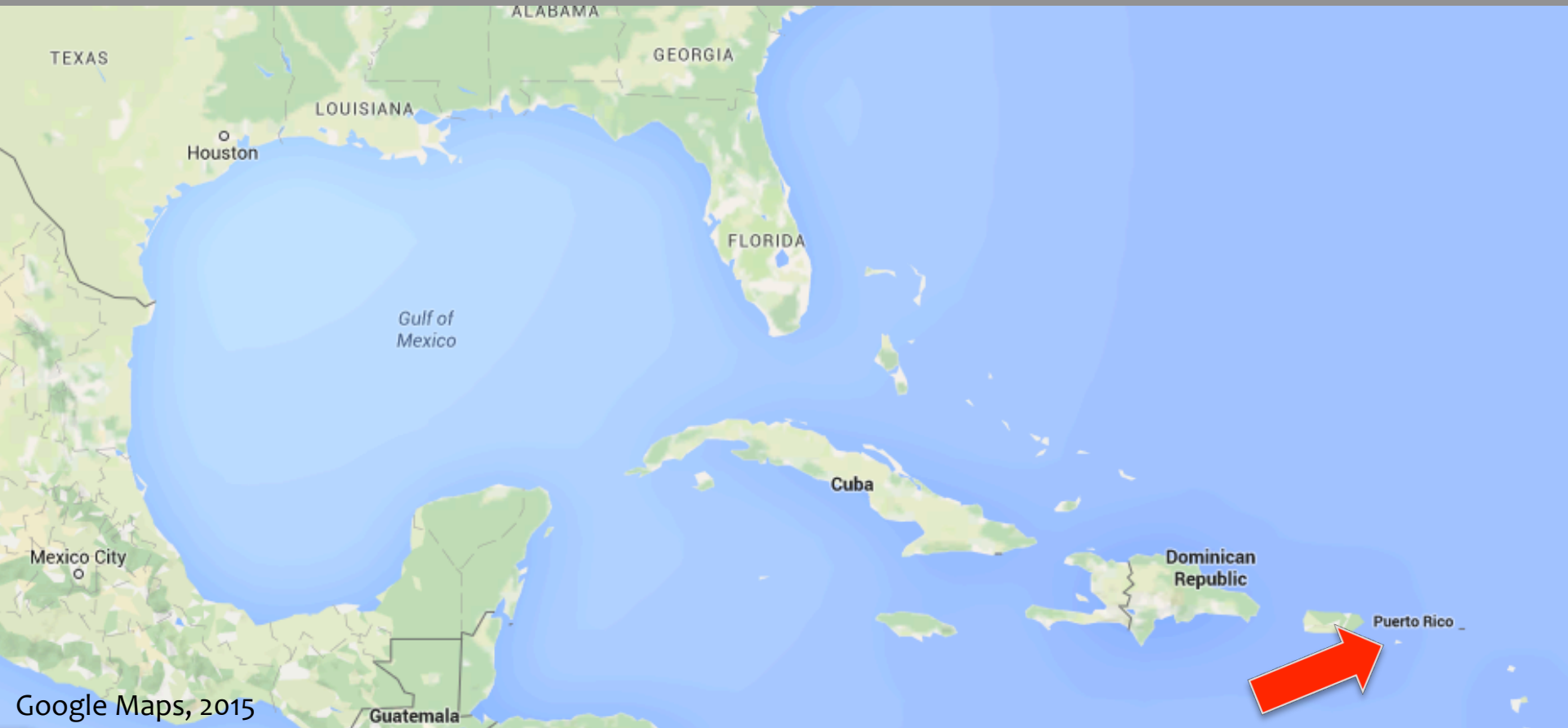




**Evaluation of Anthropogenic Marine Debris and *Sargassum fluitans* and its Potential Impact on Sea Turtle Hatchlings at Sandy Point National Wildlife Refuge**

Christina MacMillan- JLS Middle School &  
Kelly Stewart- NMFS Marine Mammal and Turtle Division

# Introduction







Buck Island Reef  
National Monument

Christiansted

St Croix

Kingshill

Frederiksted

North side



Sandy Point National  
Wildlife Refuge



West side



South side (survey location)





**Sandy Point  
National Wildlife Refuge  
Vehicle Regulations  
"Drive Safely"**

Speed Limit of 15 mph is strictly enforced.  
 Single Lane Road. All vehicles yield to oncoming traffic.  
 All vehicles must meet USVI Motor Vehicle requirements.  
 All vehicles are restricted to main access road and designated parking areas.  
 Violators are subject to fines and/or arrest.

All accidents, injuries and incidents occurring on Sandy Point NWR should be reported immediately to USFWS Law Enforcement: 340.690.9451  
 Virgin Island Police Department: 340.690.8325  
 "911"

**SEASONALLY CLOSED**

April through August

On Weekends and Weekdays  
 due to Sea Turtle Nesting

**ALL PUBLIC ENTRY IS PROHIBITED  
 DURING SEASONAL CLOSURE**





# North side of Sandy Point

Marked leatherback nest





# Sea Turtle Hatchlings



Robin LeRoux, 2014

Green (*Chelonia mydas*)



Leatherback (*Dermochelys coriacea*)



Hawksbill (*Eretmochelys imbricata*)



# Background



Leatherback hatchlings emerging from a nest

- \* 7 sea turtle species
- \* Status: vulnerable to Critically Endangered
- \* ~20% of eggs laid never hatch
- \* Land and water predators
- \* Estimated 1 in 1000 hatchlings reach adulthood



# Natural Obstacles



Annie Clift, 2014

Hatchling climbing over a branch



Hatchlings emerging between plants





Hatchling climbing over sargassum





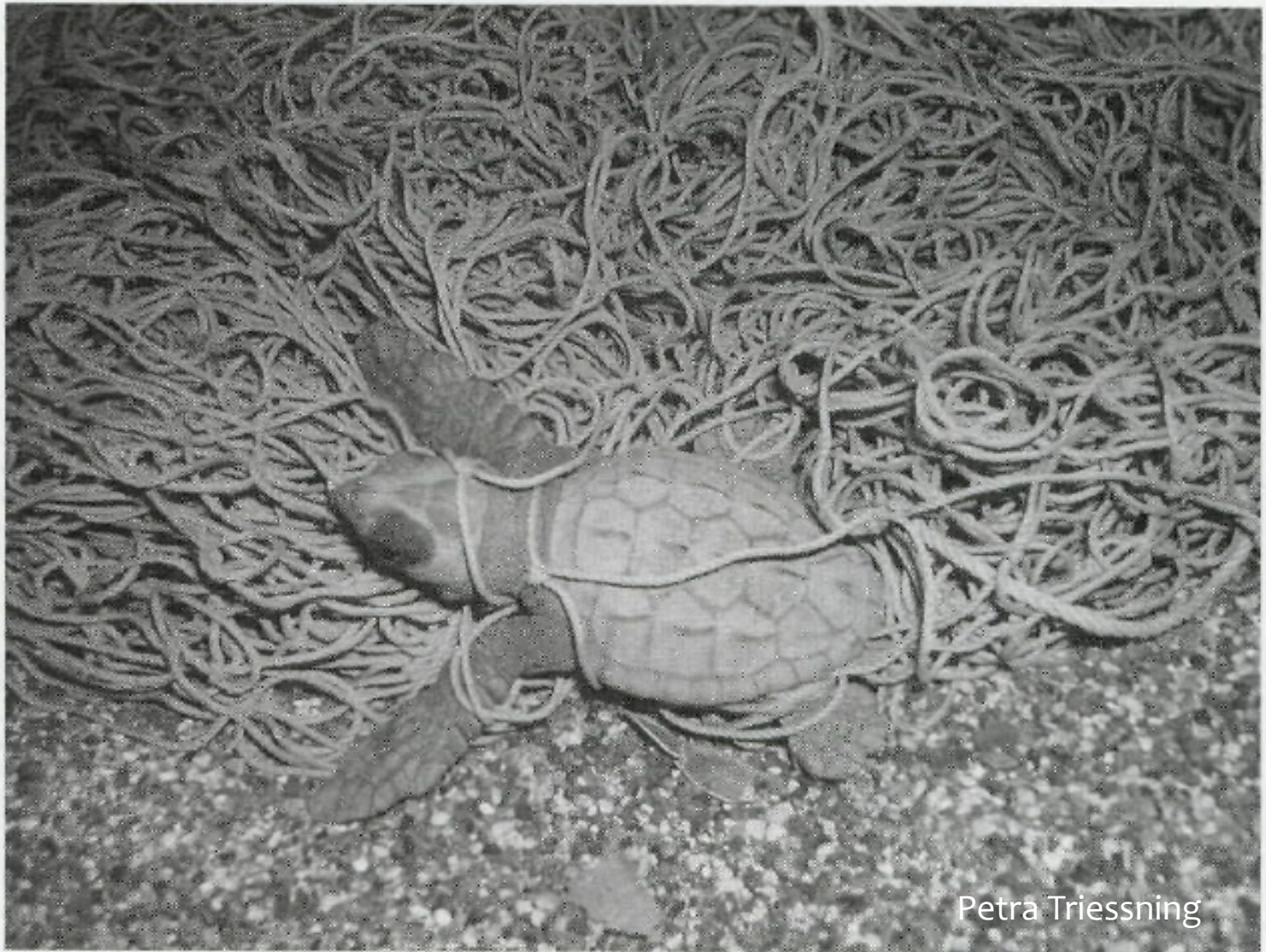
## *Sargassum fluitans*



Location of where hatchlings would have been released if there was less sargassum  
(7/27/2015)



## Hatchlings and anthropogenic debris



Petra Triessning



## Anthropogenic debris impact on juveniles & adult turtles



Alejandro Fallabrino, 2014





Michael Liles, 2014



# Objective

- \* To evaluate the the amount of anthropogenic marine debris and *Sargassum fluitans* on the south beach at Sandy Point National Wildlife Refuge and its potential impact on sea turtle hatchlings



# Methods

Transect #1 (120 to 100)



Transect #2 (120 to 140)







Shreya Banerjee, 2015



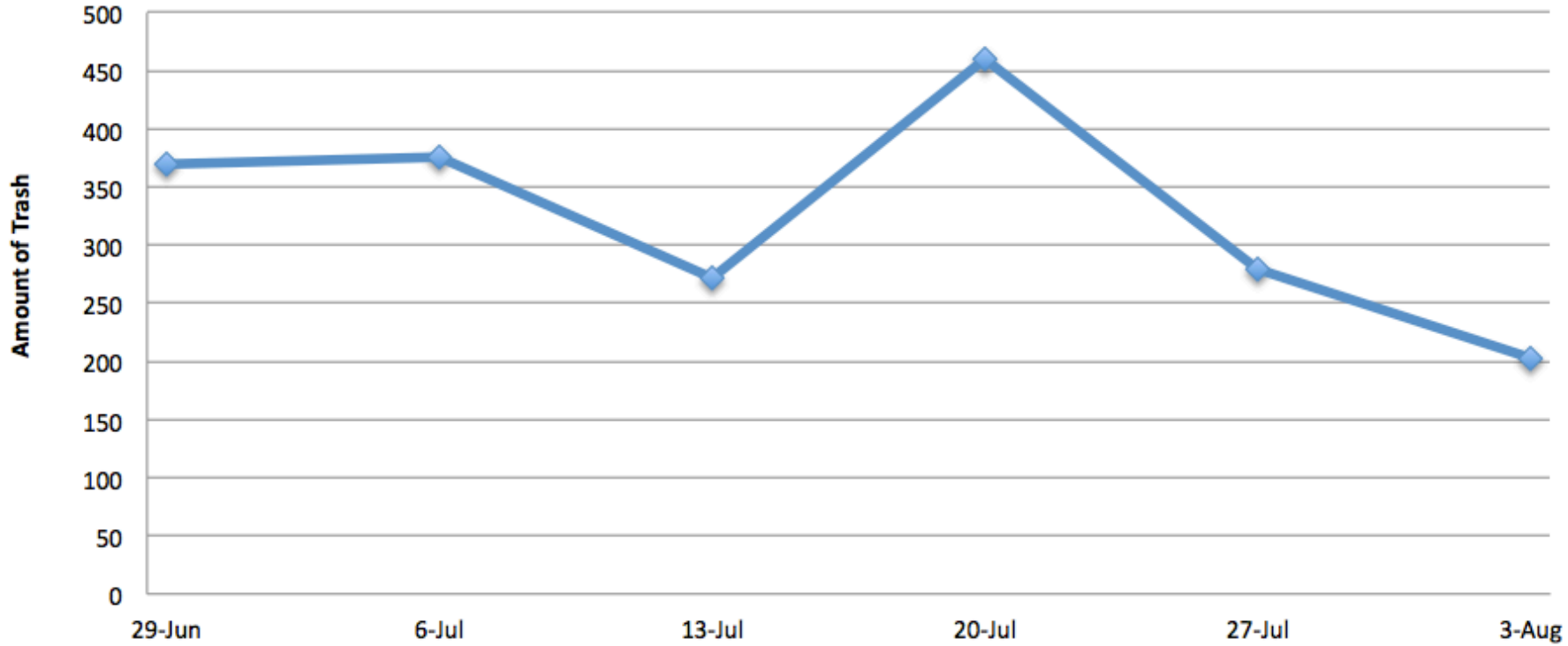




Kelly Stewart, 2015



## Trash Collected From The Surveys



Amount of Trash

29-Jun

6-Jul

13-Jul

20-Jul

27-Jul

3-Aug

369

375

272

460

280

203



Item	Total
Hard plastic fragments	594 ←
Foamed plastic fragments	284 ←
Plastic rope/small net pieces	272
Bottle or container caps	210
Film plastic fragments	108 ←
Plastic beverage bottles	93
Other plastic	71
Metal fragments	58
Other jugs or containers	49
Cups (including polystyrene/foamed plastic)	33
Aluminum/tin cans	28
Fabric pieces	18
Straws	17
Other rubber	14
Personal care products	13
Lumber/building material	10
Flip-flops	9
Glass beverage bottles	9
Buoys & floats	9
Glass fragments	8
Disposable cigarette lighters	8
Bags	7
Food wrappers	6
Other cloth/fabric	5
Other processed	5
Plastic utensils	5
Fishing lures & line	5
Tires	4
Rubber fragments	4
Other metal	3
Other glass	2
Other/unclassifiable	2
Gloves	1
Glass jars	1
Balloons	1

All items collected from the surveys

Total of 1,966 items

986 pieces of plastic fragments  
(hard, foamed, and filmed)









Survey #1 on June 29<sup>th</sup> on transect #1













Survey #4 on July 20<sup>th</sup> on transect #2







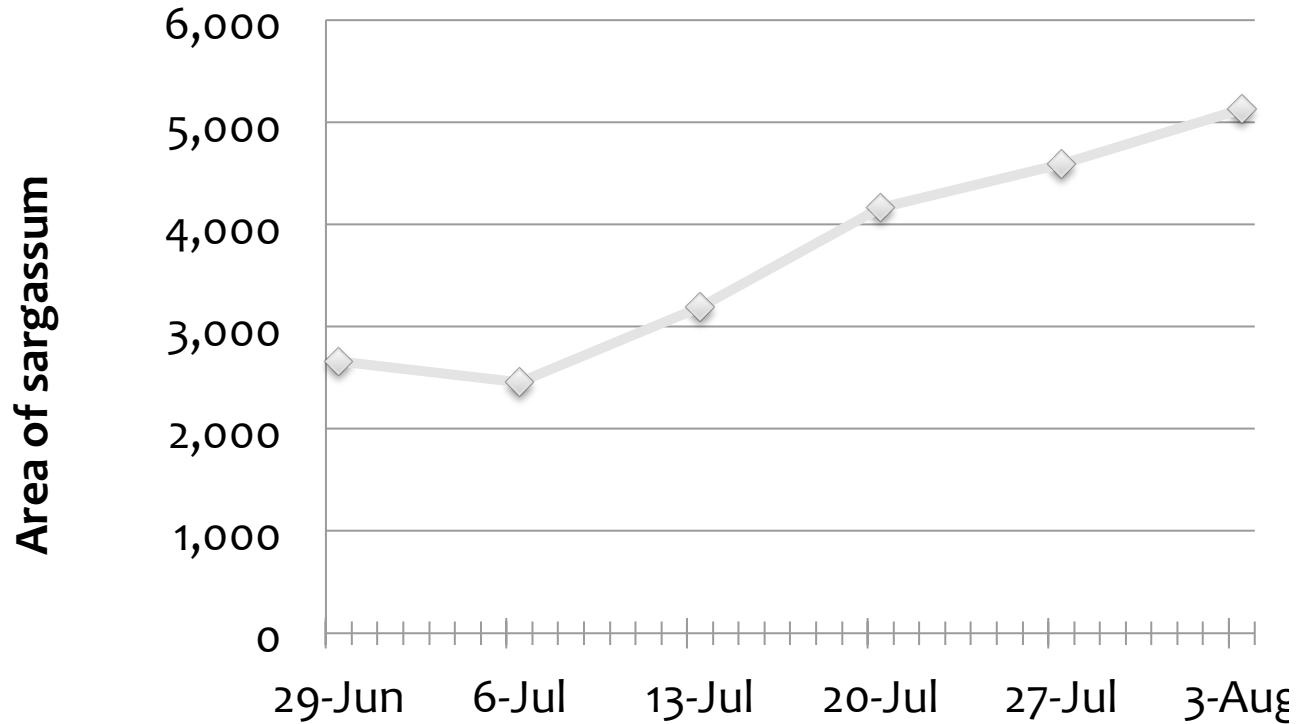


Survey #6 on August 3<sup>rd</sup> on transect #2





## Area of sargassum during surveys



	29-Jun	6-Jul	13-Jul	20-Jul	27-Jul	3-Aug
◆ Sargassum (m <sup>2</sup> )	2,657	2,456	3,189	4,164	4,595	5,131



# Sargassum

Transect #1 (120 to 100)

Taken on June 29<sup>th</sup>, 2015

First day



Taken on August 3<sup>rd</sup>, 2015

Last day





# Sargassum

Transect #2 (120 to 140)

Taken on June 29<sup>th</sup>, 2015  
First day

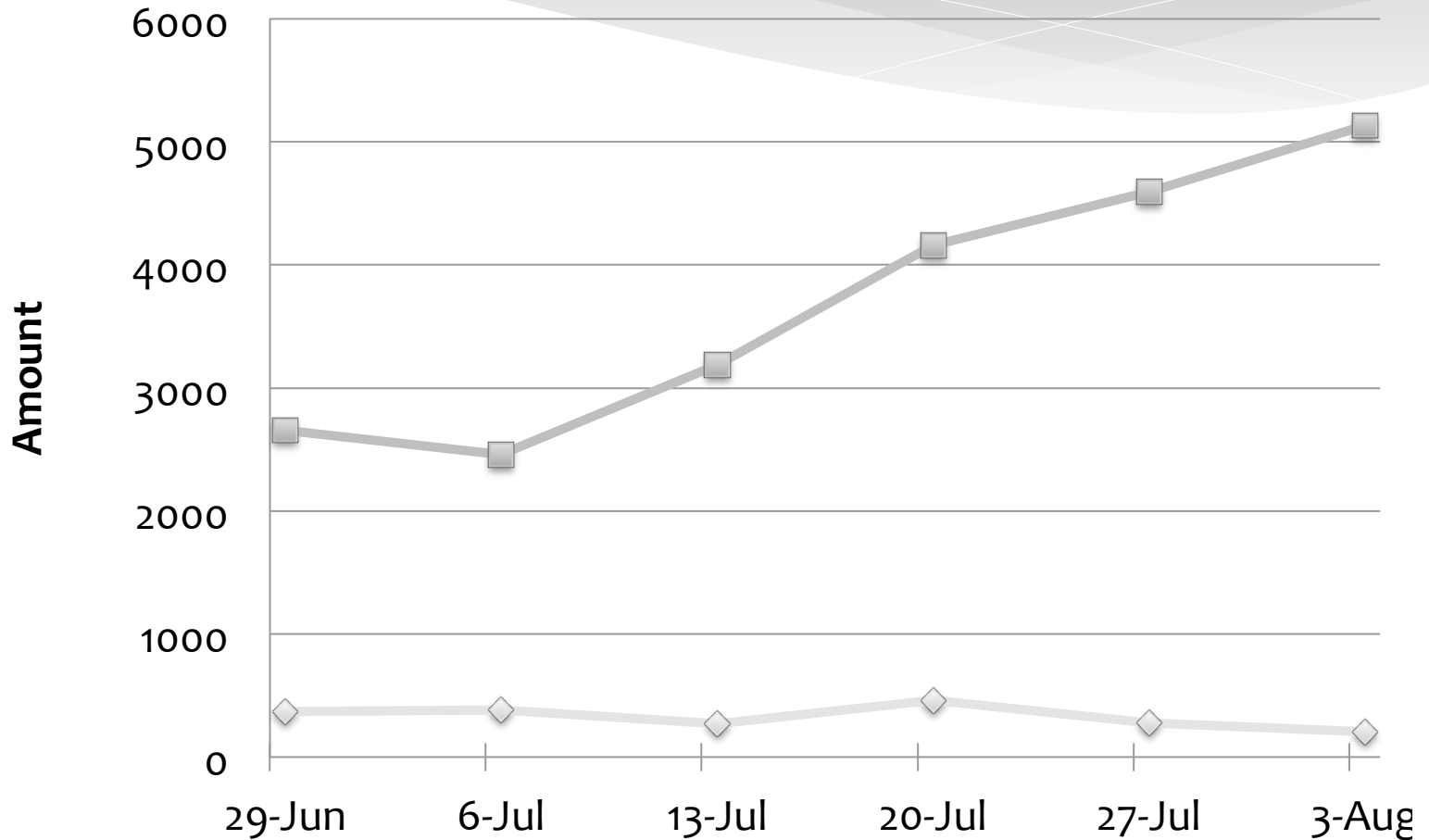


Taken on August 3<sup>rd</sup>, 2015  
Last day





## Amount of trash and sargassum during the surveys



	29-Jun	6-Jul	13-Jul	20-Jul	27-Jul	3-Aug
◆ Trash	369	384	272	460	278	203
■ Sargassum (m2)	2,657	2,456	3,189	4,164	4,595	5,131



# Conclusion



Sargassum on west side 2015



Max Freling, 2011

Sargassum clean-up in south Caribbean 2011





Kelly Stewart, 2015



Sargassum on grassy side 2015







# References

- Gass, Scott. "The survival of the sea turtle." TED. July 2012. Lecture.
- Gower, Jim, Erika Young, and Stephanie King. "Satellite Images Suggest A New Sargassum Source Region In 2011." *Remote Sensing Letters* 4.8 (2013): 764-773. *Academic Search Complete*. Web. 15 Aug. 2015.
- Gower, J. F. R., and S. A. King. "Distribution Of Floating Sargassum In The Gulf Of Mexico And The Atlantic Ocean Mapped Using MERIS." *International Journal Of Remote Sensing* 32.7 (2011): 1917-1929. *Academic Search Complete*. Web. 29 June 2015.
- Scherer, Angelo Luís, et al. "Life Stages, Anthropogenic Impact, And Temporal Variation Of Stranded Sea Turtles In Southern Brazil." *Chelonian Conservation & Biology* 13.1 (2014): 42-48. *Academic Search Complete*. Web. 12 July 2015.
- Schuyler, Qamar, et al. "Global Analysis Of Anthropogenic Debris Ingestion By Sea Turtles." *Conservation Biology* 28.1 (2014): 129-139. *Academic Search Complete*. Web. 28 June 2015.
- Smetacek, Victor, and Adriana Zingone. "Green and Golden Seaweed Tides on the Rise." *Nature* 504.7478 (2013): 84-88. Web. 29 June 2015.
- Tomillo, Pilar Santidrián, et al. "Predation Of Leatherback Turtle Hatchlings During The Crawl To The Water." *Chelonian Conservation & Biology* 9.1 (2010): 18-25. *Academic Search Complete*. Web. 5 July 2015.
- Tourinho, Paula S., Juliana A. Ivar Do Sul, and Gilberto Fillmann. "Is Marine Debris Ingestion Still a Problem for the Coastal Marine Biota of Southern Brazil?" *Marine Pollution Bulletin* 60.3 (2010): 396-401. Web. 12 July 2015.
- Triessing, Petra, Andreas Roetzer, and Michael Stachowitsch. "Beach Condition And Marine Debris: New Hurdles For Sea Turtle Hatchling Survival." *Chelonian Conservation & Biology* 11.1 (2012): 68-77. *Academic Search Complete*. Web. 29 June 2015.
- Vélez-Rubio, Gabriela, et al. "Marine Turtle Threats In Uruguayan Waters: Insights From 12 Years Of Stranding Data." *Marine Biology* 160.11 (2013): 2797-2811. *Academic Search Complete*. Web. 12 July 2015.
- Wabnitz, Colette and Wallace J. Nichols. "Plastic Pollution: An Ocean Emergency." Editorial. *Marine Turtle Newsletter*. Oct. 2010. Web. 12 July 2015.
- "Plastic Debris In A Nesting Leatherback Turtle In French Guiana." *Chelonian Conservation & Biology* 9.2 (2010): 267-270. *Academic Search Complete*. Web. 28 June 2015.
- "Reporting Site: Pelagic Sargassum in the Caribbean." *Reporting Site: Pelagic Sargassum in the Carribean*. Web. 23 Jun. 2015. <<http://www.usm.edu/gcrl/sargassum/>>.



# Acknowledgements

- \* Photographs were taken with permission from the U.S. Fish and Wildlife Service. No flash photography or lights were used because it can disturb and disorient nesting and hatchling turtles.

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