Figure One: Me with two days worth of e-waste at one site. (April 28, 2021)

E-Waste Recycling Project

A Voice for Animals Contest

Jordan Dearsley

For my project I am running a series of e-waste recycling drives in order to help prevent the e-waste in my community from damaging ecosystems and hurting wildlife. I have been locating different areas in some of the communities around me and I have been arranging events in these different communities. It's been really difficult due to the pandemic but I currently have six different dropoff locations planned, with two day events for. I am still working on expanding (I hope to get more drives in my school division) by trying to create more events in order to help reduce animal suffering. As well, I also coordinate pickups with the Electronics Recycling Association in order to get the e-waste picked up and transported to the recycling centre, where the devices will be either fixed up and given to charities, or disassembled for their parts. The largest amount of work for the project has been getting the word out and educating others on the importance of disposing of e-waste properly. I run an Instagram, Facebook and Twitter, which I use to give information and spread the word. I have gotten some help

Figure Two: One of my Electronics Recycling Drive Posters (March 30, 2021)

Figure Three: Shannon Martin recognizing Jordan Dearsley in a Private Members Statement (April 26, 2021).

from local politicians to promote the event as well as environmental groups and businesses. I use my social media to describe the effects of e-waste on the environment and wildlife in particular, in order to help educate others on the importance of recycling e-waste. I decided on this project because I learned that e-waste was a rapidly growing problem and I wanted to do something to help. Canadians were found to create around 725 000 tonnes of e-waste each year! (Kumar & Holuszko, 2016). This is due to the fact that, to many, it is an inconvenience to donate their e-waste so a lot of time it ends up in the trash. Therefore by setting up these events I can measure how much e-waste I diverted from the landfill and prevented from harming wildlife.

Upon researching the impacts of e-waste I discovered that e-waste has incredibly harmful effects on wildlife when it is disposed of improperly. Heavy metals cause a lot of direct harm to wildlife. Arsenic is one example of how heavy metals from e-waste (Arsenic is used typically in LEDs) can greatly harm animals. Many animals are exposed to arsenic through drinking water or through eating plants. For example, cows in South America suffered greatly after soil was poisoned with arsenic. Out of 42 heifers, 29 died (Mandal, 2017). During a period of 44 days 4 out of 5 calves who had shown adverse symptoms had died (Mandal, 2017). This shows that heavy metals such as arsenic can cause a lot of suffering and death for wildlife. As well, heavy metals such as mercury cause issues through bioaccumulation. Mercury is commonly used in batteries and fluorescent tubes. The mercury from e-waste often ends up in waterways, and is then converted to methylmercury by bacteria. It is picked up by plankton, and eaten by smaller fish. When a larger fish comes along and eats these smaller

Figure Four: One of my loads of e-waste (April 28, 2021)

fish the methylmercury is passed up the food chain in greater amounts. This continues until it kills larger animals. This is an unfortunately common problem and causes the death and harm of many larger animals. (Vermont Department of Environmental Conservation, n.d.)

Electronic waste harms our environment which serves as animals' habitat. E-waste has a lot of toxic impacts on water when thrown away Heavy metals and flame retardants easily end up in water and cause acidification. When water acidifies it affects some populations more than others, causing some to disappear. This continues to harm other species. As well, invasive species can thrive and continue to upset other populations. Acidification particularly causes stress on fish, which reduces size and can even lead to a buildup of mucus which suffocates fish. These harmful effects of acidification continue to harm the entire aquatic ecosystem. (LennTech, n.d.) In addition, when e-waste is disposed of improperly it has large negative effects on the soil. Heavy metals and flame retardants from e-waste can either seep into and contaminate soil, or upon being burned deposit in the soil, causing contamination. This results in plants that are harmful to the animals who eat them. Once eaten, these toxins will cause a lot of internal damage and greatly pain wildlife. (Elytus, 2019). Moreover, e-waste damages the air. A lot of the time when e-waste is tossed out it is shipped overseas and burned. This process releases many toxic chemicals such as PCDD, PBDEs, PAHs, PCBs, and other heavy metals. (Salleh, 2013) When animals live in air contaminated with these chemicals it can cause their endocrine systems to shut down, it can make it harder for them to reproduce, can cause injury to their organs, and can increase animals' vulnerability to diseases. (Government of Canada, 2012). All these negative effects show that the pollution of air through e-waste is extremely harmful to animals. All of these terrible effects on wildlife from e-waste are incredibly concerning.

That is why I am so passionate about my e-waste recycling project, as I am able to make a difference in protecting animals. Allowing e-waste to continue to be improperly disposed of will continue to hurt animals both by harming their health directly and harming their habitat. That is why I have felt it to be so necessary to put my all into my e-waste drives. With each device I collect I hope to improve the future for animals.

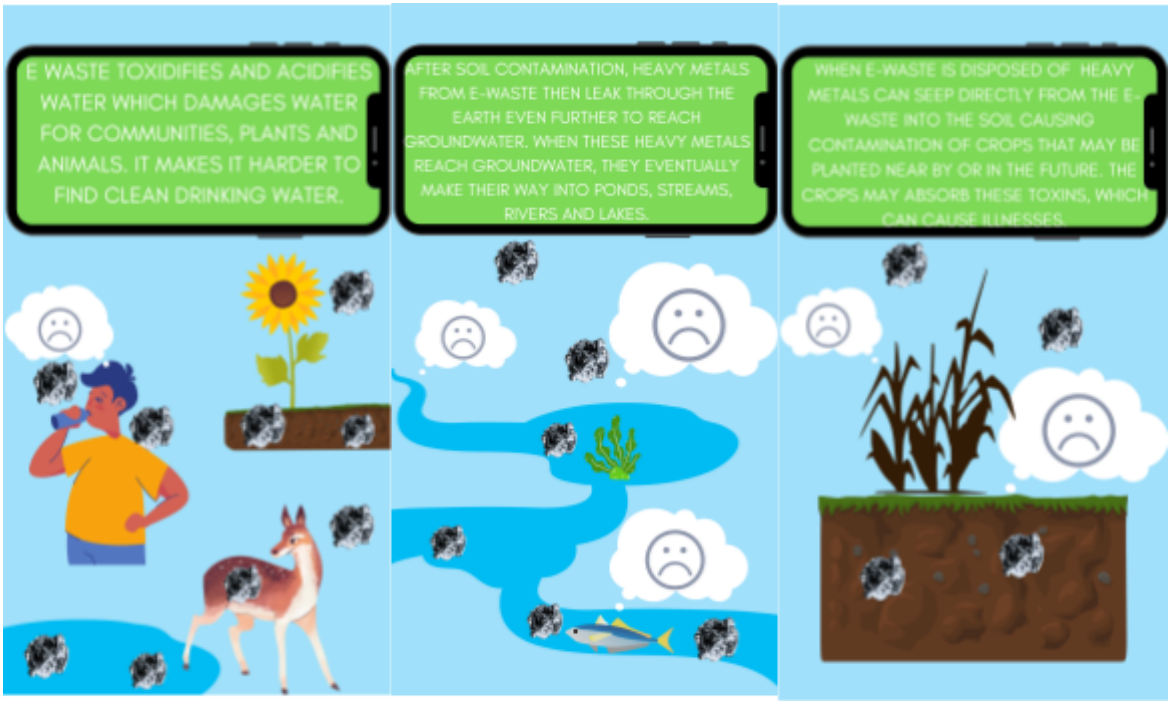

Figure Five: 3 of my Instagram Stories to Educate about the Impacts of E-waste on animals and the environment. (April 15, 2021).

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