Lake Superior as an unlikely – yet repeat - bloomer

What we know, what we need to know, what we're fixing to know.

Blooms and the Big Lake

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Northern Great Lakes Visitor Center, Ashland, WI

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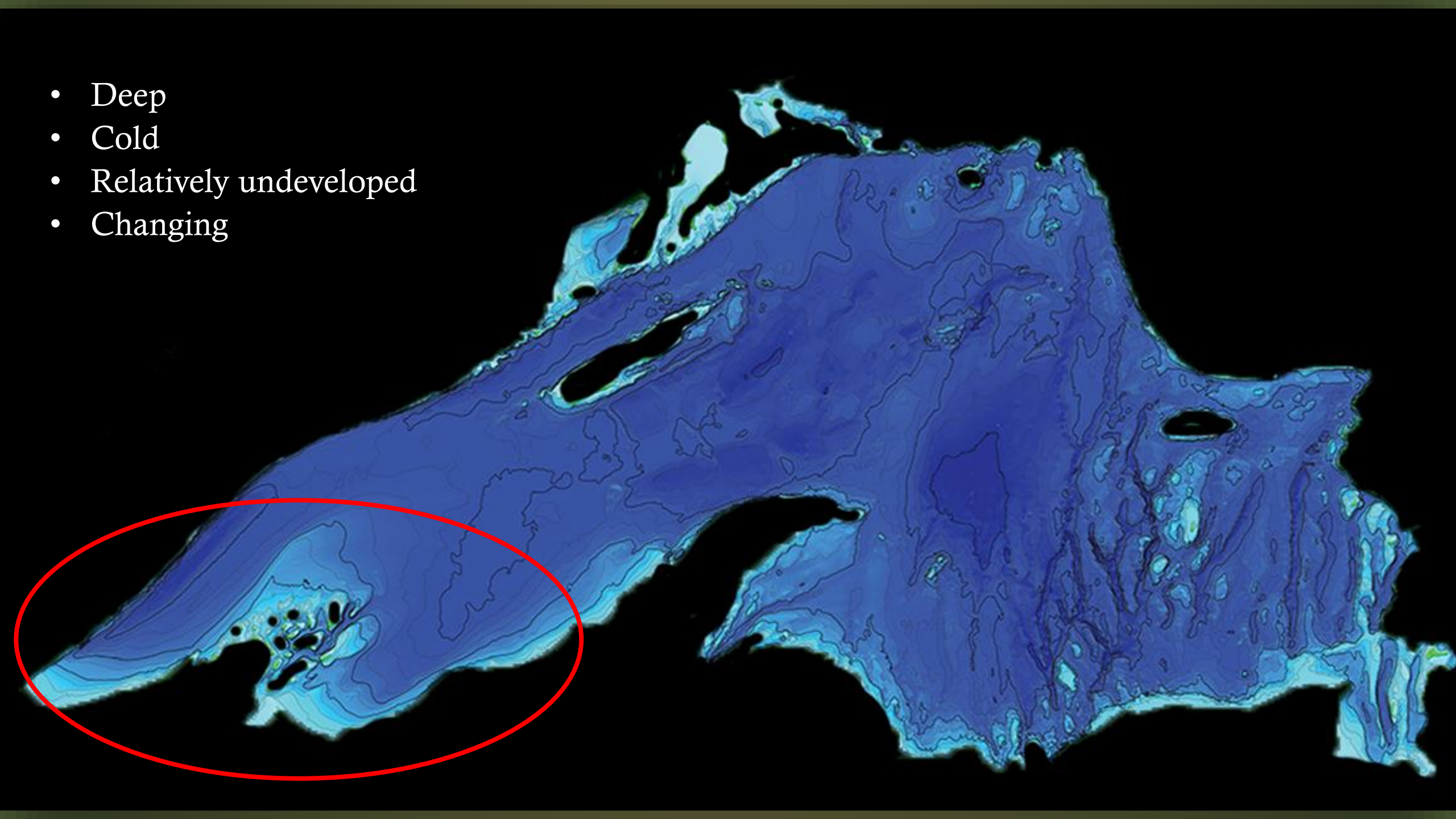
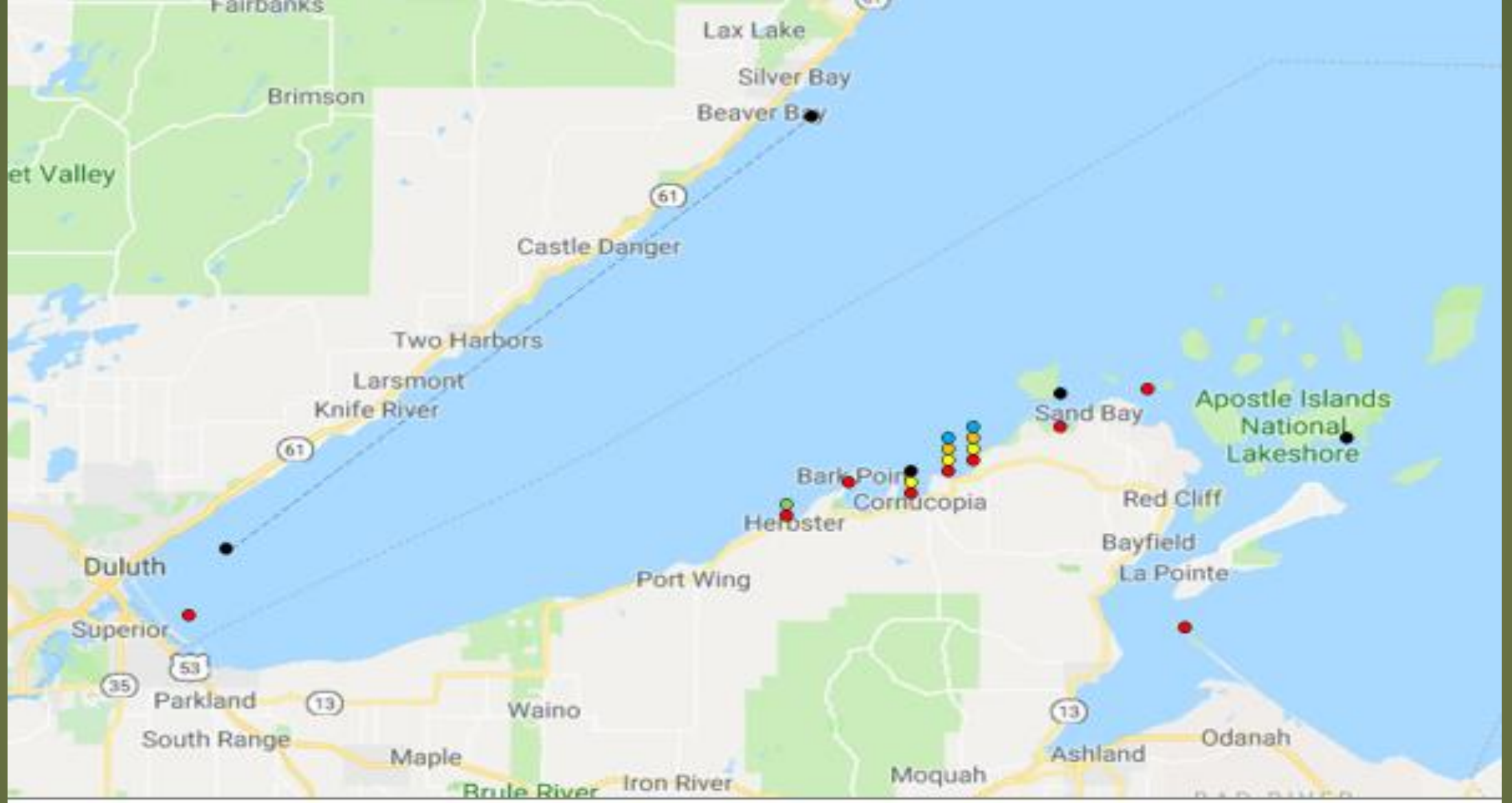
WISCONSIN
DEPT. OF NATURAL RESOURCES

- Deep
- Cold
- Relatively undeveloped
- Changing




Fairbanks
Lax Lake
Silver Bay
Brimson
Beaver Bay
et Valley
61
Castle Danger
Two Harbors
Larsmont
Knife River
61
Sand Bay
Apostle Islands
National
Lakeshore
Bark Point
Cornucopia
Red Cliff
Herbster
Bayfield
La Pointe
Duluth
Port Wing
Superior
53
35
Parkland
13
Waino
13
South Range
Maple
Ashland
Odanah
Moquah
Brule River
Iron River
Anecdotal Historical Observations
2012 Observations
2015 Observations
2016 Observations
2017 Observations
2018 Observations

What we know

- Bloom have occurred in L Superior in the past, since 2012 have been occurring at greater frequency
- Blooms concentrated close to shore
- Blooms short lived
- Species identified as *Dolichospermum lemmeranni*. Can produce toxins, but samples from blooms to date have not included toxins tested for.

What we know

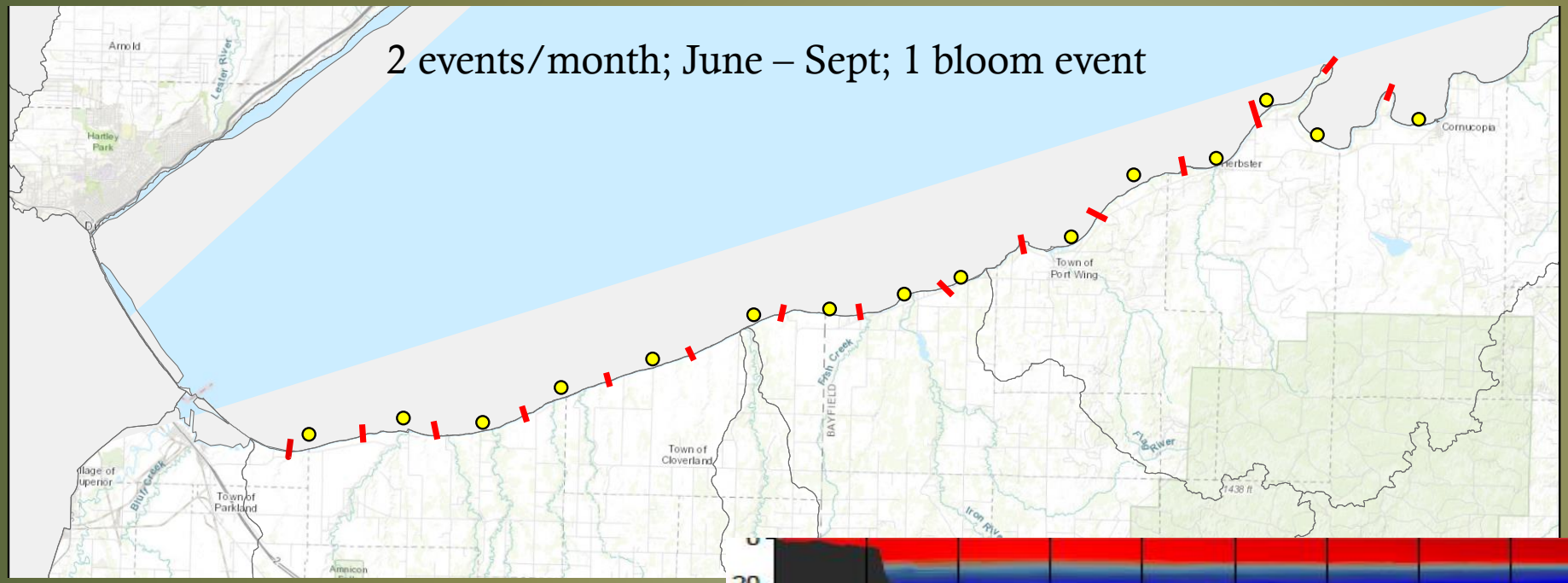
What are the drivers of these blooms?

Heavy Rain	Bigger blooms when **exceptional precipitation and flooding**
Nutrients/Light	Sediments/nutrients come with floods Blooms lag 1-2 mo. behind floods
Temperature	Warmest years, warmest parts of summer
Wind/Waves	During a relatively calm period

What we need to know

- How big are the blooms? (Only know where you look…)
- What is the source of blooms?
- Potential for future blooms?
- Potential for blooms to produce toxins?

WDNR 2019 nearshore monitoring



- Distribution of blooms?
- Water quality conditions leading up to and during blooms?

- How do grab samples represent nearshore conditions?