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The Wampahoofus' Favorite Place: A Children's Book of Environmental Stewardship

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Abstract

This project is dedicated to the conservation of the largest alpine environment in Vermont, and consists of a children's book and an activity brochure that is meant to supplement the book. The book, titled *The Wampahoofus' Favorite Place*, tells the story of the Wampahoofus (a folkloric character that lives on Mt. Mansfield) as he travels the ridgeline of Mt. Mansfield and speaks about the alpine plants and animals that make the alpine environment unique and important. The activity brochure consists of a point-based treasure hunt that encourages children to explore the plants and animals outlined in the book while they are hiking the ridgeline of Mt. Mansfield. The goals of this project were to spark interest in young readers and educate them about the rare alpine environment atop Mt. Mansfield, and for the book and brochure to become part of the Green Mountain Club's collection of information in their Visitor Centers (one on Rt. 100 in Waterbury Center and the other at the top of the Mt. Mansfield toll road). This paper outlines the literature relevant to my topic, the methods used in the creation of both the book and the brochure, the results of my methods, and finally a discussion of these results.

Acknowledgements

I would like to thank my advisers, Rick Paradis and Grace Greene for the knowledge and help that they have generously given me throughout this process. I would also like to thank the Green Mountain Club for opening this door for me; without the job opportunity that I was given, I would not have created this book. Finally I would like to thank my family and friends for their never ending support throughout this difficult and rewarding process.

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Introduction

Children's books are arguably some of the most captivating, fun and interesting pieces of literature. The combination of the author's carefully chosen words, the engaging nature of the story and the color and variation of the artist's illustrations makes picking up a children's book almost irresistible. This initial attraction to children's literature sparked the inspiration for my creative project thesis, which took the form of a children's book and brochure about a creature called the Wampahoofus and his home on my favorite Green Mountain. I titled the book *The Wampahoofus' Favorite Place*,[1] and the brochure, "The Wampahoofus' Treasure Hunt."[2]

My goals for this project were first to write a children's book about the conservation of the alpine environment atop Mt. Mansfield that would interest and educate young readers. In addition to this, I had the goal of creating a supplementary activity brochure that children could take with them as they hiked the ridgeline trail. Finally, I wanted book and brochure to be included in the Green Mountain Club's body of literature at their two visitor centers (on Mt. Mansfield and in Waterbury Center). The book was meant to be used as a learning tool for children who hike and live in central Vermont so that they may better understand alpine areas in Vermont and the importance of their protection.

I accepted a job as a Summit Caretaker on Mt. Mansfield beginning in June of 2010, and the main goal of this job was to protect the alpine vegetation on the summit and ridgeline trail by speaking to hikers about the importance of this rare ecosystem. While working, I noticed that children who accompanied their parents to the mountain rarely understood why they were not allowed to lie in the sedge that grew along the trail. As Summit Caretakers, my co-workers and I would try to explain to the kids why we were protecting the plants, but the kids became overwhelmed by the fact that a stranger was speaking to them for "doing something wrong" and didn't seem to be interested in what we were saying. It was this communication difficulty combined with an absence of publications and information for children in the Green Mountain Club's body of literature that inspired me to write and illustrate a children's book about Mt. Mansfield. I chose the

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[1] See attached book, *The Wampahoofus' Favorite Place.*

[2] See Appendix A.

Wampahoofus, a folkloric character that I had become familiar with while working on the mountain as the main character and decided to write the story from his point of view. The Wampahoofus would teach readers about the rare and beautiful plants and animals that make Mt. Mansfield's alpine area worth protecting.

With this project, I am trying to improve on the perceived gap of children's literature that exists in the Green Mountain Club's collection of publications. At this point, there is a wealth of information for adults at the Green Mountain Club's Visitor Centers, but only one piece of literature for children. There are no materials that encourage children to learn about what plants and animals are present in alpine areas or even more generally that encourage children to learn about the Long Trail and the Green Mountains. I hope that my project will give the Green Mountain Club more tools to offer children so that they may learn about the rare and unique alpine area on Mt. Mansfield and begin to form environmentally conscious behaviors that will last a lifetime.

Literature Review

Introduction

The following literature review has been divided into three different sections: Geology and Ecology of Alpine Areas, Environmental History and Conservation of Alpine Areas and Children's Literature. In the first section, I provide an outline of the information regarding the geology of Vermont's alpine areas. Following this is a discussion of the ecology of alpine areas, specifically their climate, soil and plant species. In this first section, I also discuss the restoration of alpine areas and provide information about the ecology of the alpine environment found on and around the summit of Mt. Mansfield. Finally, I provide a list of plants and animals native to Mt. Mansfield's alpine area. In section two, I discuss the environmental history of Mt. Mansfield, the history of the Green Mountain Club on Mt. Mansfield, and the legend of the Wampahoofus. In the third and final section, I discuss the writing and illustration of children's books, most specifically those that convey an environmental message.

Geology and Ecology of Alpine Areas

I. Geology

The Green Mountains were formed between 450 and 350 million years ago when continental collision during the formation of Pangaea caused the Earth's crust to fold,[3] creating tall mountains. The mountains were worn down and shaped into their current state as few as 12,000 years ago when glaciers from the last Ice Age traveled over Vermont, wearing off the tops of mountains and creating lakes throughout the state.[4] Mt. Mansfield currently stands as the highest mountain in Vermont at an elevation of 4,393 feet.[5]

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[3] Author unknown. "Brief Geologic History of Vermont." *Department of Geology,* 2010 Edition. University of Vermont. Accessed April 10, 2011.
[4] Stone, P.B. "The Appalachians of North America: Marginal in the Midst of Plenty." *The State of the World's Mountains: A Global Report.* Ed. P. B. Stone. London: Mountain Agenda, 1992. pp. 310.
[5] Hagerman, R. *Mansfield: The Story of Vermont's Loftiest Mountain*. Essex Junction: Essex Publishing Company, Inc, 1971. pp. 15.

The Green Mountains make up part of the northern region of the Appalachian Mountain range that extends from Alabama to Newfoundland.[6] These Appalachian mountains were created between 570 and 245 million years ago during the Acadian, Taconia and Appalachian orogenies, which were caused by the collision of continental plates during the late Precambrian supereon and the following Paleozoic era. [7] The northern Appalachians are composed of metamorphic and igneous rock and are some of the oldest mountains in the world. [8]

Beginning in the Oligocene era, tundra began to evolve in the Molgolo-Tibetan plateau region and spread to the world's arctic highlands.[9] After a few million years of evolution, the Earth's climate began to cool and dry during the Pilocene epoch.[10] By the end of the Pleistocene epoch, much of North America was covered by a one-mile thick sheet of ice[11] referred to as the Laurentian ice sheet.[12] The Laurentian ice sheet was the most recent glacier to cover any portion of the lower 48 states, and shaped the current geography of the northern Appalachian Mountains as it moved in a north-south direction across the northern United States.[13] The movement of the Laurentian ice sheet over the landscape carved the rounded mountaintops and numerous lakes currently found in the northern region of the Appalachian Mountains.[14] Striations and erratics can be found on the summit of Mt. Mansfield that attest to the presence of this glacier.[15]

The cooling during the Pliocene and Pleistocene epochs and resulting formation of glaciers in North America forced a southward migration of many plant species from

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[6] Billings, W. D. "Alpine Vegetation." *North American Terrestrial Vegetation*. Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp. 542.
[7] Ibid.
[8] Stone, P.B. "The Appalachians of North America: Marginal in the Midst of Plenty." *The State of the World's Mountains: A Global Report.* Ed. P. B. Stone. London: Mountain Agenda, 1992. pp. 308.
[9] Bamberg, J. M. a. A. "Comparison of Some North American and Eurasian Alpine Ecosystems." *Arctic and Alpine Environments.* Ed. J. a. W. H. O. H. E. Wright. Bloomington: Indiana University Press, 1967. pp.92.
[10] Ibid., pp. 95.
[11] Stone, P.B. "The Appalachians of North America: Marginal in the Midst of Plenty." *The State of the World's Mountains: A Global Report.* Ed. P. B. Stone. London: Mountain Agenda, 1992. pp. 310.
[12] Munroe, J. et al. "Parent Material and Chemical Weathering in Alpine Soils on Mt. Mansfield, Vermont, USA." *Catena.* 2006. pp. 1.
[13] Billings, W. D. "Alpine Vegetation." *North American Terrestrial Vegetation.* Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp. 538.
[14] Stone, P.B. "The Appalachians of North America: Marginal in the Midst of Plenty." *The State of the World's Mountains: A Global Report.* Ed. P. B. Stone. London: Mountain Agenda, 1992. pp. 310.
[15] Munroe, J. et al. "Parent Material and Chemical Weathering in Alpine Soils on Mt. Mansfield, Vermont, USA." *Catena.* 2006. pp. 3.

the North American arctic highlands to what is now the northern United States. Due to this southward movement of many plant species, many plants found in alpine areas today are also found in the Canadian arctic (for example, 70% of the plant species found atop of Mt. Washington are also found in arctic regions).[16] The mountains in the southern region of the Appalachian Mountains differ from the mountains of the northern Appalachians because they weren't glaciated during this last ice age and therefore do not possess alpine areas like their northern counterparts.[17]

The Laurentian ice sheet regressed to the north, and the alpine species that currently occupy alpine areas followed its regression and began to grow in Vermont.[18] As the climate continued to warm, alpine species began to flourish on top of Vermont's highest mountains, where the climate most closely resembled the arctic climate in which the species originated.[19]

II. Ecology

i. Definition of an Alpine Area

An alpine area (also referred to as an alpine environment) is composed of many non-vascular and vascular plants that are only able to grow in low temperature, high altitude conditions. In order to define where on a mountain the alpine area or "alpine zone" exists, Andel and Aronson have outlined four ecological zones and the borders that separate them (shown below in brackets). From lowest elevation to highest, the ecosystems are separated into:

"Montane zone
[Forest line]
Subalpine zone
[Tree line]
Alpine zone
[Grassland border]
Subnival zone."

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[16] Billings, W. D. "Alpine Vegetation." *North American Terrestrial Vegetation.* Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp. 538.
[17] Ibid., pp. 549.
[18] Ibid., pp. 544.
[19] Ibid., pp. 538.

The alpine and subnival zones occur on average at elevations between 1300 and 2400 meters (4265 and 7874 feet) in the United States.[20] Within the alpine zone, there are subcategories whose environments differ greatly from location to location, but can be summed up on a scale that places: "a rocky area with less soil and water" at one end, and "a peat-based bog area where water collects after running down a slope" at the opposite end.[21]

Although sometimes used interchangeably, "arctic tundra" and "alpine tundra" refer to two different environments, the only thing they have in common is their physiognomy[22] and their low mean daily temperature.[23] Arctic environments have greater variation in exposure to sunlight due to the extreme seasonal changes in day length (very long days in the summer, very short days during the winter).[24] Alpine environments are found at higher elevations and therefore have a lower oxygen content (although this does not inhibit the growth of plant species) and a higher variation in slope steepness.[25] Organisms in alpine environments are exposed to intense radiation and have higher rates of soil drainage resulting from steep slopes.[26] Alpine environments have a higher number of plant species than arctic environments;[27] they share about 500 plant species in common, which are referred to as arctic-alpine species.[28] Alpine environments have rocky soil, short growing periods and are exposed to the harsh climates of mountaintops, making growth difficult.

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[20] Wittman, B. K. a. H. "Restoration of Alpine Ecosystems." *Restoration Ecology.* Ed. J. v. A. a. J. Aronson. Malden: Blackwell Sciences Ltd., 2006. pp. 209.
[21] Billings, W. D. "Alpine Vegetation." *North American Terrestrial Vegetation*. Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp. 544.
[22] Bamberg, J. M. a. A. "Comparison of Some North American and Eurasian Alpine Ecosystems." *Arctic and Alpine Environments.* Ed. J. a. W. H. O. H. E. Wright. Bloomington: Indiana University Press, 1967. pp. 89.
[23] Billings, W. D. "Alpine Vegetation." *North American Terrestrial Vegetation*. Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp. 538.
[24] Bamberg, J. M. a. A. "Comparison of Some North American and Eurasian Alpine Ecosystems." *Arctic and Alpine Environments.* Ed. J. a. W. H. O. H. E. Wright. Bloomington: Indiana University Press, 1967. pp. 89.
[25] Ibid.
[26] Taber, R. S. H. a. R. D. "Origin and History of Holarctic Tundra Ecosystems with Special Reference to Their Vertibrate Faunas." *Arctic and Alpine Environments.* Ed. J. a. W. H. O. H. E. Wright. Bloomington: Indiana University Press, 1967. pp. 146.
[27] Körner, C. "Alpine Plant Diversity: A Global Survey and Functional Interpretations." *Arctic and Alpine Biodiversity: Patterns, Causes and Ecosystem Consequences*. Ed. F. S. C. I. a. C. Körner. New York: Springer-Verlag, 1995. pp. 45.
[28] Ibid., pp. 50.

Alpine environments comprise about 8% of the total US land area.[29] In the Northeastern United States, the total area of alpine tundra is 34 square kilometers, a large majority of which is found in New Hampshire surrounding Mt. Washington, and in Maine on Mt. Katahdin.[30]

ii. Climate

The transition between seasons takes place quickly in the alpine zone, and frost is a possibility throughout the year in both the alpine and subnival zones. Since the climate is so harsh, the vegetation period for the alpine zones is, on average, about one third of the vegetation period in the valley below. [31] During the colder months of the year, snow cover provides protection from radiation as well as insulation for alpine plant species.[32]

Precipitation, evaporation and wind speed increase with altitude, making the climate inhospitable to both plants and animals in the alpine environments.[33] The effects of this harsh climate are apparent when looking at the alpine vegetation. If left to grow in a more hospitable climate, many trees found in alpine zones would grow to a "normal tree size" instead of being forced to grow into small, windblown trees.[34]

iii. Soil

The constant freezing and thawing of the ground in alpine environments forces small rocks to the top layer of soil, resulting in a rocky layer of soil on top of finer soils.[35]

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[29] Chambers, J. C. "Restoring Alpine Ecosystems in the Western United States: Environmental Constraints, Disturbance Characteristics, and Restoration Success." *Restoration Ecology and Sustainable Development.* Ed. K. M. Urbanska. Cambridge: Cambridge University Press, 1997. pp. 161.
[30] Munroe, J. et al. "Parent Material and Chemical Weathering in Alpine Soils on Mt. Mansfield, Vermont, USA." *Catena,* 2006. pp. 2.
[31] Wittman, B. K. a. H. "Restoration of Alpine Ecosystems." *Restoration Ecology*. Ed. J. v. A. a. J. Aronson. Malden: Blackwell Sciences Ltd., 2006. pp. 210.
[32] Billings, W. D. "Alpine Vegetation." *North American Terrestrial Vegetation*. Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp. 544.
[33] Wittman, B. K. a. H. "Restoration of Alpine Ecosystems." *Restoration Ecology.* Ed. J. v. A. a. J. Aronson. Malden: Blackwell Sciences Ltd., 2006. pp. 210.
[34] Bamberg, J. M. a. A. "Comparison of Some North American and Eurasian Alpine Ecosystems." *Arctic and Alpine Environments.* Ed. J. a. W. H. O. H. E. Wright. Bloomington: Indiana University Press, 1967. pp. 89.
[35] Billings, W. D. "Alpine Vegetation." *North American Terrestrial Vegetation*. Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp 545.

This rocky topsoil is affected by erosion from the elements, animals and humans.[36] Plants need thick roots to penetrate the upper layer of rocky soil, and these roots are capable of extending into fractured rock. [37] Plant roots are concentrated in the top 5-25 cm of soil.[38]

According to Körner, there are four different events that provide minerals for alpine soils: "on site erosion of parent rock, gravity [transport]…sedimentation by water or snow (avalanches, etc.), sedimentation by wind."[39] The low nitrogen and phosphorous concentrations in alpine soils[40] combined with low deep ground temperatures decreases the activity of microorganisms that break down organic mass to provide basic mineral nutrition for plants.[41] Because of this low nitrogen content in soils, alpine plants must store and use available nitrogen more efficiently, which results in higher concentrations of nitrogen in alpine plants than in plants that grow at lower elevations.[42]

iv. Plants

Many of the plants found within alpine environments are perennial, small in stature, and are classified as "cushion plants" because they grow close to the ground to avoid the cold and windy climate of mountaintops.[43] The dense clusters of leaves on these cushion plants occur so that more plant surface area is available for photosynthesis during the growing season, and many alpine plants can adjust the temperature at which photosynthesis occurs.[44] Cushion plants grow only a few millimeters per year and can live to be hundreds of years old.[45] The long life cycles of alpine plants make them more vulnerable to disturbance and if damaged will either die or take decades to grow back.[46] A number of the plants found in alpine environments are evergreen species, many of

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[36] Wittman, B. K. a. H. "Restoration of Alpine Ecosystems." *Restoration Ecology.* Ed. J. v. A. a. J. Aronson. Malden: Blackwell Sciences Ltd., 2006. pp. 211.
[37] Körner, C. *Alpine Plant Life*. Basel: Springer, 2003. pp. 67.
[38] Ibid.
[39] Ibid., pp. 65.
[40] Chambers, J. C. "Restoring Alpine Ecosystems in the Western United States: Environmental Constraints, Disturbance Characteristics, and Restoration Success." *Restoration Ecology and Sustainable Development*. Ed. K. M. Urbanska. Cambridge: Cambridge University Press, 1997. pp. 163.
[41] Wittman, B. K. a. H. "Restoration of Alpine Ecosystems." *Restoration Ecology.* Ed. J. v. A. a. J. Aronson. Malden: Blackwell Sciences Ltd., 2006. pp. 210.
[42] Körner, C. *Alpine Plant Life*. Basel: Springer, 2003. pp. 153
[43] Ibid., pp. 277.
[44] Ibid.
[45] Körner, C. *Alpine Plant Life*. Basel: Springer, 2003. pp. 289.
[46] Ibid,. pp. 290.

which are trees that are shaped by the cold and windy environment into "krummholz," which comes form the German, "crooked wood."[47] Krummholz is a term used to describe the small, crooked trees that grow on mountain summits.

v. Restoration of Alpine Areas

Plants in alpine ecosystems are very fragile and slow growing, which makes it difficult to design restoration plans that yield results for damaged ecosystems. Replanting damaged areas within alpine ecosystems is difficult mainly because the seed yield for most plants in alpine ecosystems is small and varies greatly from year to year, and the seeds are difficult to harvest.[48]

The goal for damaged alpine ecosystems is to return them to their natural state (before they were impacted by human presence).[49] It can take years to develop a restoration plan that will work for a damaged alpine environment, and these plans usually require constant monitoring after they are implemented.[50] A significant factor that makes it difficult for alpine restoration plans to succeed is the increased human presence that results from the tourism industry. This industry generates millions of dollars per year and continues to grow[51] thanks to factors like the development of ski resorts and the increasing draw of National Parks.[52]

Human impact presents the greatest danger to alpine ecosystems, and causes more damage than any weather or animal-related event.[53] In order to protect these rare and fragile areas, it is necessary to educate the public and to "deepen and disseminate mountain knowledge."[54]

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[47] Author unknown. "Krummholz." *Merriam-Webster Dictionary Online*. Retrieved April 30, 2011.
[48] Chambers, J. C. "Restoring Alpine Ecosystems in the Western United States: Environmental Constraints, Disturbance Characteristics, and Restoration Success." *Restoration Ecology and Sustainable Development.* Ed. K. M. Urbanska. Cambridge: Cambridge University Press, 1997. pp. 161.
[49] Ibid., pp. 167.
[50] Wittman, B. K. a. H. "Restoration of Alpine Ecosystems." *Restoration Ecology.* Ed. J. v. A. a. J. Aronson. Malden: Blackwell Sciences Ltd., 2006. pp. 212.
[51] Stone, P.B. "The Appalachians of North America: Marginal in the Midst of Plenty." *The State of the World's Mountains: A Global Report.* Ed. P. B. Stone. London: Mountain Agenda, 1992. pp. 343.
[52] Billings, W. D. "Alpine Vegetation." *North American Terrestrial Vegetation*. Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp 569.
[53] Körner, C. *Alpine Plant Life*. Basel: Springer, 2003. pp. 298.
[54] Godde, L. A. G. M. a. P. M. "Strategy for Future Mountain Tourism" *Tourism and Development in Mountain Regions*. New York: CABI Publishing, 2000. pp.324.

vi. Ecology of Mt. Mansfield

Mount Mansfield is home to the largest expanse of alpine tundra in Vermont, measuring between 65 and 70 acres (this number represents the amount of exposed vegetation above tree line).[55] The alpine zone of Mt. Mansfield begins at an elevation of 1,200 meters (about 3,900 feet)[56] and includes the ridgeline trail, forehead, nose and summit of the mountain. The climate of this alpine zone is much cooler and windier than the climate of the valley below. Mt. Mansfield has a mean annual temperature of 1.4 degrees Celsius (34.52 degrees Fahrenheit), a mean annual precipitation of 1800 millimeters and a mean maximum snow depth of 215 centimeters.[57]

Soils on Mansfield (data taken from the West Chin area, slightly South of the summit via the Long Trail) are on average, less than 50 centimeters deep and composed of minerals collected as the result of chemical weathering of the local bedrock and Glacial till deposited by the Laurentide ice sheet. [58] In addition, a small amount that comes from eolian, or windblown, sediment.[59]

vii. Plant and Animal Species of Mt. Mansfield

The following list of plant and animal species does not include the names of all species that are present in Mt. Mansfield's alpine area. The species listed have been chosen because they are either endangered species or commonly found in Mt. Mansfield's alpine area, and because I found this collection to represent the wide range of species present in the alpine area.

Plants, Shrubs and Fungi:[60]

- Alpine bilberry: *Vaccinium uglinosum*

[55] Paradis, Rick. Personal Communication, April 6, 2011.
[56] Munroe, J. et al. "Parent Material and Chemical Weathering in Alpine Soils on Mt. Mansfield, Vermont, USA." *Catena,* 2006. pp. 4.
[57] Ibid., pp. 3.
[58] Ibid., pp. 2.
[59] Ibid., pp. 6.
[60] Shear, L. *Nature Guide to Vermont's Long Trail*. Waterbury Center: Green Mountain Club, Inc., 2008. pp. 88-163.

Lives in open, rocky alpine areas. Leaves small, round and bluish green in the summer, turning purple in the fall. Small pink bell-shaped flowers and dark blue/black berry (edible).

- Mountain cranberry: *Vaccinium vitis-idaea*.
  Lives in open, rocky alpine areas. Has small, leathery green leaves, pink bell-shaped flowers and tart, red fruit.
- Creeping snowberry: *Gaultheria hispidula.*
  Lives in most northeastern forests. Tiny, dark green, round leaves with tiny white flowers. Edible round, white berry.
- Three-toothed cinquefoil: *Potentilla tridentata.*
  Lives in open, rocky alpine areas. Short plant with several flowers on one stem and green leaves with three teeth at the end of each.
- Diapensia: *Diapensia lapponica.*
  Lives in open, alpine summits. Endangered and only found on Mt. Mansfield. Short plant that grows in a cushion-like fashion to protect itself from the cold. Tiny leathery green leaves.
- Mountain Sandwort: *Arenaria groenlandica.*
  Lives in open, rocky alpine areas along trails. Plant grows low to the ground, has many small, skinny leaves per stem. Small, white flowers with many to a stem.
- Old man's beard: *Usnea plicata.*
  Lichen that hangs on living and dead trees. Gray/white coloring, looks like hair.
- Map lichen: *Rhizocarpon geographicum.*
  Lichen that is found on rocks above timberline. Yellowish green flaky material on top of black.
- Bunchberry: *Cornus canadensis*.
  Smooth, veined green leaves. Flowers are white and have four pointed petals that surround smaller green flowers. Bright red cluster of fruit in the summertime.
- Turkey tail: *Trametes versicolor.*
  Fungus that grows on hardwood logs and stumps. Forms striped brackets either blue or black.

Animals:[61]

- Bicknell's Thrush: *Catharus bicknelli.*

  Thrush family, lives in northeastern forests above 3,000 feet. Brown with a black spotted breast. Call is a three-part trill.

- Snowshoe Hare: *Lepus americanus.*

  Lives in coniferous forests with bushy areas. White during the winter and light brown during the summer. Possess large feet for traveling in snow.

- White-footed mouse: *Peromyscus leucopus.*

  Common in northeastern forests. Nocturnal animal colored brown with white feet and breast.

- Raven: *Corus corax.*

  Lives at higher elevations, common throughout northeast. Carnivore, very intelligent. Black coloring and larger stature than common crow.

- White-throated sparrow: *Zonotrichia albicollis.*

  Common throughout northeastern forests, especially at higher elevations. Black and white striped head with white chin. Call sounds like "Oh sweet Canada, Canada, Canada."

- Milbert's tortoiseshell: *Nymphalis milberti.*

  Butterfly found during the spring and falls in open, rocky areas. Dark coloring with bright orange/yellow bands on the wings. Eats nettles.

Environmental History and Conservation of Alpine Areas

I. Environmental History

In the early 1800's, the University of Vermont acquired about 400 acres of land along the ridgeline of Mt. Mansfield and in 1974, and this piece of land was named a natural area by the UVM Board of Trustees.[62] Since then, UVM has been working with the Green Mountain Club, Stowe Mountain Resort and the Vermont Department of Forests, Parks and Recreation to manage and protect this land through the Mt. Mansfield Cooperative Partnership. The ridgeline is part of Mt. Mansfield State Forest, which

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[61] Shear, L. *Nature Guide to Vermont's Long Trail*. Waterbury Center: Green Mountain Club, Inc., 2008. pp. 167-203.

[62] Paradis, R. *Habitat Recovery Plan for Vermont Alpine Natural Communities*, 2003. p. 3.

covers 39,765 acres of the mountain and surrounding area and is managed by the Vermont Department of Forests, Parks and Recreation. The ridgeline of Mt. Mansfield was named a National Natural Landmark by the National Park Service and a Fragile Area by the State of Vermont.[63] The efforts of the Green Mountain Club's Land Protection campaign (begun in 1986) has led to the protection of 60 miles of trail along the Long Trail, 24,000 acres of which are high elevation forest lands much like the alpine zone of Mt. Mansfield[64].

II. History of the Green Mountain Club

The Green Mountain Club was founded in 1910 "to make the Vermont mountains play a larger part in the lives of the people" through the construction of the Long Trail from Massachusetts to Canada. The Long Trail would later become the oldest long-distance hiking trail in the country.[65] The Long Trail was completed in 1930 and in 1969, the first caretakers were hired by the Green Mountain Club to live at different sites along the Trail in order to educate visitors about the principles of Leave No Trace camping and sustainable hiking.[66] "Caretakers are an important part of this collective effort because they provide a constant GMC and agency presence at a number of Vermont's most sensitive and most highly impacted backcountry campsites during the hiking season."[67] This program was created in order to confront field issues relating to recreational use of the Long Trail, and caretakers are stationed at specific sites along the trail to act as a permanent presence of the Green Mountain Club and the club's mission. The mission reads, "the mission of the Green Mountain Club is to make the Vermont Mountains play a larger part in the life of the people by protecting and maintaining the Long Trail System and fostering, through education, the stewardship of Vermont's hiking trails and mountains."[68]

The presence of fragile alpine environments on three mountain summits in Vermont lead to the creation of the Green Mountain Club's Summit Caretaker program.

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[63] Ibid., pp. 4.
[64] Hardy, D. "GMC Site Caretaker Thoughts." Green Mountain Club, 2008. pp. 16.
[65] Slayton, T. *A Century in the Mountains*. Waterbury Center: The Green Mountain Club, 2009. pp.14.
[66] Waterman, G. et L. *Forest and Crag.* Boston: Appalachian Mountain Club, 1989. pp. 581.
[67] Hardy, D. "GMC Site Caretaker Thoughts." Green Mountain Club, 2008. pp. 1.
[68] Author unknown. "About GMC." *Green Mountain Club.* Retrieved March 31, 2011 from https://www.greenmountainclub.org/page.php?id=3.

This program places caretakers on the summits of Mt. Mansfield, Camel's Hump and Mt. Abraham so that they may educate visitors about the fragile alpine ecosystems and how to travel through them without causing damage.[69] The necessity of this program is apparent when considering that Mt. Mansfield receives about 40,000 visitors per year. Visitors are drawn by the many hiking trails on the mountain, as well as by the Toll Road and Gondola that provide easy access to the mountain from Stowe.[70] The Summit Caretaker program employs five caretakers to live on Mt. Mansfield from June through October to manage the large number of visitors.

In addition to the Caretaker program, the Green Mountain Club relies on the Long Trail Patrol and seasonal volunteers to manage recreation impact on the Long Trail.[71] In 1995, the GMC hired a full-time Education Outreach Coordinator to lead workshops for the public and to do outreach work with those that have limited access to the Long Trail and knowledge about hiking. The Club's collection of publications are targeted towards the adult population (there is one activity book for children) and is comprised of books, maps and brochures that encourage sustainable hiking and camping behaviors. Signs placed along the Long Trail inform visitors about how to travel on the trail especially in fragile areas.[72]

III. The Wampahoofus

The legend of the Wampahoofus has been told for almost 80 years, since the Long Trail Patrol constructed the Wampahoofus Trail in 1933. This trail was built as an alternate route to the Forehead of Mt. Mansfield from Butler Lodge, giving hikers a slightly easier and less technical route towards the summit.[73]

The "Wampahoofus Trail" was named after a unique rock outcropping was found close to the trail's intersection with the Maple Ridge Trail. This rock outcropping had a

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[69] Author unknown. "About GMC." Retrieved March 31, 2011 from https://www.greenmountainclub.org/page.php?id=3.
[70] Paradis, R. *Habitat Recovery Plan for Vermont Alpine Natural Communities*, 2003. pp. 4.
[71] Hardy, D. "GMC Site Caretaker Thoughts." Green Mountain Club, 2008. pp. 3.
[72] Ibid., pp. 5.
[73] Barnum, G. *Place Names on Vermont's Long Trail: From Wampahoofus to Devil's Gulch.* Waterbury Center: Green Mountain Club, 2007. pp. 69.

"fierce-looking profile" that, according to Professor Roy Buchanan, "looked like a Sidehill Wampahoofus."[74]

The "Sidehill Wampahoofus" is a place-based variation of a more general folkloric animal known as a "Sidehill Gouger."[75] A Sidehill Gouger is an animal found on the steep slopes of mountainsides throughout the United States that have adapted to their environment to such an extent that their right and left legs are different lengths. This is the result of the animal's time spent walking around a mountain in the same direction for thousands of years, the varied legs allowing them to stand balanced on a steep slope.[76]

According to a more recent legend, the Sidehill Wampahoofus is a cousin of the Sidehill Gouger who once lived on Mt. Mansfield, and who resembled a cross between a Moose and a Gnu.[77] Legend states that the Sidehill Wampahoofus (known simply as the "Wampahoofus") is no longer present on the mountain as a result of difficulties that the animal's varied leg lengths presented for breeding. When two Wampahoofi attempted to mate, they simply "didn't fit."[78]

The Wampahoofus is remembered today thanks to the "fierce-looking"[79] rock outcropping that remains near the Maple Ridge Trail, and to the Ethan Allen Firing Range, located in the valley West of Mt. Mansfield in Underhill, Vermont.[80] The firing range frequently tests their weapons, producing sounds that are interpreted by hikers as the call of the Wampahoofus.

Children's Literature

I. Writing Children's Books

In *Write for Children*, Andrew Melrose states that, "writing for children requires more skill than writing for adults."[81] Part of the challenge of writing for children is

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[74] Barnum, G. *Place Names on Vermont's Long Trail: From Wampahoofus to Devil's Gulch.* Waterbury Center: Green Mountain Club, 2007. pp. 69.
[75] Tryon, H. "The Side-Hill Gouger." *Fearsome Critters*. Cornwall: The Idlewild Press, 1939. pp. 39.
[76] Ibid.
[77] Kim, M. "The Wampahoofus: A Sad Evolutionary Tale" Retrieved March 31, 2011.
[78] Ibid.
[79] Barnum, G. *Place Names on Vermont's Long Trail: From Wampahoofus to Devil's Gulch.* Waterbury Center: Green Mountain Club, 2007. pp. 69.
[80] Author unknown. "Ethan Allen Firing Range Information." *The Town of Underhill, VT*. Retrieved April 30, 2011.
[81] Melrose, A. *Write for Children*. New York: Routledge Falmer, 2002. pp 2.

holding the interest of a young reader and engaging their short attention span for an extended period of time. Writing intended for a young audience must be well thought-out and concise, and possess details, information and vocabulary that stimulate the reader.[82] "Children read to learn,"[83] and children's books help to explain the large, complex world that surrounds them. Aspiring children's book authors must spend time with children in order to explore the ways in which young children learn and interpret information.[84] Reading previously written children's books allows aspiring authors to learn about different types of writing that have been successful in teaching and engaging children.[85]

Picture books are most commonly targeted at children aged only a few months to eight years old, and the generally accepted word count in a children's book varies according to age.[86] Children's books written for children aged less than one year to three years old rely mostly on illustration, and include up to 400 words maximum. Books for children aged three to eight years include a greater emphasis on detail within the text, and are written in up to 1500 words[87].

When beginning to plan his or her book, an author must first determine who and what the main character is going to be (person, animal, plant, etc.) and develop the character's interests.[88] The author must then determine the main character's personality and how he or she interacts with other characters. [89] Following the creation of the main character, supporting characters are formed to help the main character convey the overall message of the story.[90]

A book's illustration and writing hold the interest of the reader throughout the story,[91] so authors must choose both an illustration style and a writing style that is engaging and interesting to readers. Instead of using flashbacks, metaphors and sarcasm,

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[82] Aiken, J. *The Way to Write for Children: An Introduction to the Craft of Writing Children's Literature*. New York: St. Martin's Griffin, 1998. pp.8.
[83]Ibid., pp. 4.
[84] Wells, R. a. P. D. Z. My Place in My World: Literature for Place-Based Environmental Education. Early Childhood Education Journal, 35(3), 2007. pp. 286.
[85] Aiken, J. *The Way to Write for Children: An Introduction to the Craft of Writing Children's Literature*. New York: St. Martin's Griffin, 1998, pp. 11.
[86] Melrose, A. *Write for Children*. New York: Routledge Falmer, 2002. pp 84-85.
[87] Ibid.
[88] Ramos, V. Young at Heart: The Step-By-Step Way of Writing Children's Stories. Scottsdale: VR Publications, 1999. pp. 3.
[89] Ibid.
[90] Ibid., pp.14.
[91] Koehler-Pentacoff, E. *The ABCs of Writing for Children*. Sanger: Quill Driver Books, 2003. pp.122.

authors should include continuous action and engaging vocabulary to keep their reader's attention.[92] In their writing, authors must use language that is clearly articulated, easy to understand and fun to say.[93] Rhyme, alliteration, pattern and repetition are common techniques used by authors to hold the interest of young readers,[94] who also respond well to simple writing and words that describe sounds, such as "oink" for a pig or "crrrrrunch" for something that has been broken.[95]

The illustrations are a place where readers are encouraged to use their imaginations.[96] Children "read" the illustrations as they read the story, and rely on the illustrations for a full comprehension of the overall message.[97] Children develop visual literacy while exploring and learning through illustrations, and this visual literacy aids in the development of readers' critical thinking skills.[98] High quality illustrations that relate to the text of a book are especially important for young children, as children under six years of age pay more attention to illustration than text.[99] In a study done by the University of Guelph in Ontario, it was found that young readers ages five to six years old look at illustrations ten times more frequently than the text when a picture book was read aloud to them.[100] This study also found that, when read aloud to, young children follow a story's events in the illustrations.[101]

Illustration style varies from book to book; illustrators use many different styles and mediums to make their illustrations.[102] Impressionism, realism, surrealism and graphic design are used in combination with different media like collage, paint, or pencil

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[92] Aiken, J. The Way to Write for Children: An Introduction to the Craft of Writing Children's Literature. New York: St. Martin's Griffin, 1998. pp.9.
[93] Ramos, V. Young at Heart: The Step-By-Step Way of Writing Children's Stories. Scottsdale: VR Publications, 1998. pp. 44.
[94] Ibid. pp. 23.
[95] Aiken, J. The Way to Write for Children: An Introduction to the Craft of Writing Children's Literature. New York: St. Martin's Griffin, 1998. pp. 25.
[96] Galda, L. a. K. G. S. "Visual Literacy: Exploring Art and Illustration in Children's Books." *The Reading Teacher*, 46(6), 1993. pp. 506.
[97] Ibid.
[98] Ibid.
[99] Evans, M. A. a. J. S.-A. "What Children Are Looking at during Shared Storybook Reading: Evidence from Eye Movement Monitoring." *Psychological Science*, 16(11), 2005. pp. 915.
[100] Ibid.
[101] Ibid., pp. 919.
[102] Galda, L. a. K. G. S. "Visual Literacy: Exploring Art and Illustration in Children's Books." *The Reading Teacher,* 46(6), 1993. pp.512.

and paper.[103] Even within these categories of medium, there are variations. For example, an illustrator may use textured paper, painted paper or found items to make their collage, which may be plain or detailed to reflect the writing.[104]

II. Environmental Writing for Children

i. Introduction

The Encyclopedia Britannica defines children's literature as a "body of written works produced to entertain or instruct young people."[105] Environmental children's literature is a relatively new[106] form of environmental education and a subset of children's literature that conveys an environmental message through text and illustration. Environmental children's books also teach readers the ways in which they may take action to help the environment.[107] Using the New Ecological Paradigm approach,[108] this literature encourages children to connect with nature so that they may become knowledgeable of current environmental issues and keep from developing "nature-deficit disorder," or an aversion to nature.[109] Environmental children's literature is an effective way of teaching to children because the environment is interesting, engaging and stimulating to the imagination.[110]

ii. Positive Characteristics of Environmental Children's Literature

High quality environmental children's literature is both entertaining and educational[111], and teaches children about the world along with small ways that they may

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[103] Galda, L. a. K. G. S. "Visual Literacy: Exploring Art and Illustration in Children's Books." *The Reading Teacher,* 46(6), 1993. pp. 508.
[104] Ibid.
[105] Author unknown. "Children's Literature." Encyclopedia Brittanica Online, 2011. Retrieved April 30, 2011.
[106] Meyer, J. M. "Accuracy and Bias in Children's Environmental Literature: A Look at Lynne Cherry's Books." *Social Studies*, 93(6), 2002. pp. 280.
[107] Ibid.
[108] The New Ecological Paradigm states that humans influence the environment with every action that they take, and that humans are equal to both animals and nature.
[109] Wells, R. a. P. D. Z. "My Place in My World: Literature for Place-Based Environmental Education." *Early Childhood Education Journal*, 35(3), 2007. pp. 286.
[110] Meyer, J. M. "Accuracy and Bias in Children's Environmental Literature: A Look at Lynne Cherry's Books." *Social Studies*, 93(6), 2002. pp. 278.
[111] Ibid., pp. 279.

become involved to help the environment. Children's picture books appeal to more than just children; stated simply, "A lot of parents wouldn't sit down to read a 350-page book like Al Gore's, but they would sit down and read a 32-page children's book."[112]

Children are more likely to become interested in the environment through this type of literature because the text and illustrations of this literature inspire curiosity in children and encourage them to explore the natural world around them.[113] Instead of approaching environmentally "difficult or sensitive"[114] topics with a negative tone, as the media most often does, environmental children's books allow children to investigate an issue without the feeling of "fear and doom."[115]

Environmental children's books can be used as a tool to increase young children's knowledge of the environment, social studies and science. These subjects are commonly left out of early elementary school curriculum due to a strong and time-consuming emphasis on reading, writing and math education. Integration of children's books into elementary school curriculum allows children to learn about environmental issues, social studies and science while learning language literacy.[116] Environmental children's books also provide a more detailed explanation of topics that are only briefly mentioned in textbooks.[117]

The information that children learn from reading environmental children's books will influence them throughout their lives. The formative years of childhood provide the perfect opportunity for children to develop behaviors and patterns that will benefit the environment later in life.[118] Literature that encourages children to become familiar with their environmental surroundings has been said to increase positive environmental

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[112] Meyer, J. M. "Accuracy and Bias in Children's Environmental Literature: A Look at Lynne Cherry's Books." *Social Studies*, 93(6), 2002. pp. 279.
[113] Ibid., pp. 281.
[114] Farris, P. J. a. C. J. F. "Developing Social Studies Concepts through Picture Books." *The Reading Teacher*, 47(5), 1994. pp. 383.
[115] Meyer, J. M. "Accuracy and Bias in Children's Environmental Literature: A Look at Lynne Cherry's Books." *Social Studies*, 93(6), 2002. pp. 280.
[116] Christenson, M. A. "Children's Literature on Recycling: What Does it Contribute to Environmental Literacy?" *Applied Environmental Education and Communication*, 9(2), 2010. pp. 146.
[117] Farris, P. J. a. C. J. F. "Developing Social Studies Concepts through Picture Books." *The Reading Teacher*, 47(5), 1994. pp. 380.
[118] Wells, R. a. P. D. Z. "My Place in My World: Literature for Place-Based Environmental Education." *Early Childhood Education Journal*, 35(3), 2007. pp. 288.

practices and behaviors later in life because it encourages the reader to form an emotional attachment to the endangered place or practice.[119]

iii. Some Drawbacks to Environmental Children's Literature

Although high quality environmental children's books inspire children to think creatively about issues facing the environment, there are some that fail to convey their messages due to a number of factors. In their attempts to present issues as entertaining and interesting to young readers, some authors choose to emphasize readability and excitement over accuracy.[120] Many environmental children's books approach their topics from one viewpoint and fail to represent all sides of the issue,[121] or use fear to frighten children into taking action to avoid the "earthly hell" caused by destroyers of the environment.[122] These books that only convey one viewpoint often come across as "preachy,"[123] and don't encourage children to develop the critical thinking skills that they would if they were encouraged to consider all sides to an environmental issue.

iv. What Makes a High Quality Environmental Children's Book?

In order to be considered a high quality environmental children's book, the story must address all sides to an environmental issue and provide readers with a "balanced perspective."[124] Facts included in the writing must be clearly articulated and presented in a way that is similar to how they view their world.[125] This can be done by creating "place based" knowledge that teaches readers about their immediate environment.[126] Before asking children to become part of an environmental solution, high quality writing should

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[119] Miller, M. "Storytelling for Sustainability." *Ometeca*, 14(15), 2010. pp. 2.
[120] Meyer, J. M. "Accuracy and Bias in Children's Environmental Literature: A Look at Lynne Cherry's Books." *Social Studies*, 93(6), 2002. pp. 280.
[121] Ibid.
[122] Ibid., pp. 281.
[123] Christenson, M. A. "Children's Literature on Recycling: What Does it Contribute to Environmental Literacy?" *Applied Environmental Education and Communication*, 9(2), 2010. pp. 148.
[124] Meyer, J. M. (2002). Accuracy and Bias in Children's Environmental Literature: A Look at Lynne Cherry's Books. Social Studies, 93(6), 2002. pp. 278.
[125] Wells, R. a. P. D. Z. "My Place in My World: Literature for Place-Based Environmental Education." *Early Childhood Education Journal*, 35(3), 2007. pp. 288.
[126] Ibid., pp. 290.

ask children to explore their own personal values,[127] and encourage children to love and respect the natural world.[128] The message conveyed by the text must be made clear and should inform readers that they can be a part of the solution.[129] In most cases, the steps toward a solution are clearly outlined at the end of the book and let the reader know that their action could make a small but positive difference for the environment.[130]

In order to hold the interest of the reader, books must have a storyline and avoid falling into the category of a "field guide."[131] The characters must be "non-stereotypical," have a connection to nature, their own feelings, opinions and personal values.[132] The illustrations must be factual, accurate, and related to the text.[133] Environmental children's book authors are faced with the challenge of writing about current environmental problems without overwhelming their readers with sadness or a sense of loss.[134] High quality children's books achieve this while instilling a sense of hope in place of sadness.[135]

Conclusion

Although the three sections of this literature review cover topics from different field of study, they have been combined in this context to provide an adequate base from which to began writing a high quality environmental children's book about the alpine environment of Mt. Mansfield. I used information from the first and second sections when formulating the setting and characters of my story, and I used the information from the third section of this review in my writing and to make sure that the book had all of the necessary elements to be considered high quality. While writing and illustrating *The*

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[127] Christenson, M. A. "Children's Literature on Recycling: What Does it Contribute to Environmental Literacy?" *Applied Environmental Education and Communication*, 9(2), 2010. pp. 146.
[128] Wells, R. a. P. D. Z. "My Place in My World: Literature for Place-Based Environmental Education." *Early Childhood Education Journal*, 35(3), 2007. pp. 285.
[129] Rule, A. a. J. A. "Choosing Picture Books about Ecology." *The Reading Teacher*, 47(7), 1994. pp. 587.
[130] Ibid., pp. 588.
[131] Ibid., pp. 586.
[132] Ibid.
[133] Meyer, J. M. (2002). Accuracy and Bias in Children's Environmental Literature: A Look at Lynne Cherry's Books. Social Studies, 93(6), 2002. pp. 280.
[134] Rule, A. a. J. A. "Choosing Picture Books about Ecology." *The Reading Teacher*, 47(7), 1994. pp. 586.
[135] Wells, R. a. P. D. Z. "My Place in My World: Literature for Place-Based Environmental Education." *Early Childhood Education Journal*, 35(3), 2007. pp. 285.

Wampahoofus' Favorite Place, I referred back to this information to make the book's information accurate, illustrations engaging and writing interesting for children.

Methods

My goals for this project were to write and illustrate a children's book and brochure that would interest and educate readers about the conservation of the alpine ecosystem of Mt. Mansfield. Following this, my goal was to have the Green Mountain Club agree to include the brochure and the book in their collection of literature at their two visitor centers (in Waterbury Center and on Mt. Mansfield).

In order to create the book and brochure, I had to decide which to create first. I chose the book because my idea for the brochure was to use illustrations and information from the book so that it would function as a supplement to the book. I decided that I would finish the book in early March of 2011 and began my work in early September of 2010.

At this point, I began to have weekly meetings with a fellow classmate who was also writing a children's book for her senior thesis project. We would meet for about an hour to discuss our progress and ideas, and it was through these meetings that I was able to test out the ideas that I had for my story. Since the student that I was meeting with was a semester ahead of me, I was able to learn about techniques that worked and didn't work in the actual book making process. We ended these meetings at the beginning of November 2010, and by that point I felt that I had gotten a lot of good advice and information while being able to offer helpful criticism. Once I had a rough story idea, I began the research for my literature review.

After finishing my research, I decided that I would write a 32-page book aimed at children ages 6 to 8 years old. Based on advice from the other student that I met with at the beginning of the fall semester, I picked blurb.com as the online publisher that I would use for the final copies of my book. In late November of 2010, I began planning the book with an outline of possible characters, plants, animals and settings.

When forming my outline, I made a list of all of the plants, animals and places that I felt were important to include in my book. After making a long list of names, I narrowed down the list by choosing only the plants, animals and places that I thought were most important to include about the alpine ecosystem, and those that could be found relatively easily while hiking. I finalized the setting of the book, and decided that the

story would follow the Wampahoofus as he traveled from the summit of the mountain to the Wampahoofus Trail junction about two miles South.

At this point, the December 1, 2010 deadline to apply for a grant from the Waterman Fund was approaching, so I took a break from my book planning to apply for a $500 creative project grant (see Appendix C). I would use this grant to pay for copies of the printed book that would be sent to libraries in central Vermont as well as to the Green Mountain Club.

I made a storyboard for the book that I would fill in as the book developed (figure 1). The storyboard had sixteen rectangles that each represented a two-page spread of the 32-page book, and I left the first and last spread blank: the first for the title and the last to have a blank page at the end.

Figure 1: Storyboard

On a separate piece of paper, I drew a line to represent the trail from the Chin of Mt. Mansfield to the Wampahoofus trail junction and made marks along this line to signify places that the Wampahoofus would stop to discuss a plant, animal or natural feature in the story. I chose 14 different stops and listed the site name as well as the plants and animals that would be discussed at this stop. I made sure to include no more than three different plants and animals so that the information would be evenly distributed throughout the book.

I drew a general layout of how I wanted each spread to look (figure 2). The final layout that I chose included one page full of illustration and the facing page including the text and a more detailed illustration of the plants and animals being discussed.

Figure 2: Two-page spread format

After choosing content and a general layout, I experimented with tissue paper and acrylic paint to develop a technique that I would use throughout the book to make the paper for my collage. I chose colors for constant elements such as sky, rocks and the path that I would be able to use throughout the illustrating process. I painted enough sheets of tissue paper in each color to last through the entire illustration process. For example, I painted 16 sheets of 11x13 inch tissue paper in light blue for the sky (this is enough for 14 full-page illustrations with two extra sheets in case of mistakes).

I made my first collage to show both my advisers and the Waterman Fund what my illustrations were going to look like. I was able to get feedback from both parties about this illustration and after making changes to the look of the Wampahoofus and my depiction of the landscape, I was ready to begin making the final collages.

On January 5, 2011, I heard from the Waterman Fund who agreed to fund my request in full ($500) as long as I provided letters of support from both of my advisers and the executive director of the Green Mountain Club. I was able to provide these letters and received the full funding.

In early January of 2011, I wrote the story while closely examining my outlines and research so that I would be able to include all of the information that I wanted. I wrote the story one page at a time with continuity in mind because I wanted it to flow

together when read all at once and I tried to keep the word count below or at 1500 words. I sent a rough draft of my 1570 word story to my advisers and after getting their feedback in the last week of January 2011, I was able to make corrections and begin illustrating.

To complete a two-page spread of the book, I looked at the story and my outline to figure out the setting of the spread and what I needed to include. Then, I sketched out the full-page illustration in pencil using pictures of the landscape as a reference. Once this was complete, I traced over the pencil marks with tracing paper. Using this drawn-on tracing paper as a stencil, I used an exacto knife to cut out all of the shapes that I needed for the illustration from the painted tissue paper that I had prepared previously. Once all of the shapes were cut out, I glued them on top of my pencil drawing. After all of the pieces were glued into place, I pressed the illustration under a number of books so that it would lie flat. To do the small illustrations that accompanied each large illustration in a spread, I used the same technique on a smaller scale. I would sketch in pencil, trace, cut, glue and press. I used pictures of what I was illustrating as a reference to make sure that all of the details were correct.

When all spreads were complete, I photographed them with the help of my father, who is a photographer. He helped me to adjust the brightness of the images and crop them on the computer. I transferred the files onto my laptop and downloaded the book layout software from blurb.com. Once the files were transferred, I used this software to lay out the book in its entirety (text and illustrations). Once this was finished, I checked the book for mistakes and ordered two copies as first drafts. I ordered them March 4, 2011, just before Spring Break, so that I would have the book as soon as I returned to school ten days later.

The week before spring break, I was able to set up a meeting with a third grade class at Calais Elementary School where I would read my book and talk about Mt. Mansfield. Following Spring Break on March 15, 2011, I took one copy of the book to Calais and read it aloud to the third grade class, who listened attentively and asked many questions about the mountain. I left a copy of the book with the students and spoke with the teacher after the class period to get feedback. She said that the book was a learning tool that they would be able to use for their current project and in the future.

On March 10, 2011, I submitted my second copy of the book to my advisers to get feedback for the final version and began putting together the activity brochure.

To format the brochure, I used a publication program called Pages. I outlined the brochure using the Green Mountain Club's "Tundra Walk" brochure as a guideline (see Appendix B). Since I wanted this brochure to be used by children as they hiked towards the summit from the Visitor Center, I decided that the brochure's activity would begin at the Visitor Center and end at Frenchman's Pile, a landmark about 1/4 mile north on the Long Trail. I picked this short distance so that it would not be too difficult or strenuous for children to hike, and I chose plants, animals and landmarks that would be easy for them to find and identify. In order to make this activity fun and engaging, I called the brochure "The Wampahoofus' Treasure Hunt" and assigned point values to each plant, animal or landmark. I began the activity with information about how to travel through the alpine environment without disturbing any part of the ecosystem.

Once I had finished the outline of the information and elements that I wanted to include, I used Pages to format the brochure using images from my book.

On March 24, 2011, I received a number of thank you letters in the mail from the third grade class that I had visited in Calais. The students each told me one fact that they had learned from my presentation and commented on the book (see Appendix D).

On March 29, I received an email from the head of publishing at the Green Mountain Club, who stated that he would like to see my book and talk more about it when I received my final copies.

After getting feedback from my advisers on April 18, 2011, I made corrections to the book's layout using the downloaded Blurb software and ordered 15 final copies. I revised the brochure and made color copies to place at the Mansfield Visitor Center for children to take before starting their hike.

I sent my book and a copy of the brochure to the Green Mountain Club on April 28, 2011. At the same time, I scheduled a meeting with the head of publications for May 10, 2011 to discuss opportunities for *The Wampahoofus' Favorite Place* to be published by the Green Mountain Club.

Results

After two semesters of research, writing and illustrating, I have completed a 32-page book for children about the importance of the conservation of Mt. Mansfield's alpine ecosystem. In addition, I have completed a supplementary activity brochure that helps children to identify common alpine plants, animals and landmarks while hiking a small distance that begins at the Visitor's center and travels north on the Long Trail to Frenchman's Pile.

I received a $500 grant from the Waterman Fund to pay for the cost of printing the book. My project is the first creative arts project that the Waterman Fund has funded, and they chose to do so because of the book and brochures' educational value to young hikers. I ordered 15 printed copies of the book that I have sent to libraries in Burlington, Montpelier, Waterbury, Jericho, Waitsfield and Stowe, the ECHO center in Burlington, and the Green Mountain Club's visitor centers on Rt. 100 in Waterbury and at the top of the toll road on Mt. Mansfield. Copies will also be given to the University of Vermont's Environmental Program, the Waterman Fund and the advisers to this project.

The Green Mountain Club has agreed to keep the book in their Visitor Centers on Rt. 100 and atop Mt. Mansfield, and they have also agreed to make free copies of the brochure available at the Visitor Center atop Mt. Mansfield. To pursue further publishing opportunities with the Green Mountain Club, I have scheduled a meeting with the head of publishing for May 10, 2011.

Discussion

As it stands at the end of this process, I feel that I have produced a book that can be used as an educational tool for children for years to come. Although there are some elements of the process that I would change, I believe that the project is a success thanks to my overall concept, ideas and art process.

If faced with this project again, I would choose to more efficiently manage my time for both the illustration and research. Although I was able to finish the project on time, some parts of the illustration process were more stressful than enjoyable simply because I was pressed for time. Instead of taking only three months to write and illustrate the entire book, I would have finished writing the book in early November of the fall semester and then used the time from November to the beginning of March to complete the illustrations.

The overall concept and idea of this project was a success. I chose a topic that I was genuinely interested in and that held my interest throughout the creation process. I have previously invested time and effort into the conservation of Mt. Mansfield's alpine environment during my time working as a Summit Caretaker, and I genuinely enjoy making artwork, the combination of which increased the quality of the final products. At the beginning of the process, I figured out a method of illustrating that was efficient and enjoyable, and therefore all of my time illustrating was used to produce pieces that would be included in the final product. I chose the medium and style in which I would complete all of the illustrations at the beginning of the process, and the high standard of work to which I kept made it so that all of the illustrations were complete, legible and related to the text.

I believe that the final product is a success thanks to the feedback that I received from the third grade class from Calais Elementary School and my advisers. My book is a high quality children's book because it sparks the interest of readers, encourages exploration of the environment, educates readers about alpine species and outlines ways in which they can help to conserve the alpine area atop Mt. Mansfield.

Conclusion

I have completed *The Wampahoofus' Favorite Place*, and have since been able to schedule a meeting with the Green Mountain Club's head of publishing to discuss future publishing opportunities with the Club. I have given the book to several libraries in central Vermont in hopes that children curious about Vermont's tallest mountain and the Wampahoofus will encourage children to pick it up. I have made copies of the activity brochure and book available for free at the Visitor Center on top of Mt. Mansfield for children to take with them as they hike north along the ridgeline. I have also made copies of the book available at the Green Mountain Club's Visitor Center in Waterbury Center. I have reached all of the goals that I originally set out to accomplish with this project and discovered a love for creating children's literature.

My hopes for the future of *The Wampahoofus' Favorite Place* are numerous and realistic. I see the book making an impact on both the children that live in central Vermont and hike Mt. Mansfield, and on the conservation of the alpine environment. I hope that after reading this book, children will want to explore Mt. Mansfield and build strong connections to the natural world. I also hope that this book will encourage children to behave in environmentally conscious ways in the future so that more generations will be able to enjoy the rare and beautiful alpine environment of Mt. Mansfield.

Recommendations

- Ask children to read *The Wampahoofus' Favorite Place* before hiking on Mt. Mansfield or anywhere in the Green Mountains.
- Encourage children to take a copy of "The Wampahoofus' Treasure Hunt" activity brochure with them as they hike north on the Long Trail from the Visitor Center at the top of the Mt. Mansfield toll road.
- Meet with the head of publishing at the Green Mountain Club to discuss publishing *The Wampahoofus' Favorite Place* with the GMC.
- Encourage children to make connections to the environment and form environmentally conscious behaviors by reading books such as *The Wampahoofus' Favorite Place.*

Work Cited:

Aiken, J. *The Way to Write for Children: An Introduction to the Craft of Writing Children's Literature*. New York: St. Martin's Griffin, 1998.

Author unknown. “About GMC.” *Green Moutnain Club*, 2010. Retrieved March 31, 2011 from https://www.greenmountainclub.org/page.php?id=3.

Author unknown. “Brief Geologic History of Vermont.” *University of Vermont Department of Geology,* 2010. Accessed April 10, 2011.

Author unknown. "Children's Literature." *Encyclopedia Britannica Online*, 2011. Retrieved April 30, 2011.

Author unknown. *Children's Writer's & Illustrator's Market*. Cincinnati: Writer's Digest Books, 2009.

Author unknown. “Ethan Allen Firing Range Information.” *The Town of Underhill, VT*. Retrieved April 30, 2011.

Author unknown. “GMC Store” *Green Mountain Club*, 2010. Retrieved March 31, 2011 from https://www.greenmountainclub.org/category.php.

Author unknown. "Krummholz." *Merriam-Webster Dictionary*. Accessed April 30, 2011 from http://www.merriam-webster.com/dictionary/krummholz?show=0&t=1304202996.

Author unknown. “Make Your Own Book.” *Blurb*, 2010. Retrieved November 11, 2010 from http://www.blurb.com.

Bamberg, J. M. a. A. “Comparison of Some North American and Eurasian Alpine Ecosystems.” *Arctic and Alpine Environments*. Ed. J. a. W. H. O. H. E. Wright. Bloomington: Indiana University Press, 1967. pp. 89-118.

Barnum, G. “Wampahoofus.” *Place Names on Vermont’s Long Trail: From Wampahoofus to Devil’s Gulch*. Waterbury Center: Green Mountain Club Inc., 2007. pp. 69.

Billings, W. D. “Alpine Vegetation.” *North American Terrestrial Vegetation.* Ed. M. G. B. a. W. D. Billings. Cambridge: Cambridge University Press, 2000. pp. 537-572.

Carle, E. *The Art of Eric Carle*. New York: Philomel Books, 1996.

Chambers, J. C. “Restoring Alpine Ecosystems in the Western United States: Environmental Constraints, Disturbance Characteristics, and Restoration Success.” *Restoration Ecology and Sustainable Development.* Ed. K. M. Urbanska. Cambridge: Cambridge University Press, 1997. pp. 161-187.

Christenson, M. A. “Children's Literature on Recycling: What Does it Contribute to Environmental Literacy?” *Applied Environmental Education and Communication*, 9(2), 2010. pp. 144-154.

Evans, M. A. a. J. S.-A. “What Children Are Looking at during Shared Storybook Reading: Evidence from Eye Movement Monitoring.” *Psychological Science*, 16(11), 2005. pp. 913-920.

Farris, P. J. a. C. J. F. “Developing Social Studies Concepts through Picture Books.” *The Reading Teacher*, 47(5), 1994. pp. 380-387.

Galda, L. a. K. G. S. “Visual Literacy: Exploring Art and Illustration in Children's Books.” *The Reading Teacher*, 46(6), 1993. pp. 506-516.

Godde, Pamela M, M. F. P. a. F. M. Z. “Tourism and Development in Mountain Regions: Moving Forward into the New Millennium.” *Tourism and Development in Mountain Regions*. Ed. M. F. P. a. F. M. Z. Pamela M. Godde. New York: CABI Publishing, 2000. pp. 1-26.

Godde, L. A. G. M. a. P. M. “Strategy for Future Mountain Tourism” *Tourism and Development in Mountain Regions*. New York: CABI Publishing, 2000. pp. 323-338.

Hagerman, R. *Mansfield: The Story of Vermont’s Loftiest Mountain*. Essex Junction: Essex Publishing Company, Inc., 1971.

Hardy, D. “GMC Site Caretaker Thoughts.” Green Mountain Club Inc., 2008.

Karl, J. E. *How to Write and Sell Children's Picture Books*. Cincinnati: Writer's Digest Books, 1994.

Ketchledge, E. H. “Vegetation Restoration in Northeastern Alpine Zones.” *Challenges in the Conservation of Biological Resources*. Ed. D. Decker, Krasny, Goff, Smith, Goss. Boulder: Westview Press, Inc., 1991. pp. 317-330.

Kim, M. “The Wampahoofus: A Sad Evolutionary Tale.” *Green Mountain Club Burlington,* 2007. Retrieved March 31, 2011, from http://nature.thecompass.com/gmcburlington/news/0410wamp.html.

Koehler-Pentacoff, E. *The ABCs of Writing for Children*. Sanger: Quill Driver Books, 2003.

Körner, C.. “Alpine Plant Diversity: A Global Survey and Functional Interpretations.” *Arctic and Alpine Biodiversity: Patterns, Causes and Ecosystem Consequences.* Ed. F. S. C. I. a. C. Körner. New York: Springer-Verlag, 1995. pp. 45-62.

Körner, C. *Alpine Plant Life*. Basel: Springer, 2003.

Marchand, P. J. *North Woods: An Inside Look at the Nature of Forests in the Northeast.* Boston: Appalachian Mountain Club, 1987.

Melrose, A. *Write for Children*. New York: Routledge Falmer, 2002.

Meyer, J. M. "Accuracy and Bias in Children's Environmental Literature: A Look at Lynne Cherry's Books." *Social Studies*, 93(6), 2002. pp. 277-282.

Miller, M. Storytelling for Sustainability. *Ometeca*, 14(15), 2010. pp. 1-9.

Munroe, J. et al. "Parent Material and Chemical Weathering in Alpine Soils on Mt. Mansfield, Vermont, USA." *Catena,* 2006. pp. 1-10.

Paradis, R. *Habitat Recovery Plan for Vermont Alpine Natural Communities*, 2003.

Paradis, Rick. Personal Communication, April 6, 2011.

Pierce, K. M., et al. "Environmental Issues and Actions." *The Reading Teacher*, 47(4), 1994. pp. 328-335.

Ramos, V. *Young at Heart: The Step-By-Step Way of Writing Children's Stories*. Scottsdale: VR Publications, 1999.

Rule, A. a. J. A. "Choosing Picture Books about Ecology." *The Reading Teacher*, 47(7), 1994. pp. 586-591.

Seuling, B. *How to Write a Children's Book and Get it Published*. Hoboken: John Wiley & Sons, Inc., 2005.

Shear, L. *Nature Guide to Vermont's Long Trail*. Waterbury Center: Green Mountain Club, Inc., 2008.

Slayton, T. *A Century in the Mountains*. Waterbury Center: The Green Mountain Club., 2009.

Stone, P.B. "The Appalachians of North America: Marginal in the Midst of Plenty" *The State of the World's Mountains: A Global Report.* Ed. P. B. Stone. London: Mountain Agenda, 1992. pp. 299-326.

Taber, R. S. H. a. R. D. "Origin and History of Holarctic Tundra Ecosystems with Special Reference to Their Vertibrate Faunas." *Arctic and Alpine Environments*. Ed. J. a. W. H. O. H. E. Wright. Bloomington: Indiana University Press, 1967. pp. 143-170.

Therrien, N.. *The Waterman Fund,* 2003. Retrieved November 11, 2010, from http://www.watermanfund.org.

Tryon, H. "The Side-Hill Gouger." *Fearsome Critters*. Cornwall: The Idlewild Press, 1939. pp. 39-41.

Waterman, G. et L. *Forest and Crag.* Boston: Appalachian Mountain Club, 1989.

Wells, R. a. P. D. Z. "My Place in My World: Literature for Place-Based Environmental Education." *Early Childhood Education Journal*, 35(3), 2007. pp. 285-291.

Wittman, B. K. a. H. (2006). "Restoration of Alpine Ecosystems." *Restoration Ecology.* Ed. J. v. A. a. J. Aronson. Malden: Blackwell Sciences Ltd., 2006. pp. 208-222.

Appendices

Appendix A: “The Wampahoofus’ Treasure Hunt” brochure

Appendix B: “The Tundra Walk” brochure

Appendix C: Waterman Fund Grant Application

Appendix D: Letters from three students at Calais Elementary School