Microscope Toolkit for Rapid In-Field Water Screen for Toxic Harmful Algal Blooms (HABs)

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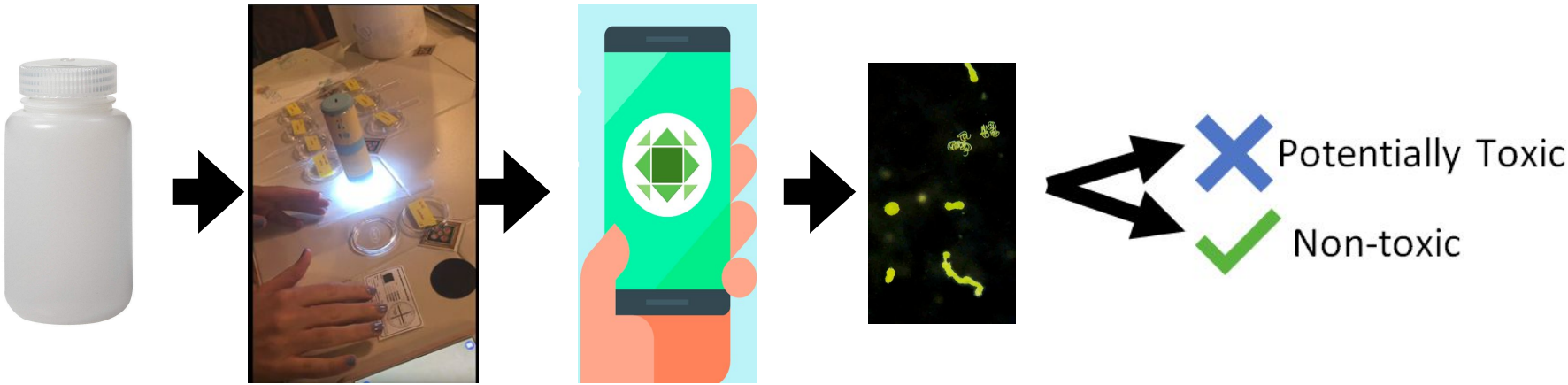
In-field HABs screening toolkit

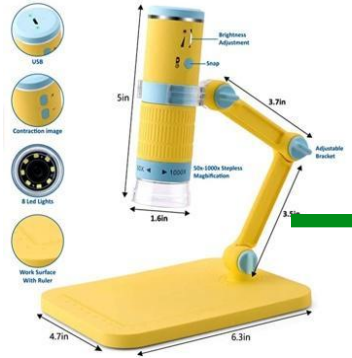
• In field (no ty ransport) •Small sample (5 mL)
• Rapid (<3 min) •Inexpensive •Easy to use



Sample analysis to be done in project

HABs Volunteer Samples

Microscope images (Volunteers and Cornell)



Upload/email images for screening by image analysis (Cornell)

Microcystin and chlorphyllA testing (FLI and CSI and other local labs)

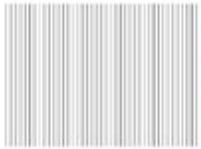
DNA test (Cornell)

Cheap scope kit contents

Microscope Protocol

1. After you have taken and mixed your sample, pour a small subsample (5-15 mL) into the provided test tube
2. Put 4-4.5 mL of your sample into a small petri dish using the provided dropper (the smallest volume needed to get the sample to cover the bottom of petri dish - may need to tilt petri dish around to distribute the sample.)
3. Set the petri dish on top of your grid line micrometer(500 micrometer grid lines)
4. Turn on the microscope and connect it to your phone (WiFi) or computer (WiFi or cable)
5. Place the microscope's plastic guard ring directly into the petri dish with sample.
6. Observe what you see on your phone/computer, and go into high magnification (should have only 2-3 grid lines showing along short length of image). Take a photo.
7. Move the microscope around to get more fields of view of the sample (all on the highest magnification).Take 3-5 pictures and a 5-20 second video on the micrometer background
8. Switch to the black background by lifting the scope and petri dish together and placing them down on the black background.Repeat taking pictures and short video moving around different locations on the petri dish
9. Upload photos to shared google drive folder
10.

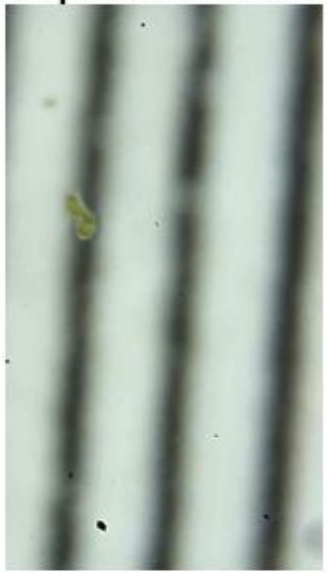
Photos and videos taken for suspicious bloom



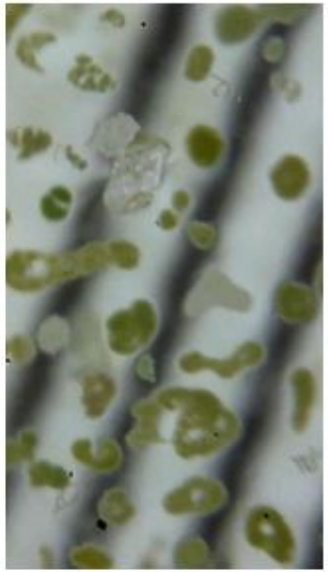
Take a picture and video with 0.5 mm grid as background

Take a picture and video with black background

3477 7/3/20 (non bloom)



3459 B5 (MC 1.3)
Very sparse Microcystis

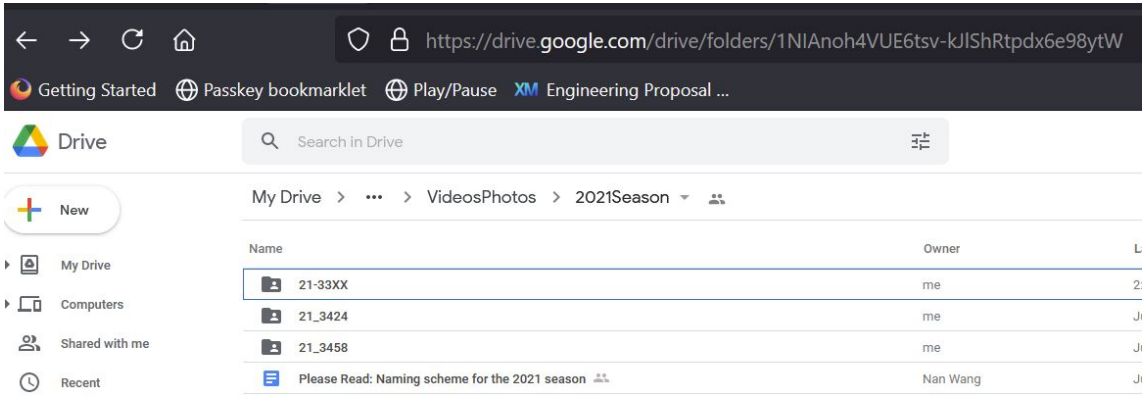


3454 "B2" 9/26/20 (MC 303)

Dense Microcystis, dense Dolichospermum, and sparse Oscillatoria

Uploading and Naming Photos/Videos

- Go to the shared Google Drive “2021Season” folder: https://drive.google.com/drive/folders/1NIAnoh4VUE6tsv-kJlShRtpdx6e98ytW?usp=sharing
- In that “2021Season” folder you should find a subfolder dedicated to your zone for 2021 (21-ZONE, f example: 21-3458 meaning 2021 season for zone 3458 on Cayuga Lake)
- When you spot a bloom and take pictures/videos, make a new subfolder within your zone subfolde Then upload images.
- The subfolder name is in the format of MMDDB or MMDDG 4 digits of month and day of the sampling, B if it’s black background or G if it’s grid background.
- For example, 0609B means a folder contains samples collected June 9 with a black background

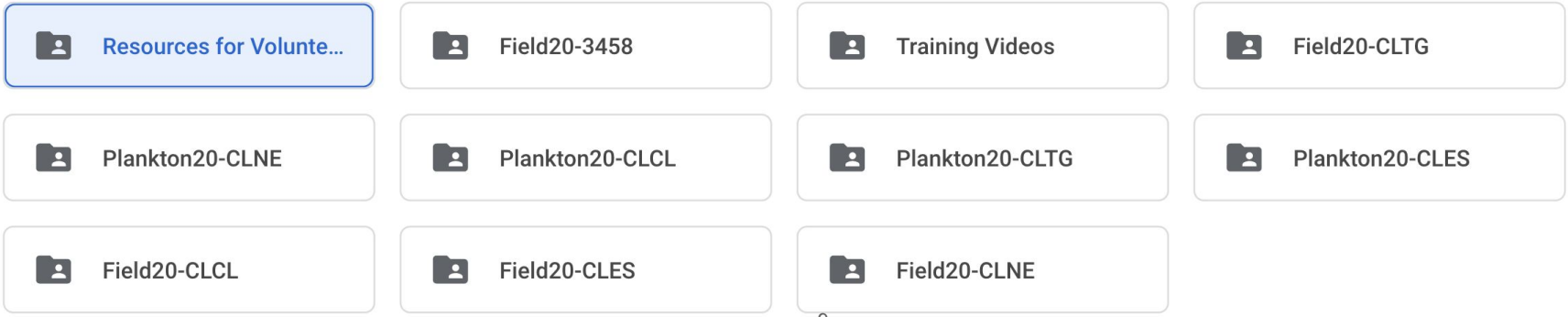


Next steps

- Make a one on one meeting with team if you have more questions
- Start taking pictures of blooms that you collect for your local HABs monitoring (upload them or email them if you aren’t sure how to upload)
- Visit our Resources folder for additional information
- Spread the word/recruit other HABs volunteers (e.g. in your own lake or others)
- Join us again for zoom checkins over the summer.

Resources

- Shared Google Drive folder containing:
  - Videos on how to use the microscope and how to take photos of a sample
  - Sheet of micrometers that can be printed out and used (** if you have a color printer, be sure to print in Black and White to avoid color dots in the printout)
  - Identification guides to let you know what you are seeing under the microscope (if you are curious)



Q&A?

Contact Us

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Thank You!