THE PROVENANCE CO.
REGENERATION MANAGEMENT

Outcomes 2022

# Annual Report

Provided to project partners Regenerative Kansas Land and One Small Planet

Jan 1, 2023

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# The Hard Second Year

When I was first learning Holistic Management, on Allan Savory's ranch in Zimbabwe in 2014, I asked a fellow visitor if it would really work for us. She had spent several decades helping develop the framework with her husband in Australia.

"Just give it 2 years," she said. "You won't believe the difference 2 years will make."

Indeed, I learned over time, completion of the second year marks an early milestone for holistic managers.

2022 — our 2nd on the land with the Regenerative Rewilding scale pilot at Wallace, Kansas — was a very hard year. A year of hard weather. Hard work. Hard challenges, for humans and livestock.

Hard ecological anomalies emerged, as the land comes back to life and restores its balance underground first. Anomalies like "loco weed hill," a vast segment of a paddock where a weed poisonous to livestock proliferated.

With patience, those anomalies tend to yield treasures, such as the guild of native prairie button flowers and coveted *sideoats grama* grasses that accompanied the loco weed by midsummer. Or like the 80-acre section that looked like a bomb went off in 2021, but this year decided to explode in a glorious profusion of yellow clover, followed by sunflowers that could not have flourished so abundantly had they been purposely planted.

As our second year closes, we see the glimmers of the future we envisioned — a future of regeneration for rapid, radical climate impact.

We see the first fledgling results across the Triple Bottom Line outcomes we projected: ecological, financial, social transitions.

We see the beginnings of several key story themes that will unfold over our decade on this land: critical stories of carbon, wildlife, water.

And even as we see new life emerging on the land, it occurs in the midst of perhaps our most pressing challenge of all: the social barriers continually presented by depopulation of the prior indigenous hunting lands we now occupy with modern agriculture, as our shrinking communities struggle to remain vital.

Amidst these challenges, we have lifted The Provenance Co. up and built the capacities needed to scale-up Regenerative Rewilding over a landscape of impact, ready for impending dire needs as the world wakes up to them.

The end of Year 2 marks our transition from start-up to ongoing operations, on the land and as a company. At this pause, we celebrate the metrics of success and contrast against where we thought we would be. We feel immense gratitude for our partners and the opportunities this project provides. And we relish in the results, that while just beginning, already astound and delight.

— Julie Mettenburg, Land Operations CEO

# Timeline

**MARCH 2020**
First site visit

**JUNE 2020**
Sign contract

**NOVEMBER 2020**
Staff team moves to Wallace

**JANUARY 2021**
Year 1 operations begin

**FEBRUARY 2021**
First cattle arrive

**MARCH 2021**
Yurt raising event

**JUNE 2021**
Baseline EOV,
carbon measures recorded

**DECEMBER 2021**
Year 1 calf sales

**JANUARY 2022**
Year 2 Operations begin

**MARCH 2022**
Year 1 remainder calf sales

**APRIL 2022**
Year 2 cattle arrive

**JULY 2022**
Year 2 ecology
measurements recorded

**DECEMBER 2022**
Year 2 calf sales

**JANUARY 2023**
Year 3 operations begin

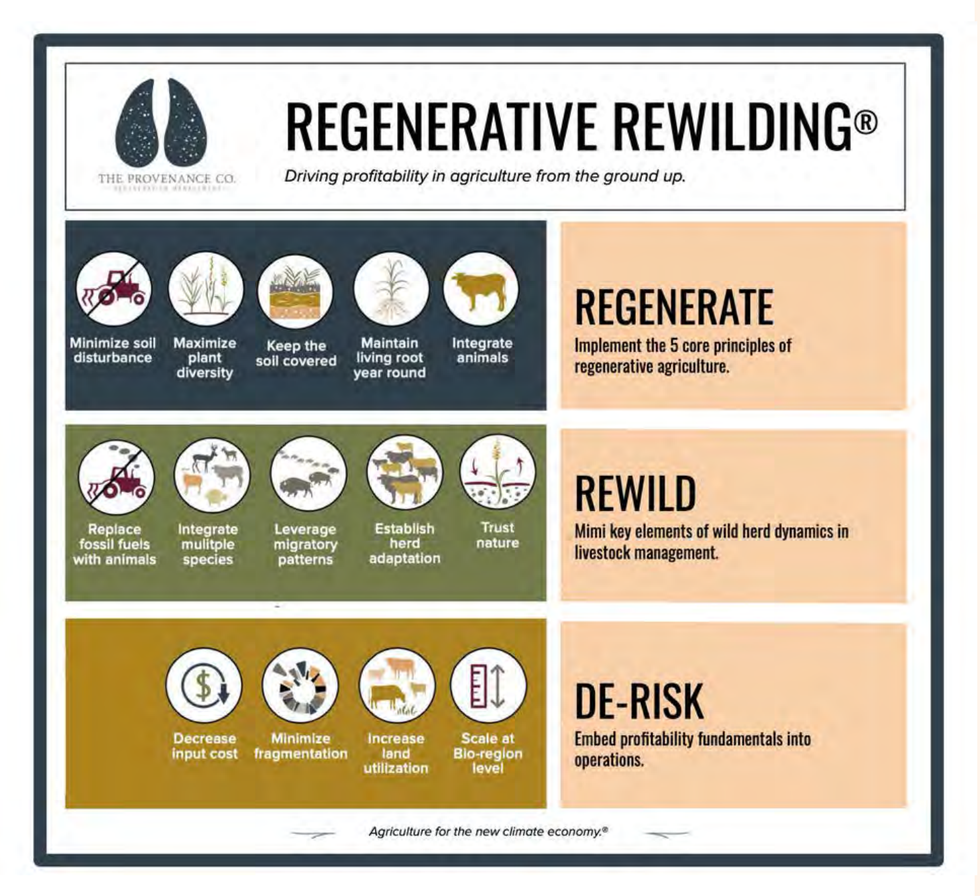
# Financials

What will a resilient grasslands agriculture of the future look like? Can we remove fossil fuel reliance and build economic security? Can we prove a financially viable model for the Great Plains that would alleviate impending water crisis while reducing environmental hazards such as dust storms? Such a model would have to meet or beat corn returns, on a per-acre utilization basis.

In the face of such questions and based on years of work across the regenerative supply chain, we formulated the model for grasslands agroecology that we call Regenerative Rewilding.

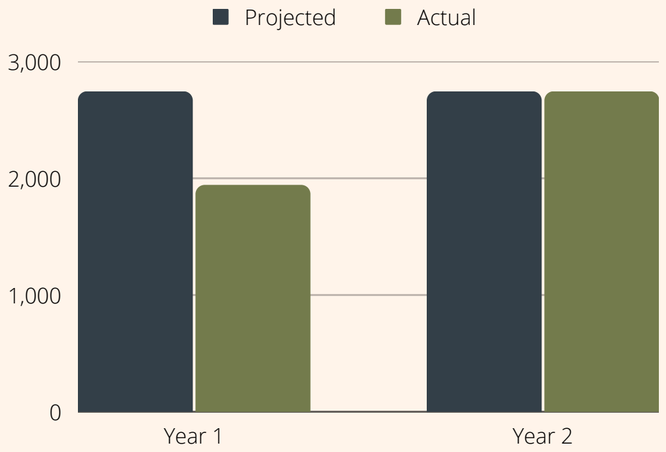
Utilizing Holistic Management with a goal of returning grazers to the ecosystem, we replace megafauna that were removed when bison were exterminated.

Stocking rate is the key driver to both ecological transition and financial viability. By challenging the land with peak stocking rates from day 1, we jumpstart biology and provide a pathway for financial viability, replacing the cash crops that rely on expensive inputs to extractively mine the soils and water of this semi-arid, brittle environment.




## Grazing Animals: Our Tool for Grassland Regeneration & Economic Viability

# ACRES UNDER MANAGEMENT

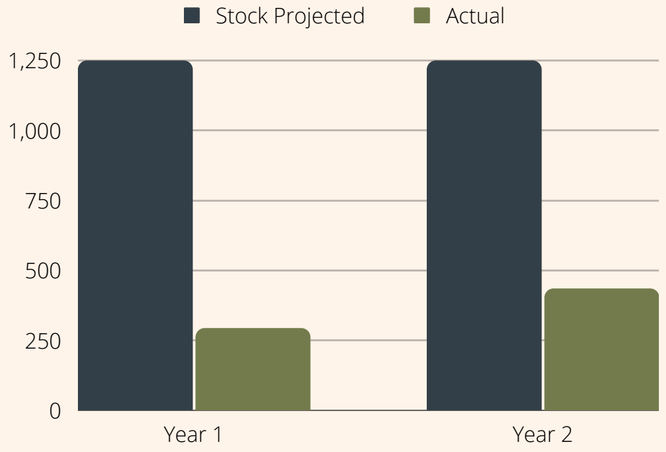


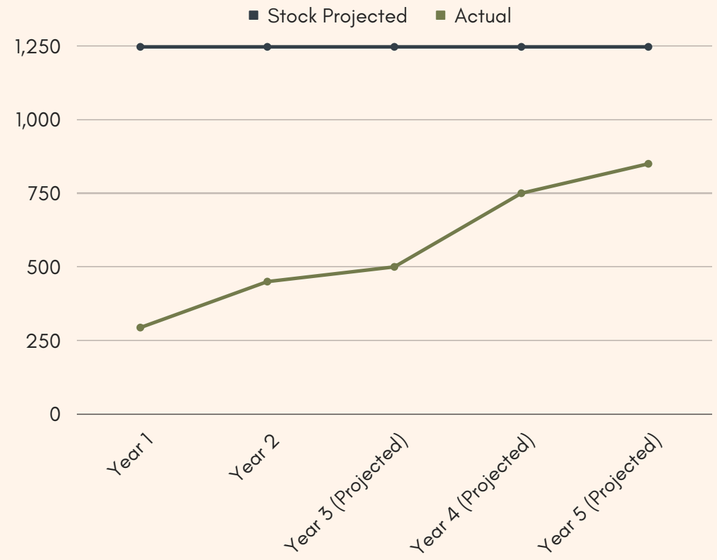

Year 2 Summary: Productivity

Logistics of lacking infrastructure, forage toxicity and human resource presented ongoing slowdowns for stocking rate. Still, our number of stock are consistently higher than area norms. In Year 1, we rented acres we could not use due to lack of water infrastructure, back to the prior farmer for one more season of corn cash rent.

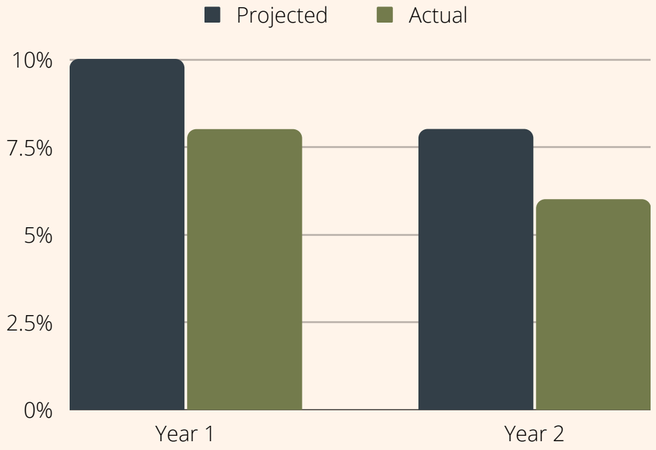
The predicted “gnarly purge” stage of early weed proliferation did not disappoint, providing for high productivity in sheer tonnage of biomass produced.

# HERD STOCKING RATE

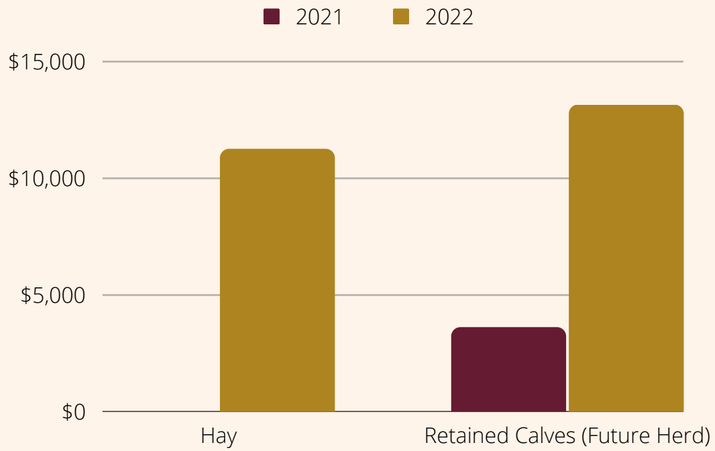


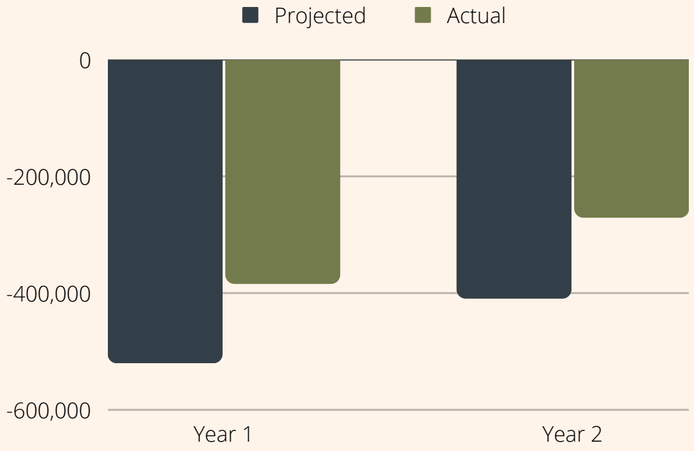
## DEATH LOSS




## SOURCES OF RETAINED VALUE




## NET INCOME




Year 2 Summary: Profitability

Overall, while stocking rate and thus revenues did not track on pace, our cost structures continue to come in below projections, while key metrics for our model — birth and death rates — also continue to perform better than projected.

These combined factors, along with strong weaned calf prices, provide for a better financial picture overall than projected thus far, in the form of the early-years transition losses being less steep than predicted and setting the stage for profitability potentially sooner than anticipated.

*Financial data is unofficial, pending year-end reconciliations and depreciation*

# Before - And - After:
## Infrastructure Investments

Going from zero to 100 in a rapid transition from cropland to livestock management requires rapid infrastructure investment.

Two wells were re-activated on the property, one off-grid so therefore utilizing solar power. Tanks were placed in central watering points for each square-mile section, providing a starting point for grazing paddock divisions.

In addition to perimeter and internal fencing, utilizing a semi-permanent high-tensile electric system, we installed cattle containment corrals and working equipment to allow for load-in and load-out of livestock for purchase and sale.

# Ecology

On the Great Plains, where the Dust Bowl still haunts the landscape and its people, a change in paradigm is imperative. Annual cropping is ill-suited to the brittle, semi-arid environment and accelerating depletion of the Ogallala Aquifer underground due to irrigation.

An appropriate agroecology must utilize soil coverage and perennial root systems to recharge underground water stores, optimize healthy biology and prevent erosion. By reducing mechanical processes that disrupt nature's soil armor, we can reduce financial and human risk, as well as hazard events such as the historic derecho that ravaged the region on December 15, 2021.

Regenerative Rewilding relies on the Holistic Management framework to mimic nature, returning grazers to the land as a critical missing link in plains ecology and providing the fastest possible transition to an economically viable, perennial grasslands agriculture.

Year 2 Summary: Ecology Outcomes
Despite a rain shortfall of about 6 inches during the 2022 growing season, we saw positive trendlines in key metrics such as plant diversity and soil coverage. We also saw expected drops in overall productivity in Year 2, as excess crop additives such as Nitrogen are no longer present.

*See the full 2022 ecological report, provided by our data partner Snaplands LLC, at:*
*https://www.flipsnack.com/CAB8ABDD75E/regenerative-kansas-land-2022-management-impact-report/full-view.html*

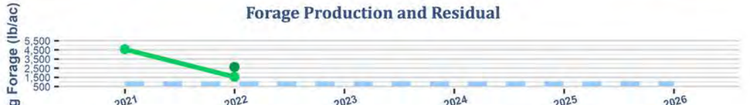
## SOIL SURFACE SUMMARY

### Soil Cover


Time-lapse imagery pg. 13 & 14 — Basal & Litter — Target Basal & Litter > 95% — Map pg. 6

The year's average soil cover condition was 70%. This was 25% below the long-term target of 95% cover. The site with the greatest cover was W1E (T-101) at 97.50%, and the lowest cover was in HQ2W (T-110) at 24% cover.

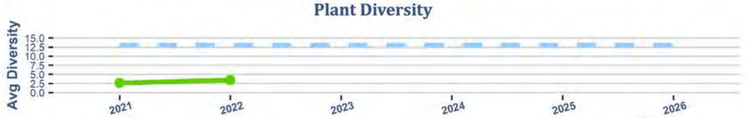
### Forage Production and Residual




Forage Production (lb/ac) — Forage Residual (lb/ac) — Target Forage Residual > 800 lb/ac — Map pg. 8

The graph above shows the amount of total standing forage residual in pastures (light green) compared to the total forage grown in grazing exclosure cages. Forage residuals determine optimal utilization of the annual forage grown to achieve desired target ranch residuals (blue dash line). Stocking decisions must be contextualized to the overall pasture conditions.

### Plant Diversity




Forbs, Grasses & Other — Target Diversity > 13 spp. — Map pg. 10

The above graph shows the average number of unique plant species per 4.9 ft² area at each monitoring location. The year's average diversity was 3.42 plant species and is 9.58 species below the long-term target of 13 plants. The highest diversity was in HQ1W (T-112) with 6 plant species, and the lowest diversity was in North (T-107) with 1 plant species.

### Leaf Height


Leaf Avg — Leaf Max — Target Leaf Avg > 8.5 in. — Map pg. 12

The above graph shows the average (light green) and maximum (dark green) grass leaf heights. The average height was 7.625 inches. This was slightly below the long-term target of a 8.5 inch leaf height. The highest average leaf height was in HQ2W (T-110) at 19.5 inches and the lowest was in AA4 (T-104) at 3 inches.

### Utilization


Utilization — Target Utilization (30%) — Map pg. 14

The above graph shows the percentage of the forage biomass that was clipped, trampled, or harvested each year in the pasture compared to a grazing exclosure cage. Forage in 2021 had an average utilization of 46.16%. This was 16% above the target utilization of 30% across the ranch.

# Transitions

**Hardpan**

Years - in some areas on the property, decades - of crop production have created a hardpan layer. These hardpans can become as dense as concrete, preventing healthy ecosystem functions from occurring both underground and above ground.

Early infrastructure efforts were also stalled by interactions with the hardpan, which stopped auger drills from creating holes for fenceposts.

**Weeds Make Way**

Evidence of ecosystem transition included deep taproot annual "weeds" puncturing hardpan below ground and providing both soil coverage and highly nutritious edible forages.

*Disturbance of the hardpan layer can be observed by the tapering of taproots as they squeeze through the barrier.*

**Abundant, Available (No Cost) Forage**

Both desirable and "weed" legume species take root to provide corrections in underground biology that will create necessary conditions for grasses, while early-succession annual and perennial grass plants establish throughout the property over time.

*Homesite circled as landmark.*

# Transitions

**Before & After, Year 1 - Year 2**

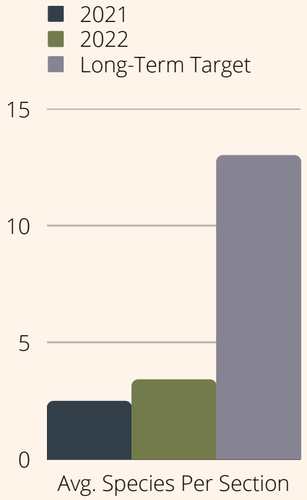
**Grasses**

The locals call it “comeback grass” and indeed, it’s apparent that the grasses want to prevail in native prairie landscape. In fact, to attempt to chemically kill the grasses and plant seed -- in addition to being costly -- is a constant and ongoing fight for those attempting both annual cropping and re-establishment of grassland through seed plantings at this early stage. Instead, we allow grazers to return biology to soils and stimulate seed bank expression toward eventual and appropriately timed return of the grasses.

# Notable Biology Returns




## PLANT DIVERSITY




## KEY DESIRABLE FORAGE


Image: Patrick Alexander

**Sideoats Grama**

This highly palatable and nutritious forage is an important component to the shortgrass prairie. The characteristic 1-sided seed spike grows grom large, dense clumps that are resistent to drought and grazing. Under intense pressures, this species can increase in realtive abundance as there is a reduction in competition from other species.


Image: David Thornburg

**Slim Flower Scurfpea**

This plant forms mutually beneficial symbiotic relationships with soil bacteria which convert atmospheric Nitrogen into a form that is usable to plants. Furthermore, the flowers provide a valuable resource for pollinators. While the foliage is reported to be mildly toxic to livestock, it is seldomly selected but can be out-selected in heavily grazed areas.


Image: Frankie Coburn

**Winterfat**

An extremely palatable small shrub favored by livestock and wildlife, particularly in winter. It thrives in a wide range of arid and salty soils and germinates easily but is often selected out of overgrazed areas. It is distinguishable by its silver-white foliage and may be mistaken for sage if not for its lack of smell, woolly stems, and prominent mid-vein on the underside of the leaves.

*Sideoats Grama emerging naturally in a strong stand, without seeding, in Year 2*

# Carbon

Carbon provides a means for monetizing ecology outcomes. It also provides a proxy for measuring climate impact. The deeper the perennial roots, the more carbon potentially stored below ground.

Current equations for shortgrass prairie carbon storage assume less than for deeper-rooted systems such as tallgrass prairie. However, historical data indicates a healthy prairie in the region will also contain deeper-rooted species. Therefore, a goal of our carbon initiative is to substantiate improved sequestration under optimum management in shortgrass country for increasingly diverse prairie.

Year 2 Summary: Carbon Credits

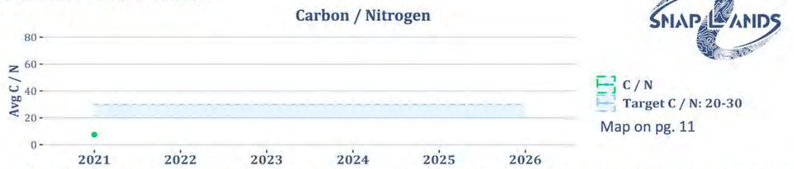
Baselines were taken in 2021. Carbon partner Regen Network issued credits in 2021 and 2022, and will again based on original data, in 2023. RKL opted not to sell these credits, valued at a total around $4,000, or $1.45 per acre, due to restricted land use for at least 15 years. We expect that future measures will show increased underground carbon stores and subsequently, increased carbon credit issuances, and therefore potential revenues making sale worthwhile.

2021 report: https://www.dropbox.com/s/8xtxbaw40kl4niv/20220210_SnaplandsReport_Pilango-Final.pdf?dl=0

*The difference can already be seen between dusty (left) and more biologically dense soil (right) on the Wallace site.*

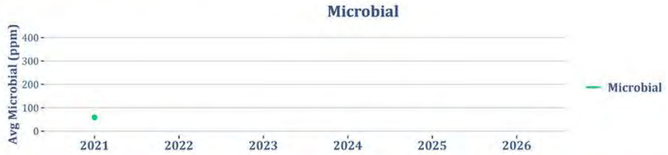
*The presence of fungi and bacteria, cycled through the guts of animals, encourage the soil to hold together. This prevents blowing dust and erosion, and supports root system activities that store water and carbon underground.*

## SOIL HEALTH SUMMARY

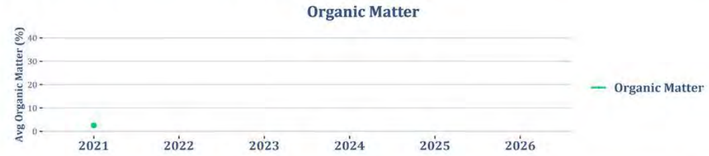



Map on pg. 11

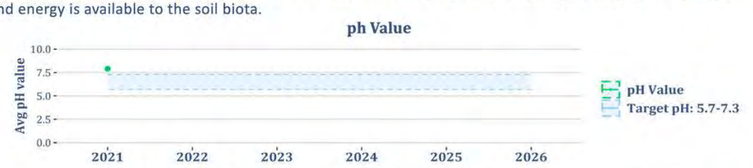
This number is the ratio of organic C from the water extract to the amount of organic N in the water extract. This C:N ratio is a critical component of the nutrient cycle.




This is a measure of the microbial biomass in the soil and is related to soil fertility and the potential for microbial activity. This result is one of the most important numbers in this soil test procedure.




This is a measurement of the organic portion of the soil measured by lost-on-ignition. This measurement correlates to soil fertility and function because this active pool of mineralized nutrients (i.e., carbon, hydrogen, oxygen, nitrogen, potassium, water) and energy is available to the soil biota.




This is the measurement of the soil's alkalinity or acidity. This is an important indicator for soil health and is influenced by inherent soil properties and management. The pH impacts plant available nutrients, forage quality, forage, production, leaching, soil biology, and soil stability.


This is the measurement of soluble salts concentration in the soil or water. Saline soils can affect soil health when more salts are added to soil than removed. Increased salinity limits biological activity, production, and the ability for many terrestrial plants to uptake water soluble nutrients.

# A Tale of Two Protocols

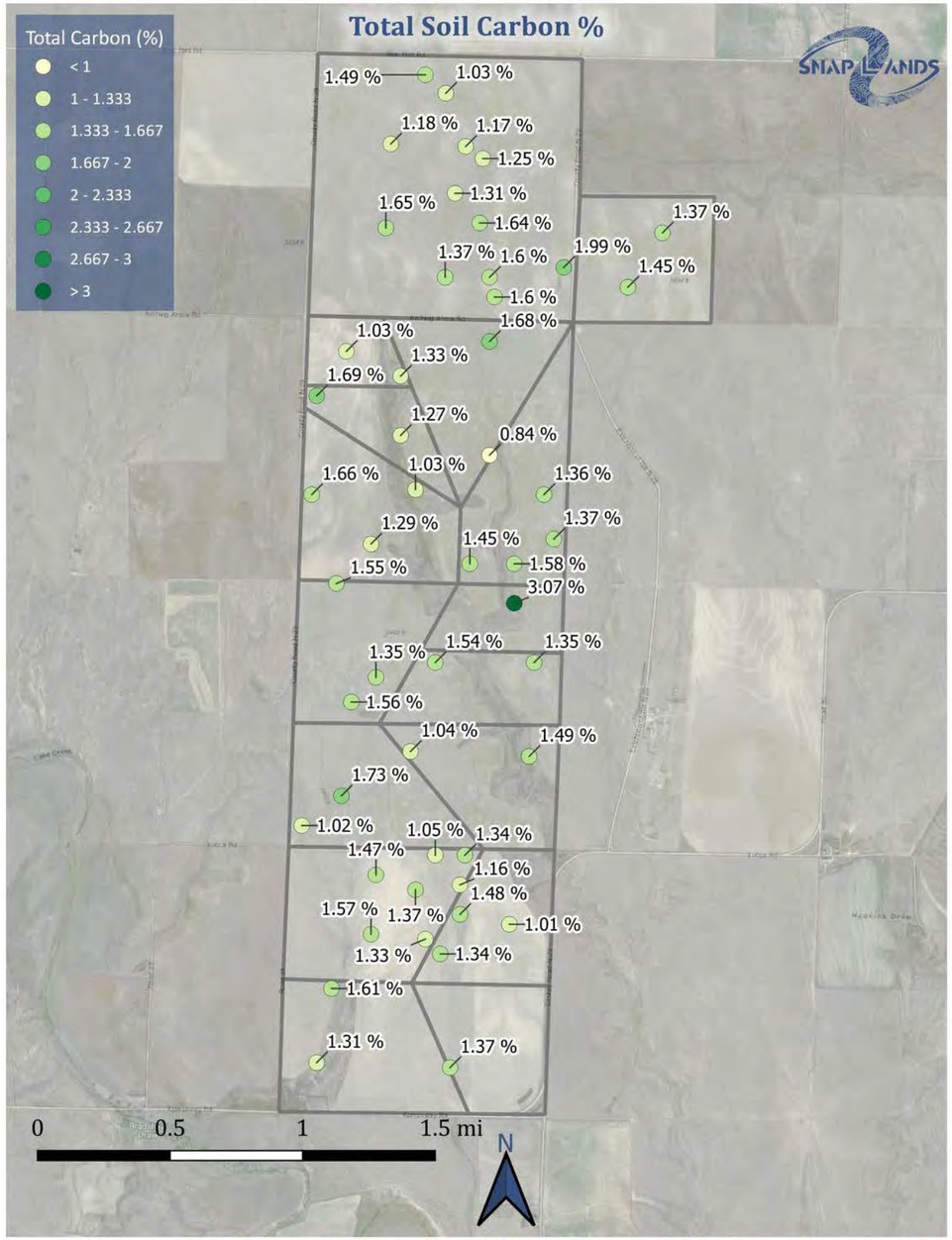
For the stability and security of carbon credit markets, it is imperative that credits are issued with robust data that substantiates their claims. In the race for grasslands carbon credit development, there is a need to balance cost of measuring data with the credibility of that data.

Therefore, The Provenance Co. and RKL project, working with One Small Planet, Snaplands LLC and Regen Network, embarked on two parallel paths in carbon credit data substantiation, with baselines taken in 2021 and to be repeated in several subsequent years of the project.

On one path, crew of The Provenance Co. worked with carbon credit partner Regen Network to execute their new carbon data protocol. We obtained samples of soil per a stratification map to represent soil types on the property. The samples were then analyzed by the Kansas State University soil lab. With remote sensing technology, Regen Network used the soil analysis to predict underground carbon stores across the landscape, upon which credits are issued for 2021, 2022 and 2023. New measures and issuances -- presumably demonstrating more carbon stores -- are expected in 2024.

On the parallel path, One Small Planet contracted with Snaplands LLC, who also provides Rangelands EKG and 3rd-party Savory Institute EOV data measurements to The Provenance Co., to conduct a robust soil carbon protocol developed by greenhouse gas accounting specialist Ryan White. His protocol utilizes prevailing soil methodology, which comes at higher cost due to number of samples required. Soil analysis was provided by Ward Laboratories in Nebraska.

By utilizing this data set alongside the Regen Network data set, over time we will be able to confirm carbon stores in this little-understood grasslands region as well as provide comparison and verification for the Regen Network carbon credit protocol.



# Wildlife

As domestic stock are re-introduced to the landscape, under proper management they leave behind more nutritious grasses and increased cover, as well as provide for year-round water systems installed by humans, all of which attract and sustain wildlife populations on the land. Wildlife provide a bridge to social and financial outcomes, as hunters and wildlife enthusiasts are attracted to the fauna of the "American Serengeti."

Year 2 Summary: Wildlife Abounds!

To begin to understand wildlife species and counts, in Year 1 we posted protective signage and delegated hunting rights to a local caretaker for observation and reporting. The land is home to several known characters (mule deer, pronghorn and whitetail bucks) for the area.

In fall 2022, our local caretaker learned of a pronghorn buck poached from the land and reported the crime to the game warden. Bringing human activity back to this landscape both allows us to prevent poaching in the future, while potentially monetizing wildlife abundance through hunting, birdwatching or other nature activities. Bird populations have proliferated and riparian species discovered as well — both indicators we will be watching with interest for signs of continued whole ecosystem restoration.

*Evidence of scavenging wildlife*

# Water

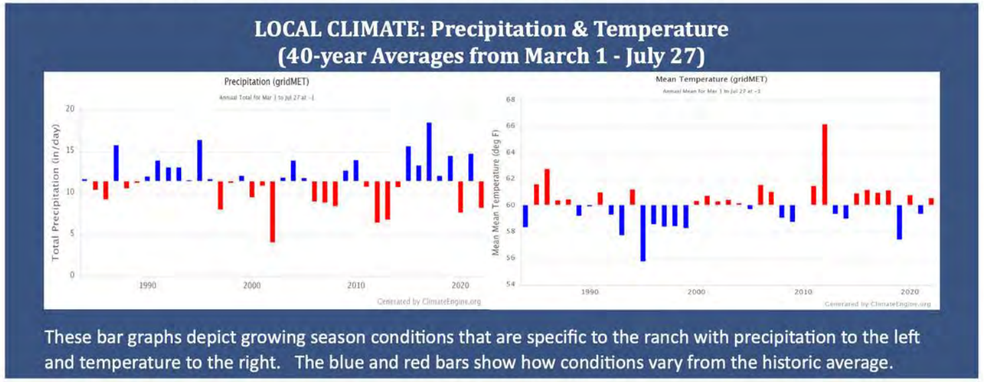
Few issues strike at the heart of sustaining life on the High Plains like water. Closely related is temperature: where there is water, it is green, and where it is green, the ambient temperature cools.

Retaining water in the landscape provides ecosystem services: riparian areas and streams, soil health and moisture, underground recharge, and moderation of extreme heat in the atmosphere.

Year 2 Summary: Extremes

Despite rainfall during the growing season of 6 inches below normal, we were able to stock more cattle and stay on pace with plan — until a run of extraordinarily hot days in mid-July. With temperatures soaring above 110 degrees, our newly installed solar well and underground water store were unable to provide for the peak needs of the season.

While we utilized strategies to manage through the inconvenience, we are conferring with experts such as local drillers and the Kansas Geological Survey to devise water systems that can meet the needs of peak stocking rates, which are higher than local conventions and thus requiring additional attention with water service providers.

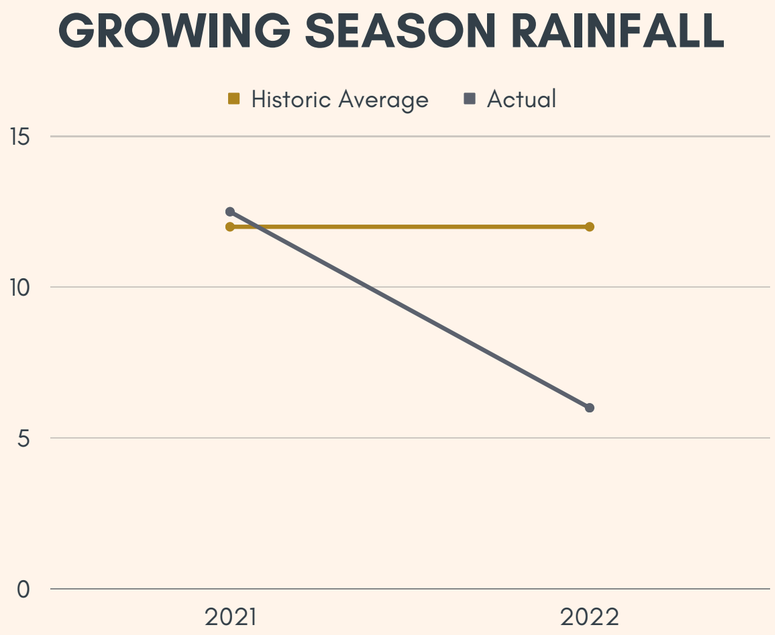




*See the full 2022 ecological report, provided by our data partner Snaplands LLC, at: https://www.flipsnack.com/CAB8ABDD75E/regenerative-kansas-land-2022-management-impact-report/full-view.html*

**Water Retention**

August 2022

As root systems return to the soil, water can be absorbed and held, allowing for increased drought resilience.




*Above: Lead Herdsman Dan completes water infiltration rates. In a later conversation, evaluator Ryan White commented that one of our baseline water infiltration rates was the worst he had ever encountered. Conversely, Dan has learned from local old-timers that Wallace County was historically known for its abundant surface waters. Such context indicates how far the land has degraded, and how much it can improve.*

*Below: Neighbor fenceline comparison at peak summer heat and drought. Presence of green provides a measurably cooler temperature.*

# Social

Humans are a vital component of whole-ecology health. Along with their power to degrade, destroy and eliminate, they also bring an awesome power to love, coax life, and communicate.

We know with Holistic Management that removing humans from an ecosystem is neither desirable nor realistic. Removal of the humans who managed these lands for centuries prior has had a devastating ecological effect parallel to removal of the bison they relied upon for life.

In a land now depopulated by consolidation in modern agriculture, the communities of Wallace County are reduced from more than a dozen towns several decades ago, to only 3 small communities remaining, with a total county population of 1,500. Our home community to the ranch, Wallace, is home to fewer than 50.

Year 2 Summary: People Return to the Land

In Year 1, we found ourselves hastily erected housing for our first resident family — including 2 young children — due to lack of area housing, in the form of a much-talked-about small yurt compound. In Year 2, our team settled in on the land with an additional new ranch hand, a growing network of local and regional service providers and partners, and team working dates and retreats. We provided several field tours to local and area farmers, and a community thank-you summer picnic.

In addition to impact on the Wallace County community through multiplier effects from a commitment to buy local as prudent, The Provenance Co. provides donations each year to Wallace community efforts including the building of a new children's playground and addition of climate control systems to a key historic building, as well as providing for general historical society support.

# Signs of Life

**The Day the Goats Appeared**

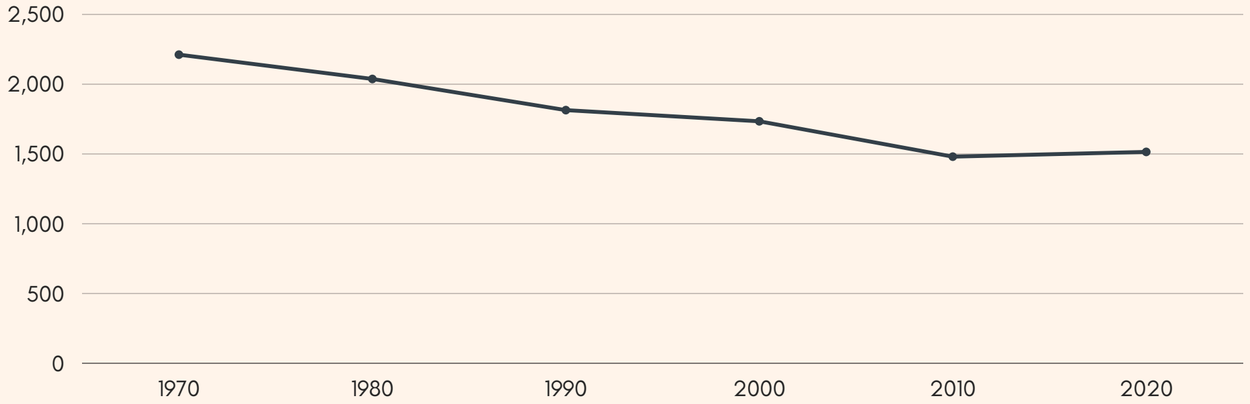
In the summer of 2021, the resident family on-site woke to a surprise: a herd of goats grazing in the pasture with the cattle herd outside their yurt windows, as if placed there purposely to create a multi-species herd.

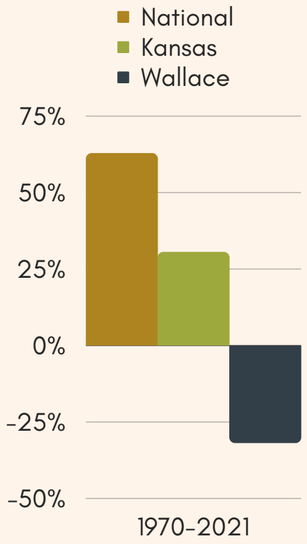
Alas, they soon learned the goats escaped from a ranch in the area ... 10 miles away. The animals wandered the countryside until they took up residence on the Wallace property, where they enjoyed lush green forage, cool water and the protection of a large herd of cattle. As notices went up on social media from Goodland, word got out that the goats were missing. By the end of the weekend, a family arrived with horses and trailer to round them up and take them home. The childen living on-site reported that fun was had by all.

We track our progress on the land in both quantitative and qualitative measurements. Our goat visitors, and meeting the family who retrieved them, were one of the most memorable qualitative indicators of our positive impact on the land!

# Social: Living Rural

## WALLACE COUNTY: DECLINING POPULATION



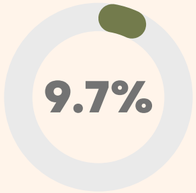




### POPULATION CHANGE 1970-2021

Whereas the U.S. population has increased by over 60% since 1970, Kansas has not tracked accordingly, increasing only by around 30%. Conversely, Wallace County has lost 30.8% of its population since 1970.

https://usafacts.org/data/topics/people-society/population-and-demographics/our-changing-population/state/kansas/county/wallace-county?endDate=2021-01-01&startDate=1970-01-01

### Wallace Township Growth in 2021




With the 2020 Census listing Wallace Township at a population of 41, the addition of a family of 4 on our ranch grew the community population by almost 10%!

Resident kids Irie and Raven each joined school classes of fewer than 10 apiece.

https://data.census.gov/profile?g=1600000US2074750

***Before and After:*** *Yurts were constructed in 2021, after a search of rental properties near the site was unfruitful.*

*Raven collects bubblegum left by Yancy, beloved new friend and postal delivery man.*

# The Provenance Co.

A key shared goal of our RKL project at Wallace is to grow a capacity for regeneration, through proof of the Regenerative Rewilding model plus stand-up of The Provenance Co. Through project start-up, The Provenance Co. has built out core capacities required for new projects, including financial systems, employee policies, and internal communications channels. Operationally, we have built strong and growing local-regional networks, including trucking, livestock auctions, veterinarians, and various suppliers and contractor-vendors.

Year 2 Summary: Poised to Expand

Going into Year 2, the team identified our holistic financial “weak link” (next capacity needed to grow) as human resource. To expand, we would need a pool of new talent, enthusiastic about the challenging and remote work, with the cultural fit to both assimilate locally while honoring our highest ideals. We subsequently launched our systems for recruiting, hiring, training and team retreats. At the close of 2022, tracking with our mutual contractual goal to add new projects and thus reduce the fee to this inaugural RKL project, a next project land purchase was under contract with a new partnership in progress.

Provenance Team (from left to right): Chloe Burns, Natalie Fullerton, Julie Mettenburg, Brian Derry, Cole Cottin, Dan Phelps. Next page: Carla Bienhoff

# For Julie, Chief of Land Operations: A Year of Milestones

In the midst of start-up, Julie was honored with several accomplishments and invitations to both recognize her work and gain interest in our Regenerative Rewilding project and approach.

In 2022 she became one of only 8 Savory accredited Master Field Professionals in the world, an achievement requiring years of practical experience in Holistic Management, mentoring and teaching experience. In fulfillment of a final requirement, her work at Wallace provided experience across brittleness scales, in complement to her background in less-brittle areas.

In September, she was one of three special guests invited to a gathering of the tribes of Kansas and several neighboring states, to discuss our approach as a potential pathway in mutual efforts for climate resilience.

Julie also joined colleagues from around the world for a week of advanced Holistic Management training on the Savory Ranch at West Bijoux, Colorado. She was pleased to learn that the Wallace team management decisions for weathering this year's drought had aligned with those prescribed by Allan Savory himself for West Bijoux: to not destock but rather, to keep the animals moving, and supplement with hay if needed — all in favor of keeping biology circulating in the landscape rather than depopulate it of the grazers who ensure the ecology can function.

Most recently, due to her experience in the complexity of the Midwest farming environment, Julie has been tapped by The Savory Institute and Kalona Organic Dairy, with a grant from General Mills, to provide the full comprehensive Holistic Management training and field support to 43 Kalona farmers in Iowa, over several visits running through May.

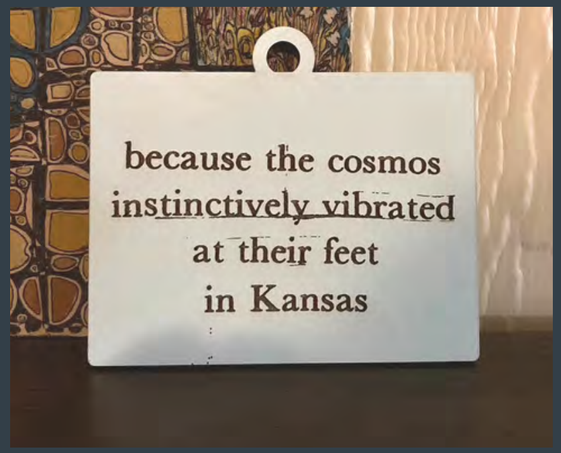


## Telling the Story


*The Wallace Project*, a short documentary detailing the 2021 year of regeneration, premiered at the Kansas City Underground Film Festival in September 2022. Watch the film by clicking below:

https://www.theprovenanceco.com/oursolution#film

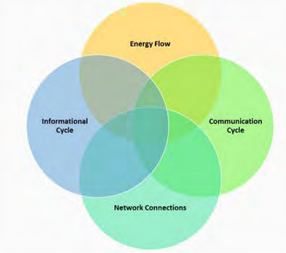
# Capacities


*We work with nRhythm to implement the Regenerative Design framework for organizations.*

Creating the conditions for flourishing + abundance


THE FOUR ECOSYSTEM PROCESSES




**Roles & Responsibilities**

- Job descriptions
- Hiring process
- Onboarding & Orientation process
- Training
- Contractor process
- Service provider process

**Housing & Hospitality**

- Yurts built
- Cleaning & setting systems
- Visitor Policies
- Visitor Manual
- Resident responsibilities

CHAIN OF PRODUCTION


Sunlight and/or raw resources including money and creativity

Products and/or services

Marketing of products and/or services

*Human creativity first needs to utilize raw resources—sunlight in particular—and money to create a product or services. Then the product or service needs to be perfected and finally marketed to produce money. The chain is only as strong as its weakest link.*

Photo Credits: Chloe Burns, Cole Cottin, Dan Phelps, Julie Mettenburg, Natalie Fullerton