



Huslia House Migration Project

Alexander Vent, Barbie Sam
Jimmy Huntington High School

University Alaska Southeast / Department of Natural Sciences, EDGE Program



Introduction

This project is about the erosion of the Koyukuk riverbank near Huslia. Huslia is located in Alaska's Interior. It is a small village of about 300 people. The residents are primarily Koyukon Athabascans.

The cut bank in front of our village is usually worn away during springtime when we have a lot of melting snow and ice. Some years the erosion is worse than others. This last year (spring of 2007) we had almost no erosion of the bank. Three years ago (spring of 2005) we had an enormous amount of erosion. In some places we lost about 40 feet of riverbank. The water was so high it crested many cut banks along the river and our town was close to flooding.

In the 1970's the U.S. Army Corps of Engineers placed cement bags along the bank to attempt to stop the erosion. This only worked for a couple of years. Since then the river has worked its way around and under the sand bags. Almost all the sandbags are now out in the river away from the bank. Over the last ten years we have had to move many of the houses that have been near the river to a location further away.

In this project we used GPS units to mark the cut bank and the houses that have been moved and will probably need to be moved in the near future. Our goal was to calculate how much erosion has occurred since the 1950's by geo-referencing old aerial photographs and maps using ArcView computer mapping software. We also planned to interview elders to gain a better perspective of environmental conditions since the 1950's and before. This will also help us to understand about the erosion on the river throughout recent history.

Data analysis

Once we had the track in the GPS we put it in the USGS map (see Figure 1) in the Arc-View Mapping software.

In the 2006-2007 school year we also used GPS units to make a track of the bank of the river and placed it on a 1975 aerial photograph (see Figure 2) to see how much it had caved since that picture was taken.

We determined this school year 2007-2008 to physically measure several the houses closest to the bank as well make a track line. The distances measured were as follows:

Attla I	65 feet
Eddie Vent	185 feet
(upper house on map)	
Sue Vent	95 feet
Vent	75 feet
Chifford	75 feet

Results

The town of Huslia was formed in the 1950's, but it is a town that has had to deal with bank erosion. We have determined that the cut bank in front of town has eroded several hundred feet since the 1970's.

As mentioned in the introduction, we wanted to try to stop this erosion. We found this was not an easy task. When the Army Corp of Engineers came to help put cement bags along the edge of the bank there were two different slopes which were used. There was a steep slope and a shallow slope. The bags making the area with a steep slope eroded away and the area with the shallow slope has held together to this day. This shallow slope area can be viewed in Figure 2 as the small peninsula at the middle left of the map.

Conclusions

We have concluded that while the Koyukuk River does not erode consistently each year it has eroded a great deal since the 1950's and will continue to erode. Houses closest to the bank are now at an average of 100 feet away from the edge of the bank. We do not feel we have accomplished everything we set out to do this year, but we look forward to continuing this project in the future and learning more from elders and community members, and finding more historical satellite and aerial photos to help find out when major erosion has happened in the past.

Resources

GIS/GPS Training, March 14-16, 2007, La'ona Dewilde www.letsmapalaska.com.

Feather, Ralph Jr. and Leach, Susan Snyder, *Earth Science*, (1997). New York, NY: Glencoe/McGraw-Hill.

1975 Aerial map of Huslia, Huslia City Council, Elsie Vent, March 14-16, 2007.

Sam, Hudson Tony Sr., *Verbal Interview*, December 15, 2007

Experimental Discoveries in Geoscience Education, August 6-10, 2007, Dr. Cathy Connor.

Huslia, Alaska

Materials and methods

For this project students used Garmin etrex gps receivers, cameras, notebooks, measuring tapes, and winter gear for outdoor field work.

Work indoors involved ArcView mapping software and Powerpoint.

In order to create the track line for our project we had to walk the cut bank from one end of town to the town's boat launch area, which is around two miles. We traveled at the speed of approximately 4 miles per hour, except when the snow was deep (which was most of the time as you can see.) In addition, we measured the distance from five of the closest houses to the edge of the river bank.

Alex, Anna, and Candice walking along the bank of the Koyukuk River.



Geoff Johnson being a woodsman in the woods, which is what a woodsman does.



Figure 1

2007 Huslia Bank Erosion with 1975 Background Picture



Figure 2

Acknowledgments

We would like to thank the people at EDGE institute for helping us learn how to use a GPS, the ArcView mapping software and for getting us here. La'ona DeWilde has also provided much assistance with GPS units and mapping software in the past and we are very grateful. Much thanks to Hudson Sr. for his knowledge about the sand bagging of the bank in the past. And lastly, we would like to thank our classmates for helping us with this project and the Environmental Office in Huslia for letting us use their equipment to help with this project.



The class making a trail up the hill at the cut bank.

Anna and Barbie following up the hill with GPS receivers.



Chris Moses taking measurements at a cabin near the bank.



Alex Vent at the other end of the measuring tape by the bank.

