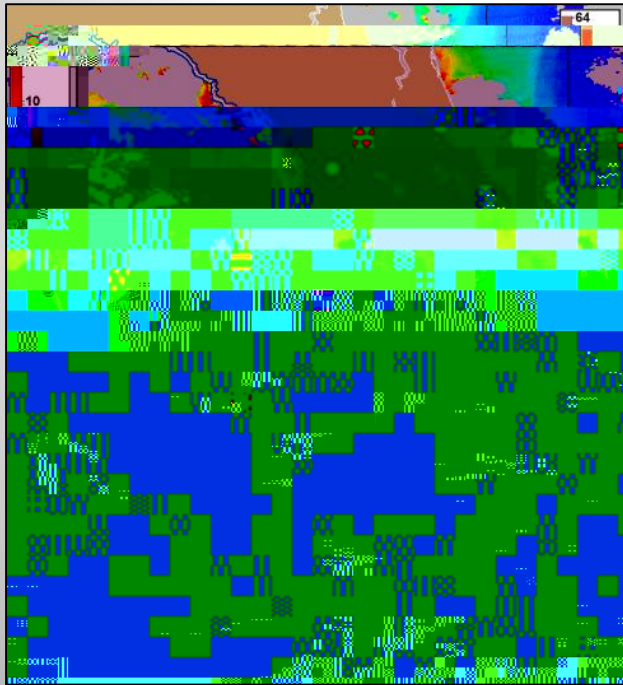


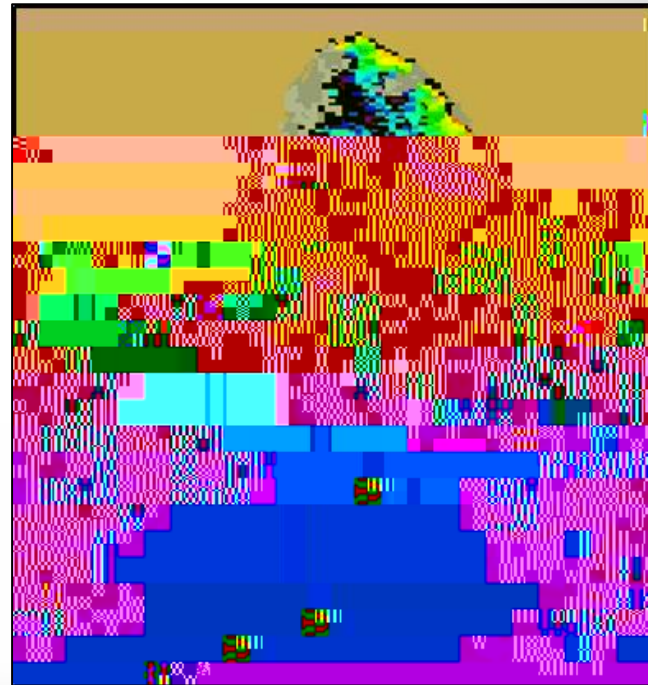
Public Health Response to Algal Blooms In Florida

Andrew Reich, Bureau of Environmental Health



Gulf of Mexico HAB Bulletin: NOAA 8/13/18

Karenia brevis Red Tide

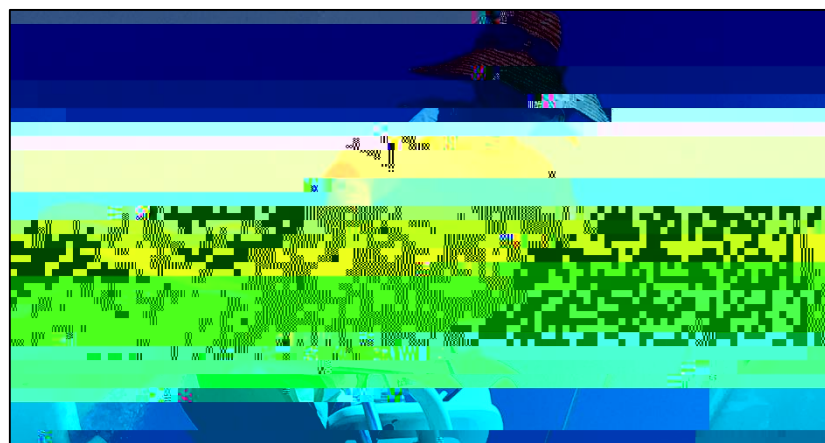
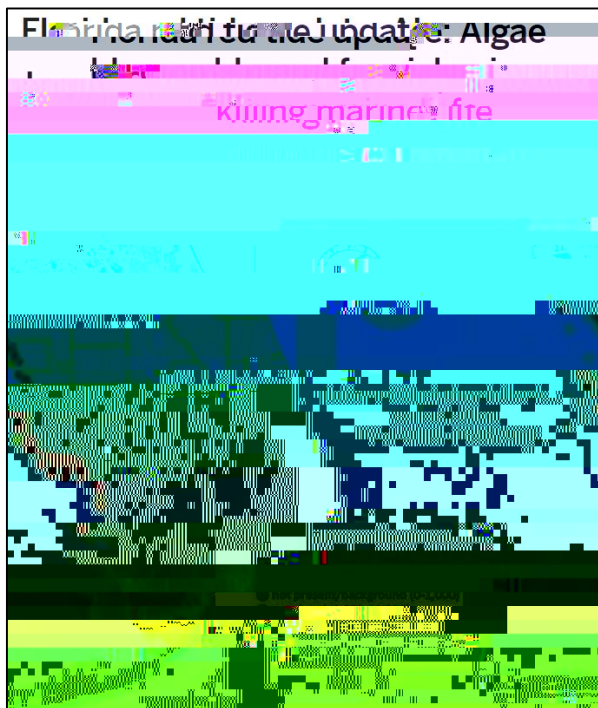
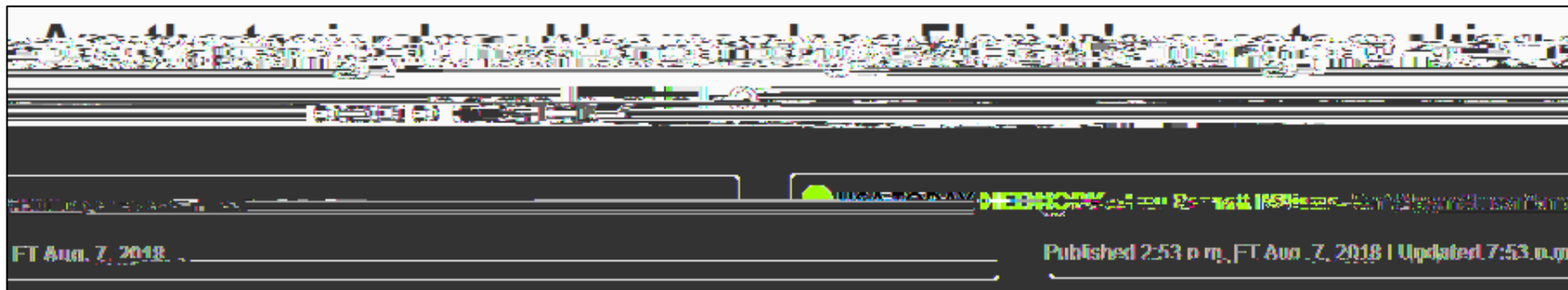


/DNH 2↑ 6HQWLQHO ,PDJH 12\$\$

Cyanobacteria Bloom



Press Reports



TC Palm (USA Today) 8/9/18



Karenia brevis Red Tide



Ben Depp, National Geographic 8/8/18





Red Tide in Florida?

Experts: Hurricane Michael failed to end Florida's

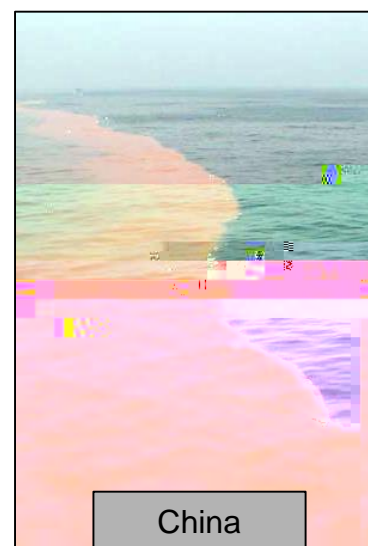
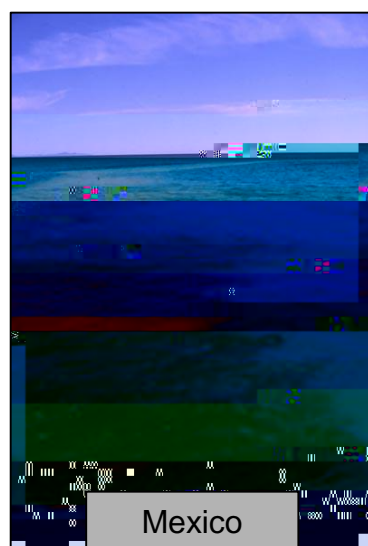
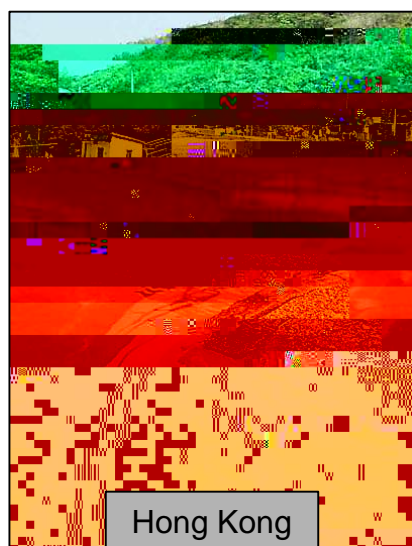
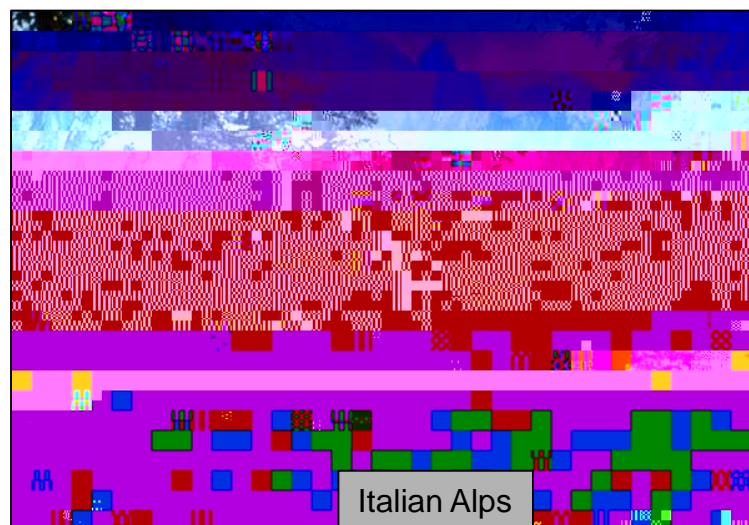
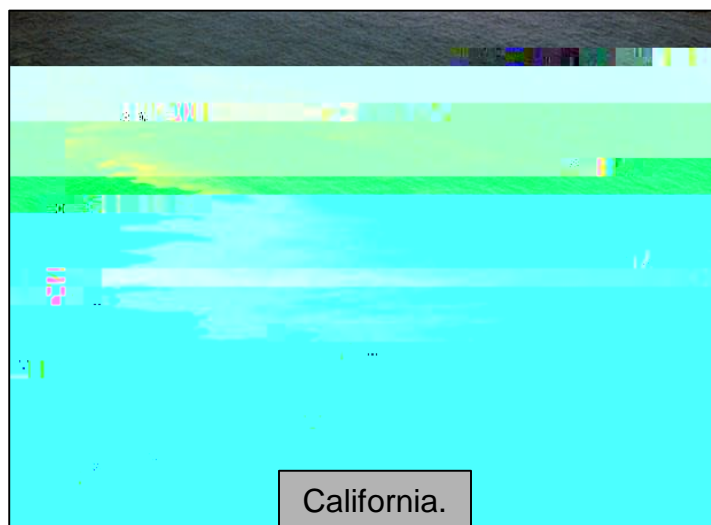
ENNIFER KAY, Associated Press | Updated: Mon 12:52 PM, Oct 15, 2018

Image Source: Pixabay / MGN

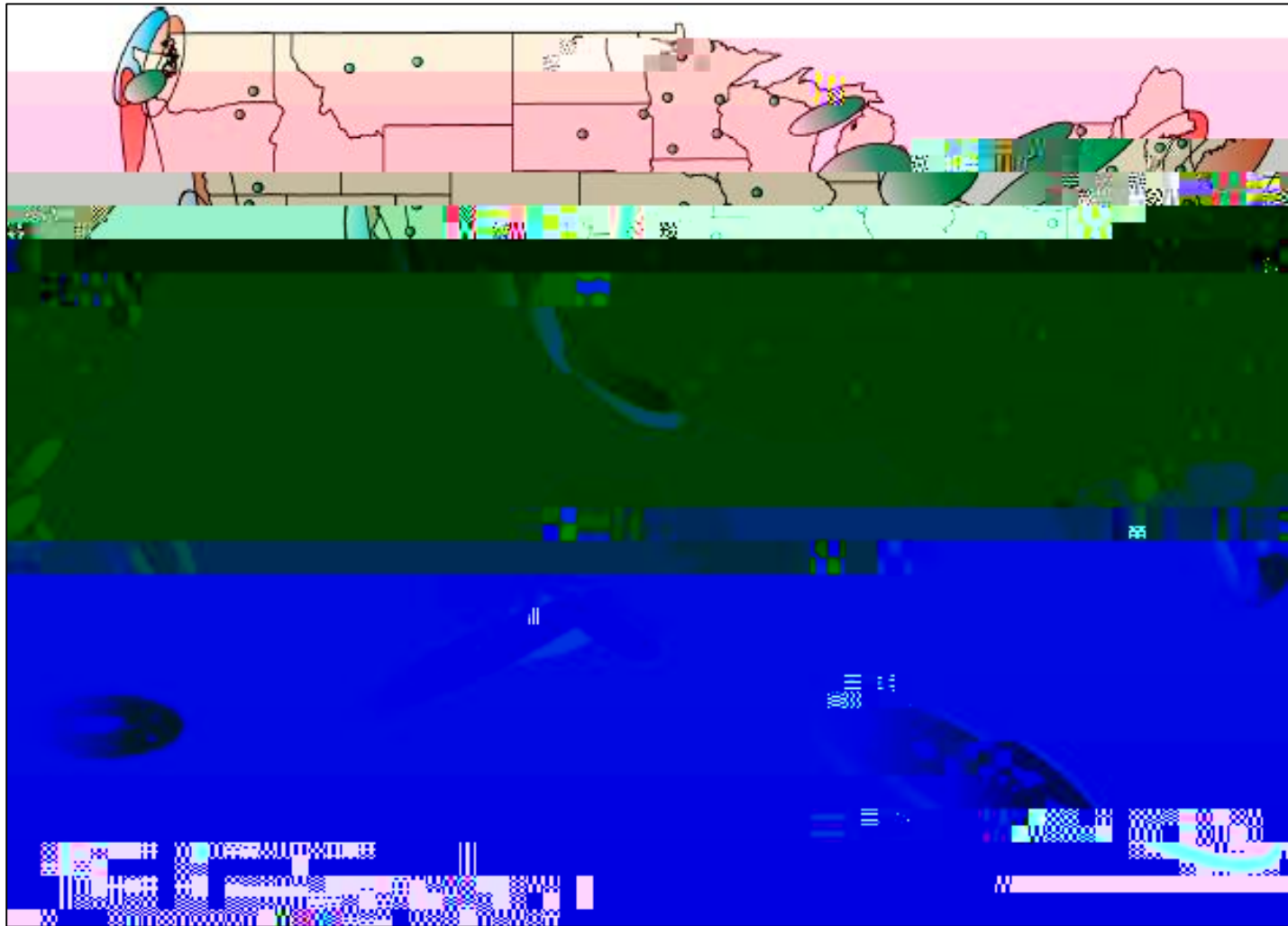


Woods Hole Oceanographic Institution

^{32}W K Red Tides

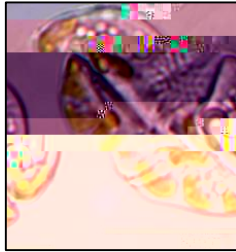


Distribution of HABs in the US



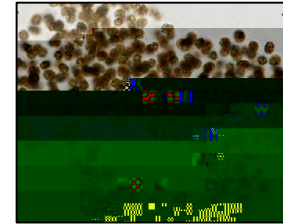
Source: U.S. National Office for Marine Biotoxins and Harmful Algal Blooms

Red Tide vs. BG algae



Compare

- ‡ Single Cells
- ‡ Aquatic Organisms
- ‡ Photosynthetic
- ‡ Produce Toxins
- ‡ Naturally Occurring
- ‡ Do not accumulate in fish fillets

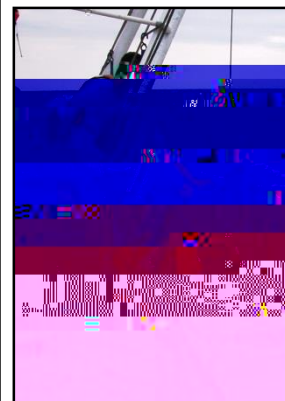
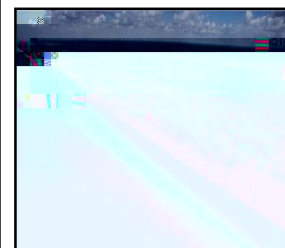
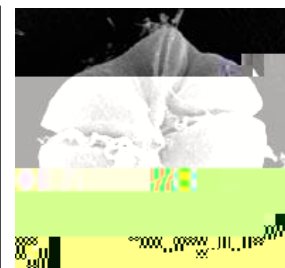
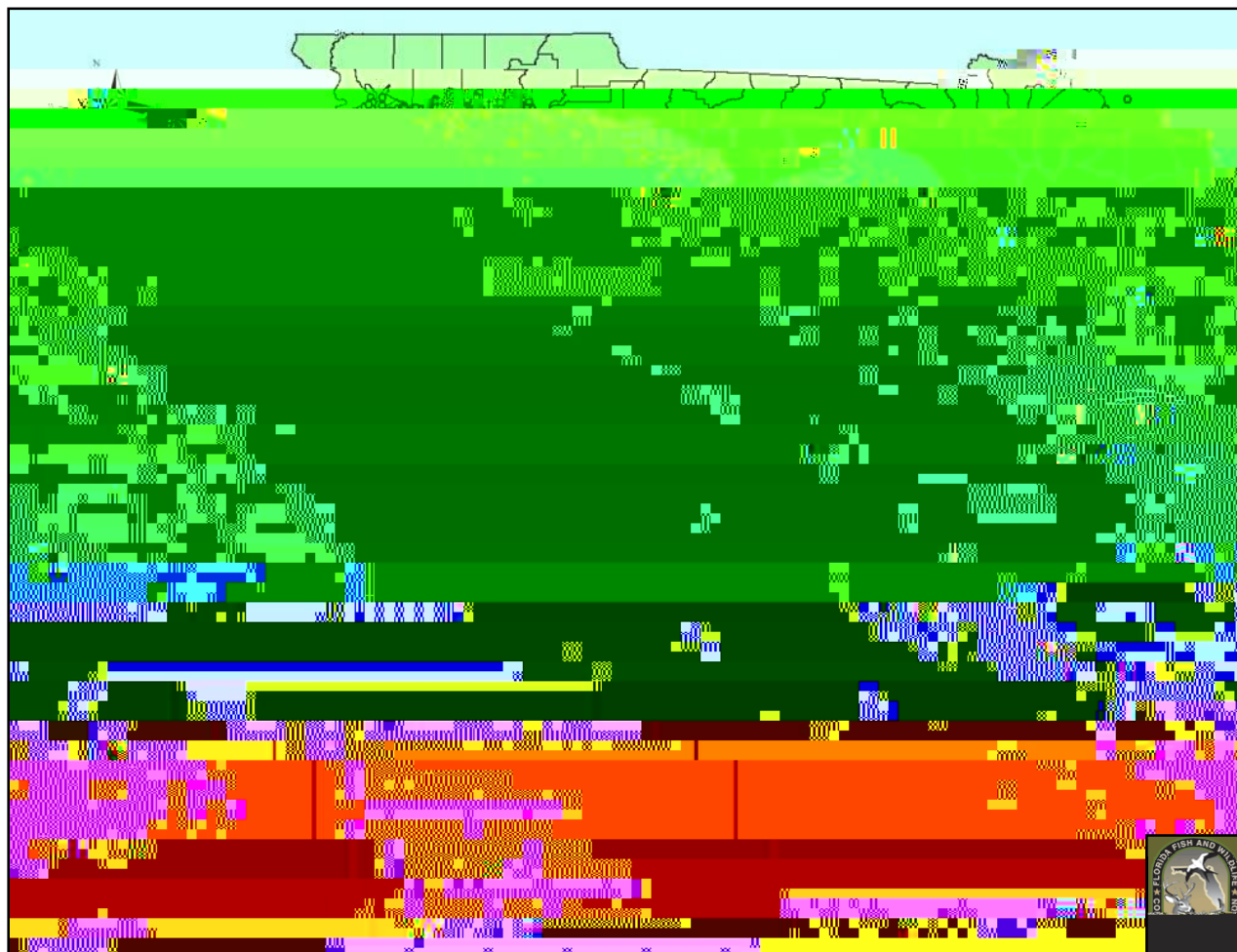


Contrast

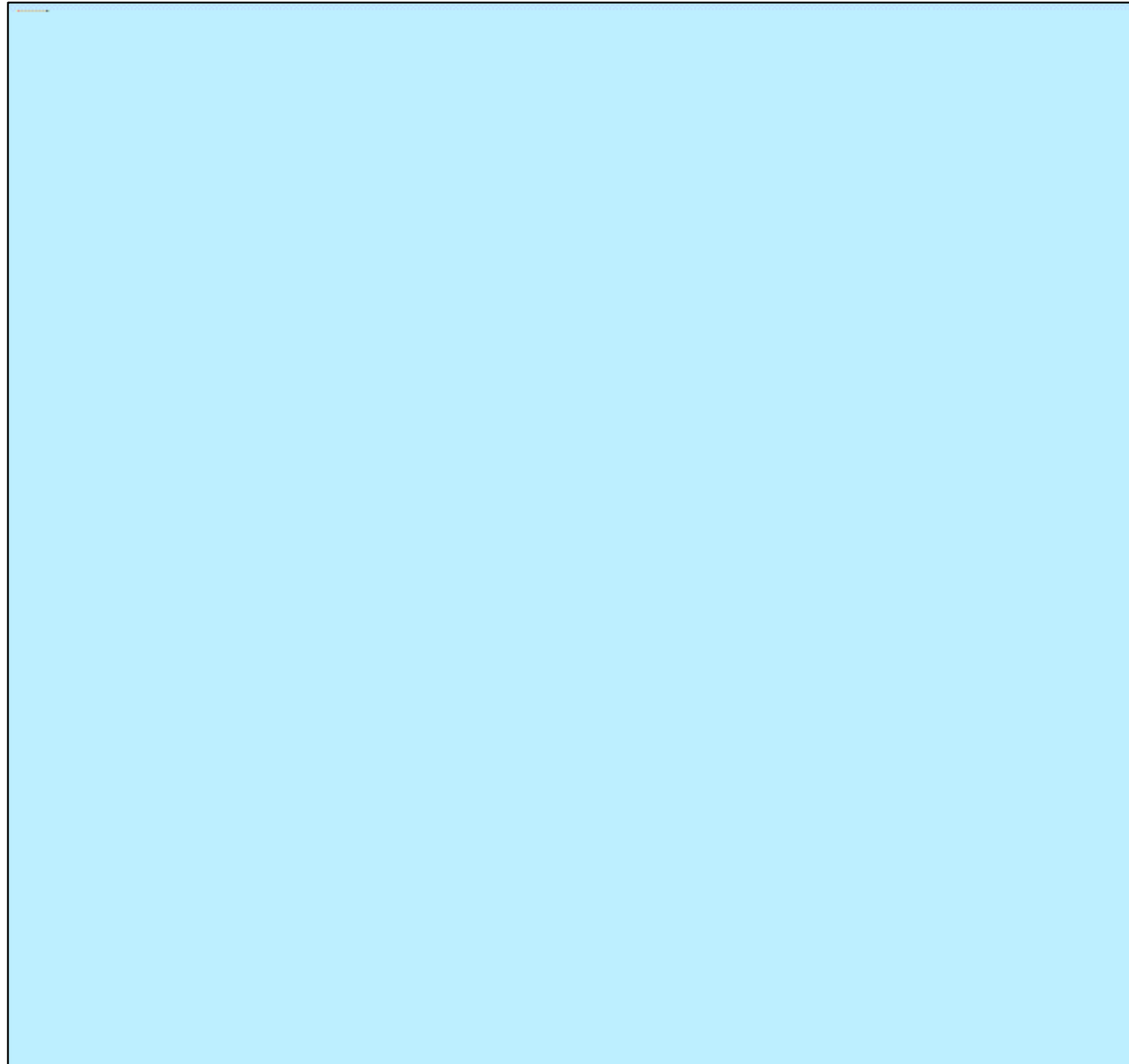
- ‡ Marine vs. Freshwater
- ‡ One vs. Many Species
- ‡ One vs. Many Toxins
- ‡ Aerosols vs Not Airborne
- ‡ Unknown why bloom vs. known association with nutrients

Florida Red Tide

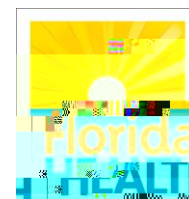
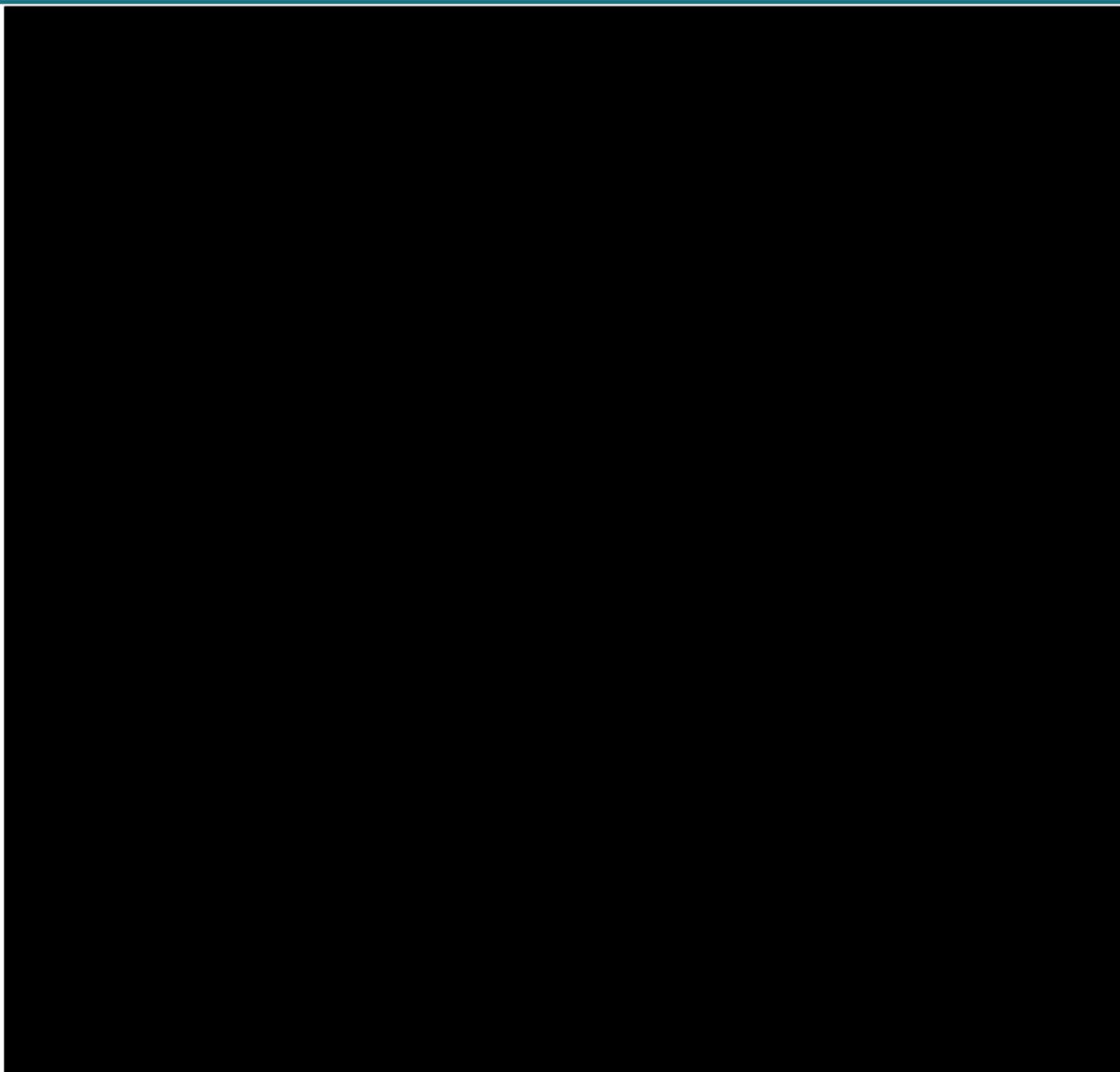
Positive Samples, 1954 to Present



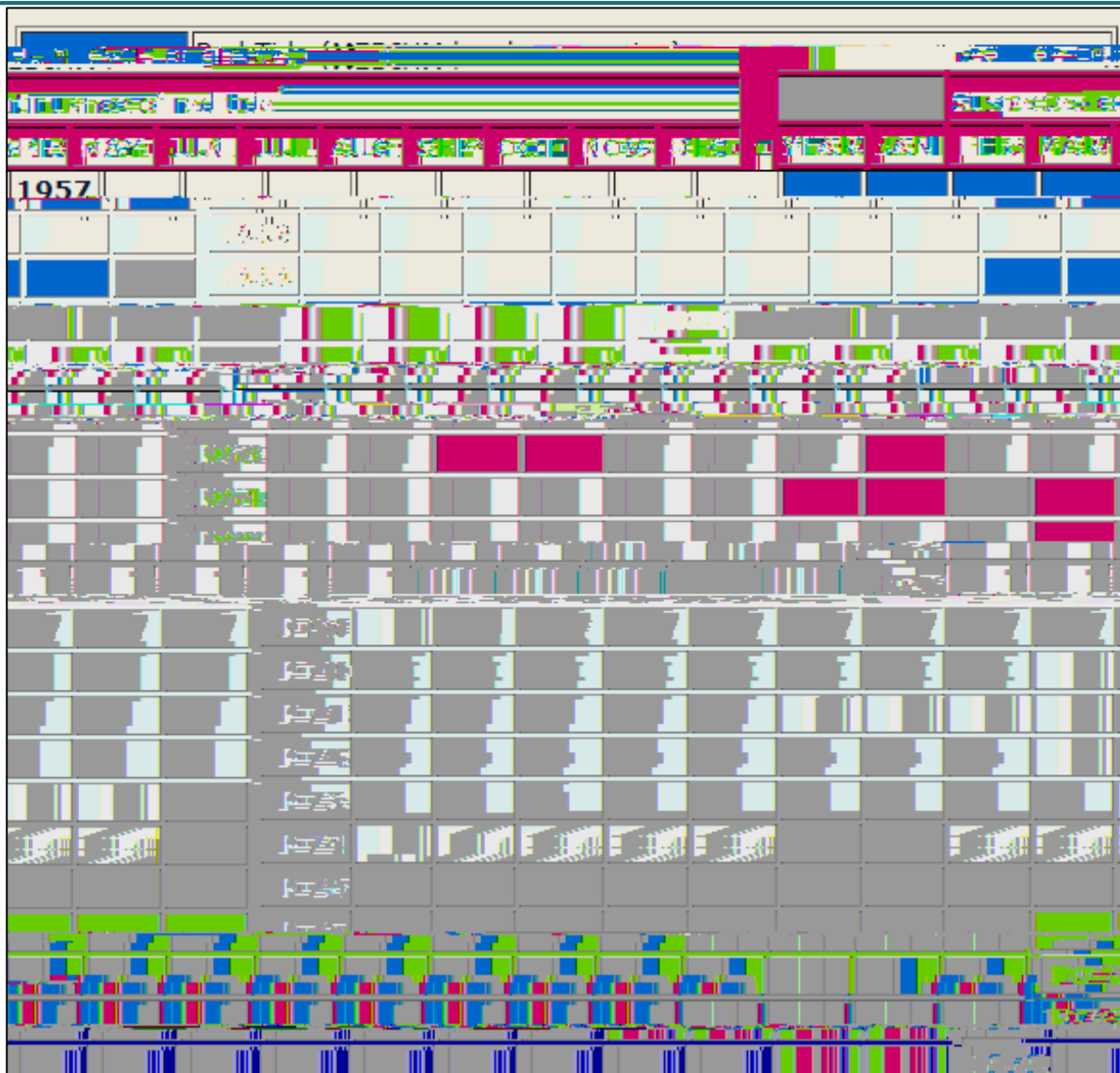
Approved Shellfish Harvesting Areas



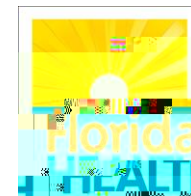
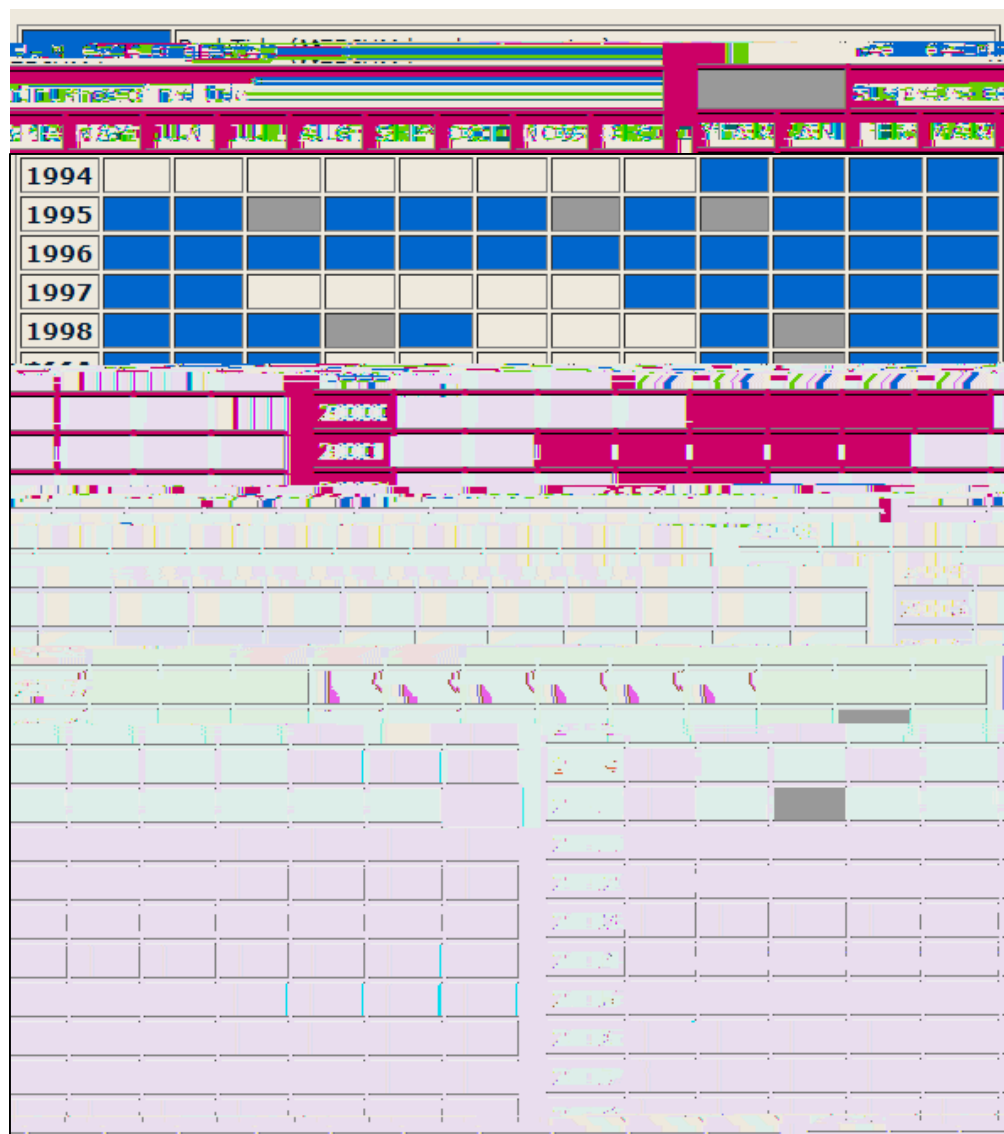
Red Tide Events



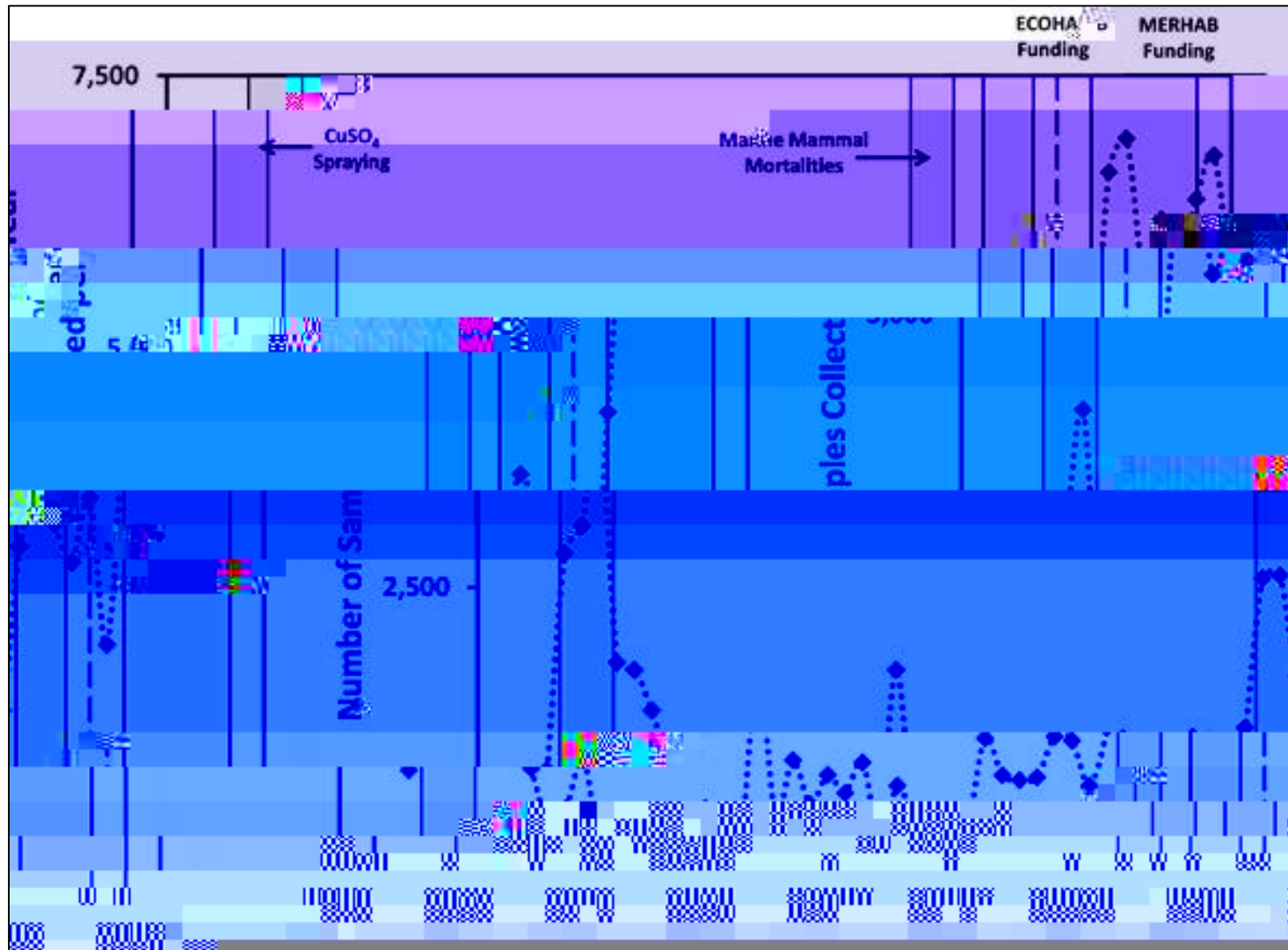
Red Tide Events



Red Tide Events

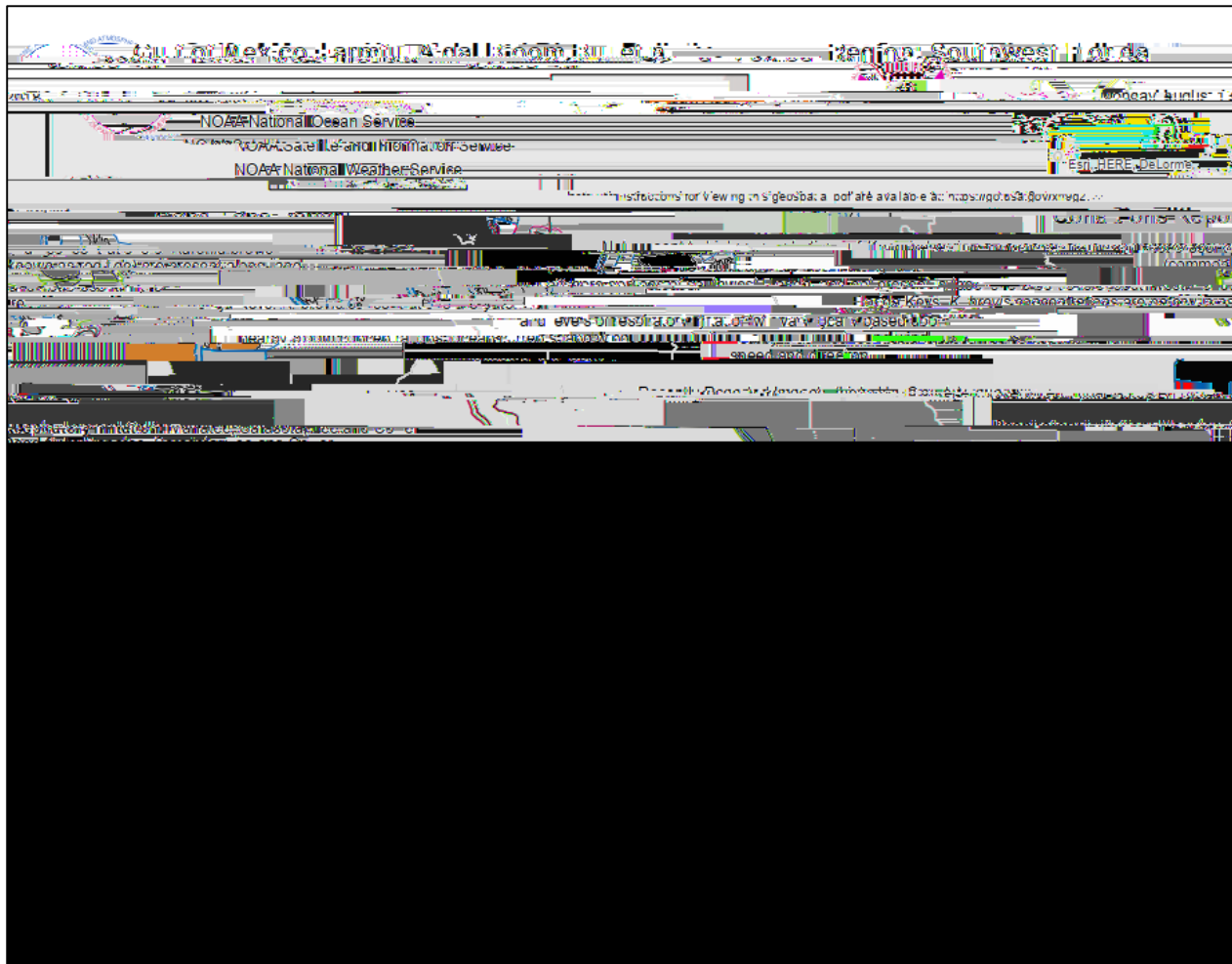


Red Tide Sampling 1954 - 2013



NOAA Gulf of Mexico

‡ Harmful Algal Bloom Bulletin

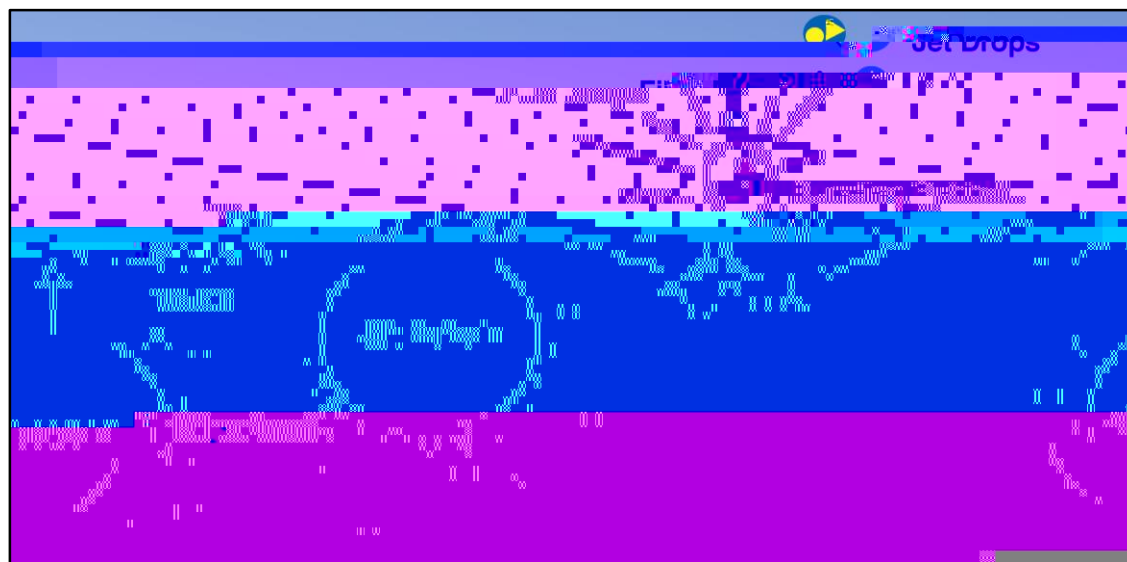
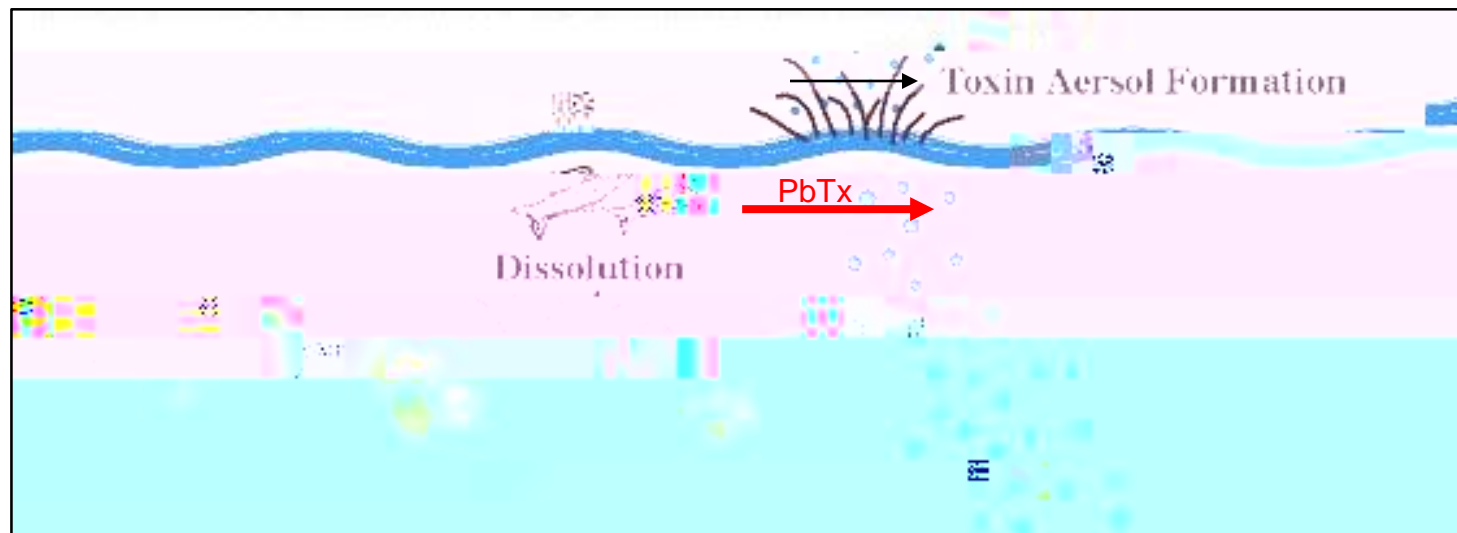


HAB Bulletin

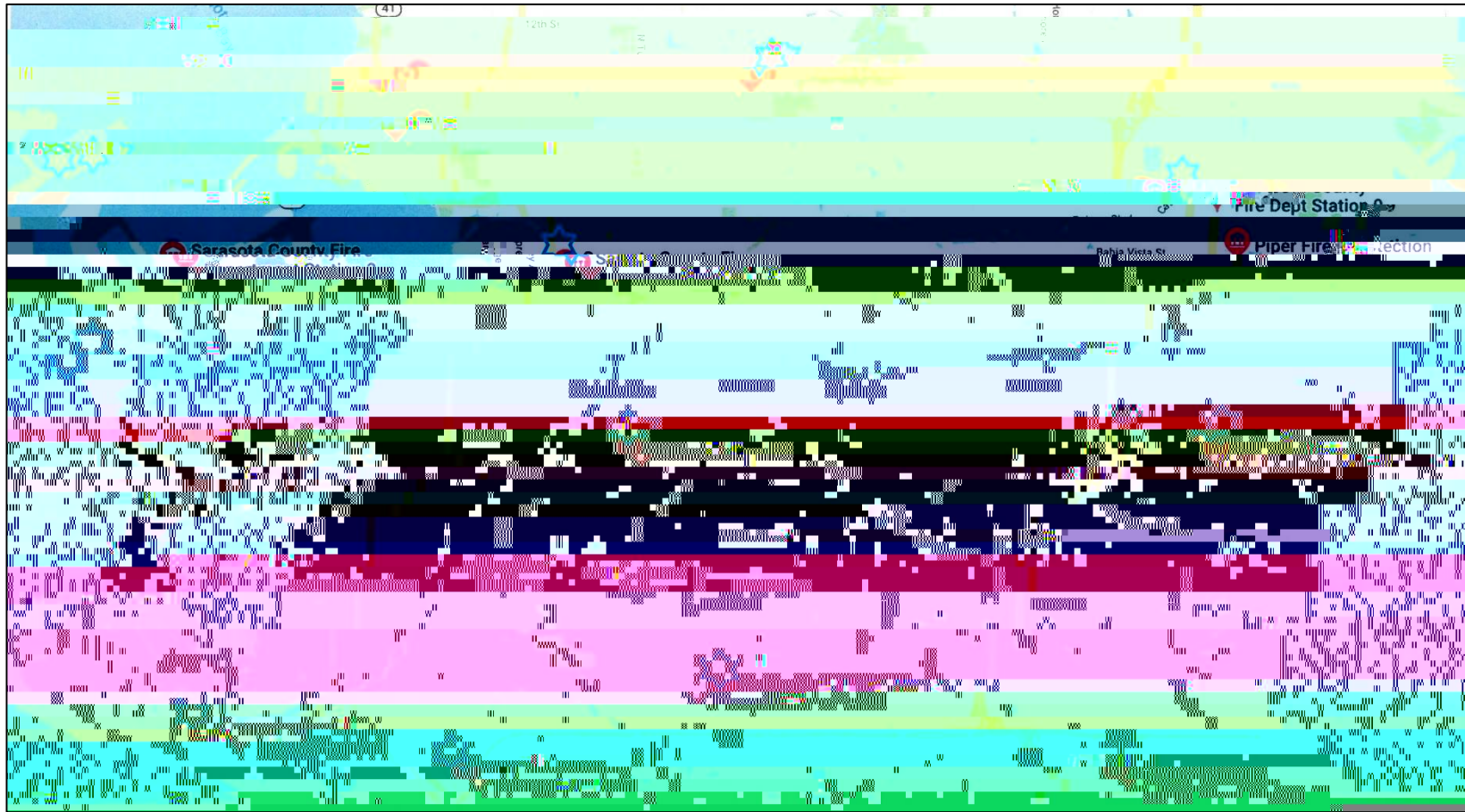
‡ Potential for Respiratory Irritation

Region	Start Date	End Date	Duration	Notes
Northern PINELLAS County Bay Regions	11/15/2011	11/15/2011	1 Day	

Bubble-mediated Transport

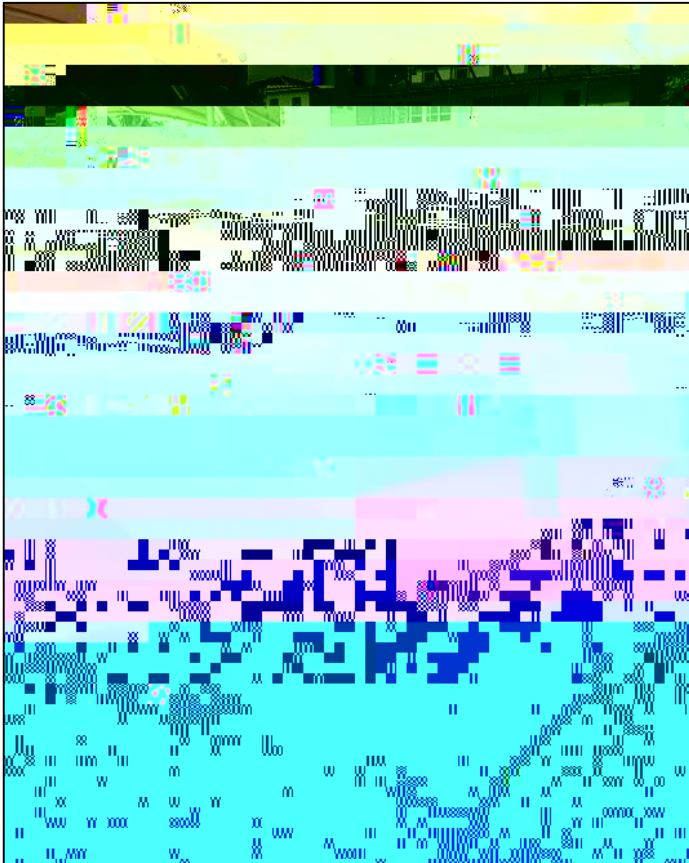


Mote Marine Laboratory and Aquarium



Sarasota County: Inland Transect Sampling Locations

Cyanobacteria/Blue-Green Algae



Chad Gillis, Fort Myers News-Press
Sept. 14, 2018



Shepard Park on the St. Lucie River near downtown
Stuart June 12, 2018. (Allen Eyestone / The Palm
Beach Post

Cyanobacteria/Blue-Green Algae

‡ Cyanotoxins: microcystins, anatoxins, cylindrospermosins, etc.



‡ No taste or smell

‡ Heat, acid stable

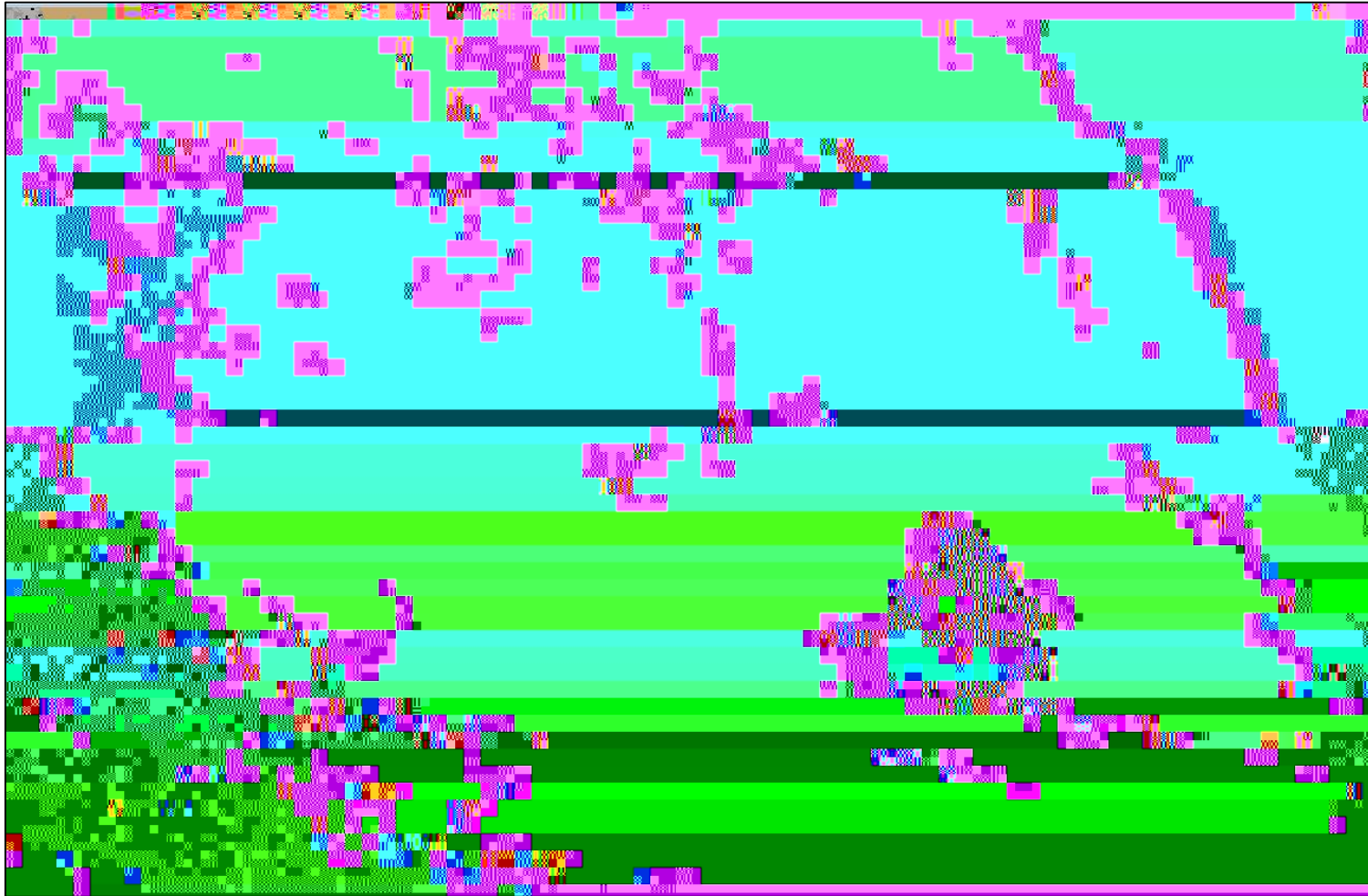
‡ Toxic



Rosen et al, 2017

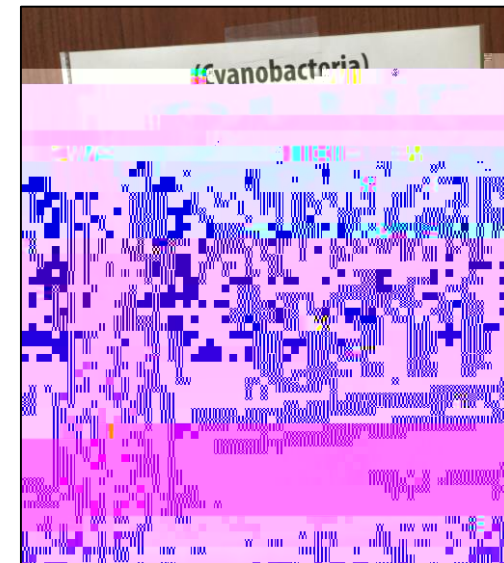
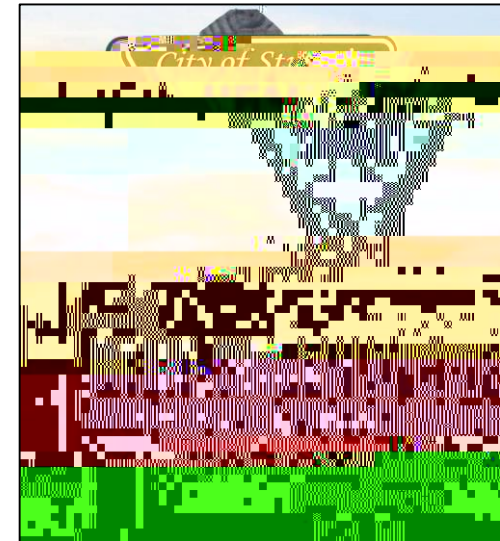
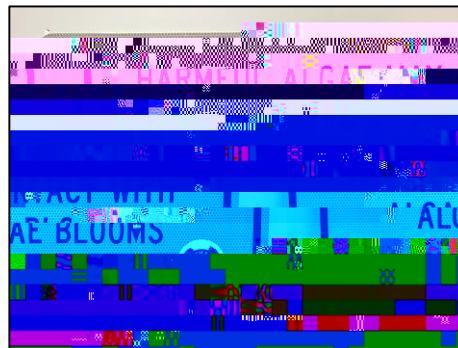
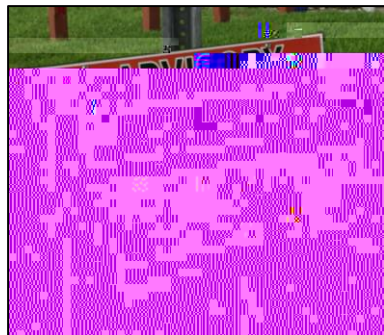
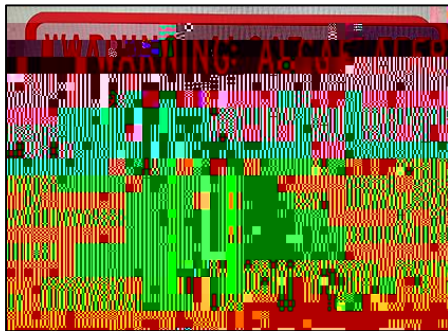


Cyanobacteria Satellite Imagery

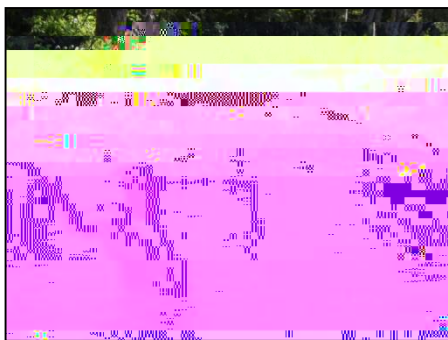


National Aeronautics and Atmospheric Administration, 8/10/18

Signage



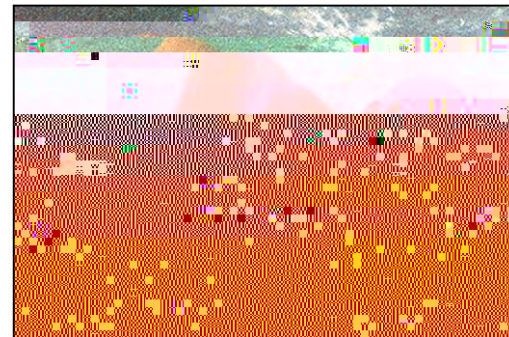
Potential Exposure Pathways



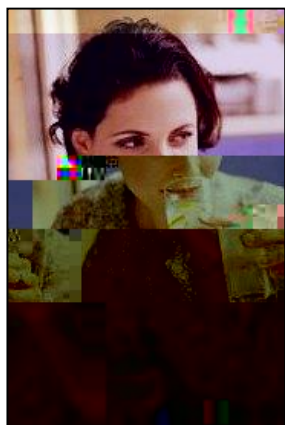
Direct Skin Contact



Ingestion of Food



Incidental Ingestion

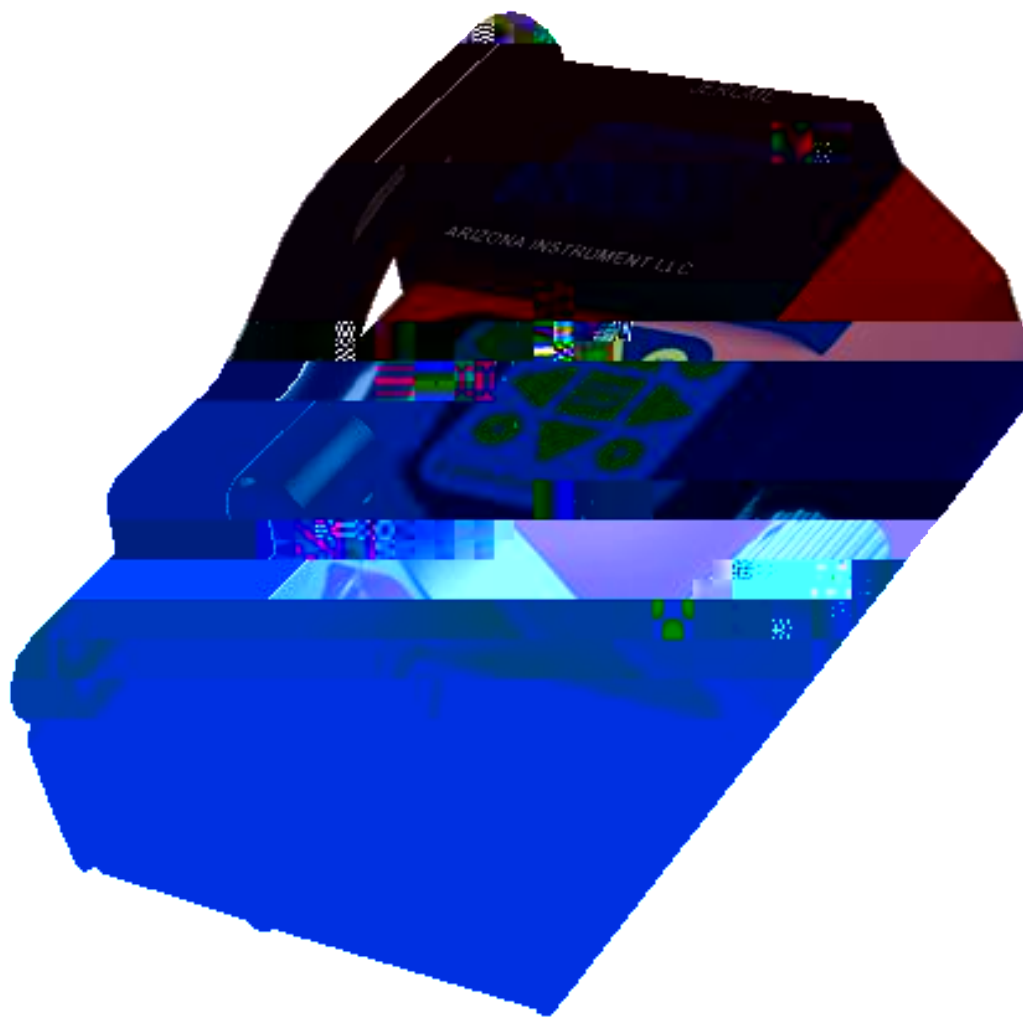


Drinking Water

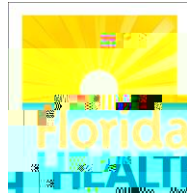
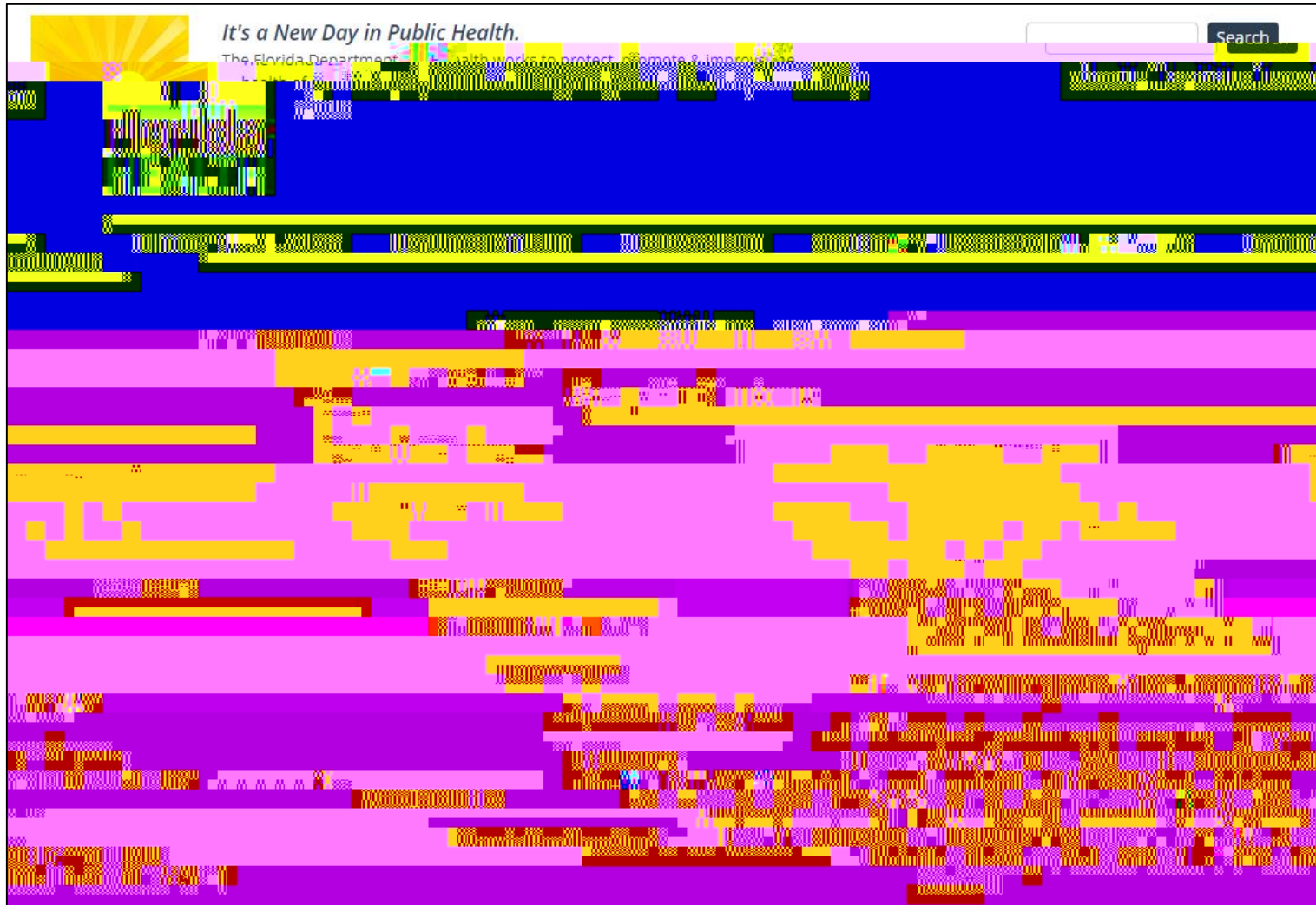


Inhalation of Aerosols

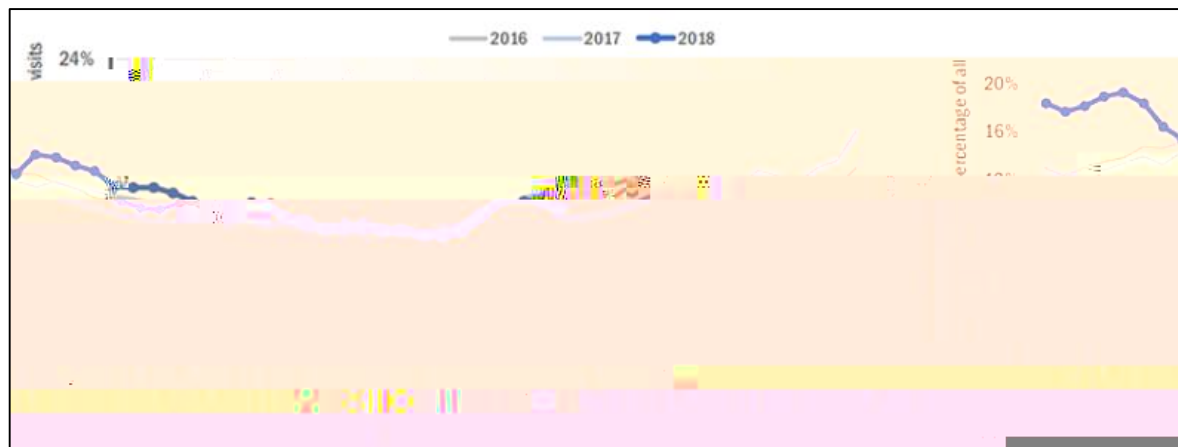
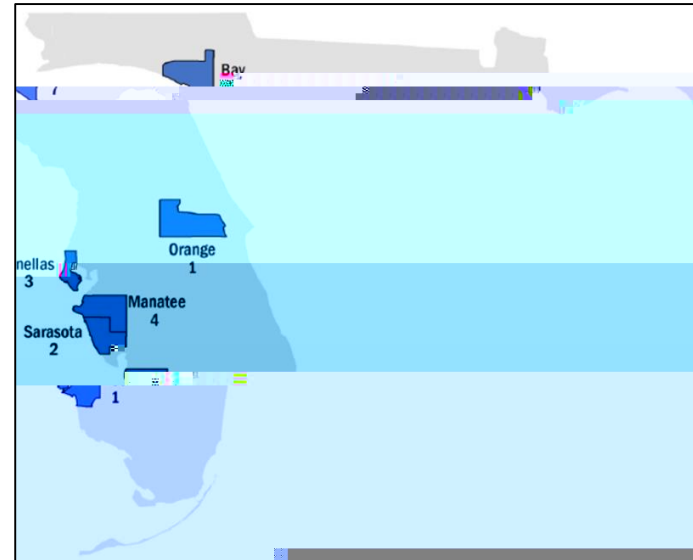
Hydrogen Sulfide Testing



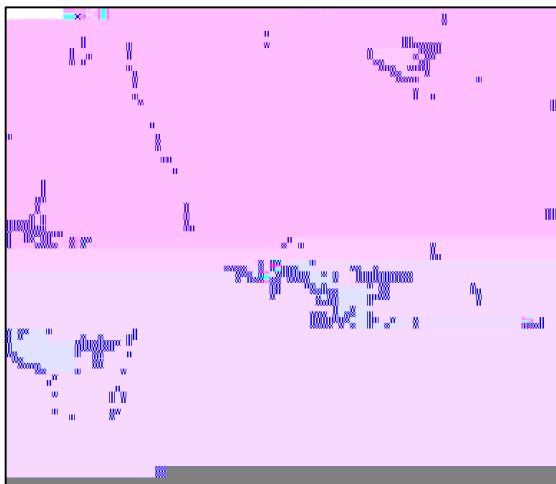
www.floridahealth.gov/algaeblooms



Health reports



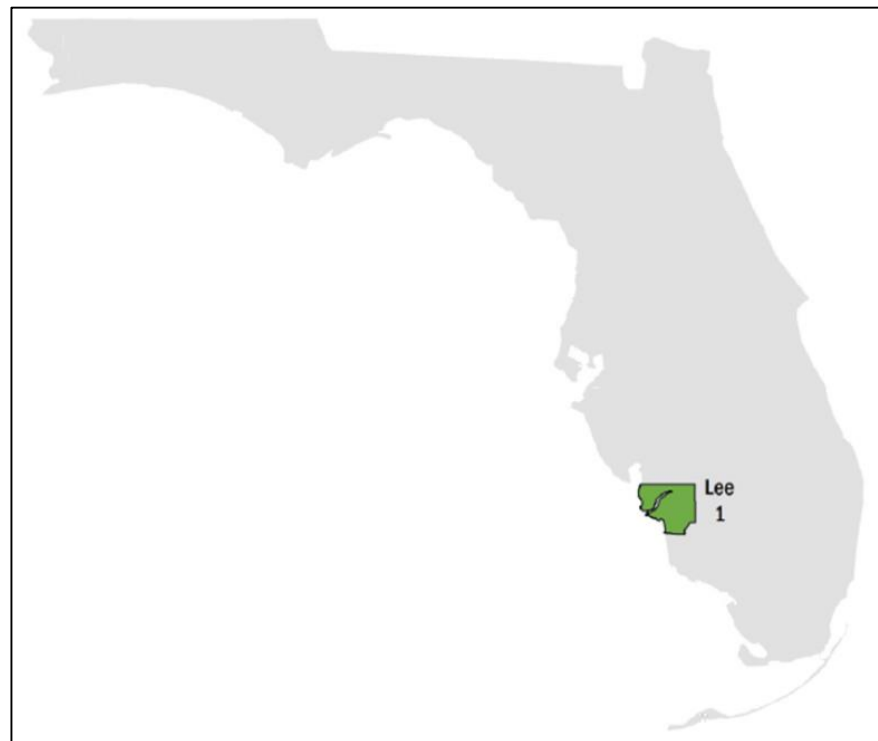
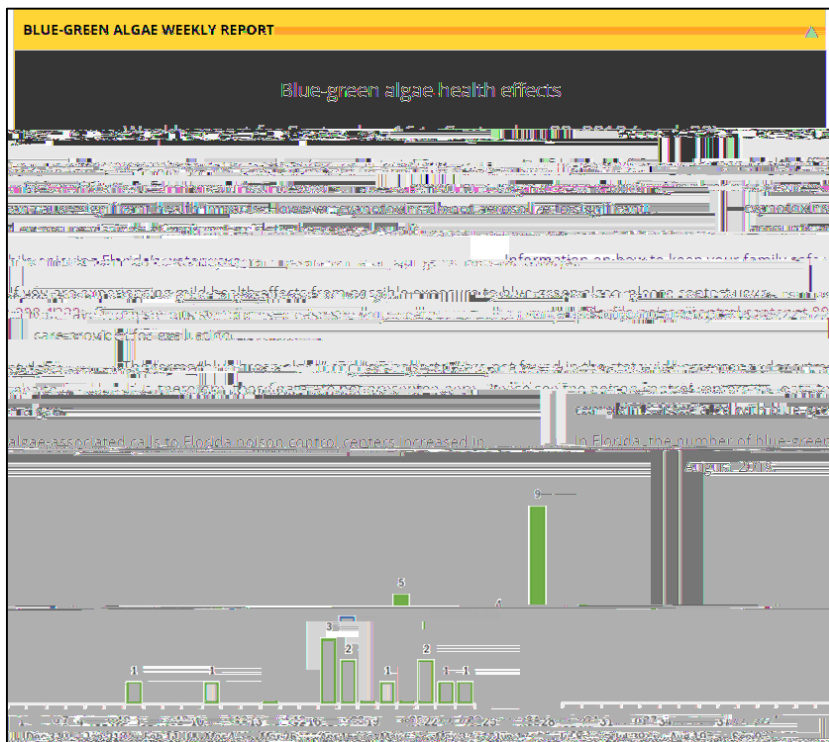
Health reports



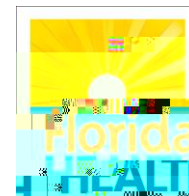
Florida Poison Control Exposure Calls



Health reports



Florida Poison Control Exposure Calls



' H S D U W P H Q W ¶ V : H E 6

- ‡ Some blue-green algae produce chemicals called cyanotoxins.
- ‡ At high concentrations, cyanotoxins can affect the liver, nervous system and skin.
- ‡ Most problems occur when substantial amounts of water containing high toxin amounts is swallowed such as when people



Guidance

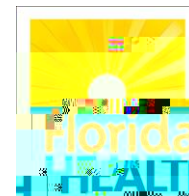
What are some tips for avoiding cyanobacteria/blue green algae? -

Avoid swimming in or drinking water



' H S D U W P H Q W ¶ V : H E 6

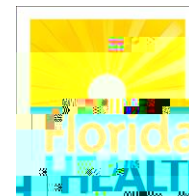
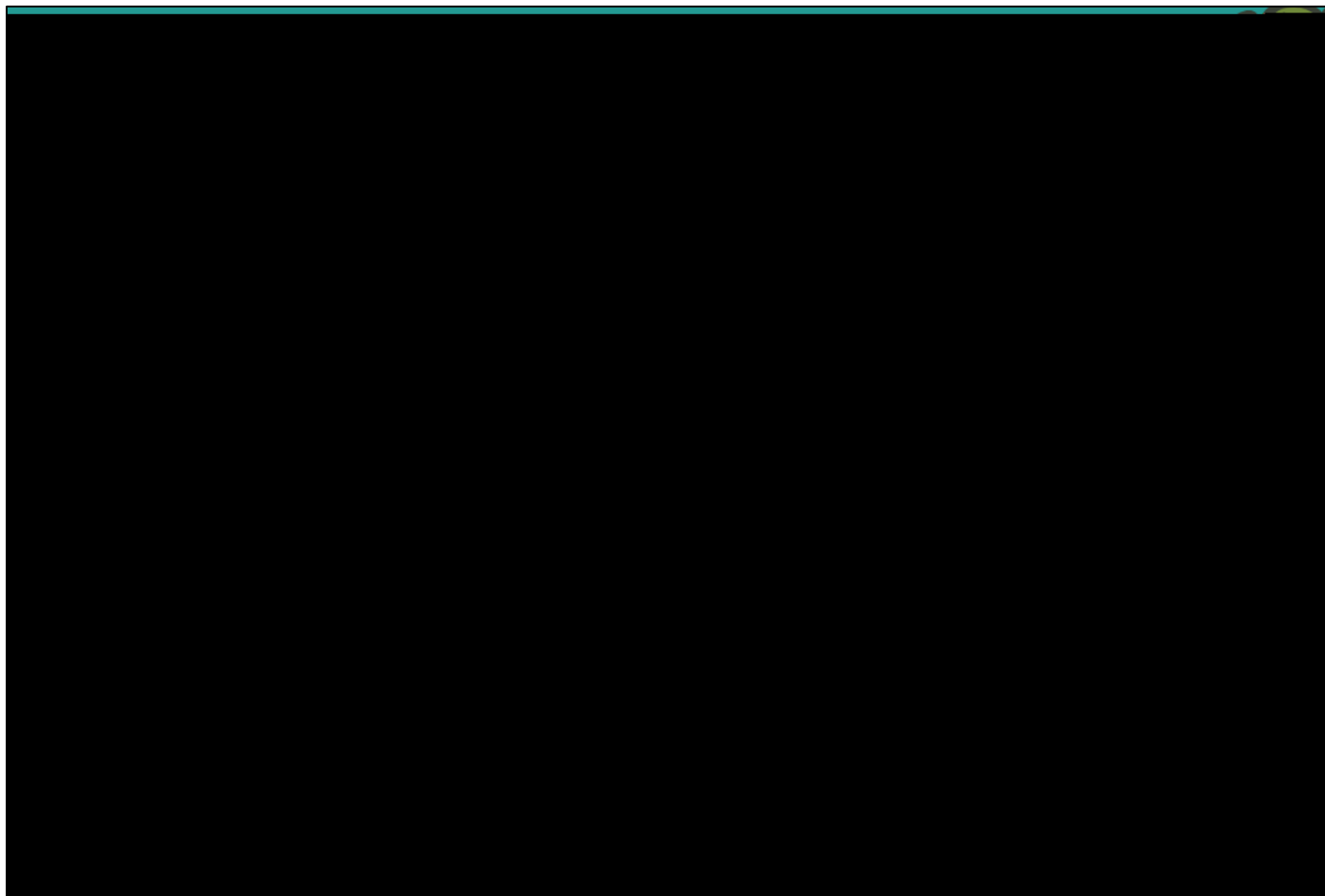
‡



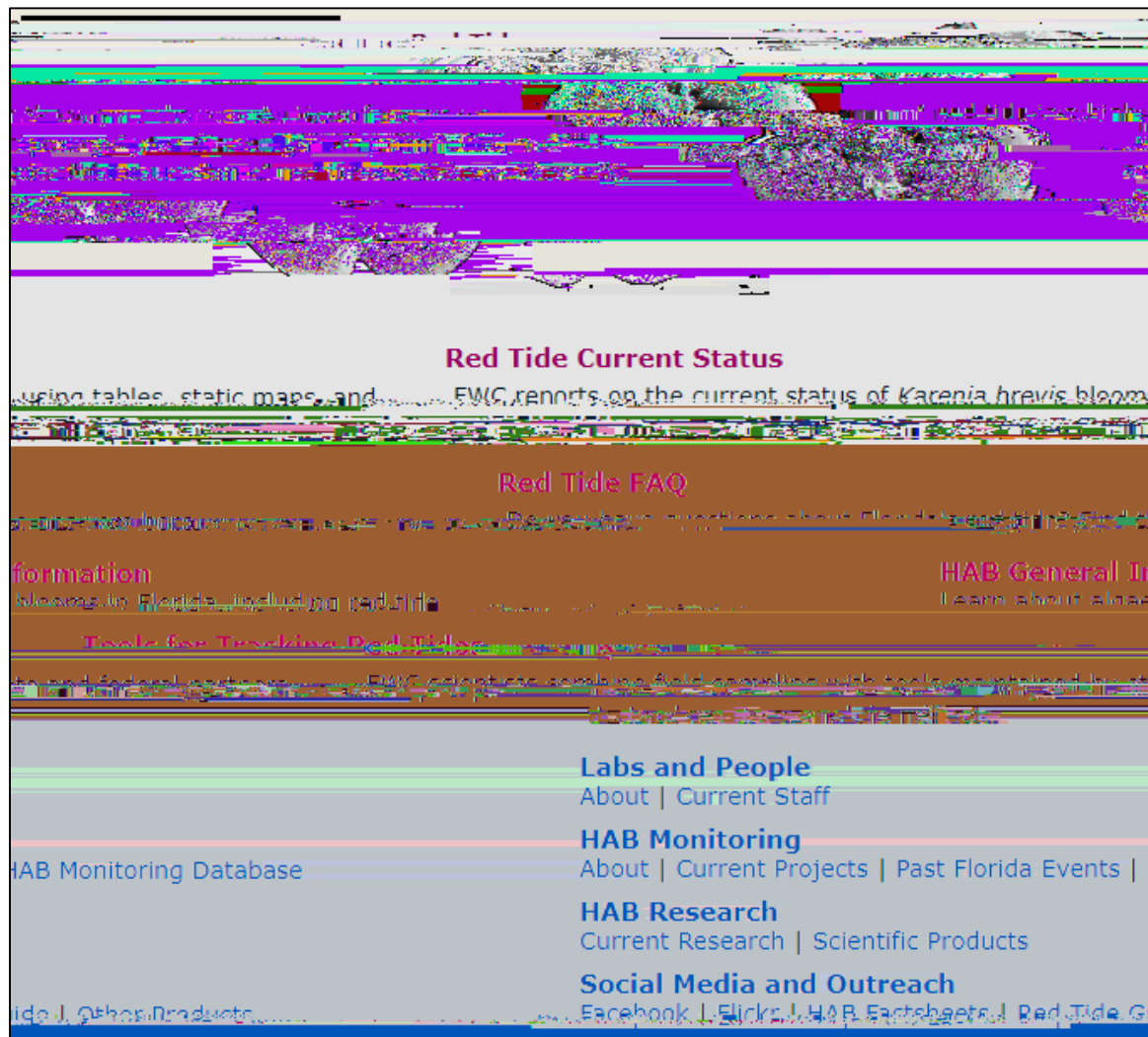
Outreach/Education



Dodge it



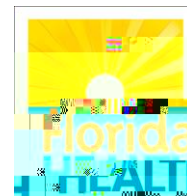
FWC Web Site



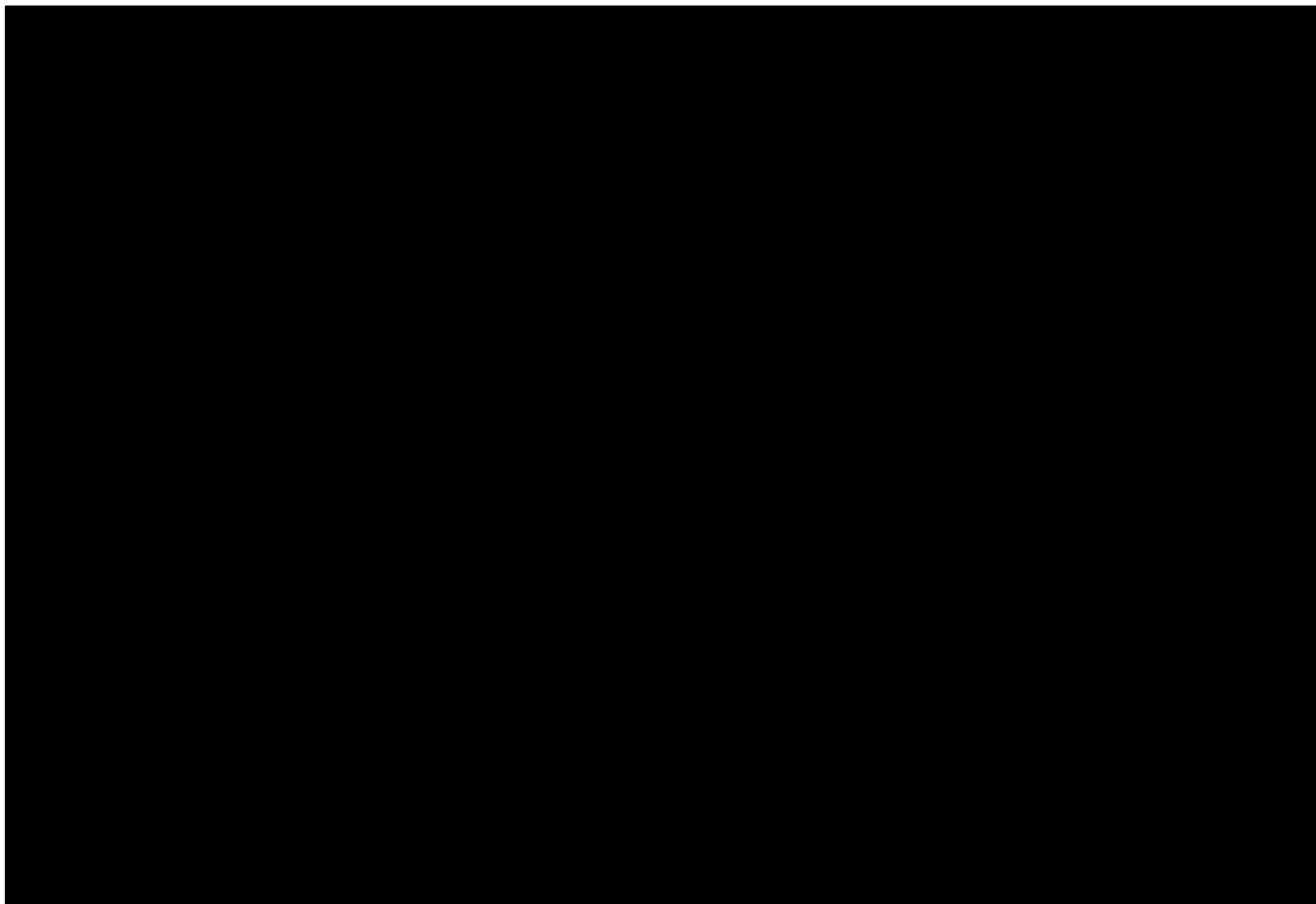
<http://myfwc.com/research/redtide/>



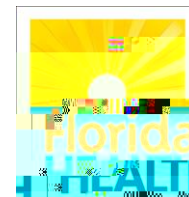
FWC Web Site



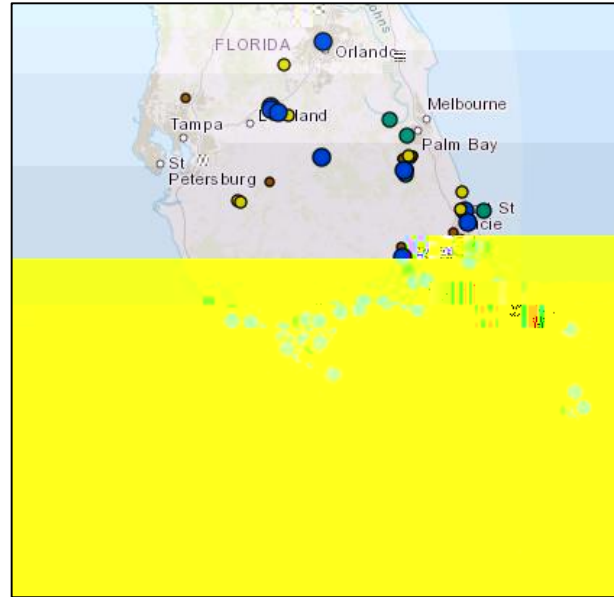
FDEP Web Site



<https://floridadep.gov/AlgalBloom>



FDEP Web Site



Sec 15 sites within 30 days
 Sec 15 sites within 30 days
 Sec 15 sites within 30 days
 Sec 15 sites within 30 days
 Sec 15 sites within 30 days
 Sec 15 sites within 30 days
 Sec 15 sites within 30 days

Location	County	Site Visited By	Sample Taken?	Sample Depth	Sample Depth	Analyzed By	Site Visit Date	Sample Lo

07 February 2014 10:00 AM

Contact Information

andy.reich@flhealth.gov
(813) 307-8015 x 5961

