

## **A BOTTLE BILL TO REDUCE LITTER IN THE DOG RIVER WATERSHED**

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My area of concern is the Dog River Watershed pollution caused by litter. The quantity and type of litter will determine how much a bottle bill will help clean up the Dog River Watershed. A bottle bill is a law that requires a minimum refundable deposit on beer, soft drink, and other beverage containers in order to ensure a high rate of recycling or reuse. The effects of deposit systems on litter reduction are well documented through pre and post bottle bill surveys. With existing data available from other states that have bottle bills or deposit laws for beer and soft drink containers, would the same redemption rates applied to the Dog River Watershed help clean up the litter that currently exists and help prevent new litter. I selected two different areas in the Dog River Watershed to collect litter. One was where Highway 90 crosses Halls Mill Creek. The other is where Sollie Road crosses Halls Mill Creek. The reason I picked these places is because I noticed there was a lot of litter in these locations. While I picked up the litter I sorted it out between depositable beverage containers and non-depositable litter. At both locations there were more depositable beverage containers than non-depositable litter. Since there were a lot of depositable beverage containers where I picked up litter in the Dog River Watershed, a bottle bill law could significantly help reduce litter in the Dog River Watershed.

Keyword: litter, bottle bill

### **Introduction**

My area of concern is the Dog River Watershed pollution caused by litter. The quantity and type of litter will determine how much a bottle bill will help clean up the Dog River Watershed. A bottle bill is a law that requires a minimum refundable deposit on beer, soft drink, and other beverage containers in order to ensure a high rate of recycling or reuse. This bill should also include non-carbonated beverage containers since bottled water has become so popular. The effects of deposit systems on litter reduction are well documented through pre and post bottle bill surveys. The percent of litter reduction in the states of New York, Oregon, Vermont, Maine, Michigan and Iowa, where studies were conducted, fall within a range that varies by only 14 percentage

points. Beverage container litter reductions have consistently been between 70 and 84%, and total litter has been reduced between 34 and 47% (Bottle Bill Resource Guide). In Denmark, 98% of the bottles are refillable, and 98% of the public stated that they consistently returned the bottles for deposit (Muldoon 2006).

The litter that a bottle bill could help has been established by previous studies submitted to Field Work in Geography. One study entitled “Litter along Michael Boulevard” was done by Bonnie Davis. She did a study that concerned the different types of litter found in a particular area in the Dog River Watershed (Davis 2007). Another study was titled “Trash Here, Trash There, Trash Everywhere” that was done by Erica Hay. Erica’s study compared the types of litter in commercial and residential areas and the most prominent type in each area (Hay 2006).

Eslava Creek, which is found in the southern part of the Dog River Watershed, was found to be littered with a significant amount of urban street refuse according to a study done and published by Auburn University. Items frequently observed were plastic soda bottles, paper cups, empty oil containers, Styrofoam objects and packaging material such as plastic wrap and cardboard (Halcomb 1996).

In the 1994 Coastal Cleanup in Alabama, zone captains reported that the prevalent types of debris found on Alabama’s coast were cigarette butts and plastic, including Styrofoam cups and beverage bottles (Sheavly 1995). Coastal Cleanup is an event supported by the government-run Environmental Protection Agency that takes place on the third Saturday in September each year. During the event volunteers pick up trash near the coastline.

The bottle bill has caused a significant reduction in beverage container litter and total litter. It has reduced beverage container litter about twice as much as total litter. States with bottle bills have less litter and this is known because of litter studies in seven bottle bill states. Beverage containers make up a large proportion of litter according to an adopt-a-highway report. (Bottle Bill Resource Guide). As a measure to reduce bottle litter, deposits are extremely effective. By placing a value on items currently viewed as “rubbish” they give a financial incentive to people to dispose of their used bottles appropriately and reward financially those who help keep the streets and streams clean. If the consumer, who pays the initial deposit chooses to toss the can or bottle, someone else may pick it up and redeem the deposit (Keep Wales Clean). The average amount of deposits used by most states that have a bottle bill is 5 cents, and for a few states it is 10 cents. In one state, California, the amount of deposit depends on the size of the bottle. If the bottle is 24 ounces or larger the deposit is 10 cents and if the bottle is smaller than 24 ounces the deposit is 5 cents.

To the best of my knowledge, no cities have instituted a bottle deposit law on their own. Some residents have suggested the idea that the city they live in should institute a 5 cent bottle deposit. As far as I can see there is nothing to stop the city of Mobile from having a bottle deposit law, but it may be difficult to mark the bottles bought in Mobile. This may be one reason why no city has a bottle deposit law.

Deposit laws also create jobs, because people are needed to collect and process bottles and cans. Bottle bills are considered to be more effective than other reward anti-littering campaigns because they are long term and cost effective.

## **Research Question**

With existing data available from other states that have bottle bills or deposit laws for beer and soft drink containers, would the same redemption rates applied to the Dog River Watershed help clean up the litter that currently exists and help prevent new litter.

## **Methods**

I selected two different areas in the Dog River Watershed to collect litter. One was where Highway 90 crosses Halls Mill Creek. The other one was where Sollie Road crosses Halls Mill Creek. The reason I picked these places is because I noticed there was a lot of litter in these locations. I picked up all litter I saw so I would not have to decide what litter to pick up. I then sorted the litter I picked up at these locations to determine what percentage would be covered under a deposit law. I sorted the litter by placing it into two categories. The two categories were depositable beverage containers and non-depositable litter. After I sorted the litter I weighed and counted the bottles and cans for the depositable beverage containers.

I did some research on the states with refundable deposit laws. I explained how the bottle bills work and how effective they have been in reducing litter in these states. For example, an estimated 86 percent of beverage containers, or 1.65 billion, are redeemed annually in Iowa (Iowa DNR Waste Management).

## **Results**

At both locations there were more depositable beverage containers than non-depositable litter. There were a lot more depositable beverage containers where Sollie

Road crosses Halls Mill Creek. At the location where Highway 90 crosses Halls Mill Creek, the cans and bottles weighed five pounds and I counted 47 cans and bottles. Glass bottles made up 5 percent, aluminum cans made up 60 percent, and plastic bottles made up 35 percent of the depositable beverage containers. Figure 1 shows the litter I picked up at this location.

**Figure 1**

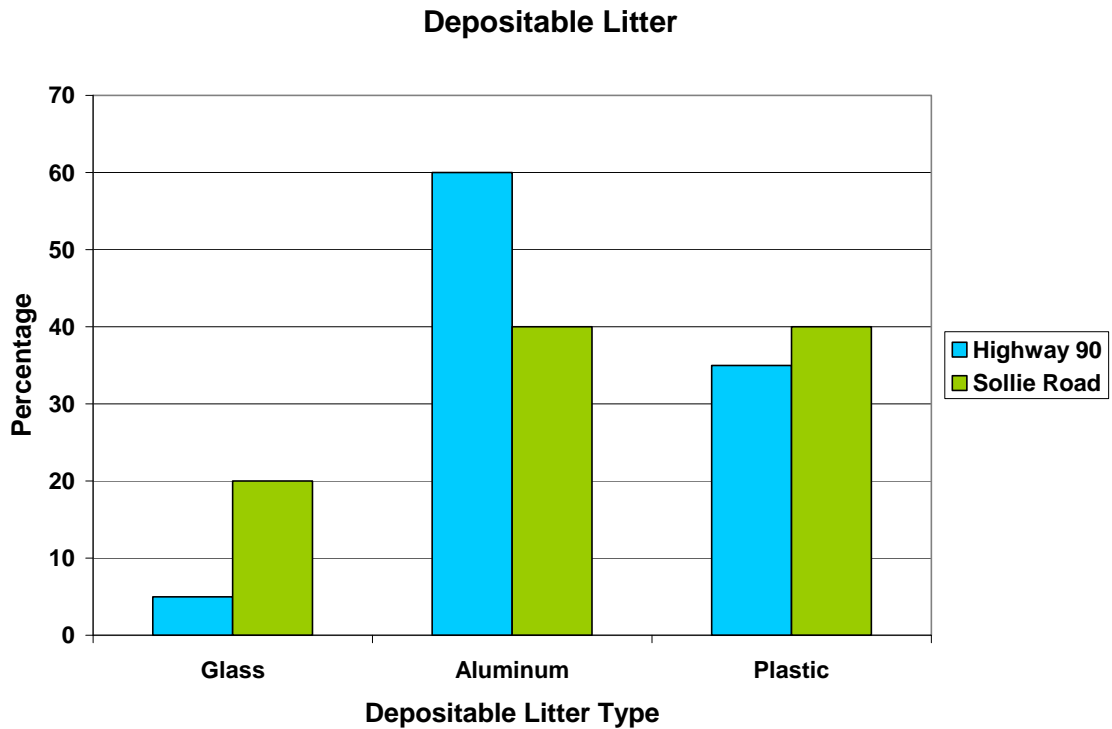


At the location where Sollie Road crosses Halls Mill Creek, the cans and bottles weighed eight pounds and I counted 27 bottles and cans. Since there were more glass bottles here, the depositable beverage containers weighed more than the other location even though there were less cans and bottles. Glass bottles composed of 20 percent, aluminum cans composed of 40 percent, and plastic bottles composed of 40 percent of depositable beverage containers. Figure 2 shows the litter I picked up at this location.

Figure 2



The following graph shows the percentage of depositable litter type at both locations.



## **Conclusion**

This project would benefit the Dog River Watershed because it could lead to legislation of a bottle bill law because there were a lot more depositable beverage containers where I picked up litter in the Dog River Watershed. According to existing data from other states, a bottle bill law could significantly help reduce litter. Reduction in litter would improve the watershed in many ways and be effective at reducing injuries, by removing glass bottles and sharp cans from the general litter stream (Flynn 2008). Less litter would increase the flow, health, and appearance of streams. Stagnant water caused by litter can be an environmental hazard. It can be a breeding ground for mosquitoes, which transmit West Nile and other dangerous diseases.

Plastic bottles and aluminum cans can take years to break down or decompose. The toxins produced by their decomposition pollute the habitats of plants and animals that flourish in the watershed. The enjoyment of nature for future generations and us can benefit from the reduction of litter.

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