



Granite State Voices
on
Climate Change



Andrew Drummond

Ski the Whites, Jackson

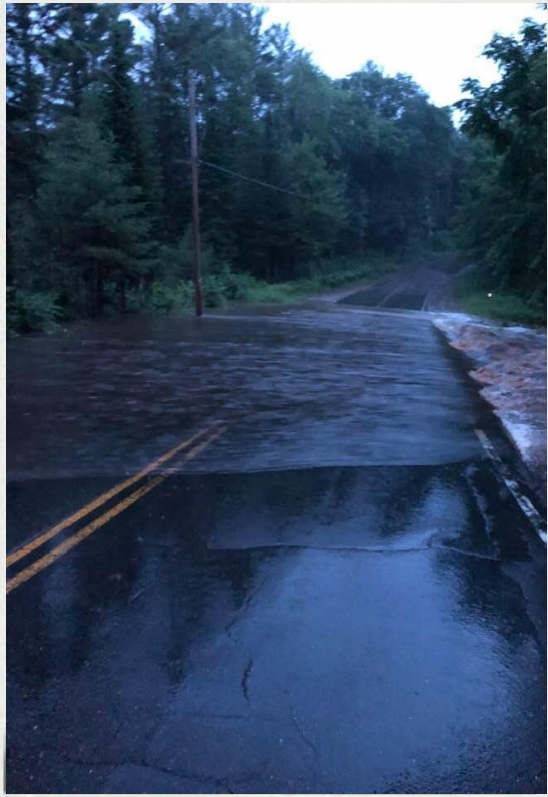
Andrew Drummond grew up in New Hampshire. After spending a few years in California he came home to settle in Madison, in the heart of the Mount Washington Valley, a community that thrives on outdoor recreation.

Andrew opened Ski the Whites, a shop at the base of Black Mountain, a local ski resort. Ski the Whites serves a different clientele than the numerous ski shops in North Conway, or on the other side of the Whites, in Lincoln. Andrew's shop is specifically for backcountry skiers, people that venture out of the usual boundaries of resorts and explore the mountains of Northern New Hampshire and Maine. Andrew doesn't just sell gear to these people though, he is one of them. On days when Ski the Whites is closed, Andrew is in the mountains skiing and posting on his social media accounts, connecting people to the mountains.

The Granite Backcountry Alliance (GBA) started in 2016 and is the leading organization in New Hampshire developing areas for backcountry skiers to enjoy their sport. Andrew serves on the board for GBA. "We want to develop these areas for backcountry skiers in a conscious way, using the proper channels of permits. We see this as an opportunity to grow our sport and create a community that is connected and working toward a similar goal. It used to be a fairly reclusive sport with folks going by themselves or with their partner and now people are going out and having conversations with like minded people in the woods."

Andrew explains the growth of this sport not only helps the ski industry but it connects people with the outdoors and nature and gives them a reason to want to protect the natural resources that draw people to the region.

"My whole livelihood depends on curbing the impacts of climate change. When I am not in the shop, I am skiing in the White Mountains, using it to develop my social media career as well. If we lose this, I lose both my shop and the sport that I care so much about."



Julia Griffin

Hanover, New Hampshire • Town Manager

Julia Griffin is the Town Manager of Hanover, New Hampshire. Hanover is home to Dartmouth College and is located in the western part of the state known as the Upper Valley, defined by its proximity to the Connecticut River. Due to the geographical location, the town is at risk from a variety of environmental hazards and more specifically flooding from dam failure, river ice jams, and severe thunderstorms. In 2009 these issues were identified as part of the town's Hazard Mitigation plan. The plan estimated the possible damage from flooding could be over \$9 million dollars.

On July 11, 2019 a line of severe thunderstorms swept through the western and central parts of the state causing severe damage to the area. Hanover, thanks to diligent planning and preparation, was ready and fared well through this round of storms. Other towns in New Hampshire did not. "This type of destructive, 100 year storm, seems to be an every year occurrence for at least one part of the state. These unusually severe microbursts are a symptom of climate change." said Griffin, immediately following the storm. "Hanover is lucky, we have a budget that has allowed us to invest in proactive measures and finally get to a point where we can manage when some of these storms hit. The towns around us are much smaller and they do not have the resources we do."

Julia explained that whether or not you are able to make it through these types of storms really depends on which watershed you live on and whether or not your town has taken enough steps to prepare for these storms. Sometimes that is still not enough. "A lot of the roads in this area are maintained by the state and they haven't invested in preparation like some of these towns have. Local residents pay the price without having the ability to make a change."



Dr. Martha Carlson

Sandwich, New Hampshire

Dr. Martha Carlson lives with her husband on Range View Farm in Sandwich, New Hampshire. They live in an old white farmhouse with a wrap-around porch that looks out onto a vegetable garden and sheep pasture that are flanked by tall sugar maples, *Acer saccharum*, the iconic symbol of New England.

The sugar maple is the dominant species of tree in the New Hampshire forest, a forest that covers 86 percent of the state. More than a million acres in this small state are forestlands held by the public in the White Mountain National Forest and dozens of state parks and private preserves. Families like the Carlsons and private businesses own 3.5 million more acres of timberland. These tree farmers manage the trees for high quality timber, wildlife habitat and recreation. And, where the sugar maples grow, for maple syrup.

Granite Staters annually make about 160,000 gallons of maple syrup, what they call “sugar”. The Carlson’s forest has hundreds of sugar maples but the Carlsons only tap a hundred trees. They made 11 gallons this last spring.

When she retired from a career as a teacher, Carlson decided to take a closer look at the sugar maple. “I wanted to take the pulse of climate change in my own backyard,” Carlson says. At age 67, she completed a doctorate from the University of New Hampshire in Natural Resources and Earth Systems Science. Her book, [Farewell, Sugar Maple](#), chronicles Carlson’s study.

“The sugar maple is considered the Appalachian forest’s most sensitive tree to a warming climate and to changing weather patterns,” Carlson said. “If climate change damages the sugar maple, it’s going to damage our entire environment and all the people who live and work in this environment.”

Over the last decade, Carlson has seen evidence of stress in the maples, changes in the tree’s health and the quality of maple syrup that might be linked to climate change. The maple season, historically a predictable six weeks every March and April, has become erratic. The sap runs and sugar makers scramble to make syrup sometimes as early as late January. Or, as it did in 2019, the sap doesn’t run until late March. Warm days have cut recent seasons to two or three weeks. Spring droughts have damaged leaf health, curbing sugar production in the trees. Some years, the classic fall foliage is a spectacular fire of orange, gold and red. And in other years, the foliage has been a dull brown as early as late August.

“Only a thousand or so people in New Hampshire make sugar,” Carlson said. “But thousands more visit a sugarhouse every spring and millions come to see the fall foliage.”

“Here, in our temperate climate, we don’t see dying sugar maples---yet,” Carlson said. “But those of us who live close to nature can see subtle changes in the tree and in sugar production. The pulse is different. Something isn’t quite right.”

“I’d like to hear candidates talk to us about climate change,” Carlson said.



Jeremiah & Nicole Vernon

Newfields, New Hampshire

Jeremiah Vernon and his wife, Nicole, own the Vernon Family Farm in Newfields, New Hampshire. The couple met when Jeremiah was working on a dairy farm in Maine, and Nicole was teaching Spanish at a local high school. They were both looking for a change when they purchased the farm five years ago.

The farm's main product is poultry. The Vernons own 33 acres of land with 15 in use, 15 forested, and 3 in conservation. Jeremiah says that they now process approximately 20,000 chickens per year, all raised in pasture. When they first started, it was hard to find quality poultry at local farmers markets in the state. They'd see small quantities of rotisserie chicken, but nothing like what they're now able to bring to market. They also sell meat, vegetables, fruit, maple products, and more, all either produced on their farm or sourced locally.

Jeremiah and Nicole are intentional about the quality of life of the animals raised on their farm, their use of resources and the environmental impact, and about participating and opening their farm up to the community. Every Friday, they host a rotisserie night with live music; community members bring their own side dishes. On Tuesdays, they host a taco night, and in general are very welcoming to folks who want to stop by their farm.

Chicken farming requires a lot of work. Once a week, the Vernons receive deliveries of 700 chicks. The chicks stay indoors for about three weeks, before going out to pasture for the remainder of their growth. It takes approximately 8 weeks for the breed of chickens the Vernons raise -- Cornish Crosses -- to get to size. And they invest a lot of money into their growth process, from quality feed to raising them out in pasture once they're old enough. So when a heat wave hit this summer and killed 400 of their oldest chickens, they took a severe financial hit.

"We knew the heat wave was coming," Jeremiah said, "and we tried to prepare ourselves for it. We removed their feed, in order to reduce their metabolism. It's salty, and we knew we needed to reduce their sodium intake to keep the water stress down. We sprayed their houses as much as we could. I was out here all day. But the reality is, it just got too hot. They weren't prepared to take on 110 °F temperatures."

Since the heat wave, the Vernons have invested in a temperature control program -- a system of generators and fans -- that they hope will prevent the same devastating loss they suffered this summer from happening again. Jeremiah said that while they could also reduce the density of their chickens, what they currently maintain is standard for pasture farmers. The infrastructure to reduce density would cost somewhere in the \$20,000 range, and that's just not manageable for smaller scale farmers.

"The real cost is going to be the labor and fuel to keep these animals out in the field. I know climate change is happening, and I believe it will continue to be a problem for us. We hope this temperature program will work for the temperature ranges we saw this past heat wave, but I don't know what we'll do if the hot days get any hotter. What will we do in a 115 °F heat wave? The irony is that we've chosen to pasture these animals to give them the best life possible while we have them, and they're dying out in the fields."



Christopher Bellis

North Conway, New Hampshire

Christopher Bellis and his husband, Eddie Bennet, own and operate the Cranmore Inn Bed and Breakfast in North Conway, New Hampshire. The Cranmore Inn has been continuously run since 1863. Bellis and his family took over the property in 2012, and now live in the carriage house at the back of the lot. Set in the heart of New Hampshire's White Mountains, the Inn caters to foliage tourists, hikers, and skiers, depending on the time of year.

Due to its location, The Cranmore Inn serves as witness to New Hampshire's climate change. Bellis is concerned about New Hampshire's changing ski and foliage seasons from what he describes as anecdotal observations from the Inn. Bellis feels that the pace in which climate is driving the erraticism of New England's seasons seems to have rapidly increased over the past five years.

Fall is the Cranmore Inn's busiest season, thanks to foliage tourists. But inconsistent start and end dates have left some guests disappointed when they arrive in North Conway. According to Bellis, the sugar maples in the region did not start to turn until the middle of September last year. Traditionally, foliage starts to turn earlier in September. This left some advance-booking travelers arriving too early, and some too late, to catch the changing leaves.

"The real impact of climate change on the hospitality industry," Bellis went on to say, "is the uncertainty. Travelers like predictability. They don't like to book without some degree of assurance that they'll see some foliage, or have enough snow and moderate enough temperatures to go skiing. For our domestic travelers outside of New England and our European guests, this can be a real disappointment. We can't promise, with full confidence, that nature is going to deliver."

Bellis used to tell guests eager to see fall foliage that the surest time to book is Columbus Day weekend. "Whether foliage reaches its peak or is at its end, you've always been bound to see something. But even this safe advice is proving unreliable. A couple of years ago, foliage started late August. By Columbus Day weekend we had nothing. Folks count on New England's traditional vibrant reds, yellows, and oranges, but all that was left by the end of the month were yellows and browns."

New England's increasingly erratic winters have also created some uncertainty for travelers looking to head to New Hampshire for ski season. "Guests typically book their ski vacations at the beginning of January, after the holidays. Last year, we had sub-zero temperatures around that time. When people are cold, they don't want to book ski trips. They want to go to the Bahamas."

"I can only speak from what I witness from the front desk of the Inn," Bellis concluded, "and sometimes longer ski seasons can actually help us. But the larger cause contributing to these inconsistent seasons concerns me. I wish somebody would address it, because if they don't, our children will have to. I'm worried that they're the ones who will end up paying the price."



Jenn Briggs

A Place to Grow, Brentwood

Child care is a difficult business. Profit margins are razor thin, staff turnover is extremely high, and any increase in expense is felt in the wallets of the families served. Jenn Briggs knows these difficulties better than most, she started and has been running A Place to Grow since 2005 and moved the business to its current location in Brentwood in June of 2016.

“The first year was difficult. During the summer we had the central air and a window air conditioning unit running full time and the second floor was still uncomfortably hot. Our electric bill nearly doubled in July and August.” Jenn explained that although the building was fairly new (built in 2009) it had terrible insulation. “We were not prepared for the winters in this building, the propane was so difficult to plan for month to month, it threw our whole budget off and that means I need to charge families more, pay staff less, or cut back in other ways.”

After the first winter in their new building Jenn knew she had to make some changes. Jenn reached out to the Community Development Finance Authority and secured funding to complete an energy audit. What she found reinforced what she and her staff knew, their building was not energy efficient and the insulation was terrible. With the help of grants, Jenn was able to fix the insulation problem in the building, then install a new energy efficient roof and finally, a 44 panel solar array that provides 100% of the buildings electricity. “I became a project manager for a few months. We managed to get all of this done while still having close to full capacity of children. The children really enjoyed being able to watch the installers from Revision Energy and the other contractors as they lifted solar panels up on to the roof.”

“It is a completely different situation now. Each room is individually climate controlled, which makes it so much more comfortable for us. We are using almost no propane now. The best thing is that my electric bills are negative! I am excited to get that bill every month at this point!”



Henry Huntington

Lēf Farms

Henry Huntington and his family own Lēf Farms in Loudon, New Hampshire. The Huntington family also runs Pleasant View Gardens, which they've continually owned and operated for 40 years. They started Lēf Farms when they were looking to diversify their business.

What's unique about Lēf is that their produce, mostly baby greens, are all grown hydroponically in greenhouses. Henry said that they saw an opportunity to bring more greens and lettuce to market, if they were able to find a way to cut down on the resources and labor it takes to grow them. Baby greens in particular are difficult to produce in scale because of the labor required to grow and pick them.

They knew they needed something automated, and found hydroponic technology in Finland that seemed like it could work. Since starting Lēf Farms three years ago, the Huntingtons have accomplished a lot. They sell into both retail and food service sellers. Their products are available in Shaws, Hannafords, Market Basket, and Whole Foods, as well as many small stores, allowing Granite State consumers to purchase greens in the supermarket grown locally and harvested the day before they hit the stores.

"Being good stewards of the land is important to us, and it's important to our customers," Henry explained. "What we grow in one acre of greenhouse, on a former gravel pit not conducive to outdoor farming, would take 60 acres of outdoor land to produce. We want to have the smallest carbon footprint while still remaining economically viable. And with New Hampshire's short growing season, we're proud that because of our indoor growing system, we can produce fresh, quality greens 52 weeks a year."

Because of the small land use relative to outdoor farming, the ability to control the temperature within the greenhouses, and the relatively small labor required in hydroponic growing, Huntington feels that Lēf Farms and hydroponic growing could be a viable part of the solution as our changing climate makes food and resources more scarce. Despite this, he said that changing temperatures could increase their fuel costs as they use more resources to keep their greenhouses running at optimal temperature.

"But honestly, clouds affect us more than anything. If changing climate brings more cloudy days, more rainy days, or more extreme weather, that's going to be a problem. And of course, increasing disease and insect pressures associated with climate change could impact us. Like everyone, we're going to need to learn to adapt. Hydroponic growing is another type of agriculture that we hope will fill in some of the blanks. And if you want dependable local produce, this is the way to do it."