

Location of Litter at Sherando Lake in Relation to Waste Bins at the Lake

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Introduction

Littering is a severe problem in the United States. Littering can be defined as: knowingly depositing in any manner litter on any public or private property or in any public or private waters, without permission to do so. Litter is also defined as any solid or liquid material or product or combination of solid or liquid materials or products, including, but not limited to any rubbish, refuse, garbage, paper, package, container, bottle, can, manure, or sewage (Litter Law & Legal Definition, 2011). Every year, millions of fish, birds and animals are killed from consuming or getting tangled up in litter with the biggest culprits being plastic bags and plastic six pack rings. Broken glass cuts the feet of a multitude of animals such as foxes, raccoons, coyotes, badgers, squirrels, cats and dogs. (Littering Statistics, 2009).

Litter is found in many places in the country, especially around lakes. During the early weeks of spring, most lakes around Virginia are stocked with trout for trout fishing, bringing many fisherman into the area. The more fisherman in the area brings the risk of more litter to the environment. Sherando Lake is a lake in Augusta County that is regularly stocked with trout during trout season and experiences the effects of careless littering. The purpose of this project is to demonstrate the need of waste bins at stocked fishing lakes by obtaining significant data on litter at Sherando Lake.

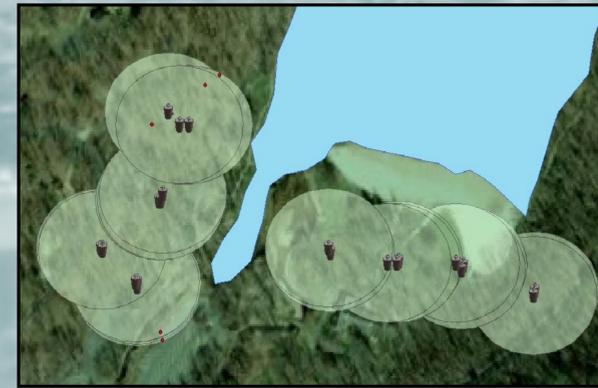
Methods and Materials

The project began with collecting a satellite image of Sherando Lake and then georeferencing the image into the Arc Map program. A GPS was used to collect the points at which the litter clusters were located around the lakes, and the types of litter were documented in specific categories. The categories that the litter was classified in were fishing litter, food litter, household items, glass, tobacco, and plastic; there was also a category called "other" for miscellaneous trash. The data was transferred to the computer and imported into the Arc Map computer program. A graduated symbol map was created to display the clusters of litter. The points where waste bins are located around the lake are also displayed on the map with 100 ft. buffers around them. Areas for proposed waste bin locations were determined last to address the littering issue.

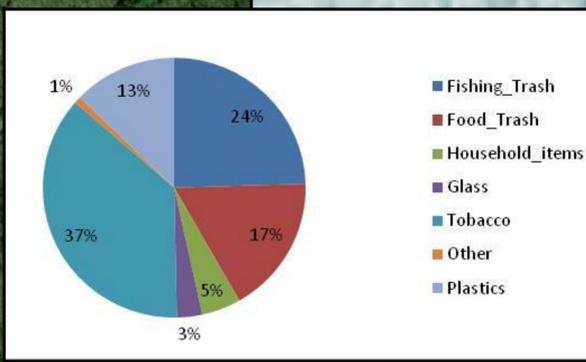
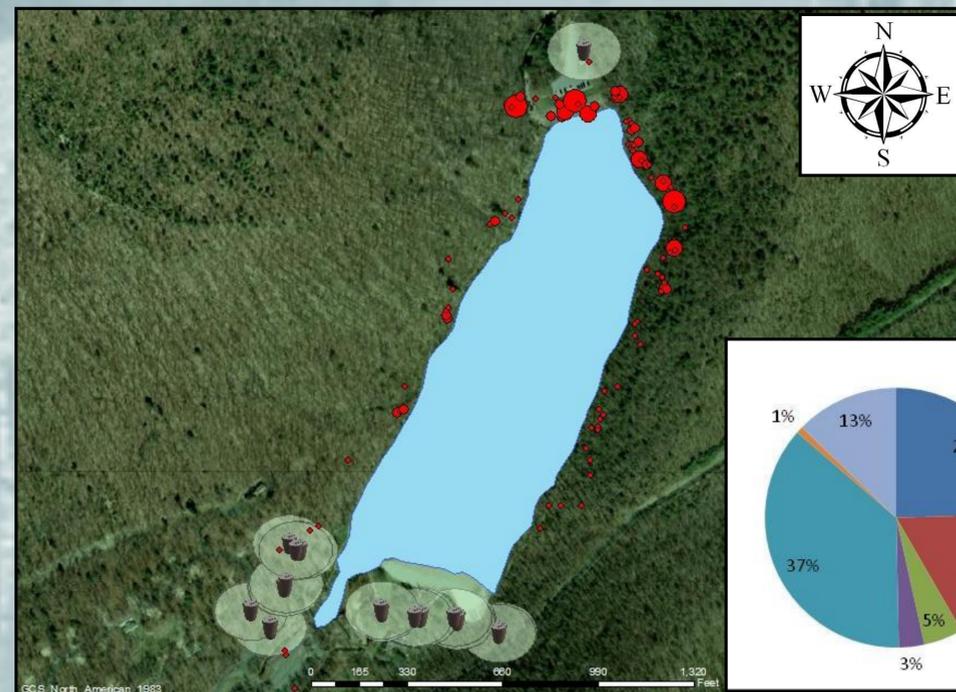
Results



Top of Lake



Bottom of Lake



Discussion and Conclusions

As the litter was examined and counted at each data point location, the types of litter were put into the specific categories. The most common litter found was tobacco products such as cigarette butts, snuff cans and cigarette cartons; the percentage of tobacco litter was 37%. The second most common litter was that related to fishing, the percentage being 24%. The next most common litter was food trash at 17%. These are outcomes that could have been easily predicted, and all could be easily put into waste bins if they were present. It is obvious that waste bins need to be installed around the lake, but the question is, where? From the aerial perspective, the left side of the lake has three obvious clusters; a waste bin should be placed at each of these three locations. The right side of the lake is the side with the most litter, most likely because it is the most easily accessible side. Unlike the left side of the lake which only has a few drop-offs for fishing, the right side has long strips providing many locations for fisherman to fish from, resulting in more locations for them to litter. The right side should have waste bins located in 200 ft. intervals down that entire side. Placing the waste bins in 200 ft. intervals would provide a full buffer zone around the lake for reasonable distances for people to walk to a waste bin. The lower side of the lake is obviously covered by plenty of waste bins, and the upper side of the lake needs to have a waste bin at the bottom of the stairs, which is central to that side. The bins should obviously be placed down at the lake shore rather than on the trails, because the litter is on the shore where the fishermen are fishing from. There are risks of the lake flooding the bins and the possibility of people damaging the bins, but they must be located at the shore for maximum opportunity at litter prevention. The bins will need to be firmly attached to the shore in some fashion to prevent them from floating into the lake.

References

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