Welcome to *The Current*, the North Central Region Water Network’s Speed Networking Webinar Series

**Market-based Approaches to Conservation**: 2PM CT

1. Submit your questions for presenters via the chat box. The chat box is accessible via the purple collaborate panel in the lower right corner of the webinar screen.

2. There will be a dedicated Q & A session following the last presentation.

3. A phone-in option can be accessed by opening the Session menu in the upper left area of the webinar screen and selecting “Use your phone for audio”.

This session will be recorded and available at northcentralwater.org and learn.extension.org.

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northcentralwater.org
Today’s Presenters:

• **Caroline Wade**, Program Director, Ecosystem Services Market Consortium

• **David LeZaks**, Senior Fellow, Croatan Institute

• **Maggie Monast**, Director, Working Lands, Environmental Defense Fund

Follow @northcentralh2o and #TheCurrent on Twitter for live tweets!
Caroline Wade

Caroline Wade is ESMC’s Program Director providing leadership and coordination across the ESMRC project team and Working Groups to guide research, development, demonstration, and deployment of cost-effective, scalable programs, technologies and approaches needed to launch the ESMC market in 2022. Prior to joining the ESMC she served as the Agriculture Program Director for the Illinois Chapter of The Nature Conservancy leading sustainable agricultural initiatives to improve water quality and soil health. She previously worked for the Illinois Corn Growers Association as the Nutrient Watershed Manager collaborating with partners in Illinois and across the country on sustainability efforts in agricultural production systems. She graduated from Illinois State University with a B.S. in Environmental Health and Environmental Science and a M.S. in Agriculture.
Ecosystem Services Market Consortium

Developing a Science and Outcomes Based Ecosystem Services Market for Agriculture

Caroline Wade, Program Director
November 10, 2020
ESMC MISSION

...advance ecosystem service markets that incentivize farmers & ranchers to improve soil health systems that benefit society.
Outcomes-based national scale ecosystem services market conceived & designed...

...for agriculture
...to overcome past market challenges
...to recognize & reward farmers & ranchers for their impacts
How is ESMC Different from other Markets?

- **Non-profit** organization: mission and impact-oriented
- Collaborative effort with **entire ag supply chain** at the table
- Investment of $22M+ in technologically advanced quantification & verification approaches to drop costs and reduce producer burden
- **Systems-based and practice-agnostic**
- Science and outcomes-based; pay for performance
- Pays producers for **4 credits in 1 process**
  - Soil C, net GHG, water quality & water conservation
- Generation of credits for **multiple markets**; Innovative, tiered, modular protocols
ESMC Protocol: Tiered, modular design

<table>
<thead>
<tr>
<th>Scope</th>
<th>GHGs a</th>
<th>Water Quality b</th>
<th>Water Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1</td>
<td>Scope 1 GHG Credit</td>
<td>Scope 1 Water Quality Credit</td>
<td>N/A</td>
</tr>
<tr>
<td>Scope 3</td>
<td>Scope 3 GHG Asset</td>
<td>Scope 3 Water Quality Asset</td>
<td>Scope 3 Water Efficiency Asset</td>
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</tbody>
</table>

a. Soil carbon can be reported separately from net GHGs.
b. Separate credits and assets can be issued for phosphorus, nitrogen, and sediment.
ESMC Market Function Overview:
ESMRC – Preparing for Market Launch

- Investments in RDD&D for a high-tech, cost-effective national launch
- Research goals through 2022
  - Testing & refining all program aspects:
    - Protocols and methodologies
    - Measurement and quantification
    - MRV Platform technology
    - Program and verification training
    - Costs and efficiencies of asset generation
    - Market needs and demand
  - Scaling through partnerships & pilots with members

- 2022 and beyond
  - Scale throughout contiguous US
  - Additional credit/asset generation to be added, including biodiversity, habitat conservation, etc.
ESMC Pilot Project Locations

Launched
Planning
ESMRC Program and Pilot Project Research

- Improvements to the MRV platform
- Data collection gap analysis
- Soil Sampling Stratification App
- Evaluation of innovative soil C measurement tools
- N2O quantification improvements
- Quantification model testing and refinement
- Comparing water quality modeling approaches
- Exploring remote sensing technologies for data collection and verification
- Pursuing certification of program, protocols, assets

✓ Bringing down the cost of quantification and asset generation
✓ Meeting the needs of buyers and producers
✓ Implementation at scale
THANK YOU

QUESTIONS?

https://ecosystemservicesmarket.org
David LeZaks

David LeZaks is an environmental scientist and financial activist whose work is centered around developing innovative mechanisms for financing the transition to agroecological farming and food systems. Before joining Croatan Institute, Dr. LeZaks led the Regenerative Food Systems initiative at Delta Institute in Chicago, where he managed a portfolio of projects that focused on the design and deployment of disruptive mechanisms to unlock substantial capital flows into regenerative agriculture. Earlier in his career, David was a postdoctoral scientist at the University of Wisconsin – Madison, where he completed his Ph.D. in Environment and Resources and an M.S. in Land Resources. Currently, he serves in advisory roles to Mad Agriculture, the Savanna Institute, Nourish, Council of Development Finance Agencies’ Food Systems Finance Advisory Council, and the Transformational Investing in Food Systems initiative, an allied initiative of the Global Alliance for the Future of Food.
The True Cost of food – an untold story

The hidden costs of global food and land use systems sum to $12 trillion, compared to a market value of the global food system of $10 trillion.

Trillions USD, 2018 prices

- Market Value of Global Food System: 10.0
- Health: 2.7
- Environment: 6.6
- Economic: 1.5
- Food System Value Net of Hidden Costs: -1.9

- Obesity: 0.8
- Undernutrition: 1.3
- Pollution, Pesticides & Anti-Microbial Resistance: 2.1
- Greenhouse Gas Emissions: 1.7
- Natural Capital Costs: 0.8
- Rural Welfare: -1.9
- Food Loss & Waste & Fertiliser Leakage: -1.9

Growing Better: Ten Critical Transitions to Transform Food and Land Use, 2019
The True Cost of food – an untold story
“You can’t fix a broken food system with a broken finance system”

Natalie Reitman-White @ Organically Grown Company
Capital allocation from the financial value chain to the agricultural value chain

Source: SoilWealth.org
A story in four Examples

1. New financial mechanisms – Rural Regenerative Organic Districts
2. Agroforestry
3. Grassland 2.0
4. Small grains
Regenerative Organic Agricultural Districts (ROADs)

Establish special-purpose soil wealth improvement districts that would become magnets for regenerative agriculture investment.
Regenerative Organic Ag District (ROAD)

Investment into regenerative ag. value chain

Financial returns on investment

Place-based financial mechanism

Impact:
Soil health & community wealth returns
Financing a more perennial agriculture

**Status Quo**

- Nitrogen & Phosphorus Water Pollution
- Soil Erosion
- Pesticide Toxicity

**Agroforestry**

- Perennial Roots Capture Nutrients
- Perennial Roots Stabilize Soil
- Minimal Pesticide Use
Key Tree Crops of the Midwest

HAZELNUT
“Soy on Trees”

Specialty Markets
$7bn current, global
$14bn within decade

Commodity Markets
Supplant soybean market
$40bn on 34m hectares in US

Ferrero (Nutella, Ferrero Rother, Kinder Bueno)
Mondelez International (Cadbury, Milka)
Nestle, Hershey, Mars

Protein soy-free, gluten-free food
Animal Fodder complete protein
Oil food / biodeisel

CHESTNUT
“Maize on Trees”

Specialty Markets
$2bn current, global
$2.5bn within decade

Commodity Markets
Supplant maize market
$63bn on 39m hectares in US

Fresh Nuts grocery/direct-to-consumer
Chips, Dried brewing, baking
Bob’s Red Mill specialty flours

Flour & Sweetener gluten-free food
Animal Fodder caloric density
Starch industrial feedstock
Response to 3 problems:
1. Farmer profitability
2. Environmental degradation
3. Community decline
Early leaders

Socio-technical Landscape

Outcomes

Institutions
Policy
Finance
Knowledge

Confinement livestock production

Power
Input suppliers

Power
Processors & retailers

Institutions
Policy
Finance
Knowledge

Graziers
Grazing networks
Academics

Agroecological Transformation

Future (perennial) system

Healthy people
Healthy communities
Healthy ecosystems

Power
Farmers

Power
Consumers

Graziers, Society
Policymakers
Lenders

Movement Socio-technical Landscape Outcomes

Current (annual) system

Obesity & disease
Abandoned communities
Climate change & eutrophication

Institutions
Policy
Finance
Knowledge

Graziers
Grazing networks
Academics

Power
Input suppliers

Power
Processors & retailers

Institutions
Policy
Finance
Knowledge

Catalyst
Regional Grain System Development

https://www.thegrainlady.com/the-grain-chain
Opportunities for capital deployment

- Production loans and transition finance
- New cleaning technology companies
- Regional co-op development
- Milling infrastructure
- Public / private seed breeding
- Consumer purchasing
- Brand development

https://www.thegrainlady.com/the-grain-chain
Additional information

- Croatan Institute & Rural Regenerative Organic Districts
  - Soil Wealth: Investing in Regenerative Agriculture across Asset Classes (soilwealth.org)
- Agroforestry & Savanna Institute
  - http://www.savannainstitute.org/
- Grassland 2.0
  - https://grasslandag.org/
- Regional Grain Systems
  - http://graincollaborative.com/
- Barriers For Farmers & Ranchers to Adopt Regenerative Ag Practices In The US
  - https://forainitiative.org/barriers-for-farmers-ranchers/
Maggie Monast

Maggie Monast is a Director on Environmental Defense Fund’s Working Lands team. Maggie works with farmers, financial institutions, agricultural organizations and others to create an agricultural system that drives climate stability, clean water, and food security. Monast works to quantify the farm financial impacts of conservation practice adoption, collaborates with major financial institutions and food companies to develop financial solutions that support farmer adoption of conservation, and identifies policy solutions to advance resilient agriculture. You can read more here: https://edf.org/farm-finance. Maggie began working with EDF in 2011. She holds a Master’s Degree in Environmental Management with a focus on economics from Duke University and a Bachelors in Economics and Political Science from Tufts University. Maggie previously interned with the U.S. Senate Committee on Agriculture, Nutrition, and Forestry. She also currently serves on the North Carolina Environmental Management Commission.
Financing Resilient Agriculture

How agricultural lenders can reduce climate risk and help farmers build resilience
Climate Impacts on Agriculture

- Precipitation and temperature variability
- Storms and fires
- Weeds, disease and pests
“Concerns about climate change are now a permanent part of the operating environment for rural America; they are here to stay regardless of which political party happens to be in power at state or federal levels.”

– Tom Halverson, President and CEO of CoBank
The 2019 Floods: Risks to Lenders

- Midwest banks reported 70% of borrowers were at least moderately affected.
- The region’s agricultural loan portfolio reported its highest rate of “major” and “severe” repayment problems in 20 years.
50% of agricultural loans are held by banks with at least 25% of their portfolio concentrated in agriculture
Climate change could cause crop insurance costs in the second half of the century to increase between 3% and 37% depending on emissions and adaptation.
Climate-Resilient Agriculture

• Build soil health through practices like cover crops and no-till
• Manage water and inputs effectively
• Diversify crop rotations and integrate livestock
The Financial Case for Resilience

• Reduce production costs
• Increase yield stability
• Diversify revenue

Barriers: short-term transition costs, risk, learning and time
Recommendations:
1. Assess climate risk at the lending institution level
2. Understand the role of resilient agriculture in managing climate risk
3. Design lending programs or products that support farmers in building climate resilience
To download: https://edf.org/aglending

Maggie Monast
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Question and Answer Session

We will draw initial questions and comments from those submitted via the chat box during the presentations.

Today’s Speakers

Caroline Wade – cwade@ecosystemservicesmarket.org
David LeZaks – lezaks@croataninstitute.org
Maggie Monast – mmonast@edf.edu
Thank you for participating in today’s The Current!

Visit our website, northcentralwater.org, to access the recording and our webinar archive!

Upcoming Webinar to note from our climate team:

**Drought Decision Calendars for Specialty Crops**
Monday, December 14, 2020 at 1pm CT
Register at northcentralclimate.org/webinars