

Cattails in the Water

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Problem

How to minimize the number of cattails in a cattail-clogged marsh / oxbow lake so that an endangered species may be introduced.

Hypothesis

My hypothesis is that cutting the cattails a few centimeters below the water line will be the most effective way of killing them.

Abstract

Cattails are one of the major nuisances related to pond or lake management. While there are several different accepted techniques for dealing with this problem, quite a few of them either involve excessive manual labor or run the risk of contaminating the existing water supply. The best process appears to be the cutting of the cattail a few centimeters below the water level. This is supposed to effectively kill the plant without much physical labor or risk to the water supply. To test this hypothesis, a fair test was created to try the technique on a cattail-clogged oxbow lake. The conclusion confirmed the hypothesis that cutting cattails below the water level will allow the cattails to be removed with minimal labor and without running a risk to the water supply.

Cattails in the Water

Many modern ponds and lakes are plagued with a particular nasty aquatic plant: cattails. While appearing innocent enough, this hardy water plant can quickly take over an expanse of water; and as soon as it takes over, it refuses to leave. Many different removal methods have emerged over the years. These include the following: chemical removal, removal by hand pulling, dredging the pond, lowering the water level during growing season, freezing the roots of the plant, and cutting the cattails. While all of these methods work to some extent, several call for massive physical labor, are time consuming, or run the potential of contaminating the water supply. However, there is one method that can be proved to be the most efficient way of removing cattails, with limited physical labor for the remover and no threat being posed to the water supply.

One of the most popular ways of removing cattails is by using chemicals. Several different and effective brands are available on the market today. They can be found in many pond supply or hardware stores and include such brand names as Rodeo, Aquapro, and Reward. However, there is a great risk run with choosing this option. Firstly, many consumers will find a product they think is for cattails and use it without asking for professional advice. Others attempt to use the product without reading the label. Consumers should be warned that they should always consult a professional before making a purchase and carefully read the instructions before ever putting the product into the water. Even if these guidelines are followed, there is still the risk of contaminating the water. Because of this, chemical removal should never be used if the pond has direct access to a river or is located upriver of potable water supplies. They also cannot be used if the pond has overflow problems. The final problem with chemical removal is the danger it poses to fish, pond insects, and other wildlife in the pond habitat. In

addition, chemicals cannot promise the eradication of the problem and can even stimulate weed growth. In short, chemical removal can be more of a hassle than it is worth.

Another favorite among cattail sufferers is to simply pull up the offending plant. However, this choice is extremely labor intensive and cannot guarantee complete removal. If a person does choose to hand pull the cattails, he should try to pull them while they are young. This ensures easier pulling. The puller should try to grasp the cattail as close to the base of the plant as he can, trying to wrap his fingers around the roots of the plant. Then, he should slowly pull the plant out of the water, throwing it onto the bank of the pond. The person will have to keep watch on the area to prevent future grow back, but the pulled cattails can be used to provide excellent fertilizer.

A less common practice, usually reserved for very large jobs, is dredging. This effectively removes the plants and the soil in which they live. Dredging can be performed with a small tractor and should ideally take place when the water level is below the work point. The dredger should try to avoid removing plants, water, and soil all at the same time and remember that dredging creates an underwater shelf that can pose a drowning danger for young children. This process is also very disruptive to the pond environment and the animals that live there. Despite these risks, dredging is one of the most effective ways of permanently removing cattails.

Flooding / freezing should only be attempted in ponds where there is access to water control for that pond. One method that can work is lowering the water level below the roots of the plants during the growing season, usually during the fall or winter, and then quickly adding it back. However, the water cannot be left too high or else the method will be ineffective, and it cannot be too low or else it could pose a risk to the animals in the pond. Freezing can also be tried. This process is simple in the fact that the owner of the pond lowers the water level to the

point that the roots of the plants are left exposed during the coldest part of winter. The freezing will usually kill the roots and the plant. However, there is the risk that this process will affect the wintering animals in the pond.

Finally, the most effective way of removing cattails is simply cutting them. If you cut the cattails that you wish removed only a few centimeters below the lowest point in the water level, the plant will be denied the oxygen it needs to grow. This will effectively kill the plant. This process should take place before the cattails spread their seeds or else it will have to be repeated the next year. For large expanses of cattails, mowing them is less labor intensive than having to cut them individually by hand. This is by far the most reasonable and easiest methods of cattail removal and can be adapted for large or small removal jobs.

Scientific advances in the world today have greatly enhanced our perspective of the world around us. While cattails may appear to be a mere nuisance, they do serve a purpose in an aquatic ecosystem. Cattails are major supports of the banks of a pond and help prevent the soil of a pond from washing away during the erosion process. They also provide habitats for several small aquatic insects and small mammals. In conclusion, a small ring of cattails around the perimeter of a pond can be very beneficial to the pond's ecosystem, but large amounts can actually stifle the pond itself. As those responsible for maintaining our different ecosystems, we must try to find and keep the delicate balance of harmony that was intended for nature.

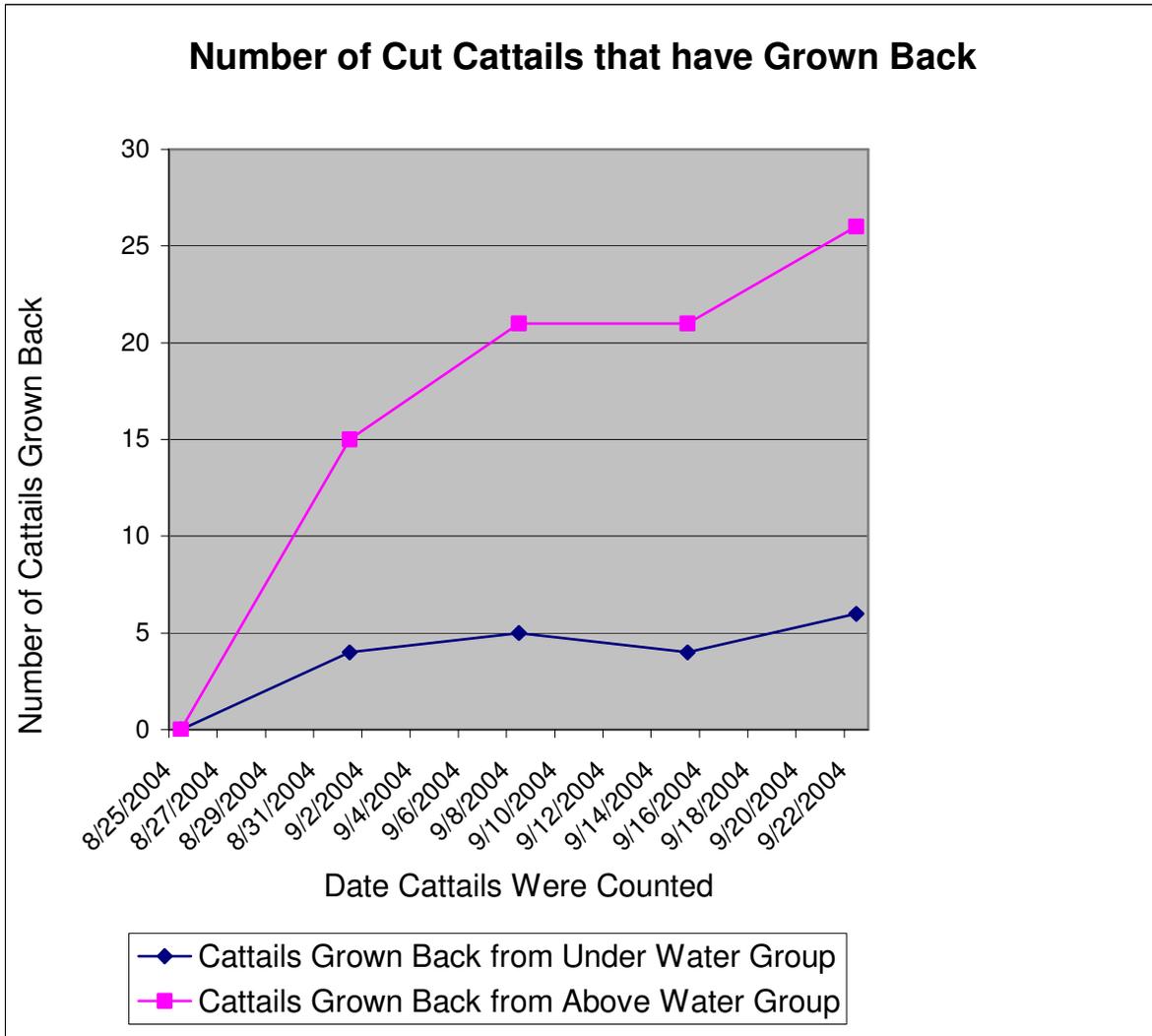
Experiment

I went down to the freshwater marsh and marked out with plastic marking tape three clumps of cattails that were both healthy and close to shore. The clump that I used for my control group was 28 x 30 cm², the clump for my under water group was 45 cm², and the clump for my above water group was 40 cm². My under water group I cut 5 cm below the water line, my above water group I cut 30 cm above the water line, and the control group I did not cut.

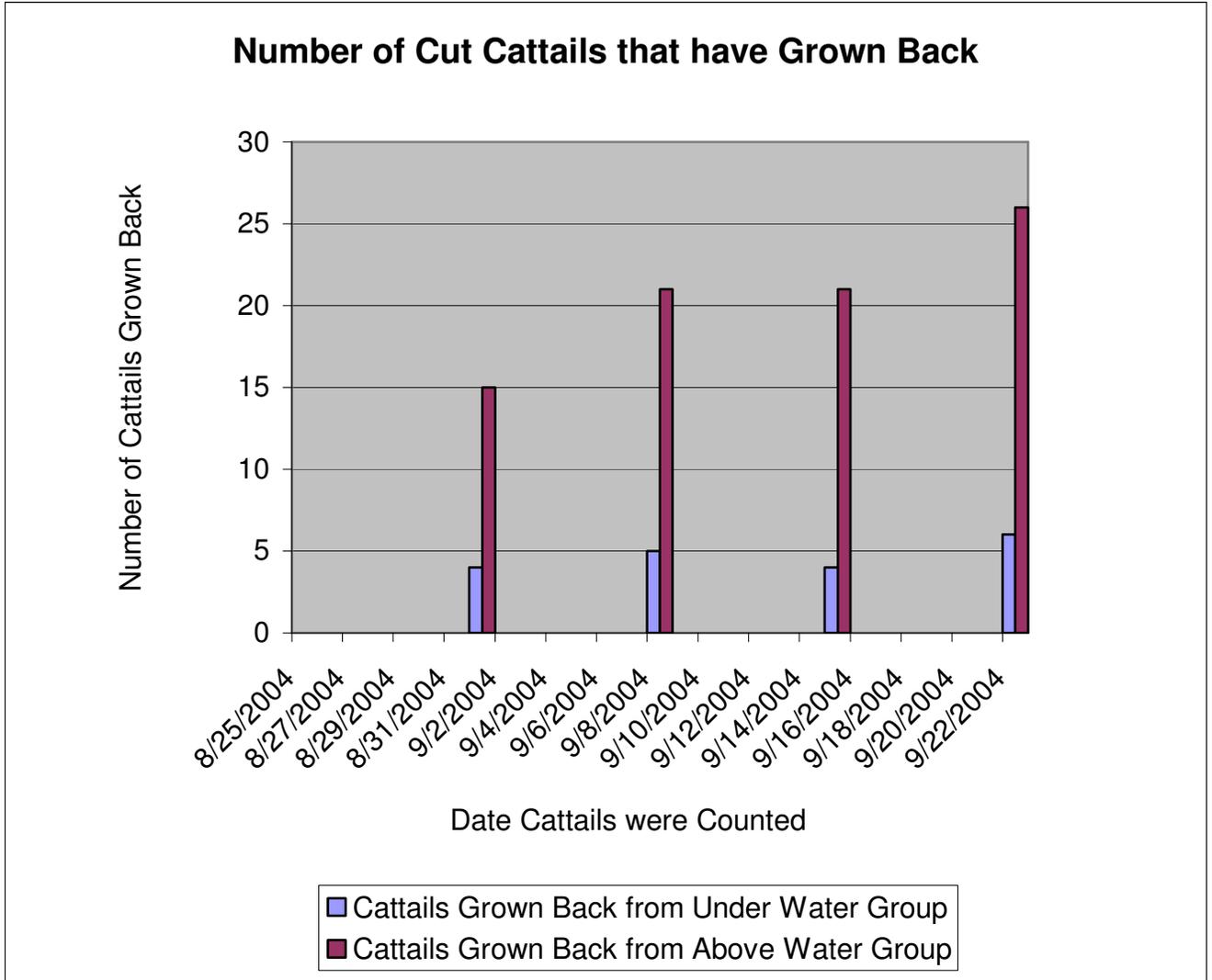
Once a week, on Wednesday, for the following four weeks, I went down to the marsh and recorded the average height of three cattails in each group as well as the number of cattails that had grown back in each of my experiment groups. I also made note of the physical appearance and health of the cattails in the separate clumps. All information was recorded around 3:20 in the afternoon. The cattail's height was measured from the top of the water in the marsh using a meter stick. At the end of September, I found an average height and health for the cattails in all three sections for the duration of the project in order to reach an objective conclusion. At that point, I determined whether or not my gathered data effectively proved or disproved my hypothesis.

Results

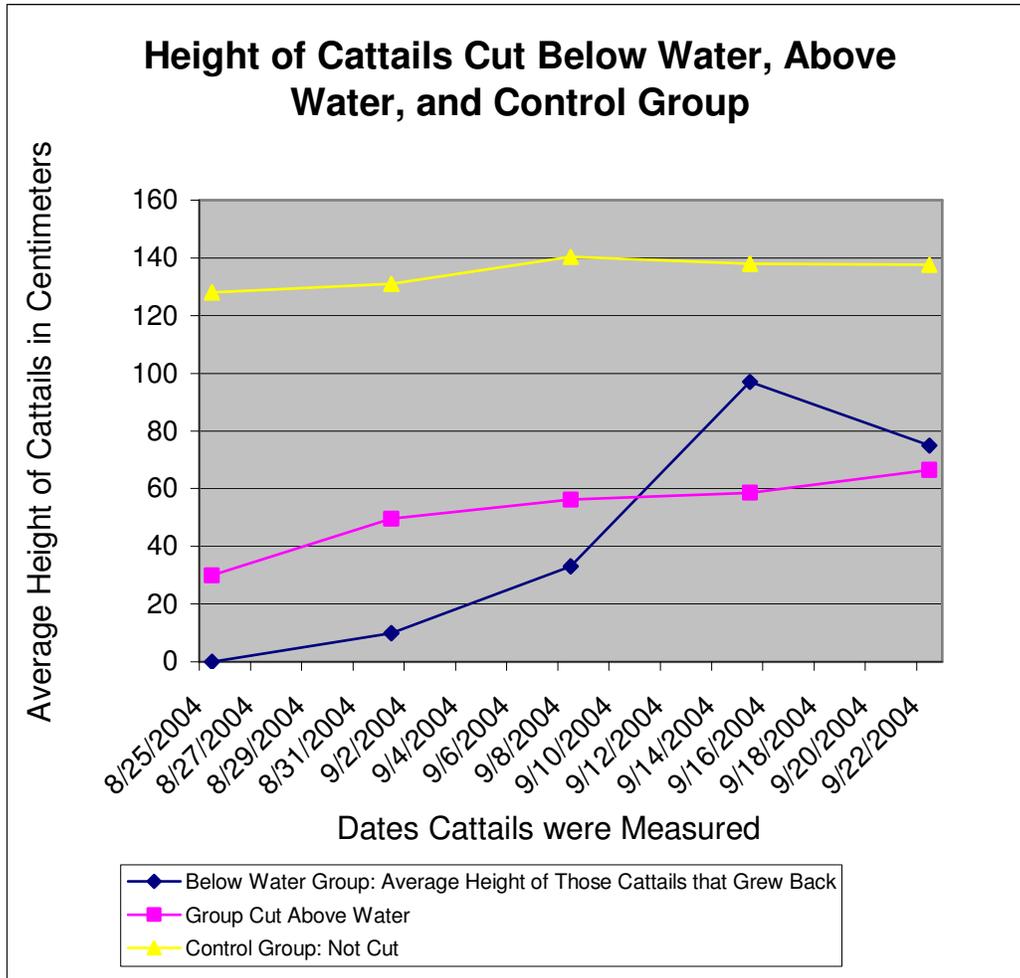
At the end of September, the information gathered for the past four weeks was collected and put together. According to the data, the clump of cattails that had been cut 5 cm below the water line had completely died, with an exception of a total of six that had grown back. The clump that was cut 30 cm above the water line showed significant grow back and remained healthy for the duration of the experiment.



This graph is a depiction of the number of cattails that grew back in each cut group. Over the four weeks, as evidenced by the graph, the group that was cut above the water experienced much more grow back than the group cut below the water.



This is another graph that depicts how many cattails grew back in each cut group. Once again, the cattails in the group cut above the water line experienced a much greater rate of grow back than the cattails that were cut under the water line.



This graph is a depiction of the average heights of the cattails in each group that grew back. Unfortunately, it is not an accurate portrayal of the results of this experiment. The data for the group cut under the water line was skewed when one of the cattails grew back to an extreme height. Because so few cattails in that group grew back, as compared to the group cut above the water line, the data was compromised. If the experiment were repeated, I would record the individual height of the cattails as well as the average so a more accurate depiction could be made.

Conclusions

Based on the research collected over the course of my experiment, I have come to conclude that cutting cattails 5 centimeters below the water line is a more effective way of killing them than cutting them 30 centimeters above the water line. After 4 weeks, the cattails I had cut below the water line had completely died with very few growing back. However, the cattails I had cut above the water line had only continued to grow with a minimal death rate. Based on this raw data, and the graph I created from it, I determined that my hypothesis was correct and that cutting cattails 5 centimeters below the water line is a more effective way of killing them as compared to cutting them 30 centimeters above the waterline.

This experiment was performed only once with only one control group because it was designed to see if this method would be able to work on a small scale project. The next step would be to see if this method would be just as effective on a large scale project (e.g. the entire marsh). In this case, multiple clumps of cattails would be used instead of just the minimum three.

Acknowledgments

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