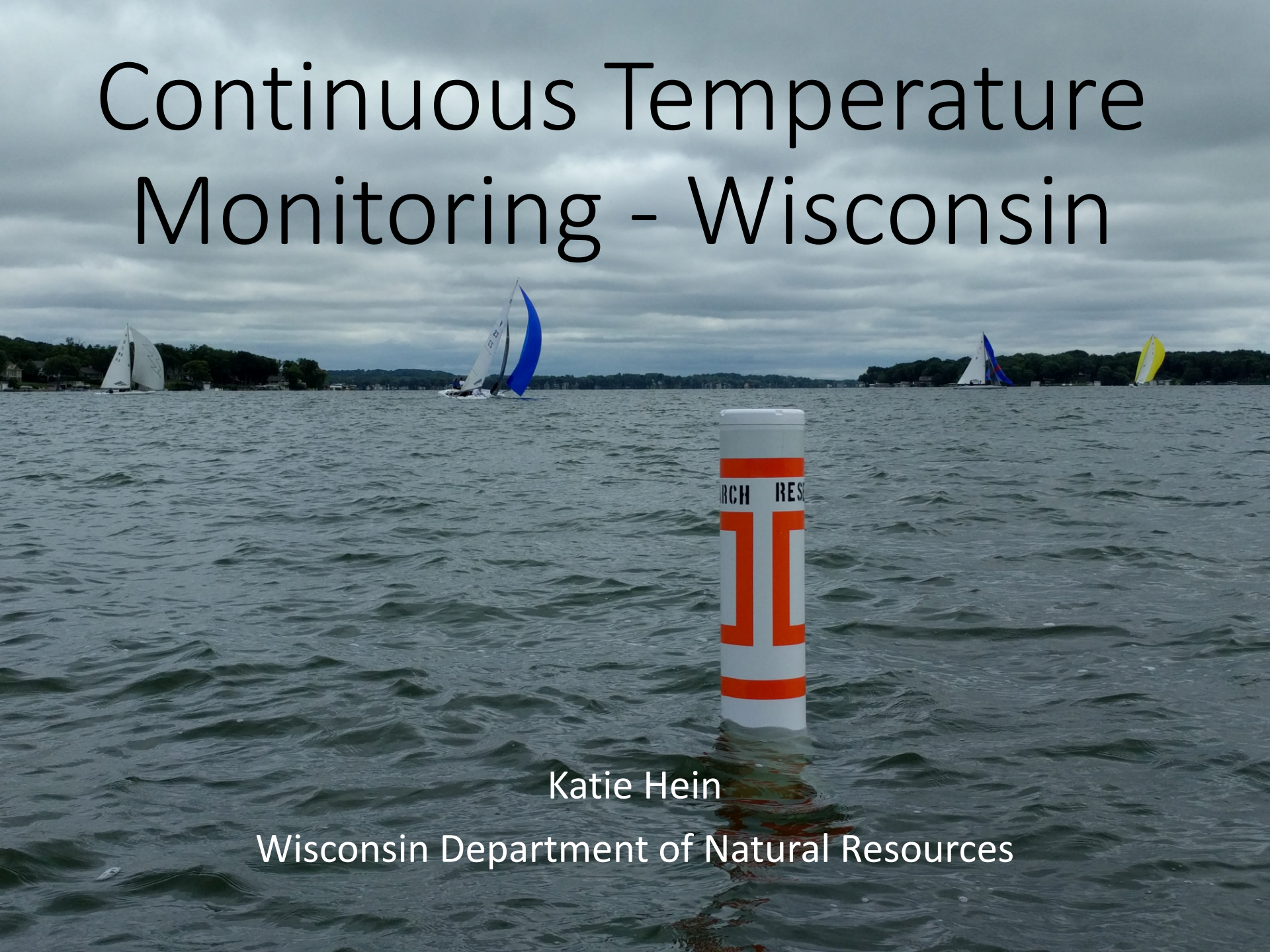
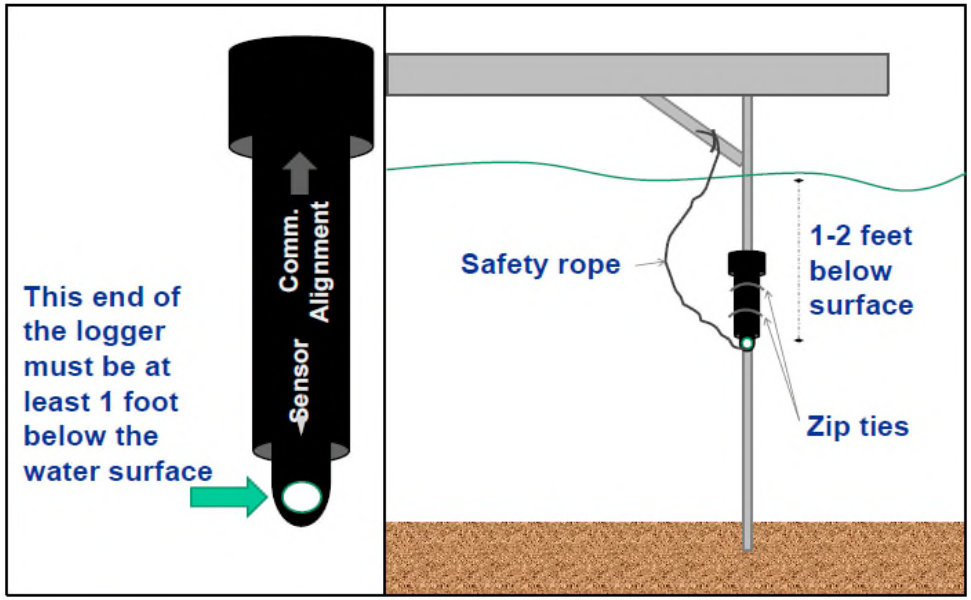
Continuous Temperature Monitoring - Wisconsin

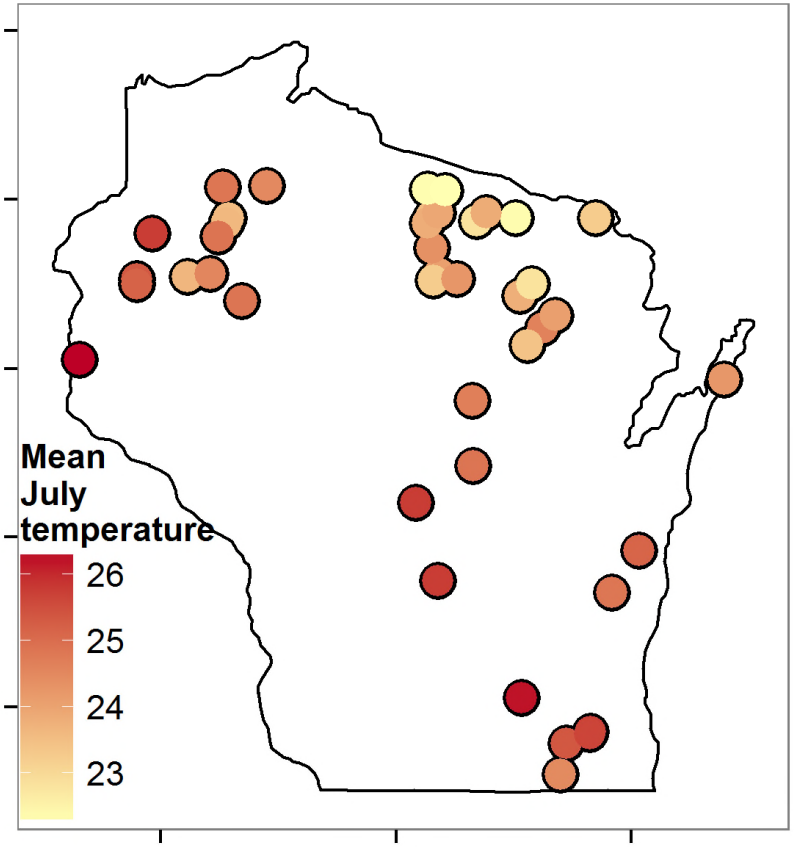


Katie Hein

Wisconsin Department of Natural Resources

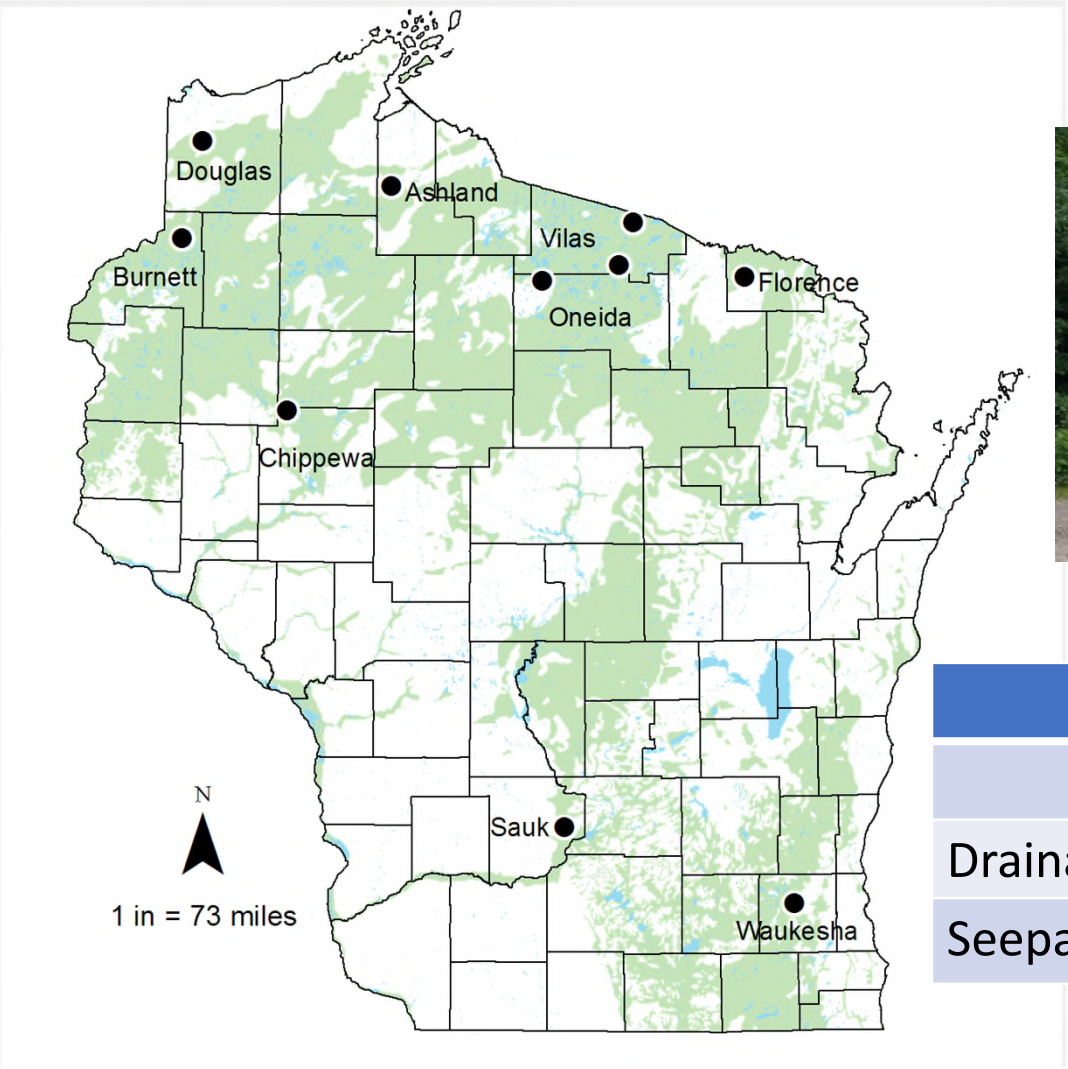
Began as citizen monitoring project in 2015





Gretchen Hansen
WDNR

10 Regional Monitoring Network Lakes



	Deep		Shallow	
	Brown	Clear	Brown	Clear
Drainage	3			
Seepage	2	3		2

Monitoring Initiative Funds

Item	Per Unit Cost
Rolyan buoy	$130
fishing float	$5
hardware	$30
temperature loggers	$130
newspaper ad (required for permit)	$100
dissolved oxygen loggers	$1,250
tools, incidentals	$200

TOTAL $725 - $1375

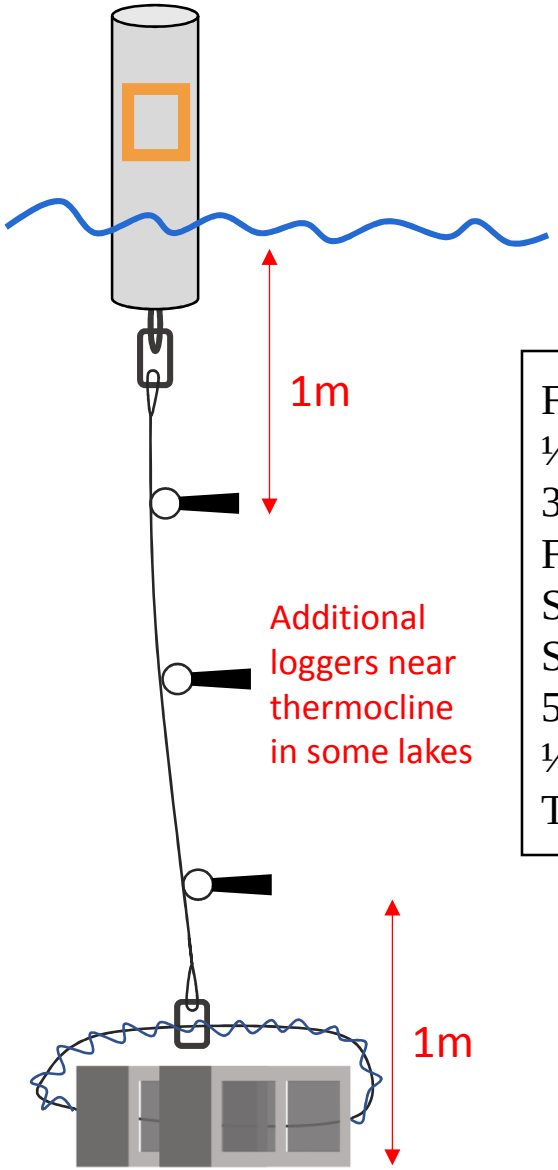
with 2 – 7 temperature loggers

Permits

Miscellaneous Structures

Waterway Marker

Our System

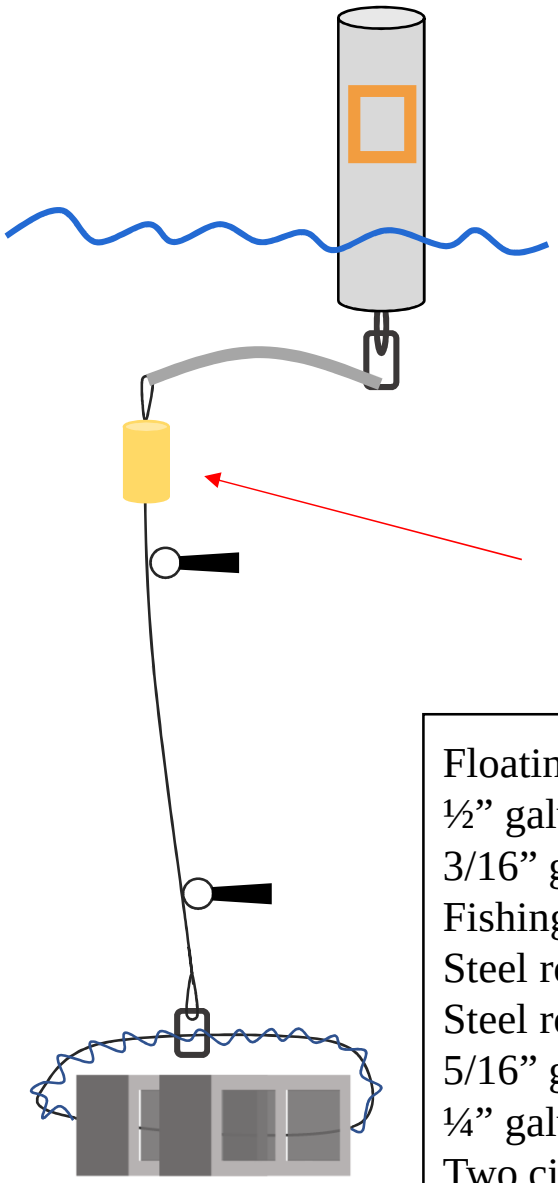


<--- Waterway marker permit required (buoy)

Floating informational buoy	← Lake surface
½” galvanized steel quick link	
3/16” galvanized steel rope loop secured with thimble and cable clamps	
Fishing float (some lakes)	
Steel rope with loggers attached	
Steel rope loop secured with thimble and cable clamps	
5/16” galvanized steel quick link	
¼” galvanized steel chain	
Two cinder blocks	← Lake bottom

<--- Miscellaneous structure permit required (anchor)

Our System



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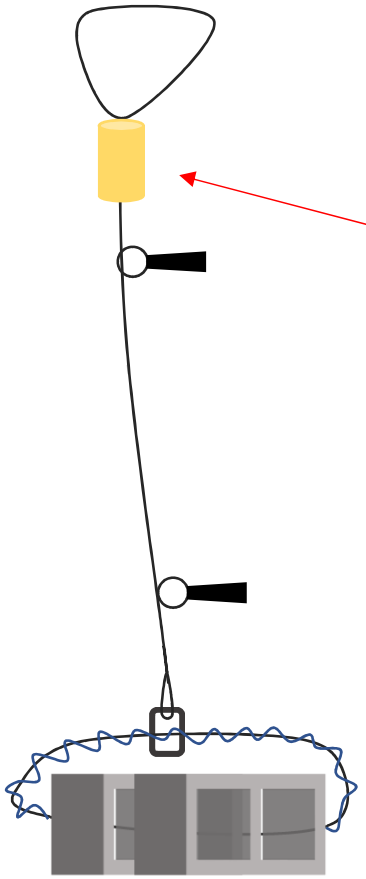

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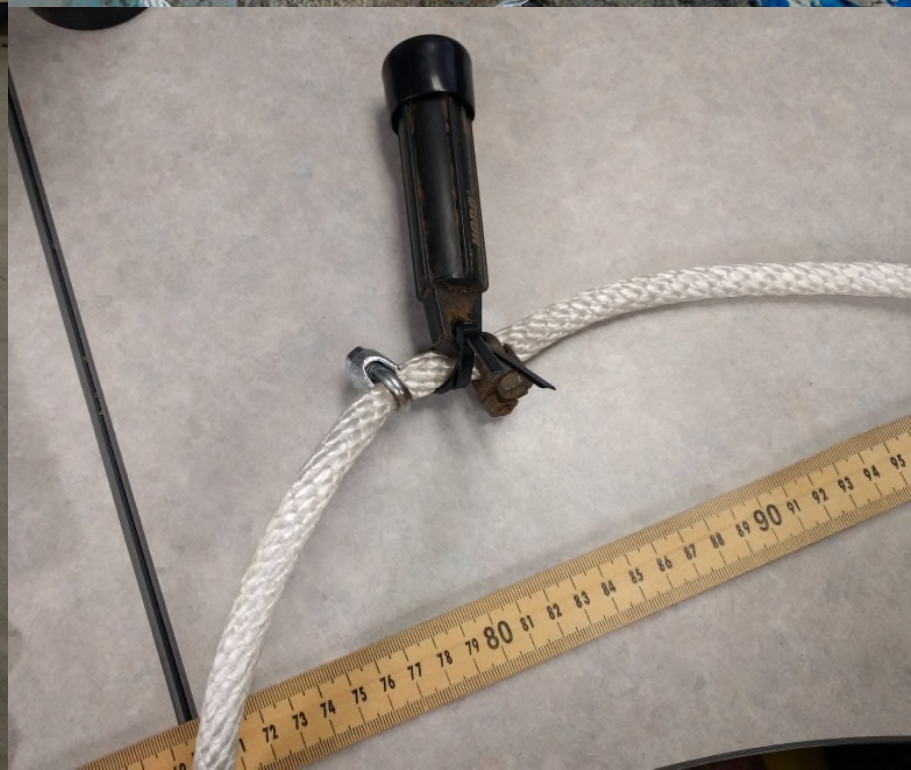
HOBO



RESE

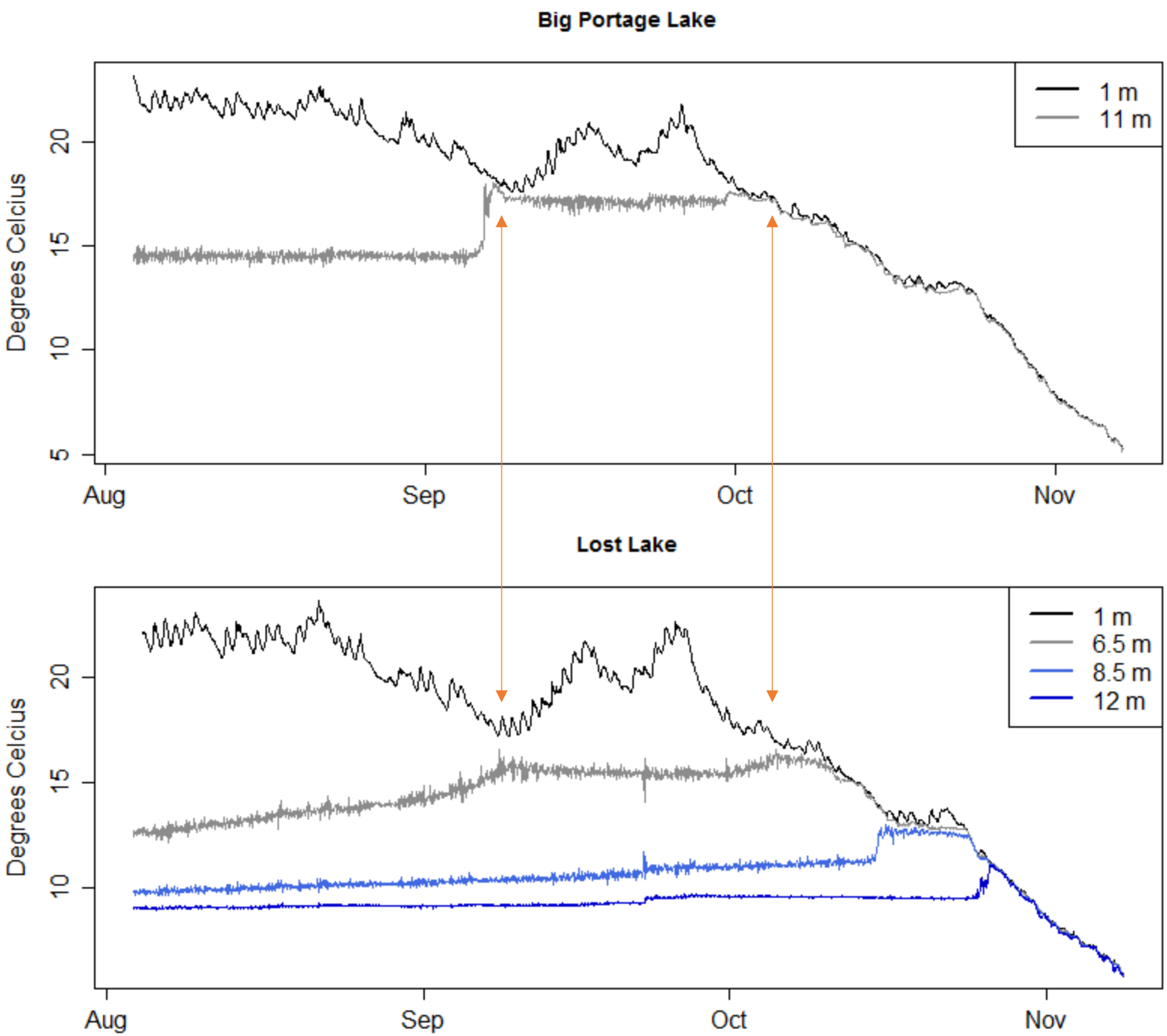
RESEARCH
FORE! LAKES!
LANDS'END

RESEAR

RESEA

Our System - lessons

- Measure logger position from the bottom in lab
- Measure depth from surface of top logger after deployment
- May need to remeasure depths in boat if lake is high / low
- Removal is physically demanding
- Steel cable can cut into aluminum watercraft – rope is better for boat and hands!
- Good data management is essential! Track logger id's, deployment, raw data files, etc.
- Check buoy before ice on!


Big Portage Lake
Degrees Celcius
20
15
10
5
Aug
Sep
Oct
Nov
1 m
11 m
Lost Lake
Degrees Celcius
20
15
10
Aug
Sep
Oct
Nov
1 m
6.5 m
8.5 m
12 m

Next Steps…

- Protocol
- Train regional staff
- Data management
- Purchase loggers

Thanks to:
Justin Chenevert
Tom Koepp
Ty Krajewski
Dick Lathrop
Jodi Lepsch
Carol Warden