



Feasibility of “Rent-a-Goat” Services to Manage Invasive Plants Regionally

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NR 206 Environmental Problem Solving
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1. INTRODUCTION

Problem Statement:

The CVCP needs more information to determine the feasibility of using a Rent-a-Goat program to control invasive species.

The Champlain Valley Conservation Partnership (CVCP) is in need of a non-herbicide solution for removing invasive plant species.

Rent-a-Goat services have been gaining popularity around the country. These programs typically involve goat farmers renting out herds of goats to help control invasive species¹. Municipalities and individual homeowners alike are attracted to the program's cost-effectiveness and eco-friendliness². Using goats to reduce invasive species on both public and private lands eliminates the need for heavy chemicals and fossil fuel-powered mowing machines. We will be gathering information to help the Champlain Valley Conservation Partnership determine the feasibility of utilizing a Rent-a-Goat program to reduce the number of invasive plant species in South Burlington, Hinesburg, St. George, Williston, and Shelburne.

In writing our feasibility plan, we reached out to businesses, organizations, and farmers across the U.S. and Canada and conducted 35 interviews with such individuals. Our questions ranged from general goat management to operational and financial considerations. The following plan is made up of information taken from these interviews and online research.

¹RentAGoat. (n.d.). Retrieved from <https://rentagoat.com/>

²Zielinski, S. (2009, May 7). Google Rents Goats to Mow the Lawn. *Smithsonian*. Retrieved from <https://www.smithsonianmag.com/science-nature/google-rents-goats-to-mow-the-lawn-11402182/>

2. Feasibility of Rent-a-Goat for the CVCP

After concluding our research and interviews, we have determined that it is feasible for the Champlain Valley Conservation Partnership to use goats as part of its invasive plant species management plan. This type of program is particularly likely to be successful as a Rent-a-Goat program known as “Goats on the Go” is said to be opening in Vermont in 2020. Earl and Becca Schrader plan to serve Chittenden, Washington, Lamoille, Orange and Caledonia Counties. Goats on the Go Vermont is an affiliate of a larger Goats on the Goat network which connects grazing programs across the U.S.

One of our key questions of this project involved whether the CVCP and the involved municipalities should own their own herd of goats or partner with existing farms or businesses. With the “Goats on the Go” business coming to the surrounding Champlain Valley area, we believe it would be best for the CVCP to partner with them. Goats have shown to be effective prescribed grazers if there are concrete management plans in place, and this would be a great opportunity for the CVCP.

3. Interviews

Interview Process

Interviews with 35 goat farmers, organizations, and businesses were completed throughout the course of the semester. Our team reached out to our existing personal Rent-a-Goat contacts (i.e. UVM Extension, Green Goats) to get a better understanding of what information we needed to obtain from future interviews. These two contacts alone were able to

give us clarity in what goes into creating a Rent-a-Goat program and provided us with additional businesses to contact. We also found contacts through basic Google searches and a Facebook group (“Rent a Goat Professionals”) which is focused on the Rent-a-Goat community.

We used a series of preset questions to ask our interviewees (see Appendix A). However, we let the majority of the conversations flow naturally by skipping some questions or adding additional questions as needed. Interviewees were generally very excited to speak with our team and were very enthusiastic about the idea of a Rent-a-Goat program in Vermont.

Data Analysis

Information from each interview was transcribed and distributed to the entire group using a shared Google Drive. Relevant data from the interviews were broken up into three main categories relevant to the objectives of the project: necessary steps and precautions for beginning a Rent-a-Goat program; financial considerations; and potential opportunities for educational outreach. Our team then used this information to create our Feasibility Plan and final presentation to the CVCP.

Resources

This project would not have been successful without the utilization of a plethora of social resources. Our team uncovered a vast community of goat enthusiasts that extends beyond the borders of the United States. The various goat farmers, organization heads, and business people we spoke with are all apart of a greater network of passionate, innovative, and resourceful environmentalists. We utilized our own intrapersonal and social skills to be welcomed into this

goat-centric community with open arms. Many of our contacts have had relations with one another in the past, and the majority of them were very willing to keep in touch as the CVCP as they continue to consider a Rent-a-Goat program.

4. Invasive Plant Management

According to the Vermont Agency of Natural Resources, the second greatest threat to biodiversity --in Vermont and around the world-- is the proliferation of invasive species³. In our beginning discussions with Ashley Parker and the CVCP there were numerous invasive plant species that the partnership were highly concerned about. These plants include poison parsnip, buckthorn and japanese knotweed. “The four direct threats invasive species pose include: out-competing native species, preying on native species, causing or carry disease, and preventing native species from reproducing⁴”. Invasives can be managed slow their spread and treat existing populations. More research is needed in Vermont as to how well goats graze these invasive species. In our general research, we concluded that goats will graze on invasive plants including thistle, poison oak and ivy, kudzu, trumpet vine, sage brush, and broom sage. By partnering with Goats on the Go in Spring 2020 to work on a pilot plot, research can be done to see how goats graze in our area and the effect they have on invasives. This could be the charge of next semester’s partnership.

³ What are their impacts? (OAD). Retrieved from <https://vtinvasives.org/intro-to-invasives/what-are-their-impacts>.

⁴ <https://vtinvasives.org/intro-to-invasives/what-are-their-impacts>

5. Start-Up Considerations

There are several precautions the CVCP needs to consider before initiating a Rent-a-Goat program. It is crucial that the partnership reaches out to an experienced individual or established Rent-a-Goat business in order to properly survey the land before bringing goats into it. The Vermont Sheep and Goat Association provides a member directory on their website which would be a great resource for the CVCP. There are numerous farms located in the Champlain Valley who may have more information on goat grazing and may be willing to work with the CVCP.

An experienced individual will be able to survey the land and create a timeline of when goats will need to be brought in in order to eliminate invasive species. Land will need to be enclosed with electric fencing in order for goats to successfully graze. These fences will impact the surrounding community that they are installed in. It is suggested that some sort of guard animals, such as dogs or llamas, be used to herd the goats if a human will not be watching them during all hours of the day. The public should not have access to the immediate area, as it is dangerous for both humans and goats alike. Furthermore, human interactions with the goats or their herders can interfere with their ability to successfully complete their jobs.

Parameters for Success

Regrowth of invasive species is very simple to measure. As Conrad Lindblom from Rocky Ridge Vegetation (see Appendix C) confirmed from his experiences with Rent-a-Goat, monitoring the success of a program can be done visually. In his past research, Lindblom measured regrowth

simply by counting the number of invasive species that were visible in an area before goat use, then counting once again the following year, when the vegetation had regrown. Annie Booth, a professor in the Ecosystem Science and Management Program at the University of Northern British Columbia, researched the effectiveness of goat grazing for managing invasive species in Prince George, BC. This project is referenced in her article titled *The Use of Domestic Goats and Vinegar as Municipal Weed Control Alternatives*, which we have attached to this plan. Results of this study showed that after the two-year pilot program concluded, invasive species growth was reduced by 30%. This regrowth was monitored and analyzed by individually counting the plants each year as they appeared.

6. Key Interviews

Mutton Mowers Boulder, CO

Of all the programs interviewed, we found Mutton Mowers to most closely resemble what we would hope to see in a Rent-a-Goat program that would serve the CVCP towns. Located just outside Boulder, Mutton Mowers is an independently owned goat farm that services municipalities within the city. The goats graze best in the urban pocket parks across the city, especially those in sloped-area, ditches, and sloped-lands. Their program has reduced the amount of pesticides used by the city of Boulder. Mutton Mowers charges \$75 a day for a herd of 20-30 goats. To ensure native species are not disrupted, Mutton Mowers uses fencing to keep goats within the invasive species area.

Gap Mountain Goats *Marlborough, NH*

Natalie of Gap Mountain Goats is renowned throughout the goat community for how well she runs her Rent-a-Goat business. Located in Marlborough, New Hampshire, Gap Mountain is currently on its eighth season in business. The most significant takeaway from this interview was the emphasis on the importance of prior experience and knowledge when starting a Rent-a-Goat program. Gap Mountain's goats were carefully selected by Natalie, who ensured that goats can be purchased inexpensively on Craigslist. However, Natalie was careful to ensure that goats were not diseased or bottle fed before making purchasing them. She ensured that after one generation successfully reproduces, subsequent generations will be naturally inclined to eat the same types of plants as their predecessors. In her experience, the goats were able to eat invasive species instinctively, and did not need extensive training. It is much more cost-effective to successfully train the first round of goats than to continue to experiment throughout a series of generations.

Eco-goats *Annapolis, MD*

Contacting Brian Knox, the owner of Eco-Goats located outside of Annapolis, Maryland was a suggestion from Ashley Parker who had previously worked with him. Eco-Goats have been successfully running for around eleven years. Brian Knox began Eco-Goats due to his experience running his own natural resources consulting firm. We believe this interview is worth noting because this business focuses on working with nonprofits and municipalities. Some key takeaways from this interview included that it costs Brian \$10 a day to feed his

herd of 30 goats in the winter, and that he only agrees to jobs over the size of one acre. Eco-Goats charges customers roughly \$3000 to graze an acre. Brian stated that he focuses on a “method of knocking back problem plants to allow other desirable plants to grow above invasives.” Eco-Goats also focuses on education because it is an easy way for community engagement with his business. Though Eco-Goats has overall been a success, Brian Knox shared that he has left the goat grazing business twice but always finds his way back to doing it. Some of the downsides of his business has been not being able to control breeding and too much demand of the goats.

Rocky Ridge Vegetation Control *Beaverlodge, Canada*

Conrad Lindblom has owned Rocky Ridge Vegetation Control for the past 20 years. His primary focus was on his government-funded project targeted at reducing maple and spruce to grow pine for logging. Goats were the best alternative method since herbicides were not able to target the specific species and were doing more harm than good. At peak times of his business, he had around 1000 goats. He teaches a class at the University of Fraser Valley focused on goat grazing for invasive plant management. One of the best things about goats is that they digest seeds completely and does not spread them in their feces. Conrad states that his business feels like they can control invasives in about three years whereas with pesticides it would take six.

Conrad’s four-day class at the University of Fraser Valley called “targeted goat grazing” focuses on managing invasive plant species. The class began in 2017 after he conducted goat

grazing trials with the Fraser Valley Invasive Plant Council and the City of Chilliwack.

Conrad's goal with this course is to spark an interest in young people to start agricultural businesses specifically ones like goat grazing which reduces the use of herbicides. The four sections of the class include goat training and herding, invasive plant biology, evidence-based practice and developing a business plan.

7. Past Goat-Grazing Operations in Vermont

Montpelier, VT

Beginning in 2018, the city government of Montpelier invited three goats to graze on the poison ivy along the bike path which is located near the high school and Winooski River. In this case, the city rented the goats from an owner instead of buying the animals for themselves. The city rented the goats again in 2019 since it takes multiple sessions to control the invasive plant. Assistant City Manager of Montpelier Sue Allen stated that “as you probably recall from last year, the goats are expected to be part of a several-year effort to use this non-chemical way of controlling the poison ivy along the recreation path, especially in areas where the weed is particularly aggressive ...the goats eat away at the poison ivy, while we also plant other acceptable species to gradually take over the area.” Goats were a good option for this situation since it reduced the amount of chemicals and heavy machinery in the heavily utilized areas along the bike path.

Charlotte, VT

In 2012, the city of Charlotte, Vermont used goats as a way to both save money and keep grass in the town's graveyards under control. Stephen Brooks of the town's Cemetery Commission stated that "the two goats and two sheep rented from a local farmer- have reduced the need to mow and fertilize, saving the town at least \$2,000 in fuel costs this year."

In 2017, a natural resources class at Champlain Valley High School received a herd of goats as part of a program called the Norman Fund. The students in this class are responsible for creating a grazing management plan for the school campus and will take care of the goats.

8. Education Strategy

Over the past few years, goats have taken pop-culture by storm. Between funny goat videos and goat-yoga programs, the public has come to love goats. This will allow for many prospective educational opportunities while the goats are both on and off the job. We think this would provide the CVCP to have a use for the goats in the off-season.

In public places, people will stop to see the goats at work. These public displays provide organizations the opportunity to educate the public about their goats and other green initiatives employed by the organization. Planned educational opportunities include Bleat-and-Greet events where one or two members of the herd are removed to interact on-on-one with the public. Other

opportunities include signage around the fenced area as well as organizational tabling in the area.

The interest in goats also makes for positive media coverage. Many Rent-a-Goat programs took off quickly after having positive publicity in local papers and social media pages. The town of Fair Haven, Vermont even elected a 3-year old goat named Lincoln as their mayor just last year.

9. Financial Considerations

Start-up costs of a Rent-a-Goat program are relatively minimal. If the herd of goats is rescued then there is no up-front cost for them. Rescuing goats came up as a recommendation from many of the farmers we interviewed.

The herd of goats will also require a livestock guardian for predator control. Livestock guardians for goats are usually llama or donkey. If the livestock guardian is not rescued, it would also be an additional up-front cost. Other up-front costs would include fencing, a trailer, and other miscellaneous equipment. Prolonged maintenance costs include the upkeep of the goats including medicine, hay, and lodging.

Lodging is an important aspect that must be addressed if a Rent-a-Goat program is to be successful. Lodging is required all year round, especially during the winter months when goats will not be actively working. While this is not necessarily a large financial burden, it is certainly a financial and logistical consideration.

One of the biggest costs of Rent-a-Goat programs is the insurance required. Insurance is required for the vehicle transporting the goats as well as liability insurance. Many interviews

shared that their insurance for vehicles and liability covers around \$2 million.

Goats are a cost effective-method for managing invasive species, as can be seen in Annie Booth's article titled *The Use of Domestic Goats and Vinegar as Municipal Weed Control Alternative*. For a project that is roughly 2.891 acres, one would spend \$14,130 on the initial start up costs of buying the goats and \$6,056 for maintenance costs. This adds up to a total cost of \$20,186 for the first year. In the second year and onward, costs are reduced to about \$1,656 a year in comparison to the \$9129 it would cost to spray pesticides on an area of this size. This research found that goats are not only the more environmentally feasible option, but cost taxpayers the least amount of money in the long run.

10. Project Continuation

If the CVCP would like to continue their partnership with the Rubenstein school, we see this as a project that can continue into future semesters. We conducted the base research needed to understand what is required to start a Rent-a-Goat program. With a Rent-a-Goat franchise program coming to Chittenden County in Spring 2020, we can see a future group of students monitoring a pilot grazing program. On a small piece of municipally owned land, goats could be used to graze invasive species. The next group of students could monitor the re-growth and determine based-off the pilot if the CVCP could utilize a Rent-a-Goat program in other places.

To help the next group seamlessly transition, we will provide our professor with the link to our google drive. Here we have placed all of our research, class documents, and contact lists. This will allow another group to read through our materials to understand the basics of a Rent-a-Goat

program. In addition, we have spoken with the folks who are hoping to bring a Rent-a-Goat program to Chittenden County and have let them know about student interest in the project. They will be on the look-out for another group to students contacting to partner with them next semester.

We have determined that it would be best if the next group focused on ecological research associated with a pilot grazing program. With consultation from the CVCP and Goats on the Go, the next group should assess a plot of land to be grazed. Once a plot is identified, the group should assess the function and values of the ecosystem and how they are being impacted by invasives. After this is determined, the group should measure the amount of invasives and regrowth both before and after goats are brought in to graze. We see the next group's main focus as helping to identify a pilot plot, determining the impacts of invasives, and measuring after a pilot is run.

Appendices

Appendix A: Interview questions.

- Name of business/program:
- Location:
 - Why did you choose the location of your business/program?
 - Who owns and manages the herd of goats?
 - If your business/program location experiences an off season (winter) what do you do with the goats during that time?

- In what ways has your program been successful?
 - What caused that success?
- How long has your business been operating?
- What challenges have you faced with your Rent-a-Goat program?
 - When did these challenges occur?
- Approximately how much did it cost you to start your business?
 - Prolonged maintenance costs
 - Insurance costs
- Do you need to train your goats?
 - How do you prevent them from eating native species/encourage them to eat invasive species?

Appendix B: Financial considerations of a Rent-a-Goat program.

Cost of Goats	Cost Guards Animals	Cost of enclosures	Cost of Insurance	Cost of Services
0-\$800	\$800- \$2,500	~\$500	0-\$2,000,000	\$75 a day
Goats can be rescued or buy them off craigslist or auctions vary depending one kind and use Dairy,meat, for show.	Can be dogs, llamas, horses, donkeys. Guard animals are for large properties or places with predators. Not as big of need in cities.	Fences to keep humans away, electric fences to keep goats from jumping.	Liability insurance and insurance for transport vehicle.	\$3,000 per acres \$250,000 a year
100 goats can go through one bale		Fence come in sections of 165ft	Depending on how much you	

of hay per week.		long 15 feet wide.	want to cover.	
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Appendix C: List of useful contacts.

Business Name	Contact	Phone Number/Email	Notes
Gap Mountain Goats *	Natalie Reid	603-439-0083	Natalie is a renowned expert in the Rent-a-Goat community. She is regarded highly for the stability of her business, which is now on its 8th season. The VT Sheep and Goat Association uses her business outline, which has been sent along with this document, when working with farmers.
VT Sheep and Goat Ass.*	Dave Martin, Kimberly Hagan	Dave: settlementfarm@comcast.net Kimberly: kimberly.hagen@uvm.edu	Dave is the president, he has a plethora of useful contacts. Kimberly has experience establishing Rent-a-Goat programs and is interested in assisting the CVCP in this project.
56 Hooves	Deb	410-925-4807	Located in Virginia. Goats are part of a toolbox, can be one aspect of an invasive plant management plan
Goat Busters	Jace Goodling	603-439-0083	Located in Central Virginia. Focuses on longer jobs, expensive to feed his herd of 100 goats throughout the winter.
Rocky Ridge Vegetation Control	Conrad Lindblom	780-380-3061	Located in Alberta, Canada. Has experience working with agricultural faculty at the University

			of Fraser Valley is offering a course on how to use goats to manage unwanted vegetation.
Goats on the Go*	Aaron Steel	512-257-6846	Network of goat grazing programs, franchise of the Goats on the Go program opening in Vermont in 2020.
Healing Hooves	Craig Madsen	509-990-7132	Located in Washington near Spokane has 17 years of experience. Has a balanced goat for meat and goats for grazing business. Talked about the advantages that multi year projects can have on lowering cost of services.
Mutton Mowers*	Emily McMurtery	801-494-4808	Services Boulder municipalities, grazing program similar to what we would want to see for CVCP.
Eco-Goats*	Brian Knox	814-233-0305	Suggested contact from Ashley Parker, focuses on working with nonprofits and municipalities. Brian Knox owns Sustainable Resource Management, Inc.
Former Montpelier Assistant City Manager	Susan Allen	Current City Manager: Cameron Niedermayer cniedermayer@montpelier-vt.org	Three goats rented from goat farmer to graze bike path along the Winooski River. Targeted at poison ivy.

Weeds List

Absinth	Diffuse Knapweed	Pasture Sage
Alder	Distaff Thistle	Pepper Grass
African Rue	Deer Brush	Persian Darnel
Alkali Swainsonpea	Dyers Woad	Pigweed
Autum Olive	European Field Pansy	Pineapple Weed
Baby's Breath	Field Bindweed	Plumeless Thistle
Birch	Field Scabious	Prairie Sage
Black Henbane	Fire Weed	Poison Hemlock
Black Meidrick	Flowering Bullrush	Poplar- <i>Aspen, Balsam</i>
Blackberry	Foxglove	Puncturevine
Bladder Campion	Giant Hogweed	Purple Loostrife
Blueweed	Giant Knottweed	Purple Starthistle
Brome Grasses	Goatsbeard	Queen Annes Lace
Buck Brush	Goosefoot	Rabbit Brush
Buffalo Bean	Gorse	Raspberry
Buffalo Brush	Hawkweed- <i>Yellow, Orange, Meadow, All</i>	Russian Knapweed
Bull Thistle	Hellbane	Russian Thistle
Burdock - <i>Common, Woolly, Lesser</i>	Hemp	Saltcedar
Buttercup	Hoary Cress- <i>All</i>	Salt Lover
Canary Reed Grass	Honeysuckle	Scentless Chamomile
Canada Thistle	Horehound	Scentless False May Weed
Caragana	Hound'stounge	Scotch Thistle
Caraway	Indian Tobacco	Sow Thistle- <i>Perennial, Marsh</i>
Cheat Grass	Italian Thistl	Spotted Knapweed
Cinquofoil-Sulphur, Rough	Knapweed- <i>All</i>	Tamarisk- <i>Chinese, Smallflower</i>
Clematis	Lambs Quarter	Tansy- <i>Common, Ragwort</i>
Clover - <i>Sweet, Alsike/Dutch, Red, Purple</i>	Larkspur	Toadflax- <i>Yellow, Dalmation</i>
Common Barberry	Leafy Spurge	Vetch
Common Buckthorn	Loco Weed	Water Milfoil
Common Crupina	Milk thistle	Water Hemlock
Common Mullein	Multiflora Rose	White Cockle
Coyote Bush	Musk Thistle	Wild Rose
Creeping Bellflower	Mustard- <i>Yellow, Garlic, Black</i>	Willow- <i>Wolf, Sandbar, Basket</i>
Current- <i>Gooseberry, Black, Red</i>	Nodding Thistle	Wormwood Sage
Dandelions	Oxeye Daisy	Yarrow
Dames Rocket	Pale Yellow Iris	Yellow Nutsedge
		Yellow Starthistle
		Yucca

Appendix D: List of known invasives targeted by goat grazing.