

Item available for public inspection in the Clerk's office during regular business hours (Monday – Friday, 9 AM – 5 PM)

December 6, 2022

Regular Meeting

**Item #4 – Economic
Development – Update
(Agenda Item)**

Economic Development

**Jeff Simpson, Economic
Development Director**



June Lake Cleanup

FY22 Summary

Background Information

- GPS Coordinates: 37.7798° N, 119.0754° W
- Elevation: 7,654'
- Circumference: 2.59 miles
- Project Objective: Take the CUTL dive teams around the full circumference of the lake while removing small and medium litter items and identifying non-collection items, potential aquatic invasive species and algal blooms. Categorize litter pulled out of the lake.

An aerial photograph of June Lake, showing its vibrant turquoise water and surrounding forested hills. A circular white overlay is positioned on the left side of the image. Inside this circle, the title 'Background Information Continued' is centered at the top. Below the title is a horizontal line, followed by a bulleted list of four points. At the bottom of the circle is a smaller, semi-transparent image showing people swimming in the lake. The background image shows a white pontoon boat with a blue canopy on the water, with a person splashing in the water nearby. The shoreline is rocky and covered with green trees.

Background Information Continued

- June Lake is located against the southern rim of Mono Basin 12.5 miles south of Lee Vining.
- June Lake has long been a popular fishing destination, seeing recreation types that yield potential litter in the form of fishing debris, alcohol and other food and drink containers, and more.
- The lake sits in a horseshoe shaped canyon that was formed by glacial action.
- The area experiences warm, dry summers and cold, snowy winters.

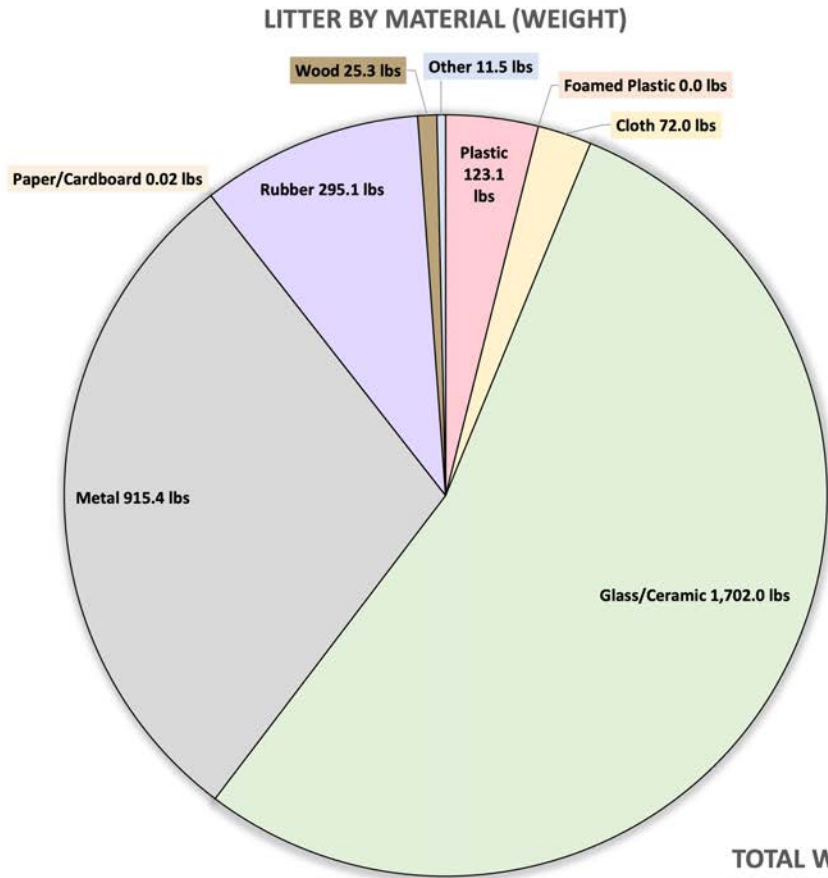
Project Totals

- Miles Cleaned: 2.59 mi
- Weight Removed (wet): 3,404 lbs
- Weight Removed (dry): 3,144.4 lbs
- Items Removed (count): 6,522 items
- Total Dive Days: 6 days
- Total Cleanup Dives: 11 dives
- Air Cylinders Used: 59 cylinders
- Volunteers to Date: 28 volunteers
- Volunteer Positions Filled: 84 positions
- Volunteer Hours (dive days): 547 hours
- Volunteer Hours (litter categorization): 46.5 hours
- Non-collection items: 47
 - Hot Spots: 16
 - Heavy Lift: 22
 - Unknown/Historic Items: 9
 - Vista Points: 0
- Potential AIS: 11
- Algal Blooms : 1
 - Includes all forms of algal blooms*

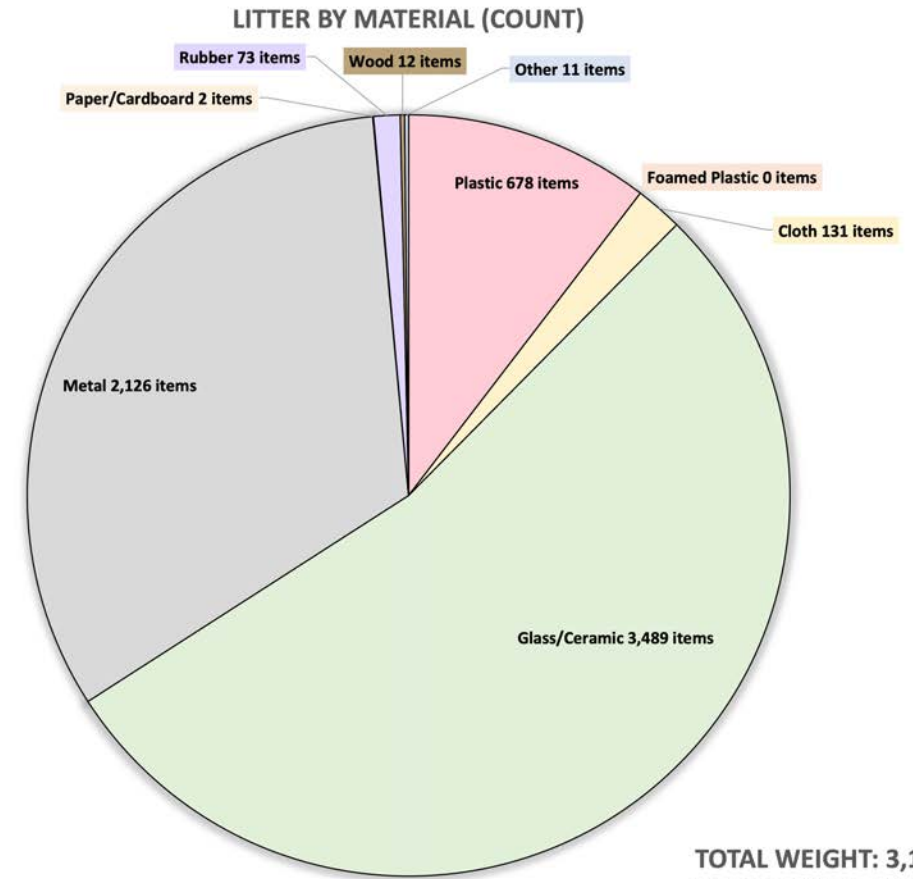
Project Totals – Category Specific

Material Type	Total Weight (lbs)	Total Count (#)
Plastic	123.1	678
Foam Plastic	0.0	0
Cloth	72.1	131
Glass/Ceramic	1,702.1	3,489
Metal	915.3	2,216
Paper/Cardboard	0.02	2
Rubber	295.0	74
Wood	25.2	12
Other	11.5	11

Litter Breakdown Visual Aid



TOTAL WEIGHT: 3,144.4 LBS
TOTAL COUNT: 6,522 ITEMS



TOTAL WEIGHT: 3,144.4 LBS
TOTAL COUNT: 6,522 ITEMS

General Litter Items Found

- Most of the litter collected was glass, specifically **powerbait jars and mason jars**; with over 3,000 power-bait jars equaling 47% of the quantity of litter items found in June Lake.
- Outside of glass, there were numerous **beer cans** and dozens of **anchors**.
- Typically, we average 472 items per mile of clean up. For June Lake the concentration of litter was **2,518 pieces of litter per mile**, making it 5 times dirtier than lakes we have previously cleaned.



Vegetation and Possible Aquatic Invasive Species

- Minimal algae growth seen.
- There was significant vegetative growth in 3-10 ft of water. The photo to the right displays the only vegetation found around the lake. Our data's photo and video content is currently being sent off for analysis by contracting environmental scientists.



Lakebed Composition and Bathymetry



- The lakebed was predominately composed of sand, small rocks, and silt. Most of the silt was concentrated in the flatter sections of the lakebed.
- The bathymetry (shape and depth of underwater formations) for the first couple of feet was a rocky/sandy wall. At 2.5-3 feet deep, vegetation began to grow and continued down to about 8-10 feet. From there the vegetation sloped off and a more gradual decline began. This area was littered with glass and beer cans. In some sections on the south shore, there was still litter at 40ft.

Conclusion

After circumnavigating the lake, the observations and data collected conclude that June Lake would benefit from further remediation work. CUTL recommends implementing further litter removal programs followed by lake monitoring, community awareness projects, educational programming, litter prevention signage and more.





Donors

In Kind Donors



June Lake Villager - Accommodation Partner



Golden Pine RV Park – Accommodation Partner



Big Rock Resort – Launch Location Partner



June Lake Marina – Pontoon Boat Donor

Volunteers

- Kalika Baker
- Mike Crow
- Sadye Easler
- Hayden Farris
- Brad Flora
- William Garnica
- Sydney Hamren
- Dave Hoop
- Carley Kaney
- Nikky Lipovsky
- Milena Torres London
- Jose Marquez
- Danielle McCord
- Eve O'Neill
- John Peltier
- Jamie Rathje
- Nicole Sands
- Pamela Sinclair
- Andrew Slucky
- Anne Slucky
- Sophia Slucky
- Drew Smith
- Ashley Thompson
- Brooker Veoni
- Colin West
- Elise Whittal
- Louise Wholey
- Shelly Witters
- **TOTAL = 28 volunteers**

Our team on clean up



CLEAN UP
THE LAKE

Mammoth Lakes Pilot Dives

FY22 Summary

Introduction

While cleaning June Lake in Fall of 2022, Clean Up The Lake took the opportunity to perform research pilot dives in the Mammoth Lakes Area to assess lake health, litter accumulation and to inform future remediation efforts in the area. We were able to survey the following lakes: Lake Mary, Lake George, Twin Lakes, and Lake Mamie.

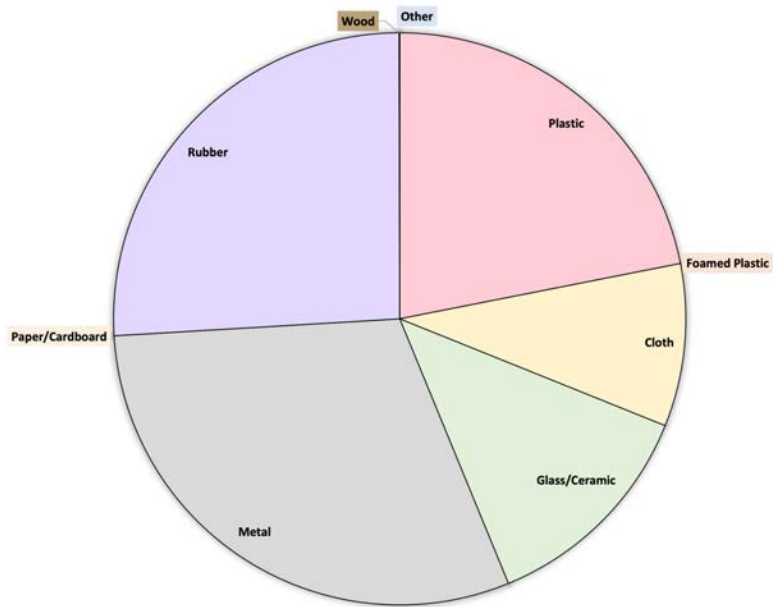
- Our team focused on collecting the following data:
 - Litter- small items were collected during dives for litter categorization and analysis.
 - Plant Species and Algal blooms- photos, videos and description collected. Images will be reviewed and analyzed by contracting environmental scientists for purposes of aquatic invasive species (AIS) identification.

Lake Mary Background Information

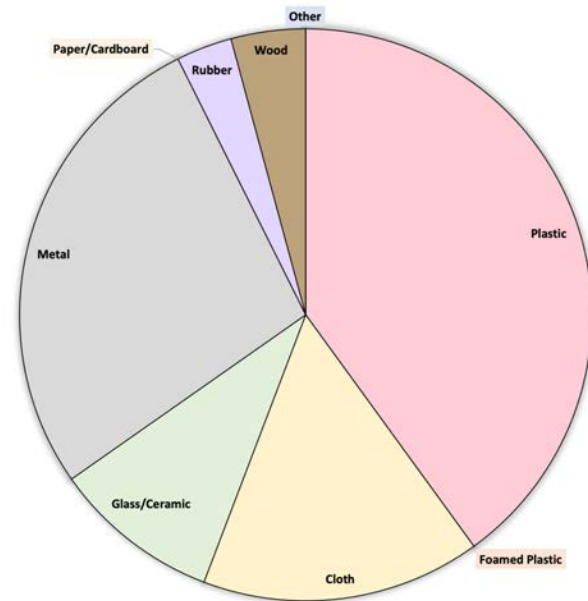
- GPS Coordinates: 37.6029081°N, 119.0027601°W
- Elevation: 8,966'
- Project Objective: Pilot research to assess litter accumulation as well as plant and algae information.
- Lake Mary Facts:
 - Largest of the Mammoth Lakes in Mono County.
 - Commonly used for rainbow trout, brook, and brown trout fishing.

Litter Distribution

LITTER BY MATERIAL (WEIGHT)

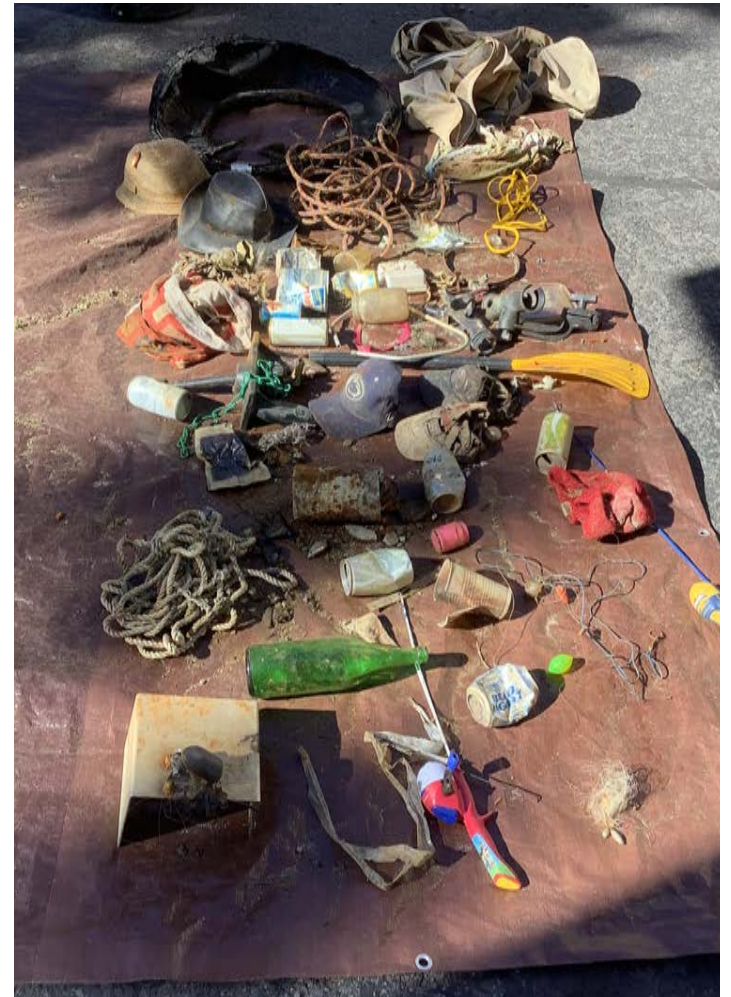


LITTER BY MATERIAL (COUNT)



General Litter Items Found

- We collected an amount of litter **significant enough to warrant a circumnavigated clean up of the lake.**
- Litter primarily consisted of **beer cans, bottles, anchors, fishing poles, fishing line, lures, anchors, tires, etc.**



Vegetation and Possible Aquatic Invasive Species

- Poor visibility
- Several algal blooms present and recorded
- Significant vegetative growth as seen in the pictures to the right. Our photo and video data content is currently being sent off for analysis by contracting environmental scientists.



Additional Information

- Two 45 min dives were conducted reaching a max depth of 34 feet.
- The lakebed is predominantly comprised of silt with a few rocky areas.
- One side of the lake has a gentle, sloping decline while the other side has a steep decent.

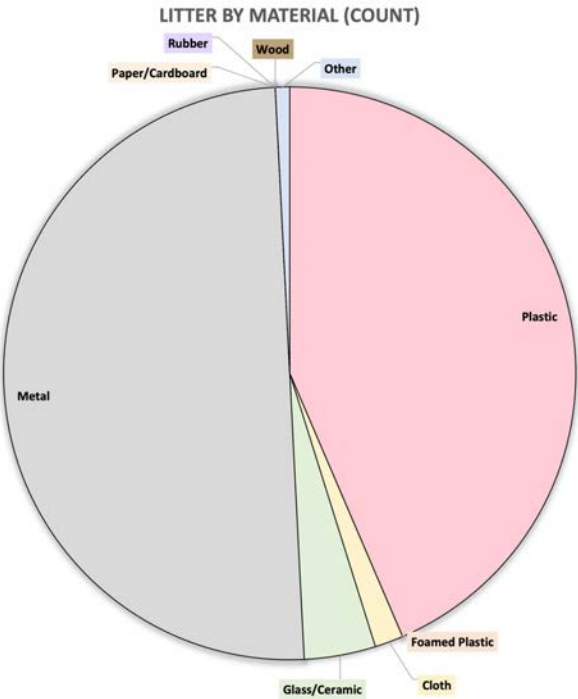
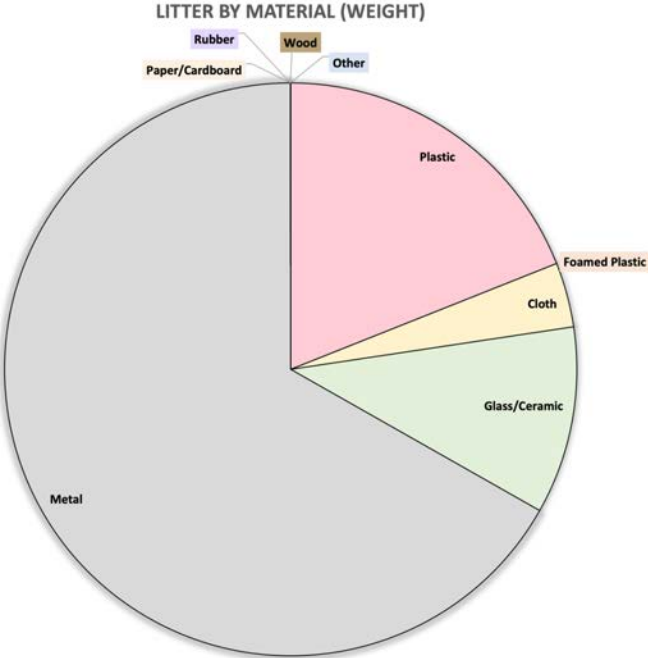
Conclusions

- During our short dives we saw there was a high quantity of fishing equipment, wildlife entanglement, and recreational litter including food and drink containers, lawn chairs, and more.
- Limited visibility, abundant vegetation both in the water column and on the lakebed restricted our ability to see and perceive litter present. For future efforts we will plan to dive early spring, post snow melt, when visibility is higher and there is less vegetation on the lakebed.
- CUTL dive teams will bring specifically engineered devices for removing fishing equipment as well as underwater metal detectors for areas with thicker silt to discover any metal/iron litter.

Lake George Background Information

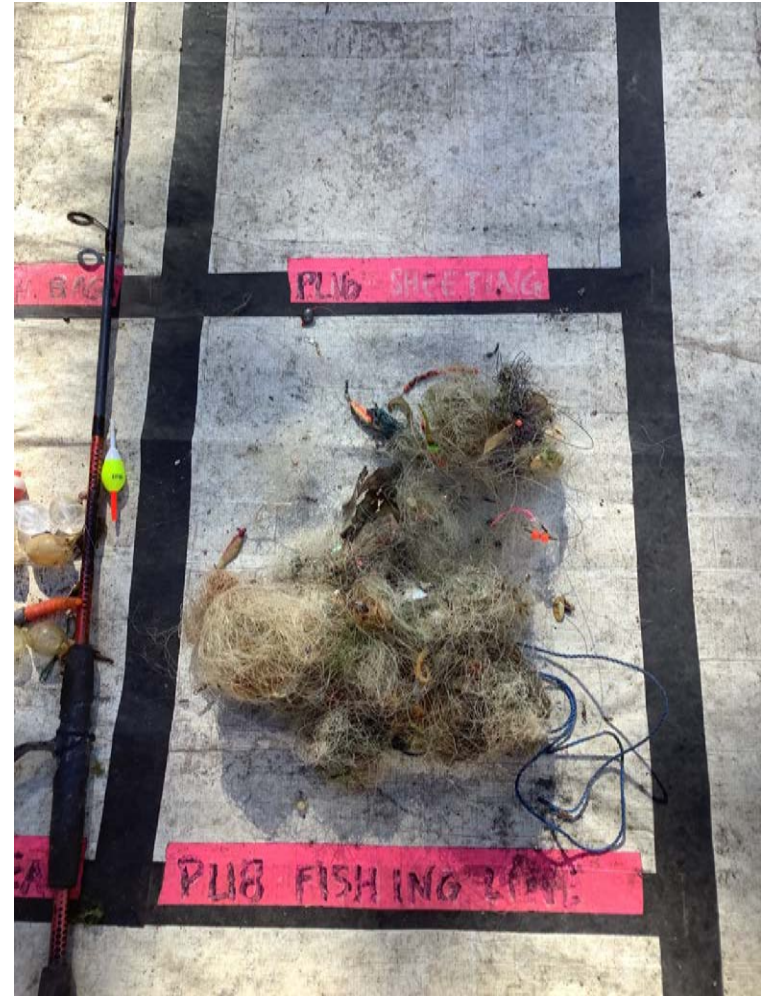
- GPS Coordinates: 37.6008° N, 119.0118° W
- Elevation: 9,250'
- Project Objective: Pilot research to assess litter accumulation as well as plant and algae information
- Lake George Facts:
 - Lake George is located in the Mammoth Lakes Basin off Lake Mary Road.
 - It is a great spot for trout fishing and is available both by foot and boat.

Litter Distribution



General Litter Items Found

- Predominant litter was **fishing line** and **lures**.
- Outside of fishing equipment, there were **anchors**, **beer cans**, and **plastic cups**.
- Additional tools would be needed to collect the egregious amount of fishing line present in the lake.



Vegetation and Possible Aquatic Invasive Species

- Good water clarity
- Minimal algal blooms were present and documented.
- Several different species of vegetation as seen to the right. The growth was not enough to hinder diving in the lake. Our data's photo and video content is currently being sent off for analysis by contracting environmental scientists.



Additional Information

- Divers reached a max depth of 33 feet over the two dives conducted.
- The lake had a very gradual and natural incline that was easy to swim along.
- The lakebed was comprised of moderate vegetation with a silty bottom.
- The higher elevation of Lake George will affect dive and accommodation plans for divers.

Conclusions

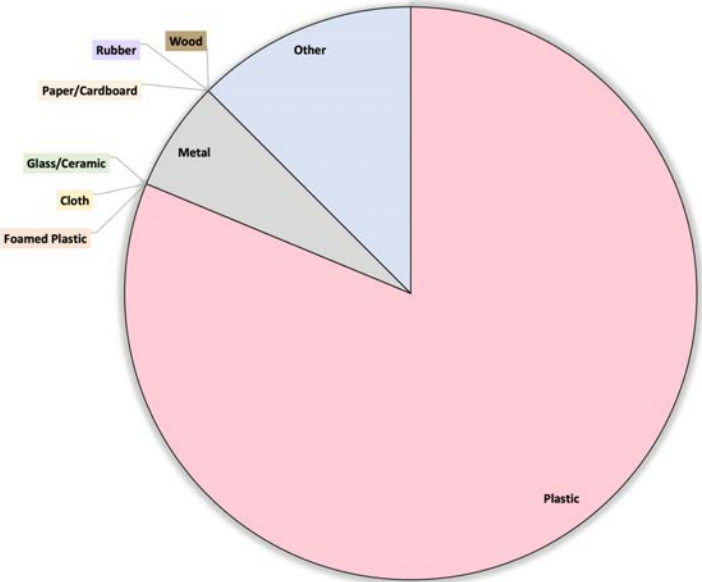
- Lake George had large quantities of fishing line deposits and snags, with 50-100 lines and lures in each location.
- The amount of submerged line appeared to aggravate wildlife entanglement. Numerous live fish were released, and several others were found dead after being caught in litter.
- While fishing equipment was the primary culprit, other litter was present as well.

Lake Mamie Background Information

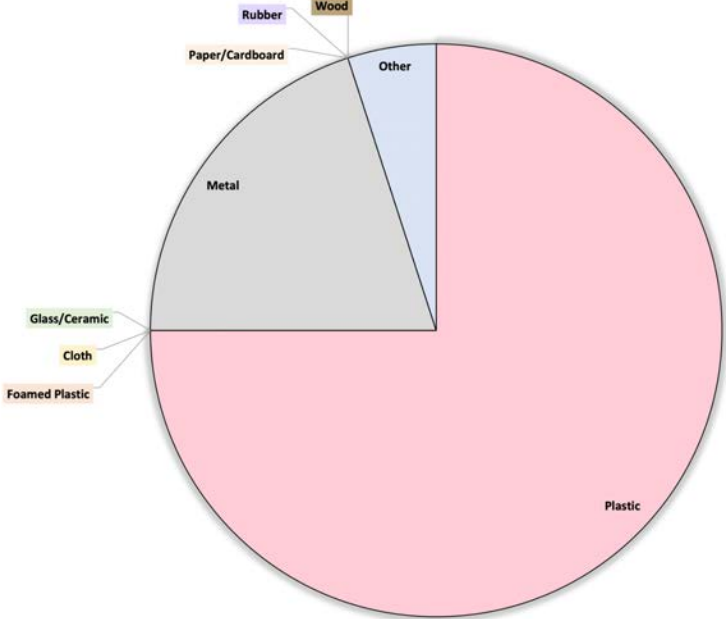
- GPS Coordinates: 37.6081° N, 119.0107° W
- Elevation: 8,901'
- Project Objective: Pilot research to assess litter accumulation as well as plant and algae information
- Lake Mamie Facts:
 - Smallest lake in the Mammoth Lakes Basin.
 - Lake Mamie is best known for its fishing and is regularly stocked with brown and Alpers trout.

Litter Distribution

LITTER BY MATERIAL (WEIGHT)



LITTER BY MATERIAL (COUNT)





Additional Information

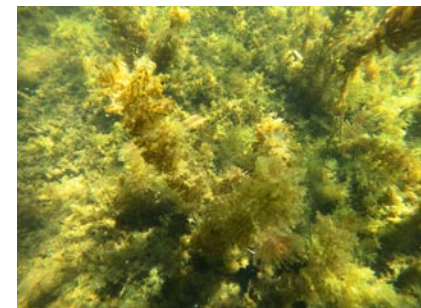
- Lake Mamie is shallow, about 8-10 feet, with good visibility.
- Minimal algae was found
- There was plant growth across the entire lakebed as seen to the left. Our data's photo and video content is currently being sent off for analysis by contracting environmental scientists.
- Lots of small litter items such as wrappers, degraded fishing equipment, and meso-plastics were found.

Twin Lakes Background Information

- GPS Coordinates: 37.6178° N, 119.0085° W
- Elevation: 8,563'
- Project Objective: Pilot research to assess litter accumulation as well as plant and algae information
- Twin Lakes Facts:
 - Upper Twin covers about 400 acres while Lower Twin covers about 250 acres.
 - Twin Lakes is home to some of the best trout fishing in California and is where the state record brown trout (26 lbs., 8 oz) was caught.

Vegetation and Possible Aquatic Invasive Species

- Strong presence of vegetative growth
- The lake was shallow and warm with significant algal blooms present.
- There were at least 2 if not 3 significantly present plant species as seen to the right. Our data's photo and video content is currently being sent off for analysis by contracting environmental scientists.



Next Steps

1. Lake Mary: A circumnavigational cleanup should be conducted in the early spring when the snow melts. This will ensure better clarity and lower levels of vegetation for divers and free divers to see and collect more litter than was visible in September '22.
2. Lake George: A circumnavigational cleanup is recommended for Lake George. It would likely take longer due to the amount of fishing line in the lake and the additional tools that would be needed to remove all of it. The cleanup will be performed in late Summer/early Fall due to good water clarity.
3. Lake Mamie: The shallow depth and amazing clarity make Lake Mamie a good candidate for a circumnavigational cleanup. This cleanup will likely be performed in FY24 to allow for the maturation of CUTL's AIS program, as it is an area of concern for Lake Mamie.
4. Twin Lakes: Vegetation was so strong here that scuba diving was not possible in late Summer and even free diving was difficult. Therefore, surveys need to be performed again immediately following the ice melting. We are waiting till FY24 when our AIS program will be more advanced since this lake needs stronger AIS remediation.