Escayne Bay Algae Blooms



Water Quality and Climate Change Issues Rorida Water & Climate Alliance, November 13, 12 – 2pm

lem Fankovich

Courtesy WPLG



What is it?, Oil spill?

Is it harmful?, Does it kill fish?

What caused it?

Why here?, Why now?

Where did it come from?



Chlorophytes



Diatoms



Dinoflagellates

Phytoplankton are diverse with distinct FWand SW species

Cyanobacteria

Toxicity

Paralytic Shellfish Poisoning Alexandriumspp. - Dinoflagellate

Amesic shellfish poisoning Pseudo-nitzschia spp. - Diatom

Human respiratory distress, fishkills Rorida Red Tide – *Karenia brevis* dinoflagellate

PalmBeach Post via AP

Mcrocystis aeruginosa

Some Rorida blooms are toxic

Ciguatera

Gambierdiscus caribaeus benthic dinoflagellate

St Lucie River, Stuart

Harmful algal blooms (HABs)

Light attenuation, shading of benthic communities

Injuries to aquaculture

Oxygen depletion, odor - decomposition

Algae Bloom Leads To Smelly Biscayne Bay

July 19, 2013 9:36 PM

Filed Under: Algae Bloom, Biscayne Bay, Card Sound, Environment, Polution, Rickenbacker Causeway, Runoff, Ti



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KEY BISCAYNE (CBS4/The Miami Herald) – An algae bloom has hit Biscayne Bay and it is possibly one of the biggest in history.

Others less harmful

Favorable conditions for HABs

Nutrient enrichment

Abundant light,

Elevated temperature

Reduced herbivory

Reduced flushing - residence time



Tetraselmis sp. – Prasinophyte Saint Lucie Estuary bloom July 2019

A combination of favorable conditions may trigger a bloom

Cyanobacteria Dolichospermumcircinale





Dinoflagellates Levanderina fissa

Freshwater



Diatoms Chaetoceros socialis





Dinoflagellates Pyrodinium bahamense





San Souci Canal North Biscayne Bay Temp – 31 C Salinity – 24 August 2020

Arch Creek B/22 12:30

88 Canal 2 8-22 11:41 am 2009 NE 120 RD





Long, thin spines (setae)

Diatom bloom in North Biscayne Bay following rainfall, canal discharge, fishkill

Chaetoceros Bloom - Why North Biscayne Bay? Why a diatom?

Phytoplankton concentrations 3-5X greater in North Bay



Chaetoceros lauderi Resting spore

Hgh Nutrient loading into small area

Restricted circulation

Location of previous blooms



Chaetoceros Boom - Why August?

Hgher temperatures - increased growth potential

Hgh rainfall - flushing of nutrients

Hgher light - intensity and daylength



Chaetoceros constrictus SEM

Conditions were favorable for rapid growth

Climate change

How may a resource manager expect the composition, timing, and intensity of algal blooms to change during anticipated climate change?

Things to consider.

Phytoplankton communities are likely to respond to conditions similarly to how they do now

But, conditions will change, likely being warmer and wetter