

Leaf Litter

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Restore the Earth and Inspire Ecological Stewardship

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Thoughts on Biocultural and Ecogastronomic Restoration

Many of us tend to associate this time of year with feasting and abundance. Whether we're sitting at a table with loved ones, grazing alongside colleagues at an office party buffet, or secretly snacking sweets solo, even the most socially and environmentally conscious among us may find ourselves eating with reckless abandon.



This year, *Leaf Litter* encourages you to take some time to think about foods that are not so abundant. Though this may be a time of highly piled plates, hundreds of plants and animals in North America that once served as traditional food sources are disappearing. If they go, gone too are the stories, recipes, and customs that have linked people to place for centuries, as well as the traditional ecological knowledge associated with these resources.



The once abundant Greater Prairie Chicken.

As people involved in ecological restoration, conservation planning and regenerative design, we work to protect and enhance biodiversity every day. And most of us are well aware of the benefits—to our bodies, consciousness, and world—of eating food made of locally, organically and sustainably produced ingredients. But could the connection between food and our work be even stronger? By integrating the restoration of endangered, place-based food species in our work, could we help rescue and regenerate traditional ecological knowledge, cultural connections, health and economic prosperity while we restore ecosystems?

Dr. Gary Nabhan says yes. [We had a chance to speak to this celebrated writer, ecologist, ethnobotanist and founder of the Renewing America's](#)

[Food Traditions \(RAFT\) Alliance](#), about this new way of thinking about ecological restoration.



In this issue, [we journey to the tiny town of Tenakee Springs, Alaska](#), where the protection of local food sources is not just important for ecology and culture, it's downright necessary for human survival.

We share our discovery that one of the simplest (and most enjoyable) ways anyone can help protect local, native food sources is to [host a "Slow Food" dinner](#). Renewing

place-based foods and human connections.

We'll share loads of [links and resources](#), and we'll update you on the [latest news at Biohabitats](#).

Don't let this be a one-way conversation! Let us know what you think about biocultural and ecogastronomic restoration on our blog, [Rhizome](#), or on our [Facebook page](#).

So put down that fork for a moment and explore the topic of biocultural and ecogastronomic restoration!



Leaf Litter Talks With Dr. Gary Nabhan

Gary Paul Nabhan, an internationally-celebrated nature writer, seed saver, conservation biologist and sustainable agriculture activist, has been called "the father of the local food movement" by Mother Earth News. Gary is also an orchard-keeper, wild forager and Ecumenical Franciscan brother in his hometown of Patagonia, Arizona near the Mexican border.



Image courtesy of Gary Nabhan

In 2004, [Gary founded the Renewing America's Food Traditions \(RAFT\) collaborative](#), an alliance of food, farming, environmental and culinary advocates dedicated to the identification, restoration and celebration of America's biologically and culturally diverse food traditions through conservation, education, promotion and regional networking. Gary has authored more than 20 books and numerous articles, all of which are available [on his web site](#).

In his book [Renewing America's Food Traditions](#), Gary and his colleagues identify 1080 foods at risk in North America, including 267 species, subspecies and populations of fish, game and other wild foods. He and



Image courtesy of Gary Nabhan

colleagues DeJa Walker and Alberto Mellado Moreno wrote about these 267 foods in the September issue of the journal *Ecological Restoration*. This exciting article, entitled [Biocultural and Ecogastronomic Restoration: The Renewing America's Food Traditions Alliance](#), explores and encourages linkage of ecosystem restoration with the recovery of place-based plant and animal species, subspecies, and stocks historically utilized as foods and the culture with which they have been associated. The article was by no means Gary's first foray into ecological

restoration. He began the Desert Restoration Task Force and the Tribal Lands Restoration Task force on the Colorado Plateau over his quarter century of involvement in ecological restoration. He is now working on food chain restoration for migratory pollinators in the U.S./Mexico borderlands.

Gary compares the multitude of factors causing the depletion of place-based food sources to the many, mounting layers of an onion. At the core of this onion, he says, is a spiritual dilemma. "If we no longer believe that the earth is sacred, or that we are blessed by the bounty around us, or that we have a caretaking responsibility," writes Gary, "...then it does not really matter to most folks how much ecological and cultural damage is done by the way we eat." We were thrilled to have the chance to speak with Gary about his work.

In very general terms, how would you describe the overall state of place-based food species, subspecies and populations in North America?

About 1/8 to 1/10 of all plant species in North America have edible and medicinal uses, and a good proportion of those are listed in [NatureServe](#) as being at risk either at the state, national or global level. The actual numbers of historically utilized food products at risk in North America change through time, but we've recorded hundreds of plants that still have uses among Native American communities and other traditional communities in North America that are of conservation concern to biologists and resource managers.



Endangered Seminole Indian pumpkin. Photo by David Cavagnaro, courtesy of Chelsea Green Publishing.

How much of the food that people were eating in North America 200 years ago is still here today?

We have to pay attention not only to species being lost, but whether specific populations are being lost. We've lost hundreds of historical populations stocks and unique genetic strains of wild edible and medicinal plants in North America. I don't think there's a specific, single number.

When we talk about foods at risk in North America, we're talking about 267 subspecies, stocks, or unique populations. Our best guess is that

38% of North American wild foods at risk are now on their way to being involved in ecological restoration projects.



The prickly burr of the endangered American chestnut. Photo courtesy of the American Chestnut Foundation & Chelsea Green Publishing.

In the book Renewing America's Food Traditions, you and your co-authors present a list of 1080 foods at risk, but your article in the journal *Ecological Restoration* only mentions 267. What is the difference between the two lists?

The 267 are wild, which include wild game (birds, mammals, reptiles) wild fish, shellfish and plants. The rest of that 1080 are heirloom vegetables, fruits, and important livestock breeds that the [Renewing America's Food Traditions Alliance](#) is interested in. For your readers, I'd like to focus on those 267 wild populations and stocks of plants and animals because they have the possibilities for collaborations for professionals as well as amateurs involved in restoration.

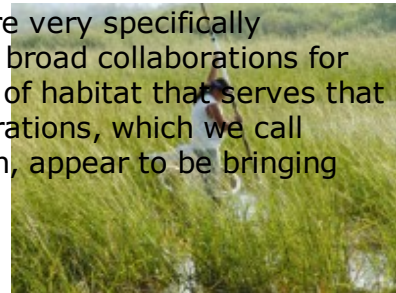
We carefully went through all of the articles in the journal *Ecological Restoration* since its beginning to see which of these species and subspecies were mentioned. We found that 38% were already in recovery.

In what percent of those projects/articles would you say the restoration of food species, subspecies and populations was *intentional* vs. *coincidental*?

We found that 17% [of the 267 wild foods] are very specifically mentioned in articles about projects involving broad collaborations for both the genetic recovery and the restoration of habitat that serves that species or subspecies. These types of collaborations, which we call "biocultural" and "ecogastronomic" restoration, appear to be bringing

people such as conservation biologists, ecological restorationists and soil scientists together with native plant societies, wild foragers, indigenous tribes, and chefs groups that want to contribute to the recovery of species that have been historically depleted.

I should mention that no one is talking about sanctioning the use and harvesting of ecological restoration plots before they have fully recovered and are regenerating themselves sustainably. We're very cautious to make sure that the hard work done by those involved in ecological restoration is not met with additional pressures by wild foragers. We want to make sure that once a habitat and its edible species are recovered, land managers and communities make decisions about what level of harvesting can be tolerated without depleting the stock or damaging the habitat.



Harvesting wild rice in Minnesota. Photo by Sarah Alexander/White Earth Land Recovery Project, courtesy of Chelsea Green Publishing.

What prompted you to submit the piece to the journal *Ecological Restoration*? Was there an "a-ha" moment during which you

discovered that it'd make sense to reach out to the ecological restoration community?

One of the moments for me was working with a very gifted Mexican [and Seri Indian] aquaculturalist and conservation biologist who is the third author of the paper, Alberto Mellado. We had just seen hurricane damage to the coastal lagoon in the Gulf of California from which his ancestors had received quite a bit of their nutrition (shellfish.) Their scallop and clam beds were inundated with sand, which disrupted their productive capacity. This productive capacity was also of economic importance to the village where Alberto lives. Alberto had just earned an aquaculture degree, but he didn't want to apply it to conventional, industrialized shrimp farming or anything that would reduce habitat quality along the coast of his people's homeland. He wanted to use his aquaculture skills to restore natural populations of oysters and scallops in his community.

We realized that by building coalitions [comprised of] user groups and conservation groups that could find overlapping values and goals, we had a new paradigm for ecological restoration. If people are engaged both in the restoration process and in sustainably harvesting the products, there's a feedback loop where they stay involved in monitoring the quality of habitat and making sure it's not damaged by other means. We really see that the local food movement and the interest in food security can be matched with conservation goals.

So that experience with Alberto is what prompted you to put the piece together for the journal *Ecological Restoration*?

Yes, that was the "a-ha" moment, and within a few weeks of that, I was a guest speaker with Dennis Martinez and Eric Jones, two people who have been involved in ecological restoration in the Pacific Northwest in collaboration with indigenous communities. We realized that many of us were independently reinventing this connection. We saw that indigenous communities, among many other rural communities, understood the logic of doing ecosystem restoration, but they also had this additional goal of wanting their children and grandchildren to be able to harvest healthy, native foods in the future.

Can you tell us a little more about Alberto's project?



Seri Indian aquaculturalist and paraecologist Alberto Mellado holds a cluster

There are two elements to the project. First, there is open water aquaculture of oysters using some innovative techniques that do not require the use of antibiotics or other nutrients to fertilize oyster production. The oysters are in netted bags, but they are also producing spawn that helps regenerate the population in surrounding areas with high tidal flow. The other component of the project involves an aquacultural nursery to re-establish several species of scallops in some of the hurricane damaged areas. The scallops are essentially started in an aquacultural nursery and then released in the nearby estuary and allowed to grow to natural sizes. We've been looking at a particular genus—*Atrina*. We have *Atrina maura* and *Atrina tuberculosa* being established in open

of Sea of Cortés native callo de hacha scallops locally propagated in Estero Sargento along the coast of Sonora, Mexico, in 2009. Photo by Gary Paul Nabhan.

waters of coastal lagoons. In that case, it's really a matter of building up the population over a number of years. There's no commercial product out of that yet. The focus has been on allowing the population to recover before utilization of those scallops resumes.

Is the population recovering? What sort of monitoring is being done to evaluate that?

There is seasonal monitoring of both the oysters and scallops. There are actually two species of oysters—an endemic Sea of Cortes oyster and a pearl oyster— that are being propagated. Their numbers are very high. The project has been incredibly successful. The scallop restoration has been patchy in its success. The scallops are very particular in terms of initial substrate. Alberto is having indigenous youth help him monitor the scallops on a seasonal basis. There is also water quality monitoring, because in order to sell the products to U.S. markets in the future, they have to have over a year and a half of high quality water tests to ensure there are no contaminants in the estuary or any food safety issues. The scallops and oysters have been used for village feasts, but until there have been sufficient water quality tests (Alberto will probably wait at least two years) there will not be commercial sales.

You, Alberto and the article's other author, DeJa Walker, highlight Alberto's project as a model ecological restoration project. Why do you consider it a model?

Most Native American people who live in coastal communities have seen, with globalization and acculturation, rapid loss of their traditional knowledge about fish, shellfish and plant resources. One key thing with this project is that the traditional ecological knowledge of tribal elders helped plan the site before the reintroduction took place. Alberto is, by inheritance, considered a caretaker of the particular site where the scallops are being reintroduced. The project is serving not only ecological conservation but cultural conservation of traditional knowledge of this resource.

A huge group sponsored by the global non-profit organization [Ocean Revolution](#) is helping with the work. They have been trained in aquaculture and ecological restoration by a number of universities and conservation non profits. They formed their own conservation group among the Seri Indian youth in Mexico that has won an [Ocean Revolution Native Oceans Award] for combining cultural preservation with biological conservation (of sea turtles, shellfish and eelgrass). So this project has been a success not only in terms of its biological goals, but in its cultural goals as well.

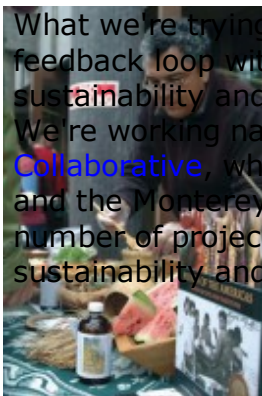
RAFT operates according to seven principles, which you call the "Seven Rs." (See [Resources](#) for complete list). Numbers five and six relate to economics: "Recuperating markets & local infrastructures to support their production" and "rewarding & actively supporting original stewards of the



resources with market based incentives." Is Alberto's project a case where that is happening? How do you do that?

Photo courtesy of Gary Nabhan.

When talking about recuperating markets in general, we have to remember that some species and habitats were depleted because there were no constraints on markets before. [For example,] the gathering of feathers from herons and cranes and the overhunting of passenger pigeons helped deplete those species.



*Award-winning chef Fernando Divina, coauthor of *Foods of the Americas* and principal menu consultant for the Mitsitam Café at the National Museum of the American Indian, shown here with his native food preparations at the 2007 American Heritage Picnic hosted by Slow Food Seattle. Photo courtesy of the RAFT Alliance, Gary Paul Nabhan.*

What we're trying to do is recuperate markets that have a positive feedback loop with conservation by focusing on restaurants that have sustainability and conservation goals for how they source their food. We're working nationally in the U.S. with a non-profit called [Chefs Collaborative](#), which has very strong ties to the New England Aquarium and the Monterey Bay Aquarium. [Slow Food International](#) has sponsored a number of projects with the Seri Indians that have criteria for sustainability and recovery of endangered foods. It's really a different kind of market.

The second part of your question about rewarding and actively supporting the original stewards of these resources goes back to some of the work done by 2009 Nobel Prize winner Elinor Ostrom. This work shows that where we have local communities that are long-term stewards of forestry and fisheries resources, we often do a better job than government agencies can do by themselves. Elinor Ostrom won a Nobel Prize for her pioneering work in the economics of natural resource use. Groups like the [National Council for Science and the Environment](#) now recognize that traditional knowledge from user communities should be considered complementary, rather than antagonistic, to western science-based knowledge.

We're really talking about drawing upon [and combining] the collective wisdom and traditional knowledge of indigenous communities of the last several thousand years with the most up to date, technologically-derived knowledge of Western science. Rather than trying to privilege one over the other, we're finding out that we get more cohesive management by integrating the two.



What kind of reaction has the article in *Ecological Restoration* received from those in the ecological restoration community?

A number of resource managers who are Native American or are working for Native American tribes feel very gratified that there is a place for them in work that is sanctioned by scientists. [They viewed the article] as a nod to go on and continue doing their work. They feel that rather than

being on the margins of ecological restoration, they are bridges between different constituencies.

I have also heard cautionary comments, specifically from foresters in the Seattle area. They have done ecological restoration projects in which they find wild foragers harvesting berries or mushrooms from the habitat before it is fully restored. I had to remind them that we're really talking about all stakeholders being involved in the planning and monitoring, and not ad hoc, informal use of an area independent of the ecological restoration stewards. But those cautions are something I welcome. I'm not trying to sell unconfined use of restoration plots by anyone. I want this to be a give-and-take where we naturally build more inclusive groups of stakeholders (scientists, restoration volunteers, foragers, community elders, etc.)



A juvenile white sturgeon in a stretcher as part of annual Carrier Sekani Tribal Council sampling activities on the Nechako River to assess the level of juvenile recruitment into the white sturgeon population in the river. The fish are measured, weighed and normally tagged with Passive Integrated Transponder (PIT) and in some instances, radio transmitters. Photo courtesy Carrier Sekani Tribal Council & Chelsea Green Publishing.

In his sidebar in response to your article, former *Ecological Restoration* editor William Jordan says that your work challenged him to consider the distinction between "self-interested management of natural resources" and "allocentric" or other-centric restoration. He concludes that both forms of restoration, practiced side-by-side, are necessary. What was your reaction to his reaction?

I was very much relieved by it. Earlier, in several of his articles, he had sort of drawn a line in the sand and said, "We have already messed up so much of the earth's surface. Shouldn't we be hands-off of restoration areas until there is good evidence that we're not messing up more?" He has a brilliant, creative mind, and he is one of the true geniuses of the ecological restoration movement. I viewed his response as another blessing encouraging Native American

resource managers to collaborate with those involved in ecological restoration.

I think William Jordan realizes that there's hope here that goes beyond Native American communities and is applicable to nearly any rural or urban community where there is place-based knowledge. I think his commentary is just as important as our article because it opens up a wider forum of discussion that includes both amateur and professional restorationists.

I read (on the [Native Seed/SEARCH web site](#)) that one in 15 wild, edible plant and animal species on this continent has diminished to the degree that it is now considered at risk. To bring this home to our readers, can you tell us the story of one or two of these species, including where they stand today? Can you also tell us how culture and tradition-along with biodiversity-has

been lost along with the species' decline?

Two of the most interesting items, which happen to be in my backyard, are the Apache and Gila trout. Both species, which are from upland areas of the great basin in the southern Rockies, have had competition from brown trout and [have had to contend with] habitat degradation from historic overgrazing.

The Apache tribes in Arizona have collaborated with Trout Unlimited and Arizona Game & Fish and New Mexico Game & Fish to really make a difference in bringing these species back. The caveat, though, is that there are some studies suggesting that climate change is going to increase water temperatures in several of the streams and perhaps in as little as 50 years, these recovered populations of trout won't be able to spawn and breed in these same streams.

Here's the bittersweet irony. We found the human capacity to collaborate on local ecological restoration but global environmental dilemmas [threaten to] negate it. We can't get too haughty and say that we recovered something for good. It's never that simple.

Do you think 300 years from now, people will refer to species we now consider invasive as traditional food species?

That's entirely possible. We're going to see a lot of assisted migration of native species. A species may have to move, say 500 meters in elevation because a three-to-five degree Fahrenheit change over 40 or 50 years will endanger them in their current habitat. We need to make sure that all of the stakeholders involved in ecological restoration understand how to plan for climate change rather than simply hoping it won't happen.

Is there anything like RAFT in other parts of the world?

There are some remarkable examples in Italy, Oman, and Mexico where government agencies and non-profits are doing full inventories of all their wild and cultivated foods. They typically start with cultivated species, but Mexico is doing both.

We have also had very good cooperation with Canada and Mexico through [Slow Food Canada](#) and [Conabio](#) which is Mexico's biodiversity commission.

Frankly, I think the U.S. can learn from other countries that have never shied away from having edible uses as one of the goals of restoration.

Can you give me an example of a place in the world where an abundance of a certain food species, and the cultural aspects with which it is associated, has been successfully maintained?

There is a great variety of examples. Peru has a [national park for the potato](#) that protects both wild and cultivated potatoes over a 40,000-hectare landscape above Cusco in the Andes. Three communities are involved in the management of the park.

There is a variety of modes of land conservation and ecological restoration going on in some countries that is very much tied to the goal

of regaining a modicum of food security and not merely for nature conservation for itself. It is also reminding people that they need to maintain these sources in case there is a collapse of the globalized food system.

Fisheries people have done habitat restoration and species recovery in all types of habitats-marine and freshwater-so we really need to pay more attention to how fisheries scientists have managed this in collaboration with community-based stakeholders.

Where Local Food Equals Survival

By Amy Nelson, *Leaf Litter* editor

Located on the Alaskan panhandle, about a seven-hour ferry ride from Juneau, the town of Tenakee Springs boasts a population of about 100 – and that includes people who only live there during the summer. Though

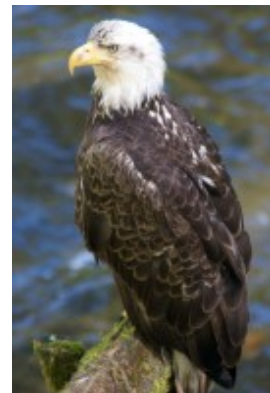


the town, with its natural hot springs, originally served as a refuge for prospectors and miners from Alaska's Interior, its residents range from eccentric retirees to commercial fisherman.

Sculpted by glaciers thousands of years ago, much of the land surrounding Tenakee Springs is part of the Tongass National Forest, the largest forest in the U.S.

Within this 17 million-acre ecosystem dwell iconic species one associates with Alaskan wilderness, like wolves, bald eagles, salmon, brown and black bears and towering hemlocks. But the Tongass is also home to the purplish Alaska huckleberry and the stocky Sitka Black-tailed deer. Many of these species—iconic and otherwise—are used as food by the people of Tenakee Springs. To this small community of independent people who prefer life off the beaten path, the preservation of these species is not just important to local ecology, culture and economy. It's downright necessary for survival.

According to the U.S.D.A. Forest Service, the Tongass Forest has been such a plentiful supplier of fish, wildlife and other food sources that the Tlingit people, who inhabited it for thousands of years, did not even have a word for the term "starvation." Though the ecological integrity of the Tongass Forest has faced threats, its abundance fortunately remains, and the people of Tenakee Springs hunt, forage and fish in it as we might our local grocer.





Plump salmonberries, native to the Tongass Forest.

"We depend largely on subsistence hunting and gathering for our protein," says John Wisenbaugh, a 37-year resident of Tenakee



John and Vicki Wisenbaugh's home and garden in Tenakee Springs

Springs. For John and his wife, Vicki, who live along the town's one (unpaved) road, eating meals made with 85-90% home-grown, foraged, fished or hunted ingredients is not a trend or movement. It's simply a way of life-the only way of life for humans in rural, Southeast Alaska.



John filets a freshly caught salmon

To John, the correlation between a healthy ecosystem and a healthy human cannot be understated. The shade of the Tongass Forest's old growth trees helps make nearby rivers suitable for salmon spawning. Its triple canopy catches a great deal of snow, allowing the creation of open space needed by deer. "Without a healthy, largely in tact, old growth characteristic forest," says John, "all those species suffer." Including people.

Like the Tongass Forest, the Pacific Ocean and its network of bays, straits, sounds, inlets, tidal flats and beaches serves as a critical food source for residents of Tenakee Springs. Shrimp, halibut, Dungeness and king crab and sea cucumbers are

just some of the oceanic bounty regularly consumed by people in Tenakee Springs.

Vicki routinely gathers and uses ingredients like sea asparagus and goose tongue as greens in salads, lasagna and quiche. "I just blanch 'em and chop 'em," says Vicki nonchalantly. "They're a little salty, but it's a good salty."



Vicki Wisenbaugh (r) and a friend forage for sea cucumbers at low tide.



Behold, the sea cucumber.

The [Southeast Alaska Conservation Council](#) reports that 80% of the region's rural households engage in subsistence food gathering. In Tenakee Springs, John puts that much closer to 100%. According to John, even those whose age and health prevents them from foraging and hunting must rely on friends to do so for them.



Vicki prepares halibut and venison for a social gathering.

Though the town has a general store and food can be imported much more easily than in decades past (thanks to the modernization of transportation systems such as the [Alaska Marine Highway ferry service](#)) many people just prefer the local stuff. "We *can* get food from elsewhere," says John, "but what we gather is so much better."

Local foods also play a major role in the Tenakee Springs social scene. "Local food is a large part of every social gathering," says John. "We have a number of potluck dinners for all kinds of occasions. Everybody brings whatever they can gather and whatever is in season-fish, shrimp, game. We all show off our best smoked fish. Some people even cure their own salmon eggs."



Many species that serve as food sources for people in Tenakee Springs are directly linked to the region's financial health. Commercial fishing is the backbone of the economy-not just in Tenakee Springs, but in all of Southeast Alaska. Since its first cannery opened in 1878, the Southeast Alaska region has become regarded as one the world's great strongholds for healthy stocks of wild salmon. All five species of Pacific salmon, along with halibut, herring, crab and shellfish, are fished commercially in the area.



John's mother caught King and Coho salmon on a recent visit



"A number of people here depend on commercial fishing for a living," said John. But the oceanic abundance is not always a guarantee. In fact, John has witnessed a decline in salmon numbers over the last 20 years. He attributes this to the double whammy of industrial logging and overfishing.

Clear cut logging has diminished salmon spawning capacity in many area streams. Commercial seine fishing outside the mouths of the streams (before fish can get into it to spawn) "...pretty much wiped out the early run of chum salmon and pinks," according to John. "There used to always be pink salmon in the Indian River here in town by the Fourth of July, and now you don't see them in there until late August."

As one might expect of a community for whom so many aspects of life-not to mention life itself-depend on the availability of local food sources, residents play a major role in the protection of these resources.



The Indian River



Towering trees in the Tongass National Forest

"We've been very active in trying to mitigate damage to the Tongass Forest from large-scale logging," explained John, himself a former logger. Working through his local chapter of the [Southeast Alaska Conservation Council \(SEACC\)](#), John has been extremely active (and successful) in lobbying all levels of government-straight up to Congress-to support legislation to end unsustainable logging practices. Given the history of logging in the region, it couldn't have been an easy fight.

In the 1950s, the Forest Service signed 50-year contracts that gave two timber companies public timber in exchange for building and operating paper mills. The result of locking into these long-term commitments was the rapid development of intensive, industrial-scale logging in the Tongass Forest. Although only a small fraction of the forests were clear cut, according to SEACC, roughly 70% of the biggest and best trees, "the biological heart of this temperate value rainforest" was targeted.



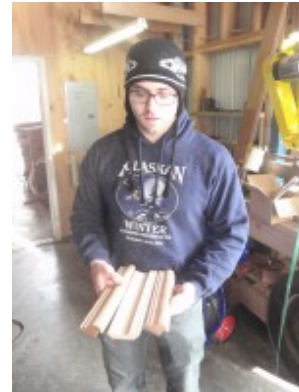
Photo courtesy of Bill Owen



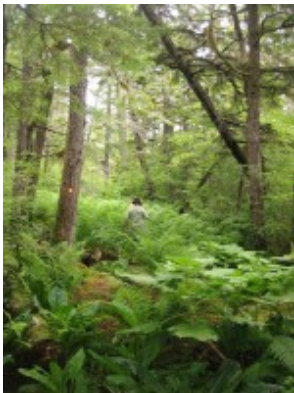
Thanks to the efforts of organizations like SEACC and SEACC members like John, and because of changing market conditions, the industry has changed for the better. "Logging is now much smaller-scale," according to John, "and we're trying to transition forest jobs into forest restoration and secondary manufacturing (actually making the lumber into something, like windows)."

When asked if the "food factor" (the fact that human food sources were part of the ecosystem needing protection) helped the conservation cause, he replied, "It sure does. That greatly helped lobbying efforts."

As John tells it, "the Forest Service had a policy called 'Viable Population,' which stated that any activity happening in the forest [could not disrupt the maintenance of] viable populations of fish and wildlife." The SEACC was able to use that policy in order to prevent or modify some timber sales.



Local lumber is used by nearby Icy Straits Lumber & Milling and by a local boat builder.



Hiking in the Tongass near Tenakee Springs.

"We fought hardest in our own neighborhoods," John explains. The results of that fight? Tenakee Springs now boasts one of the largest forest areas that includes multiple river valleys left in the Tongass.

John's resource protection efforts are not just benefitting his fridge and pantry; they're helping to ensure that future communities of Southeast Alaskans can continue the subsistence lifestyle required in order to survive there. John and Vicki's daughter, who lives nearby, hunts, fishes and traps. She and her husband are currently preparing a boat for commercial fishing.

Although he recognizes that most *Leaf Litter* readers are not living a subsistence lifestyle, John understands that we are all somehow involved in conservation planning, ecosystem restoration and sustainable design. To us, John offers these final words of advice.

I grew up in Cleveland. In the 1970s, the environment was so horrible in that area that the Cuyahoga River caught fire. But it is much better now because of the work of people. The most important thing people can do is advocate for habitat and biodiversity in their communities. Any stream you can clean...any area of in-tact habitat you help protect or create...anything you can do to advocate for your personal area...will help everyone in the long-term.



John, commuting along Tenakee Spring's major highway.

Renewing Place-Based Foods & Human Connections

By Amy Nelson, *Leaf Litter* editor

A fun way to help keep your local food traditions alive is to host a "slow food" dinner. What began in Italy in 1986 as a reaction to an encroaching fast food culture, the concept of slow food, which promotes and celebrates the strong connections between plate, planet, people and culture, has grown into a movement that now influences minds and menus across the globe. The U.S. chapter of the international non-profit organization, [Slow Food](#), defines slow food as "a way of eating that links the pleasure of food with a commitment to community and the environment."



With autumn's bounty so readily available at nearby farmer's markets, fish markets and in my own garden, I couldn't resist the urge to host my own slow food dinner for my colleagues at Biohabitats. I'd serve foods made primarily with locally, organically, and responsibly produced ingredients.



Fresh produce from the farmer's market is converted to crudite with homemade pan-fried onion dip.

At the bar, I'd have locally brewed beer and regionally produced wine and spirits. (Who knew there was a rye whiskey distilled in nearby Virginia?) To make things more interesting (and to make less work for myself) I asked each guest to bring an appetizer, side dish or desert.

Unlike the usual office party, this would not be a plate-on-your-lap affair. If the evening was truly to be "slow," I wanted people to park themselves at the table and take their time with the meal. I wanted them to linger. So I did the unthinkable. I broke out the linens and china. Once set and adorned with flowers and greens from my backyard, the table was nearly linger-worthy. All that was missing was the food and company.



With crudite and a local cheese plate at the ready, my guests began arriving. The parade of food was astonishing. Maryland oyster fritters and crab balls; borscht and greens made from beets purchased that morning at the farmer's market; homemade apple pies; rice salad featuring corn from a backyard garden; butternut squash soup; pumpkin pie!



Borscht-master Nick.



Pete savors a spicy crab ball.

Added to the roasted, organic local chicken, grilled Chesapeake Bay rockfish, Maryland bison chili and freshly shucked oysters provided by the host, my guests' contributions formed the complete makings of a lovingly produced, slow, seasonal feast of local foods.

At most office parties, at least until folks make their second trip to the bar, the conversation tends to orbit around work-related topics. This time it was different. From the moment my colleagues walked in the door, it was all about the food and the experience of preparing it. We all knew, for example, that our colleague Peter was a

brilliant marine estuarine environmental scientist, but who would've guessed he could roll such a delicate strudel? Who knew that our creative director, Jean, grew corn in her backyard and could assemble a colorful salad with the same artistry she applies to interpretive signs? And would anyone have guessed that Bryon, so precise in his measurement and construction of floating wetlands, could season clams so creatively?





Yes, something magical happened that night, and I attribute it all to the "slow food" theme of the dinner. Indeed, we did slow down. And in so doing, we not only enjoyed a new appreciation for the food, but for each other. We ate. We drank. We laughed. We lingered.

If you're thinking of hosting your own slow food meal, here are some tips I picked up:

The Invitation

Be sure to explain what you mean by "slow food." You may be surprised how enthused your guests are about the notion of taking their good old time to savor a thoughtfully prepared meal made of locally, responsibly produced, seasonal food sources. Consider providing your guests with a list of area farmer's markets and shops that carry organic, locally sourced food. (See [Resources](#) for U.S. locations)



Freshly caught rockfish from the Chesapeake Bay.

The Menu

Be flexible. Allow yourself to be inspired by the season and the availability of items at local farms or markets.

Décor

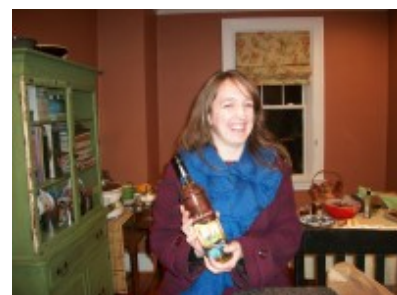
Keep it simple and seasonal, but don't be afraid to use your fancy dishes! Tasty little apples from the farmer's market added color and crunch to my cheese plate. Tea lights in mason jars added ambiance, while flowers from my garden contributed color. Even if you have no garden, greens from a nearby outdoor space can gussy up a small bunch of flowers purchased from your local florist. Heirloom china or silver can help bring even more of a sense of tradition to your table.

Did I Mention Beverages?

If, like me, you live in a region that is not known for its fine wines, visit your local wine shop and ask for help. I was surprised to discover several tasty varieties of wine from vineyards located less than 150 miles away.



Russell shows off his famous apple pie.



*Jenn bearing a bottle of wine from
her homeland near Solomons, MD.*

Resources

[American Livestock Breeds Conservancy \(ALBC\)](#)

The [Arc of Taste](#) is an international catalog of over 200 delicious foods in danger of extinction.

[Articles by or about Gary Nabhan](#)

[Books by Gary Nabhan](#)

The [Chefs Collaborative](#) is a national chef network that's changing the sustainable food landscape using the power of connections, education and responsible buying decisions.

[Cleveland Urban Agriculture Incubator Projects](#)

[Community Food Security Coalition](#)

Interactive map of [Disappearing Foods: Encouraging a Comeback](#)

[Eat Local Challenge](#) is a group blog focusing on the importance of eating locally and sustainably grown food.

[Ecogastronomy Initiative](#)

[Ecological Farming Association](#)

[Edible Communities Publications](#) a network of local food publications. Interested in keeping up to date on the latest local food news

[Farm to Family Connection](#)

[Farm to Table](#)

[Farmers markets in Australia](#)

[Farmers markets in Canada](#)

[Farmers markets in the U.K.](#)

[Farmers markets in the U.S.](#)

[Fishwatch](#), put out by NOAA's National Marine Fisheries Service, provides relevant data to help people make informed decisions about the seafood they eat.

[Food & Agriculture Organization \(of the United Nations\)](#)

[Food Routes](#)

[Food Security Learning Center](#)

[Future Harvest](#)

[Green Chefs, Blue Ocean](#): A comprehensive, interactive online sustainable seafood training program and resource center.

[International Society for Ecology and Culture](#)

[IUCN Red List of Threatened Species](#)

[Localharvest.org](#) is a U.S. nationwide directory of small farms, farmers markets, and other local food sources. The site also lists growers and producers of foods on Slow Food's [Arc of Taste](#)

[Locavores](#)

[National Sustainable Agriculture Coalition](#)

[Native Seeds/SEARCH](#) conserves, distributes and documents the adapted and diverse varieties of agricultural seeds, their wild relatives and the role these seeds play in cultures of the American Southwest and northwest Mexico.

[NatureServe](#)

[People's Coalition on Food Sovereignty](#)

[Renewing America's Food Traditions Alliance \(RAFT\)](#)

Seven "Rs" of RAFT:

1. *Recognizing* which place-based foods are most at risk.
2. *Recovering* their species, varieties, stocks, or populations.
3. *Restoring* their habitats in both wild and agricultural landscapes.
4. *Rescuing* and passing on local traditional knowledge about their stewardship and cultural uses.
5. *Recuperating* markets and local infrastructures to support their production.
6. *Rewarding* and actively supporting the original stewards of these resources with market-based incentives, recognition of their "farmers' rights" or "foragers' rights," and cross-cultural reinforcement.
7. *Reducing* or altogether eliminating contamination, both chemical and genetic.

[Slow Food International](#)

[South Asian Network for Social and Agricultural Development](#)

[Status of U.S. Fisheries](#)

[Sustainable Table](#) celebrates local sustainable food, educates consumers on food-related issues and works to build community through food.

Start with our introduction, or jump right in and get involved!

[Terra Madre](#)

is an international network of food producers, cooks, educators and students from 150 countries who are united by a common goal of global sustainability in food.

[True Food Network](#)

[University of Gastronomic Sciences](#)

[Video clips](#) from the **Terra Madre Conference** and **Salone del Gusto** international Slow Food fair held in Italy in October.

[World Watch Institute Paper #163: Home Grown: The Case For Local Food In A Global Market](#)

The [Youth Food Movement](#) is a network of young farmers, cooks, artisans, activists and students that are actively changing the future of food and farming.

Biohabitats' Projects, Places and People

Projects

EcoTrend-Setting In NYC?

When looking for the latest in business, fashion and the arts, many of us turn to New York City. But did you know that the Big Apple is also home to some leading-edge ecosystem restoration and water quality improvement pilot projects? Biohabitats, working with the City's Department of Environmental Protection (NYCDEP) and partners Hydroqual and Hayzen & Sawyer, is leading the implementation of five innovative pilot projects to help improve water quality within New York City's Jamaica Bay watershed.



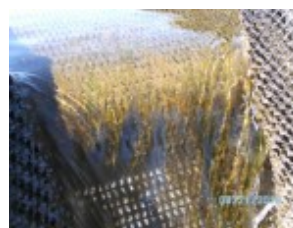
Water Resources Engineer

The first involve beneficial uses for algae. Increased nutrients in Jamaica Bay have stimulated the growth of macro-algae. In eutrophic systems like Jamaica Bay, this can lead to oxygen depletion and a decline throughout the food chain. In the Bay, the culprit is sea lettuce (*Ulva lactuca*). Working with University of Arkansas scientists, we are testing the harvesting and beneficial use of this macro-algae.

We are testing *micro*-algae, on the other hand,

Vince DeCapio harvesting sea lettuce.

for its use as a water treatment device and potential biofuel at the Rockaway Wastewater Treatment Plant. An Algal Turf Scrubber (ATS), a technology developed by HydroMentia, Inc., has been installed at the site.



Algal Turf Scrubber



Mimicking a stream system, the ATS promotes the growth of beneficial algae which helps clean pollutants from water pumped through its flowway.

Like the macro-algae, micro-algae periodically harvested from the ATS may be the source of fuel for the future! We've already created our first liter of fuel from New York City algae!

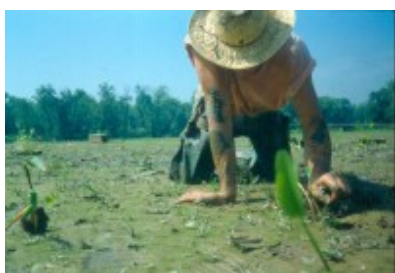


Like all of these pilot projects, the ATS is already generating *lots of buzz*.



We are also working to restore oysters, some of nature's best water filters, within Jamaica Bay. This summer, along with the NYCDEP and the Cornell Cooperative Extension, Biohabitats and [Ecological Restoration and Management](#) constructed oyster beds in the waters near Queens and installed oyster reef balls in Brooklyn. We are also giving this project

some 'mussel.' Substrates for ribbed mussels, another filtering species, are being constructed in Brooklyn's Fresh Creek, where their ability to filter discharge from combined sewer overflows will be tested. The final restoration pilot project involves the restoration of submerged aquatic vegetation. Over 4,000 eelgrass plants have been installed thus far. We are continuing to monitor the oyster and eelgrass sites through the winter, and to date, the sites are all thriving. The big test will be later in the spring when waters start to warm up. We look forward to those warmer monitoring times!



Building A Young, Green-Collar Job Corps In The Low Country

Given the widespread need for ecological restoration and economic recovery, the emergence of environmentally-focused jobs is a welcome phenomenon. This is especially true in North Charleston, South Carolina, where a new project is providing area at-risk

and court-involved youth with the chance to improve their future and their environment. Biohabitats is collaborating with the Michaux Conservancy to create a unique program called the Michaux Restoration

Crew (MRC). By providing on-the-ground training in ecological restoration job skills to 100 young people, the MRC helps support social justice and strengthen economic opportunity while creating healthy, vibrant ecosystems. With training from Biohabitats, MRC participants will master skills such as: installing native plants for wetland, woodland and stream restoration projects; building and installing wildlife nesting structures; installing deer fencing; restoring oyster reefs; performing soil sampling and water quality monitoring; and surveying invasive plant species. Through work, continued education and accountability, the program aims to build the character of young adults, improve their communities and enhance the natural world.

We are currently looking for ecological restoration opportunities throughout the Charleston metropolitan region that could benefit from this program. If you have any ideas or would like to find out more about this program please contact Keith Bowers at 843-529-3235 or kbowers@biohabitats.com.

Southern Utes Continue To Improve Local Ecology & Environmental Education

As Colorado's oldest continuous residents, members of the Southern Ute Indian Tribe are deeply committed stewards of the landscape. Biohabitats has had the honor of working with the Southern Utes on several design/build stream restoration projects in southwestern Colorado. Recently, we teamed with tribal members to restore stability and ecological function to Beaver Creek. High, eroding banks, and a diminished riparian buffer were degrading the creek's overall quality.



Working closely with tribal members, we developed a design that created low, vegetated benches to narrow channel sections and provide high-flow energy dissipation. Our design increased the riparian buffer, cut off an overly-tight bend and

created an oxbow in the channel. Swiftly handling a carefully timed permit review, we were able to take advantage of the limited construction window between snowmelt and irrigation return-runoff events. Construction, which included planting of numerous locally-collected willow stakes and culturally important native shrub species by members of the Southern Ute community, was completed on time. We also hosted an ecology lab class for students from nearby Fort Lewis College and managed the students' volunteer planting efforts.

Linking Projects To Improve Maryland's 2nd Most Polluted Stream

What do a community pond and an abandoned sand mine have in common? Both are now the sites of ecosystem restoration projects aimed at improving water quality in the St. Martin's



Bishopville Dam, existing conditions.

River, Maryland's 2nd most nutrient-contaminated stream. The 33-acre Lizard Hill Sand Mine is located near Ocean City in the coastal bays region of Maryland's eastern shore. For decades, the mine was surrounded by berms and bypassed by a tributary to the St. Martin's River. Carrying nutrient-heavy agricultural runoff, (mainly from nearby chicken farms) the tributary would flow into Bishopville Pond, where it would be retained by a dam. Periodically the nutrient-rich material would be flushed by major storm events into Bishopville Prong, and ultimately, the St. Martin's River.



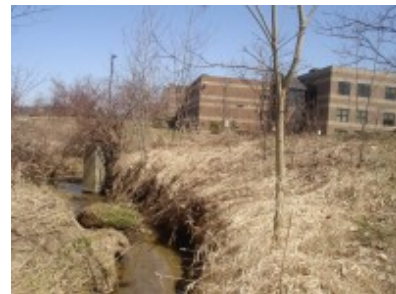
Bishopville Dam, simulated restoration.

Working with the Maryland State Highway's Environmental Enhancement program, we redesigned the tributary to flow through the mine site, and modified the landscape with a series of wetlands to treat the agricultural runoff. Working with the Maryland Department of Natural Resources, and with the support of the U.S. Fish and Wildlife Service and NOAA, we are also converting

the Bishopville Dam in a manner that restores continuous flow and fish passage. The dam conversion transforms the in-line pond into an off-line pond that meets the Bishopville community's desire to retain their historic pond, and restores the historic anadromous fish resource. Construction of the Lizard Hill Sand Mine is slated for early spring and the Bishopville Pond project will likely require another year before construction.

Tinkering With A Creek

This summer, Biohabitats was selected to by the Cuyahoga County District Board of Health (CCBH) to lead the design-build restoration of a tributary of Tinkers Creek that runs through the property of a public high school in northeast Ohio. Our goal is to restore the "Hudson High School Trib" in a way that maximizes ecological benefits, minimizes disturbance, and inspires community stewardship. This project is part of a continuum of restoration projects within the suburban Tinkers Creek Watershed focused on integrated restoration and education.



Existing conditions.

We're thrilled to be working with CCBH, Hudson High School, the Tinkers Creek Watershed Partners and the City of Hudson on a design that will not



Simulation of site, 5 years after construction.

only improve local ecology but also catalyze community revitalization, environmental education and volunteer stewardship. Throughout all phases of the restoration, the project will be used as a "Land Lab" for Hudson High School teachers and students. By integrating with the school's Science, English and Art programs, the project will create curricular connections to the natural environment, stimulating

stewardship for generations to come.

A Model Solution Along The Bronx River

Addressing streambank stability at the confluence of a stormwater outfall can be tricky business, especially when the water is flowing down a pipe about 50 feet at a 45 degree angle. But that's just what we were called upon to do for the Bronx River Alliance. The Alliance needed help remediating a crumbling pipe carrying stormwater from southeast Yonkers to the Bronx River. The pipe was beginning to dislodge from the bank, and the unchecked force of water reaching the river through the deteriorating pipe was causing significant bank erosion along the river.



To tackle this challenge, Biohabitats developed a two-dimensional hydrodynamic model which helped the Alliance understand the effect of existing flow patterns on streambank stability. The model was then used to understand how flow patterns and stability would be affected by proposed design solutions. With the help of the model, the Alliance was able to select a cost-effective design which repairs the headwall and stabilizes the streambanks. The design solution also includes planting native riparian vegetation and providing much-needed public access to the river.

PLACES

Places

New Biohabitats Office Provides Even More Service In Southeast!

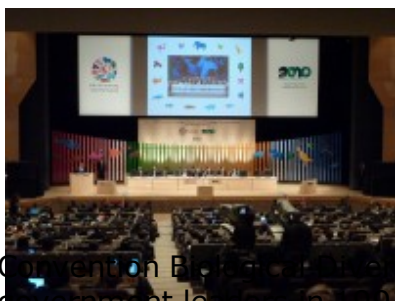
The Southeast bioregion, which spans both the Piedmont and Coastal Plain physiographic regions of the southeast U.S., includes a variety of ecosystems ranging from coastal marshes, interior swamps to long leaf pine forests. That's why we're thrilled to announce the opening of an additional office to serve this biologically rich and diverse bioregion. Our office is located in Noisette, a sustainable community being redeveloped at the former Navy Yard in North Charleston, South Carolina. Next time you are in the Low Country stop by and visit us. You can find us at 2120 Noisette Blvd., Suite 106B in North Charleston. Or give us a call at 843.529.3235. Grits and oysters are waiting!

On Monday, January 31, senior ecologist Joe Berg will be sharing his knowledge and expertise with participants of the [2011 Delaware Estuary Science and Environmental Summit](#). Joe will use a case study to illustrate the benefits of placing priority on source control vs. end-of-pipe restoration projects when striving for watershed-wide restoration.

If you're looking for Joe a few weeks later, he'll be in Oconomowoc, Wisconsin, presenting at the [Upper Midwest Stream Restoration Symposium](#). At this event, which will take place February 27-March 4, Joe will address the use of regenerative stream conveyance.

PEOPLE

Ever wonder what it's like to attend one of those major, international conventions that



draws leaders from all over the globe? Check out Biohabitats president Keith Bowers' [blog about his participation in the Conference of the Parties to the Convention on Biological Diversity \(COP10\)](#). Held in Nagoya, Japan this past October, the biennial Conference is intended to advance implementation of the Convention on Biological Diversity (CBD), an agreement signed by 150 government leaders in 1992 at the UN Conference on Environment and Development. It requires countries to develop and implement strategies for sustainable use and protection of biodiversity.

As part of the delegation from the [Society for Ecological Restoration International](#), Keith formally 'intervened' in the conference proceedings to encourage world environmental leaders to use ecological restoration as a mechanism to achieve Convention objectives. In his remarks, he passionately encouraged "countries with capacity, to provide targeted scientific, technical and financial support for ecosystem restoration initiatives in developing countries." Keith and other SER delegates also hosted side events which focused specifically on ecological restoration. Though the practice of ecological restoration is among the strategies laid out in the CBD, it had never been directly addressed at previous Conference of the Parties. Way to go, Keith!



Glossary

Biocultural Diversity: the inextricable link” of biological and cultural diversity – the sum total of the diversity of life in nature and culture. (Terralingua's Global Sourcebook on Biocultural Diversity).

Ecogastronomy: the connection between plate and planet



Food community: a physically identifiable entity with shared values, interests and future, concerned with seedsaving, crops, agriculture, breeding, fishing, processing, distribution, promotion, education and other activities connected to the food sector, ensuring that small-scale food products will reach consumers who are going to eat them. (Carlo Petrini)

Food security: when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life (World Food Summit of 1996)

Heirloom varieties: Varieties whose germplasm has been conserved through the practice of retaining and passing down 1) seed or 2) vegetative propagules from generation to generation. The germplasm may be of significance to a specific region, community, culture or historic time period. (USDA National Agriculture Library)

Seine fishing: fishing using a net that hangs in the water due to weights along the bottom edge and floats along the top.



Slow food: "...unites the pleasure of food with responsibility, sustainability and harmony with nature." –Carlo Petrini, founder and president of Slow Food International.

Subsistence fishing & hunting (in Alaska): defined in Alaska state law as the "noncommercial, customary and traditional uses" of fish and wildlife resources for direct personal or family uses as food, shelter, fuel (e.g. firewood), clothing, tools, or transportation. (Alaska Dept. of Fish & Game)

About Leaf Litter

Leaf Litter is a publication of Biohabitats, Inc. Coinciding with the earth's biorhythms, it is published at the Fall Equinox, Winter Solstice, Spring Equinox and Summer Solstice to probe issues relating to conservation planning, ecological restoration, and regenerative design. Biohabitats has attempted to ensure the accuracy and veracity of the information provided in *Leaf Litter*, however, information contained in *Leaf Litter* should not be construed as a recommendation or endorsement by Biohabitats. Please click [here](#) to contact Leaf Litter editors with questions, comments or content ideas.

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**Chesapeake/Delaware
Bay Bioregion**
Baltimore, MD
(410) 554-0156

Great Lakes Bioregion
Cleveland, OH
(216) 921-4430

Ohio River Bioregion
Louisville, KY
(502) 561-9300

Southeast Bioregion
Raleigh, NC
(919) 518-0311

**Southern Rocky
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Denver, CO
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