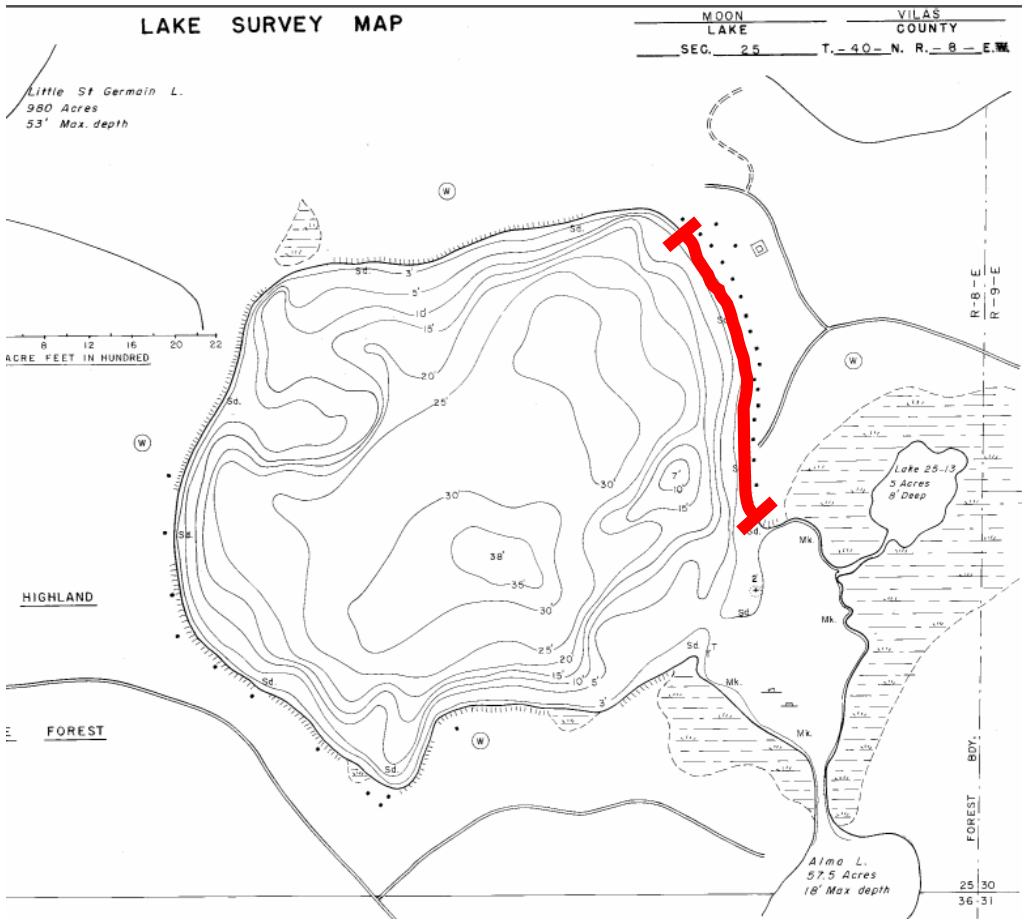
# Moon Lake Shoreline Habitat Project

Revisited Summer 2017

# Moon Lake Fisheries Shoreline Habitat Project

- Part of cooperative, federally-funded shoreline habitat research project.
- Along east shore to south of Moon Beach Camp.
- ~1,400 foot project area (red)
  - 22 half logs (spring 2009)
  - 4 tree drops (winter 2008-09)



# Fish Habitat Structures

- Half Logs
  - provide protected spawning habitat for smallmouth bass.
  - provide shelter/hiding for smaller fish.
- Tree Drops
  - provide nearshore habitat for bass and panfish.

Half Logs constructed for another Vilas Co. lake (courtesy Fritz Behr).

Tree drop anchored with boulders.

# Half-Log Bolt Experiment

- Because half logs stay in the water, they are subject to wear and degradation over time.
- So, several types of bolts were used to evaluate how they would hold up over time.
    1. Galvanized Timber Bolts (5/8” x 8”)
    2. 304 Stainless (1/2” x 7”)
    3. 316 Stainless (1/2” x 8”)
    4. Zinc Plated Grade 5 Steel (1/2” x 7”)

1. 

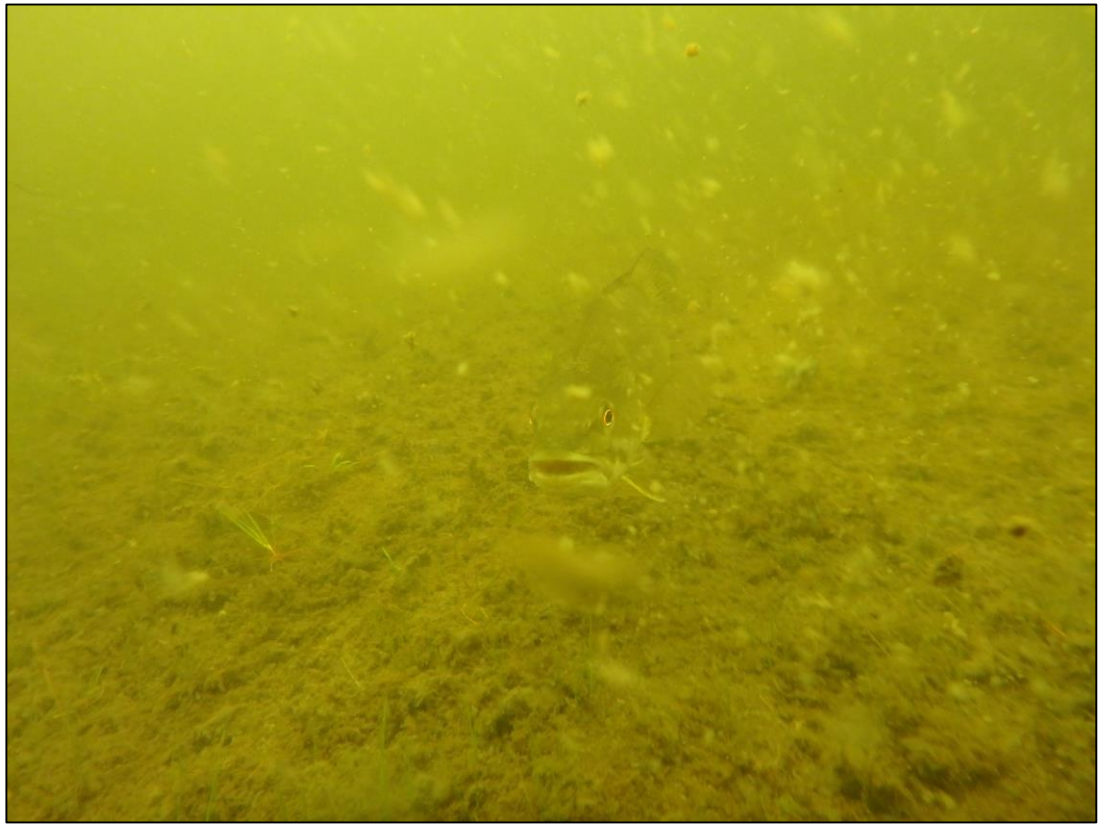
2. 

3. 

4. 

# Revisited…8 years later

- In late July of 2017, several fisheries management staff from the WDNR office in Woodruff returned to Moon Lake to assess the status of the habitat project.
  - Half log condition & fish use?
  - Tree drop condition & fish use?



Curious smallmouth bass observed during sampling.

# Locating the Structures

- We anticipated being able to locate half logs visually from the boat.
- However…
  - water levels were lower in 2008 at time of placement
  - high water levels in 2017 + rainy spring = decreased visibility (~5 ft)
- So, we ended up snorkeling to locate the half logs.

Tim records data in the boat and measures distance to shore.

Eric and Hadley locate and mark half log locations, measure depth, substrate type, tipping, condition, and fish use.

# Locating the Structures

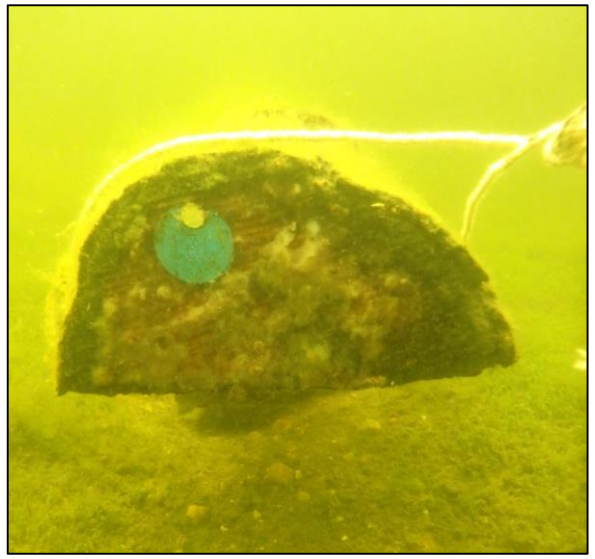
- We were able to locate 21 of the 22 half logs.
  - The area of unlocated log had developed dense vegetation making visibility very low.
- We located all of the boulders from tree drops.
- We also located at least 4 fish cribs that must have been previously placed along the beach.

Small bass and bluegills using a fish crib.

# Data Collection

- Each half log was labelled, so we knew bolt type and approximate location.

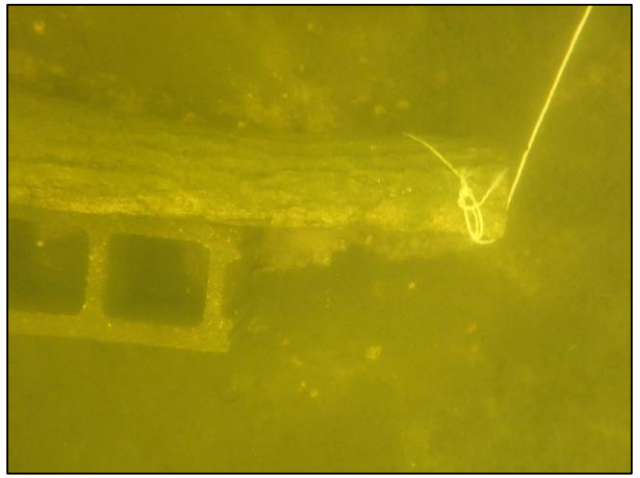
Metal tags with an ID number were nailed to each half log at time of deployment.



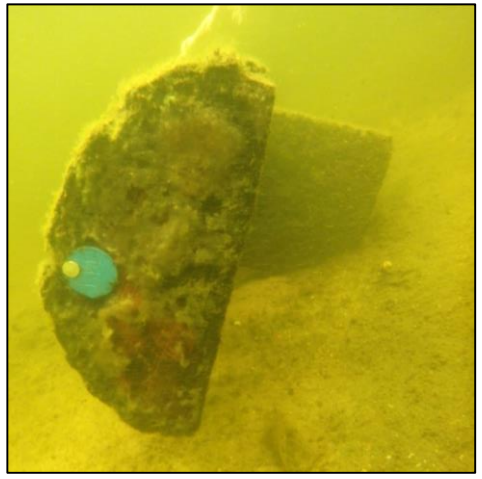
- We recorded various characteristics for each half log including:
  - upright vs. tipped
  - whether buried/covered in debris
  - surrounding vegetation and substrate type
  - whether intact and bolt condition
  - angle/distance to shore and depth
  - signs of fish use

# Tipping

- 8 of the 21 half logs were tipped.
- However, at least one of the tipped half logs still showed signs of fish use.
- We re-positioned all tipped logs so they were upright again.



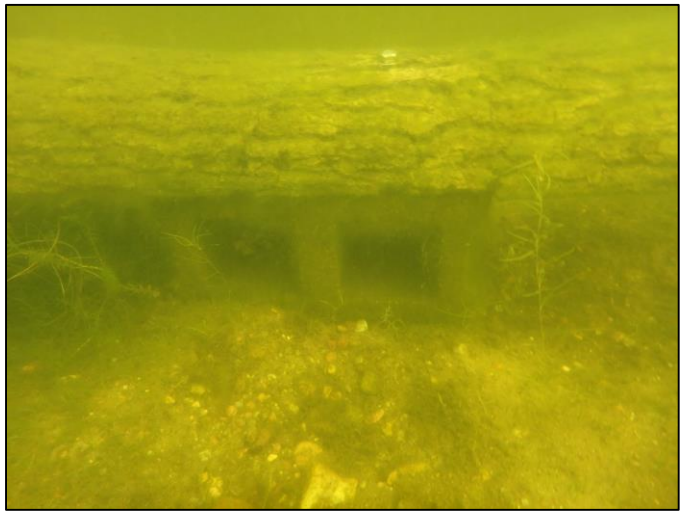
Side view of tipped half log. Rope tied to float marking log location so a GPS point could be taken above water.



End view of tipped half log.

# Debris/Burying & Vegetation/Substrate

- No half logs were fully buried or covered with debris.
- Sand and gravel were the most common substrates observed.



Some vegetation, but still good sand an gravel substrate. Possible nest in front of cinder block.

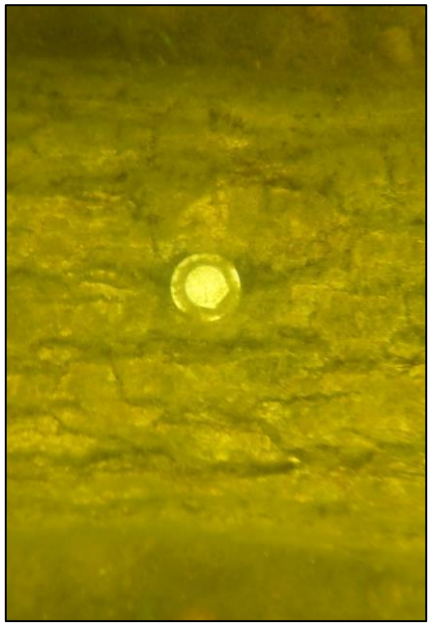
- Taller vegetation had grown up around several half logs, possibly due to changes in water level.

Several logs had taller vegetation growing around them.

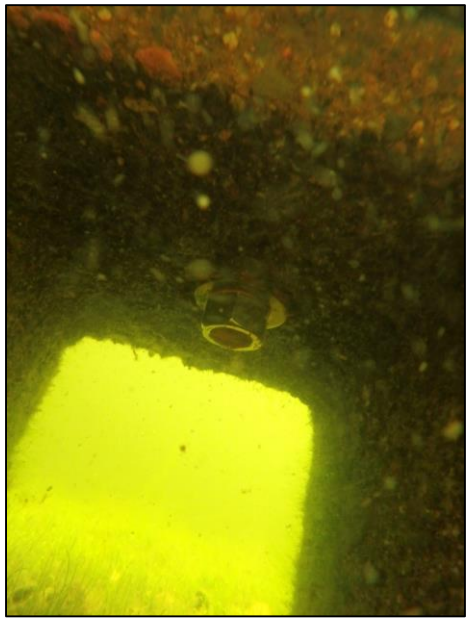
Small fish were still observed near those half logs.

# Bolt Integrity

- Both 304 and 316 grade stainless bolts still looked almost brand new.

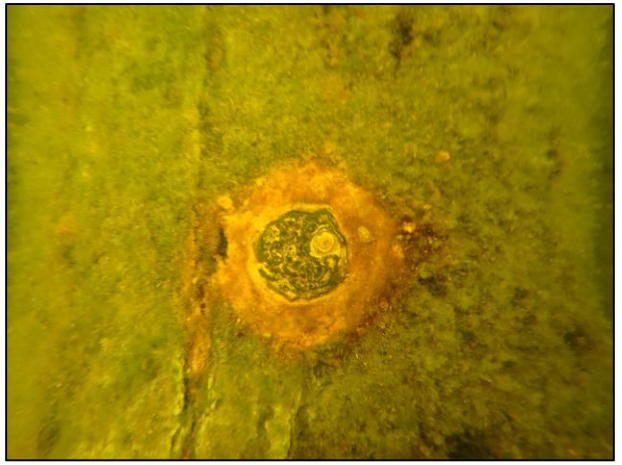


Top view.



Bottom view.

- Timber and zinc plated steel bolts both were rusty/corroded.



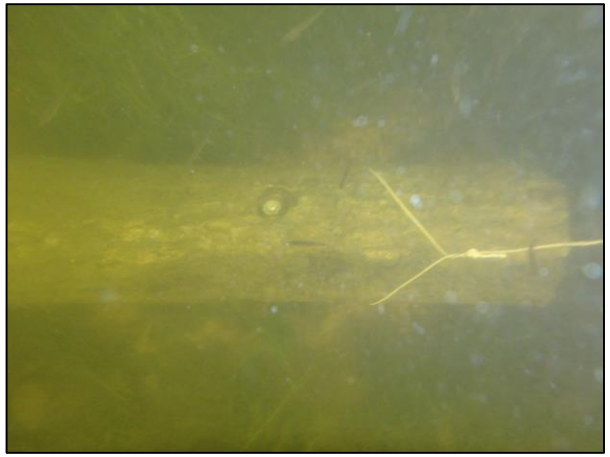
Top view.

Bottom view.

# Depth & Angle/Distance  to Shore

- Half log depths were
  - shallow end: 6.8-9.6 ft, mean=7.9 ft
  - deep end: 7.3-10 ft, mean=8.6 ft
- Distance from shore ranged between 60-260 ft with an average of 105 ft.
- Depth and distance from shore have increased due to higher water levels.
- Angle off from perpendicular to shore was always less than 20°.

Measuring depth with marked metal pole.



Recording approximate angle relative to shoreline.

# Fish Use

- We could definitively identify smallmouth bass nests at 5 of the half logs.
- We identified potential nests at another 4 half logs.
- Sometimes we observed small forage fish near the logs as well.

Forage fish and possible nest observed under middle of half log.

Nest observed at shallow end of half log.

# Fish Use

- And several times we encountered a curious smallmouth at the half log!

Smallmouth bass were not afraid of snorkelers.

# Fish Cribs

- Although not part of the habitat project, we did discover four fish cribs along the beach while snorkeling.
- We did observe fish at some of these sites.

Fish crib logs discovered while snorkeling.

# Tree Drops

- We located locations of all 4 tree drops:
  - 1 tree still anchored in rocks
  - 2 trees not located along shoreline
  - 1 untethered tree found slightly down shore from rock anchor
  - 1 naturally fallen tree near site with missing tree
- Good shoreline woody habitat still present.

Metal cable used to tether logs to anchor.

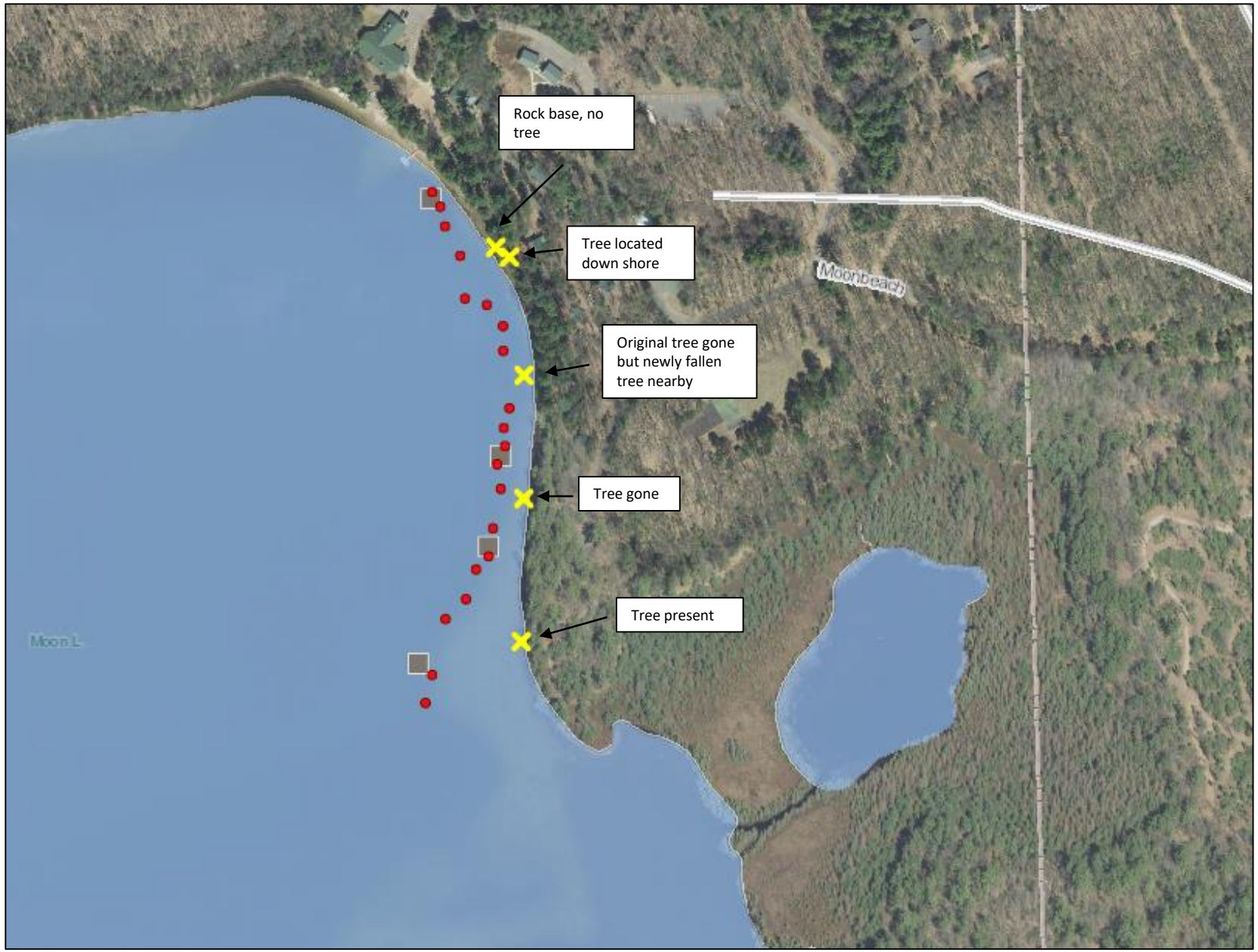
Tree drop log still secured between boulders.

# Tree Drops

- Fish were observed nearshore using woody habitat.

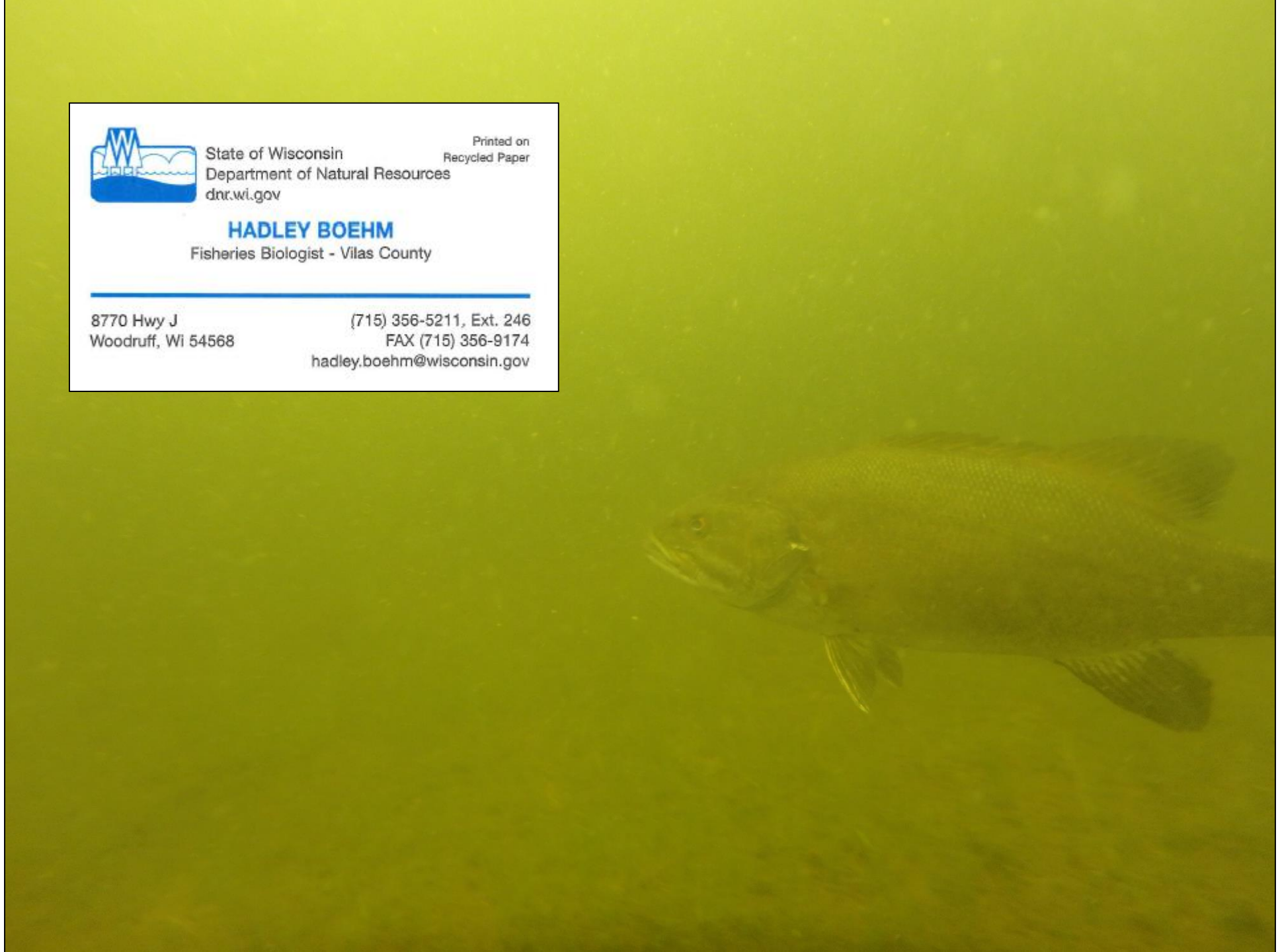
Fish observed using vegetation near tree drop.

View of tree drop from shore.




## LEGEND

- Half Logs
- Fish Cribs
- Tree Drops



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