

Virginia Lakes 2024 Cleanup

Pilot Research Final Report

PROJECT SUMMARY



Project Objective:

Conduct pilot research regarding the presence of submerged litter, aquatic invasive species in Virginia Lakes, CA - including Big Virginia Lake, Little Virginia Lake, and Trumbull Lake.

Objectives:

- Dive as much of the Virginia Lakes area collecting litter and marking heavy lift items, hot spots, aquatic invasive species, and unknown or historical objects.
- Assess underwater habitat and plant species, delivering plant samples to the CA Department of Agriculture to document any potential threats from aquatic invasive species.
- Categorize all collected litter by material type and use.

- Miles Cleaned: 1.11 mi
- Weight Removed (lbs.): 310.6
- Dry/sorted weight removed (lbs.): 306.3
- Items Removed: 626 items
- Total Dive Days: 2 days
- Total Cleanup Dives: 4 dives
- Air Cylinders Used: 16 cylinders
- Volunteers to Date: 8 volunteers
- Volunteer Hours: 72

PROJECT METRICS



NON-COLLECTION ITEMS

Aside from removing small litter items our team also identified items/ areas of interest called non-collection items using GPS location, photo collection, item description.

- **Total non-collection items: 3**

- **Heavy Lift: 1**

- *Heavy lift items= Large or heavy items that would require additional equipment to remove safely.*

- **Hot Spot: 2**

- *Hot Spot: Areas identified that have a large amount of litter which may merit a recleaning of the site*



To collect impactful data on litter removed from lake environments we have adopted the United Nations Environmental Programme (UNEP) Marine Litter Categorization standard to produce a nationally recognized data set. This method separates litter into 77 different categories. CUTL with help from UC Davis TERC and DRI has adapted this system to freshwater litter and created additional categories for a total of 83 categories.

- 9 different **material categories**: plastic, foamed plastic, cloth, glass & ceramic, metal, paper/cardboard, rubber, wood and other.
- Within the material categories there are specific **use categories** which further define the item- there 83 in total. For example- fishing equi
- We have created templates on sorting tarps that outline each category. After the litter is sorted, we photograph, count, and weigh each category.

LITTER CATEGORIZATION



AQUATIC INVASIVE SPECIES SURVEY

Clean Up The Lake's program for aquatic invasive species (AIS) surveillance was designed to help run surveys on the presence of aquatic invasive species during litter cleanups and environmental projects. During dives, our teams seek to identify new infestations in an effort to prevent spread. When the CUTL AIS surveillance program runs simultaneously with litter cleanup, our goals are to identify, sample and report on any signs of potential new AIS in the area.

During our surveys at Virginia Lakes, in small Virginia and areas of Big Virginia Lake; our dive team noticed a plant that appeared to be a milfoil. Given experiences of CUTL finding both a native Northern Milfoil, and invasive hybrids of Eurasian Water Milfoil (EWM); nearby in the eastern Sierra; our team decided to take and send in samples of this milfoil to CA Department of Agriculture.

Conclusion: Upon hearing back from CA Department of Agriculture; there was concern that it could be a hybrid of Eurasian Water Milfoil, yet it needed further molecular testing. Clean Up The Lake has offered to pay for said molecular testing and we are now standing by for the final results.



Clean Up The Lake's program for reporting algal bloom observations during their projects have three important stages.

First, our organization does preliminary research in each lake we operate to investigate any historical records regarding the presence of cyanobacteria or cyanotoxins in the lake (IE: HABS or harmful algal blooms). This is important to ensure the safety of our volunteer dive teams and also to better understand the possible algae in the area.

Second, our volunteer divers and surface support teams will photo, video & GPS document any and all algae or algal-blooms seen during the dives to send off to local or state waterboards and/or HAB specialists.

Third, in instances where we are working with a state waterboard, we will send in observations for them to determine if there may be risks of an algae bloom and they want to conduct further sampling or water monitoring in those areas.

Conclusion with Virginia Lakes: we did come across some benthic algal blooms on the bottom of the lake. Much of it appeared to be filamentous algae; yet with some potential of cyanobacteria. Photo and video were sent off to CA Waterboards to ensure they have all the possible data and knowledge of algae growth in Virginian Lakes in the late summer period. Video, photo and location information was delivered to support the CA Waterboard in all ways possible.

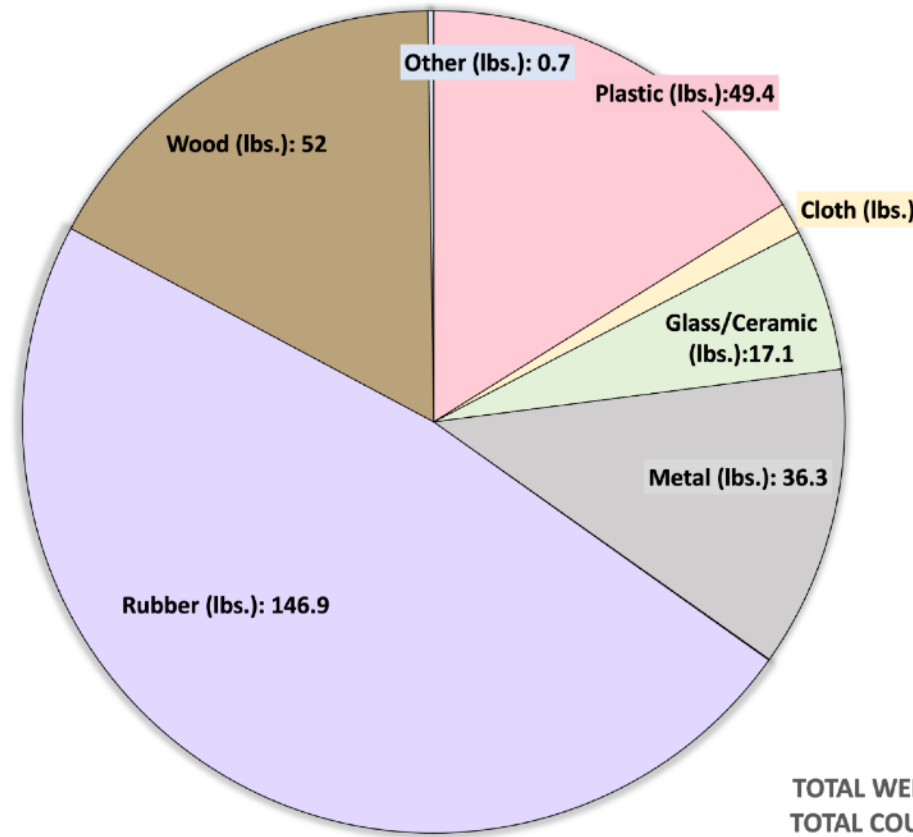
ALGAL BLOOM OBSERVATIONS



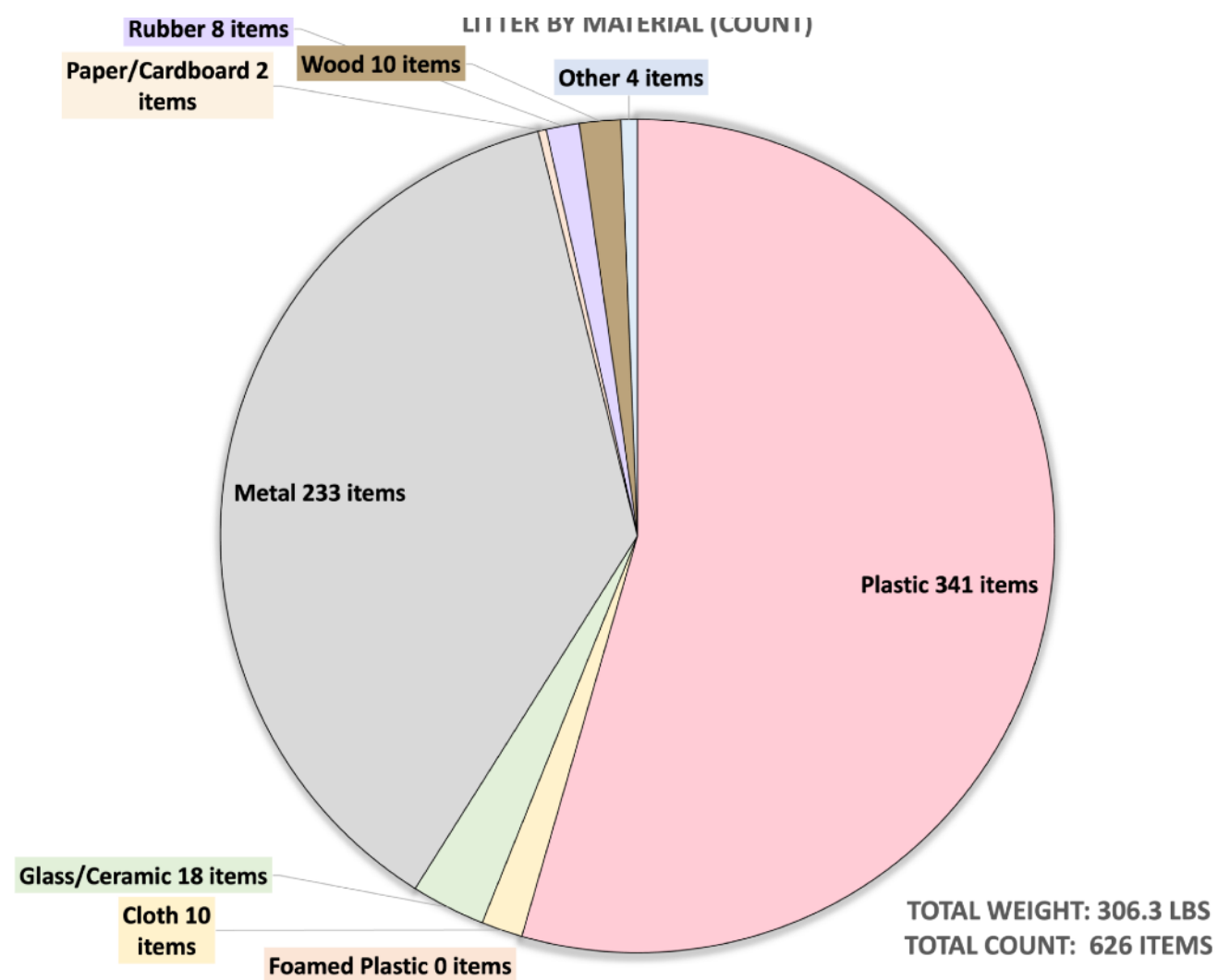
PROJECT TOTALS – CATEGORY SPECIFIC

Material Type	Total Weight (lbs)	Total Count (#)
Plastic	49.4	341
Foam Plastic	0.0	0
Cloth	3.8	10
Glass/Ceramic	17.1	18
Metal	36.3	233
Paper/Cardboard	0.1	2
Rubber	146.9	8
Wood	52.0	10
Other	0.7	4
TOTALS	306.5	626

LITTER BY MATERIAL (WEIGHT)

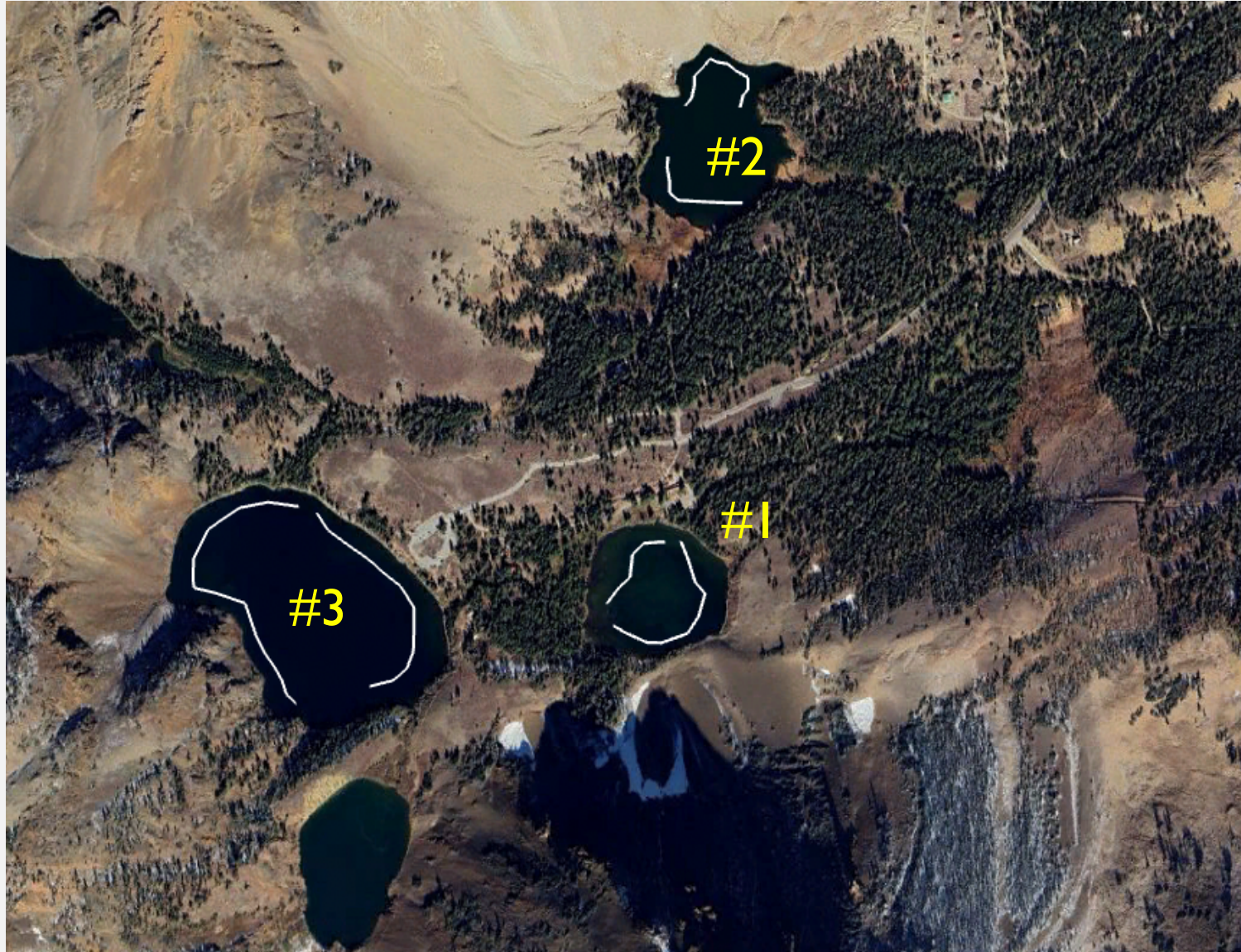


LITTER BREAKDOWN
– TOTAL WEIGHT



LITTER BREAKDOWN – TOTAL COUNT

Virginia Lakes Basin



The Virginia Lakes Basin contains several lakes.

Clean Up The lake successfully completed the first circumnavigated litter clean ups in three lakes in the basin:

- Little Virginia Lake (#1)
- Trumbull Lake (#2)
- Big Virginia Lake (#3)

Little Virginia Lake



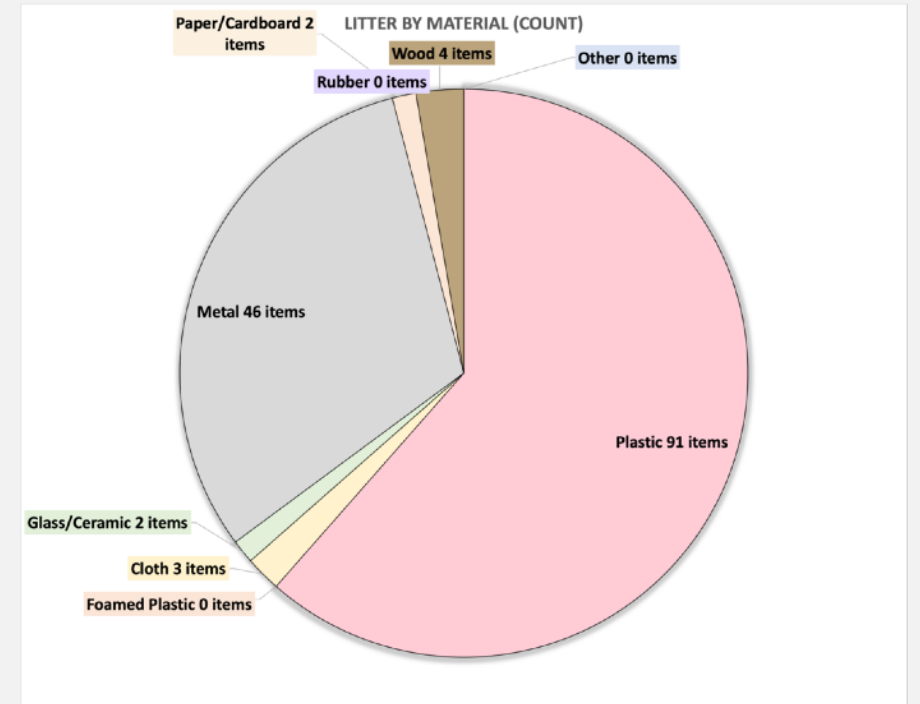
Date: 9/9/24

Dive: 1.1

Distance Cleaned: .28 miles

Recap: The team broke up into two team of 2 SCUBA divers and dove two unique lake segments simultaneously in order to circumnavigate the lake

Litter collected:
64.1 lbs



Trumbull Lake

Date: 9/9/24

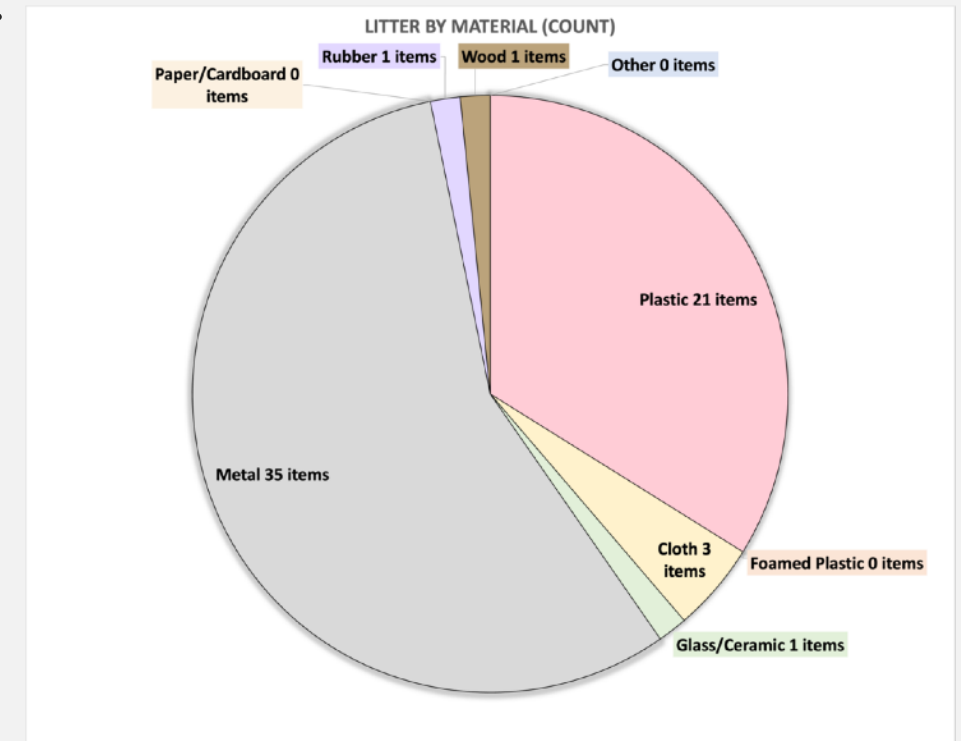
Dive: 1.2

Distance Cleaned: 0.24 miles

Recap: The team split into two pairs of SCUBA divers and dove in separate lake segments simultaneously to come close to circumnavigating the lake, both discovering an odd quagulated sediment on the lake bottom.

Litter collected:

10.7 lbs.



Big Virginia Lake



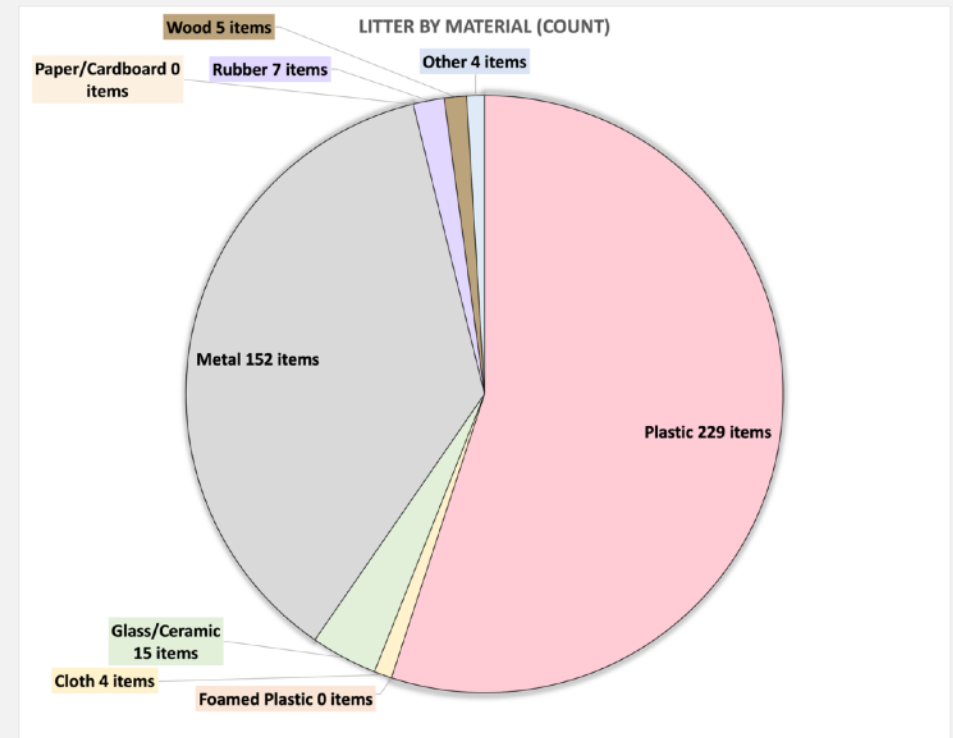
Date: 9/10/24

Dives: 2.1, 2.2

Distance cleaned: 0.59

Recap: The team performed two separate clean up dives with a surface interval in between. The team consisted of 3 SCUBA divers and three surface support personal in kayaks. SUP's.

Litter collected: 2.1: 163.4 lbs. 2.2: 68 lbs.



Conclusion

- Material with the highest weight: Rubber (146.9 lbs), primarily due to tires found in Big Virginia Lake.
- Material with the highest count: Plastic (341 items), largely from fishing gear scattered across the lakes, with the majority found in Big Virginia Lake.
- Other Notable Materials Collected:
 - Metal: 36.3 lbs, 233 items
 - Wood: 52.0 lbs, 10 items
 - Glass/Ceramic: 17.1 lbs, 18 items
- Negligible Materials: Foam plastic (0.0 lbs), Paper/Cardboard (0.1 lbs, 2 items)

Recommended Next Steps

- For submerged litter: given our pilot research program was significantly more effective and covered more ground than we planned, we don't foresee another full cleanup being needed in the immediate future. Agencies should consider generating more awareness and could benefit from:
 - 1) Signage in the area discussing litter issues both above and under the surface of Virginia Lakes. Ask visitors to clean up after themselves.
 - 2) Litter art made from litter underneath the surface of Virginia Lakes. This can have a much stronger impact than signage, drawing people into something beautiful and delivering the shock factor of where the materials came from results in a stronger desire to protect their environment.

Recommended Next Steps

- For aquatic invasive species:
 - 1) Molecular testing of this sample is needed, by either the state or other managing agencies to confirm if this is EWM or a hybrid.
 - 2) If this comes back positive for EWM or a hybrid, given the small size of Virginia Lakes and the somewhat smaller density of what may be an infestation, there is a strong opportunity for control methods to be implemented with relevant dive organizations or companies. Given popularity of fishing across all the Eastern Sierra NV, there is a high risk of these plants spreading and government agencies should prioritize mitigating the spread and possibly eradicating this plants presence in Virginia Lakes (hand pulling, suction, rubber mats, etc).

8 VOLUNTEERS

Divers:

Colin West
Shawn Louth
Mike Emmett
Dave Hoop

Free Divers:

Dave Noble

Surface Support:

Nicole Sands
Madio Wallner
Sophia Matthews

PROJECT PARTNERS

