



**GRASSLANDS
CONSERVATION
EXCHANGE:
A PILOT PROJECT**



RETURNS FOR RANCHERS AND SOCIETY

A note from the Western Stock Growers' Association

As demand for diverse land use expands, so do the challenges to conserve grasslands. The current incentives for maintaining native grasslands are limited and have variable attractiveness to ranchers, despite the numerous environmental benefits grasslands provide.

In recognition of these important environmental benefits, and as this is embedded in our livelihood, lifestyle and future legacy, the Western Stock Growers' Association has long recognized the need for establishing a marketplace for ecosystem services. We are a true grassroots organization with understanding of the complexity of a conservation marketplace and its implications for ranchers and society.

Ecosystem services benefits are the result of management decisions, as is the case with production of market commodities like oil, wheat and cattle. There are costs associated with land ownership and therefore management decisions must incorporate a return on investment if landowners are to continue to own and manage lands for long term sustainability.

Pressures to convert grasslands for real estate development or to convert into higher value crops are very real. Continuing to provide these ecosystem services for free is not a viable long-term option if grasslands are to continue to thrive on the prairies. It is widely accepted that grasslands provide large amounts of ecosystem services

benefits. In spite of this reality, there is no market cost for diminishing these benefits and no market revenue for the production of these benefits. There are some market-based tools in development for certain ecosystem services but generally the approach has been inflexible with unrealistic expectations and uncertain outcomes.

Pragmatic, flexible and voluntary market returns for commodities and ecosystem services benefits are desired. Market returns for commodities in the absence of market returns for ecosystem services benefits inevitably drive land use decisions away from the production of ecosystem services benefits.

The Western Stock Growers' have championed the creation of a grassland conservation exchange as a way to provide incentives for land management decisions driven by sustainability and regeneration, while providing society with valuable healthy grassland ecosystems complete with the suite of ecosystem services benefits they provide.





TAPPING INTO THE VALUE OF ECOSYSTEM SERVICES

Ecosystem services are the direct and indirect contributions and benefits that well-functioning ecosystems provide to society and overall human well-being.

They include functions such as water storage, water purification and quality, healthy habitat for wildlife (including species at risk), biodiversity, soil health and carbon storage. Grasslands also contribute to human well-being by providing areas for recreation and aesthetic landscapes to enjoy.

Conservation markets established for ecosystem services benefits are a means of recognizing the value healthy ecosystems provide to society, while providing land owners with incentives for sound land management decisions that serve to maintain or improve quality or minimize environmental degradation.

Grasslands ecosystems provide direct benefits to people including carbon storage and sequestration, water storage and water purification. Grasslands are also home for prairie-dependent plants and animals, beneficial insects, and soil organisms. The

loss of native prairie habitat is the main driver of population declines.

Much of the grasslands in Alberta are privately owned, where stewardship through conservation, management and restoration of prairie ecosystems are implemented voluntarily by private land owners. Historically there have been strong economic reasons for land owners to maintain or expand their cultivated agriculture land base, often at the expense of native prairie.

A grasslands conservation market provides an economic incentive for land owners to conserve, preserve or restore native prairie and deliver ecosystem services benefits to society. The proposed exchange is the system through which the value of ecosystem services can be determined and through which transactions can take place between buyers and sellers.

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Framework of a Grasslands Conservation Exchange

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Key principles for
a conservation
exchange

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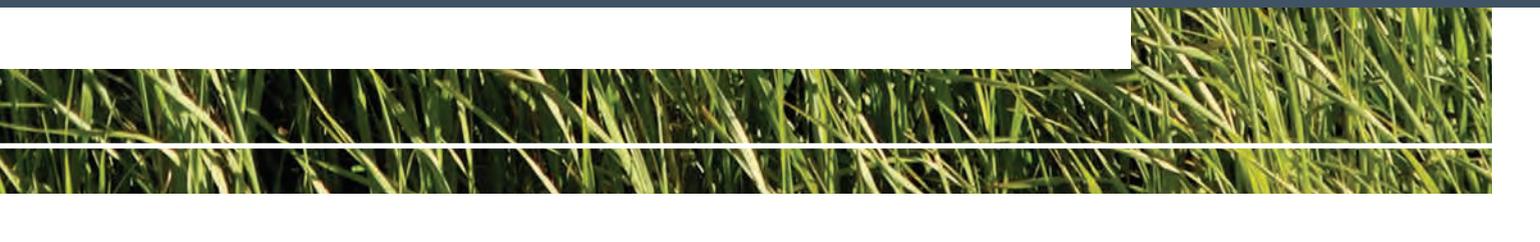
How the
exchange
process
works

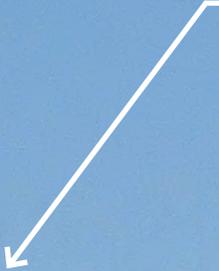
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What will be
traded in an
exchange

4

What success
looks like





KEY PRINCIPLES

The following conditions are essential for an efficient grasslands conservation market and support an optimal approach to achieving environmental, economic and social objectives through the exchange.

Voluntary marketplace

Participation in a grasslands conservation market is voluntary for buyers and sellers.

Cost effective

Implementation and participation in the market is cost effective, using existing resources, knowledge, and tools where possible. Transaction costs are as low as possible.

Efficient approach

The grasslands conservation exchange offers buyers an efficient way to achieve their sustainability objectives without the operational burden and added cost of being involved in the implementation of projects at the ranch or farm level.

Trusted

The knowledge and tools used in the grasslands conservation exchange are science-based, credible and transparent.

Outcome focused

Payments are provided for quantifiable ecosystem services and biodiversity outcomes.

Adaptable

The grasslands conservation exchange can be continuously improved upon as science and technology become well understood.

Easy to use

User tools and communication materials are easily understood, intuitive and practical.

Innovative

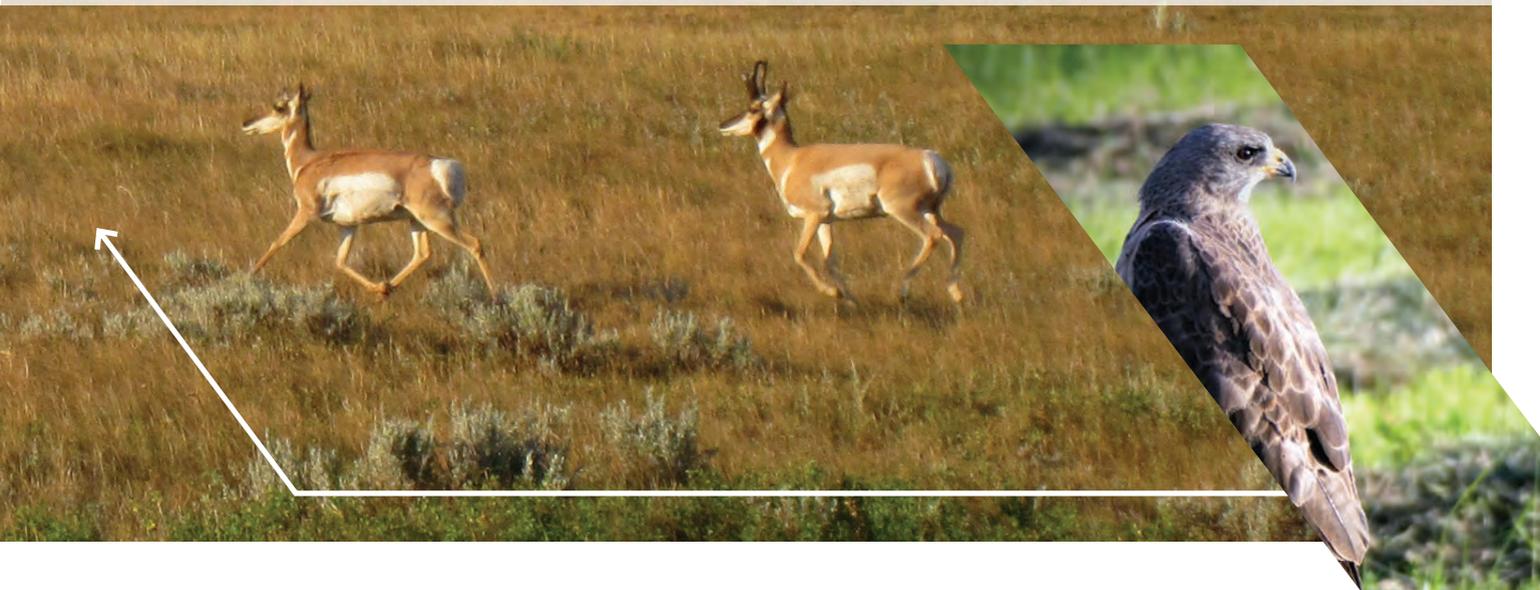
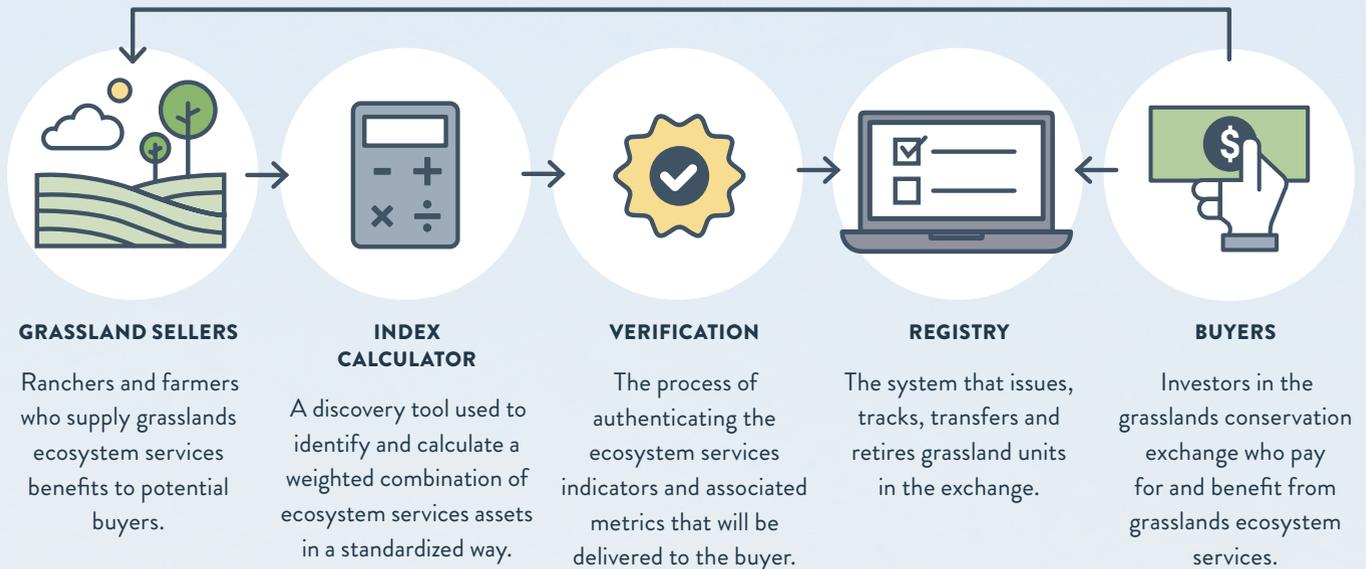
The grasslands conservation exchange is a new approach that explores unique opportunities to pay producers for managing, restoring and protecting grasslands for the ecosystem services they provide.



CONSERVATION MARKETS RECOGNIZE THE VALUE HEALTHY ECOSYSTEMS PROVIDE TO SOCIETY, WHILE PROVIDING LAND OWNERS WITH INCENTIVES FOR SOUND LAND MANAGEMENT DECISIONS THAT SERVE TO MAINTAIN QUALITY OR MINIMIZE ENVIRONMENTAL DEGRADATION.

HOW THE GRASSLANDS CONSERVATION EXCHANGE WORKS

Grasslands ecosystem services are produced by ranchers and farmers, calculated in an index, verified and then stored in a registry and sold to buyers through an exchange.

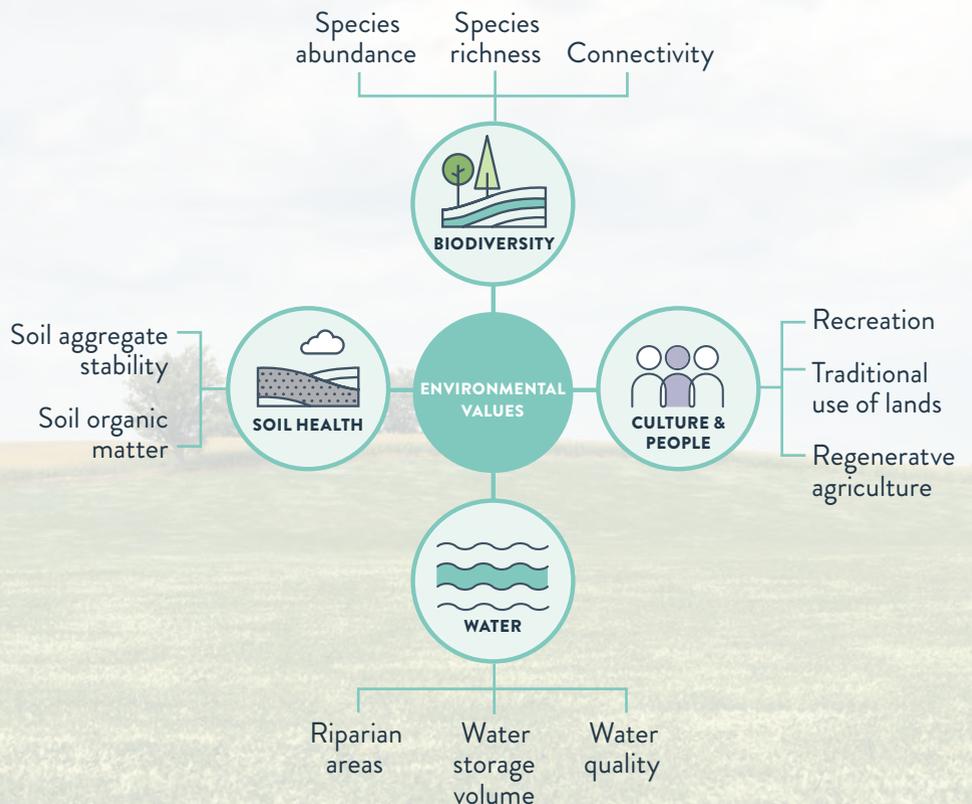


WHAT IS TRADED IN AN EXCHANGE

Buyers and sellers trade economically, environmentally and socially relevant grasslands ecosystem services that have been combined and weighted in an index.

The grasslands index includes the following ecosystem services benefits:

- Biodiversity and regenerative habitat
- Critical corridors that allow wildlife move between different habitats
- Water filtration or improved water quality (reduced runoff)
- Water storage and flood mitigation
- Soil aggregate stability and improved soil water retention
- Soil health related to organic matter content
- Recreational use of grasslands for hunters, birders and nature lovers; aesthetic viewscapes
- Land owner stewardship ethic and regenerative agriculture
- Traditional use of lands by indigenous communities



KEY INDICATORS OF GRASSLANDS CONSERVATION

Because ecosystem services are difficult to quantify, indicators are used as an evaluation tool to simplify the complexities in ecological and human interactions that ecosystem services deliver. These indicators function as a proxy to measure effectiveness or responsiveness to change.

The ecosystem services indicators identified are backed by science, can be measured and provide a level of transparency to buyers and sellers. These indicators are a starting point and as science advances and more is learned about ecosystem services and indicators the grasslands index will be adapted and improved along with the management of grasslands.

Biodiversity Intactness Index

Biodiversity is the variety of all living things that includes species diversity (animals, plants, insects and micro-organisms), ecosystem diversity (connections and interactions) and genetic diversity. The biodiversity intactness index is calculated by estimating the current relative abundance of all species (average) compared to the predicted reference species abundance expected if there were no human footprint. The index is estimated using monitoring data provided by the Alberta Biodiversity Monitoring Institute and then verified in field with rapid assessment.

Landscape Connectivity

The ability of species to move between patches of habitat is essential to maintaining biodiversity. The degree to which the landscape facilitates or impedes movements of species can be evaluated by modeling the resistance of human footprints and landscape features to ecological movement. Current methods to measure landscape connectivity are under development and include calculating an average density value.

Water Quality

Predicts the potential and importance of water quality variables (phosphorus, nitrogen, total suspended solids) entering waterbodies for human use (drinking, fishing, recreation, etc.). Water quality is first calculated via desktop using models to assess water quality variables, and then verified using remote sensing and in the field with soil water infiltration samples.

Water Supply

Measures wetland and riparian hydrology (estimate of wetland water storage volume). The water storage volume can be used to provide information on benefits such as flood mitigation and recreational opportunities. Water supply is calculated via modeled data and then verified using remote sensing information.

Soil Health

Soil health indicators are measurements of soil aggregate stability, bacteria to fungi ratio, a predicted abundance of soil micro-organisms and soil organic matter. These are measured by soil samples taken in the field.

Culture and People

Recreation and aesthetic views are important cultural ecosystem services. These are calculated based on naturalness of the landscape and use by recreational users (hunters, birdwatchers, etc.). Stewardship ethic, regenerative agriculture and traditional land use are also important indicators of cultural ecosystem health and can be measured using self assessment methods.

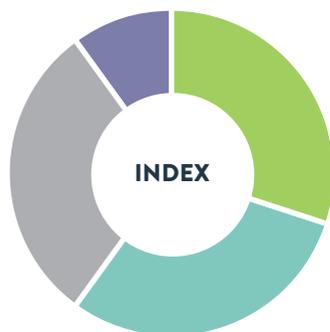


BRINGING IT ALL TOGETHER

Information submitted by a seller will be assessed and presented in a concise Grasslands Conservation Index Report. The key indicators are combined in a weighted combination to provide an overall conservation index value.

The criteria for determining the weight of each ecosystem service includes availability of data, the accuracy and confidence in the science to measure the indicator and the relevance or importance to buyers.

For initial discussions the following weight is given to each ecosystem service:



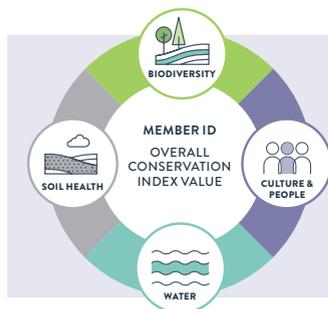
30% Biodiversity 30% Soil Health
30% Water 10% Culture and People

CONSERVATION INDEX VALUES

The overall conservation index is determined by adding the weighted combination of water, soil, biodiversity and cultural ecosystem services together. A report may also contain additional qualitative and quantitative information of interest to potential buyers.

Ecosystem services benefits that are included in the report are compared to a regional average. Some areas will have a higher value than the regional average, others will be lower, depending on the land use and the management practices used. The measures proposed rely on the availability and accuracy of current science. These metrics are combined in a cumulative score for each of the ecosystem services category; biodiversity, water, soil health and culture and people.

Grasslands Conservation Sample Index Report



Member ID: 123456

Date of issue: 01/01/2021

Year of measurement: 2020

Grassland area (ha): 250



Biodiversity

SCORE	INDICATOR	CUMULATIVE SCORE
	Biodiversity index as an indicator of species abundance and richness	150
	Landscape connectivity scores or density values	
<p><i>Additional information may also be provided such as habitat for native pollinators, habitat for species at risk or species of interest for certain buyers.</i></p>		



Water

SCORE	INDICATOR	CUMULATIVE SCORE
	Water quality index or estimated average nutrient loading of phosphorus, nitrogen and total suspended solids.	150
	Soil water filtration measurements	
	Estimated water storage (volume)	
<p><i>Additional information may also be provided such as watershed quality, flood risk and drought.</i></p>		



Soil

SCORE	INDICATOR	CUMULATIVE SCORE
	Soil aggregate stability	150
	Bacteria to fungi ratio	
	Soil microorganisms measurement e.g. soil mites	
	Estimated average of soil organic matter	
<p><i>Additional information may also be provided such as estimates of soil carbon sequestration per year based on modeled and published research data.</i></p>		



Culture and People

A qualitative description of cultural services is provided, including recreational opportunities (bird watching, hunting, scenic views for nature lovers). Community involvement of the landowner as a leader in stewardship, regenerative agricultural practices, and traditional land use could also be indicated.



WHAT SUCCESS LOOKS LIKE

Now is the time to take action and support a grasslands conservation marketplace. Together we can conserve, regenerate and restore grasslands in Alberta and help to achieve sustainable outcomes for all sectors in support of long term healthy ecosystems.

There is still some work ahead to operationalize this grasslands conservation exchange and the Western Stock Growers' Association is committed to working with their partners to bring it from concept to reality.

New knowledge

Over the past several years there have been significant advancements in the science and innovation behind ecosystem services and conservation markets. However, ecosystem services indicators could be stronger, metrics could be more accurate and data and information used in assessment models could be refined. What we know about ecosystem services and conservation markets is evolving and there is a clear need for a science plan that can unlock the complexity of data collection, measurement and management to ensure credibility and continuous improvement.

Exchange tools

We have come up with a system including key components, principles and how it will work. Next steps include developing the index calculator and the registry. We will work with key partners to secure investment from funders and support from key sectors to ensure the grasslands exchange becomes a reality.

Governance and ownership

The WSGA will establish a conservation exchange entity that works with ranchers to identify potential suppliers, promotes and communicates the grasslands conservation exchange and seeks investment from buyers. We understand there may be other governance questions and we are committed to finding solutions that work for potential buyers and sellers.

Sustainable business model

We will work to establish a business model that includes operations of the exchange, maintenance and availability of data, future development of science and all costs involved from start up to transaction.

SHIFTING INVESTMENTS

Providing ecosystem services benefits for free is not a long-term viable option for sustaining and enhancing grasslands in Alberta. Shifting investments and harnessing markets to support conservation markets and the trading of grasslands ecosystem services not only promotes sustainable use and conservation, it supports economic activity.

Common sustainability objectives are efficiently achieved through conservation markets where buyers do not have to be involved at the operational farm level and ranchers do not have to give up their right to manage the environment and the farm they live and work. Success will be a legacy of conservation in grasslands where ranchers can continue to regenerate and preserve through stewardship management of these precious ecosystems for generations to come.



ACKNOWLEDGEMENTS:

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**BUILDING A LEGACY OF
GRASSLANDS CONSERVATION.**