

# WETLAND EDUCATION NETWORK WORKSHOP SYNOPSIS

HOSTED BY THE WETLAND EDUCATION NETWORK  
A PROGRAM OF THE ALBERTA NAWMP PARTNERSHIP

March 14, 2019 | Nisku Recreation Centre | Leduc County, Alberta

PREPARED BY:  
SAGEWOOD COMMUNICATIONS SOLUTIONS LTD.

# net·work

/ˈnet,wɜrk/

*noun*

noun: network; plural noun: networks

1. a group or system of interconnected people or things.
  - a group of people who exchange information, contacts and experience for professional or social purposes.
2. a human operating system for spawning activities with a set of people who voluntarily organize themselves for collective action to solve a large problem.

*verb*

verb: network; 3rd person present: networks; past tense: networked; past participle: networked; gerund or present participle: networking

3. connect as or operate with a network.
  - interact with other people to exchange information and develop contacts, especially to further a common goal.

# wet·land ed·u·ca·tion net·work

/ˈwet,lənd/ /ˌejəˈkāSH(ə)n/ /ˈnet,wɜrk/

*noun*

noun: wetland education network

1. a collaborative network currently facilitated and funded by the Alberta NAWMP partnership.
2. the group of people representing various sectors who have come together to actively and collaboratively advance wetland education in Alberta.

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## INTRODUCTION

On March 14, 2019, Alberta NAWMP Partnership's Wetland Education Network (WEN) hosted its third annual workshop. The WEN workshop brings together individuals and organizations representing four sectors: Agriculture, Municipalities, Education/Public and Industry to discuss and share ideas for how to advance wetland education, knowledge and action in Alberta.

The workshop was attended by approximately 60 individuals from across the province and representing the various sector stakeholder groups. During this full day workshop, participants contributed fresh ideas and came away with new knowledge and motivation to support wetland education in Alberta. A list of workshop registrants is included in [Appendix A](#).

This document provides a concise overview of the workshop, important takeaways from the keynote presentation, highlights of the three program profiles presented, and valuable input and direction gathered from participants during the sector group discussions.

## WORKSHOP OUTCOMES

Through this workshop experience, participants:

- Came away with ideas, knowledge and motivation to educate about wetlands.
- Learned about the projects and activities of the Action Groups.
- Considered opportunities for collaboration.
- Met with their sector group to discuss 'future state' and determine next steps for projects and activities.

This workshop served to strengthen connections and fostered a common understanding of how participants can collaborate to improve wetland health in Alberta and excellent examples of wetland education and outreach efforts taking place today. The workshop agenda is included in [Appendix B](#).

## WETLAND EDUCATION NETWORK OVERVIEW

Christina Pickles, WEN Coordinator, welcomed everyone and opened the workshop with a brief overview of the Alberta NAWMP Partnership, the core partners (Alberta Agriculture and Forestry, Alberta Environment and Parks, Ducks Unlimited Canada, Environment and Climate Change Canada, Nature Conservancy of Canada), and its mandate to conserve and protect Alberta's wetland resources and associated upland habitat by supporting research, policy recommendations, habitat projects and communications around wetlands, of which the WEN is a part.

**TAKEAWAY:** THE WEN BRINGS TOGETHER INDIVIDUALS AND ORGANIZATIONS TO DISCUSS AND SHARE IDEAS TO ADVANCE WETLAND EDUCATION, KNOWLEDGE AND ACTION IN ALBERTA.

To provide context for the day, Christina summarized the origins and purpose of WEN, illustrated how it is a project of and where it fits within the Alberta NAWMP structure, highlighted the roles of the sector groups that contribute to guiding the WEN to its intended outcomes, and stressed the importance of having the involvement of people who can speak to the wetland needs of their sector. She also noted this is the first year the WEN has been fully operational, having been tested and piloted in previous years.

## WHERE EVERYTHING FITS



## WHO DOES WHAT

Coordinator	Wider Network	Action Groups
Set meetings for the Action Groups, agenda, logistics; support communications between Action Groups; support Action Groups to act on their ideas; connect members with each other; support ideas and suggestions from the larger network; co-ordinate with Alberta NAWMP	Offer feedback to the Action Groups; use the tools created by the Action Groups and consider other ways to work together	Speak to their sector's needs; identify tools and delivery mechanisms; design products or hire a consultant to design products to meet the identified sector needs

**TAKEAWAY:** ALL SECTORS APPROACH WETLAND EDUCATION DIFFERENTLY; THE WEN WORKSHOP IS AN OPPORTUNITY FOR PARTICIPANTS TO LEARN FROM OTHERS AND COME AWAY WITH IDEAS, NEW KNOWLEDGE AND MOTIVATION TO EDUCATE ABOUT WETLANDS.

Christina's presentation slides are in [Appendix C](#).

## AUDIENCE ACTIVITIES

Wetland education activities can range from on-line courses, hands-on workshops to games and storytelling. The workshop is an opportunity to learn how different sectors incorporate wetland education and present it to their audience. Educators, naturalists and interpreters often use games, demonstrations and hands-on experiences to teach about wetlands. To learn about different approaches to wetland education, two experienced educators demonstrated a few activities that got the audience talking, interacting and even laughing.

## WETLAND METAPHORS

Using a variety of interesting objects (e.g., binoculars, jar of honey, rubber duck, an empty container, etc.) that were placed on each of the tables in the room, Nathalie Olson, with Battle River Watershed Alliance, engaged participants in a fun wetland metaphor activity that was intended to get them thinking 'out of the box' about

wetlands and how they can be creative when describing wetlands and what they do. Nathalie began with an example: Wetlands are to insects as nightclubs are to people; dark and damp breeding grounds. 😊

The audience then shared their own wetland metaphors, including:

- Wetlands “magnify” the biological potential of an area.
- Wetlands are sometimes “brown”.
- Wetlands are natural filters.
- Wetlands act as storage and filters for water-borne contaminants.
- Wetlands are a nursery for bugs and wildlife.
- Wetlands provide a place for waterfowl to live and grow their families.

## BEAVER DRESS UP

Laura Griffin, from Ann & Sandy Cross Conservation Area, with the help of an assistant from the audience, engaged participants in a visual and fun activity that demonstrated the importance of a beaver’s physiological features and how they relate to its life in a wetland.

## INSECT LIFE CYCLE

Laura Griffin, from Ann & Sandy Cross Conservation Area, lead participants in another wetland-related learning activity. Starting as an egg, the goal was to work your way up to adult, moving through the stages of an insect life cycle (egg - larva - pupa - adult). Participants found another person in the same life stage, played a game of rock, paper, scissors and the winner moved on to the next life stage, the loser went back down to the beginning.

## KEYNOTE

### INFORMATION IS NOT ENOUGH: REACHING AUDIENCES WITH STICKY SCIENCE COMMUNICATION

#### MATTHEW PYPER, FUSE CONSULTING

Matthew’s presentation focused on the challenges we face trying to reach audiences with the science of wetlands, and how we can better connect people with wetlands by investing time, energy and passion in science communications by not just presenting the science and data, but making this type of information meaningful, understood and remembered – “sticky.” He spoke to the concept of “stickiness” as defined by Chip and Dan Heath (authors of *Made to Stick*) and elaborated on the three principles that make information stick with audiences.



To illustrate these principles in action, Matthew showcased three industry examples of how to make the science of wetlands “stick”. In addition, he focused on the importance of interpretive science and using visuals (e.g., infographics and illustrations), developing credible and meaningful content that is relatable to people’s experiences, and the importance of building relationships to inspire changes in practices.

**TAKEAWAY:** STATISTICS ARE RARELY MEANINGFUL IN AND OF THEMSELVES; THEY WILL, AND SHOULD ALWAYS BE, USED TO ILLUSTRATE A RELATIONSHIP.

**TAKEAWAY:** THINK OF SCIENCE COMMUNICATIONS AS A HEARTBEAT – YOU NEED TO KEEP IT GOING AND STAY CONNECTED WITH YOUR AUDIENCE OR IT WILL STOP.

Matthew’s presentation slides are in [Appendix D](#). Learn more about [Fuse Consulting](#) and the work they do.

## PROGRAM PROFILES

This segment enabled participants to dig deeper into various projects and programs that are already taking place in Alberta, and learn from others about new techniques, different approaches and lessons learned that can be applied to their own wetland education activities.

### BOREAL WETLANDS ONLINE TRAINING COURSE

#### LEANNE MINGO, DUCKS UNLIMITED CANADA (DUC)

Leanne set the stage by providing an overview of DUC’s work in the boreal region (promoting policies, establishing protected areas and promoting sustainable land use practices in the ‘duck factory of North America’). She further explained that increasing industrial/development pressures in the boreal region and the need to address gaps in boreal wetland education for professionals were primary reasons for developing the online “Introduction to Boreal Wetlands” training course, which they launched in February 2019.

This training, geared towards practitioners working and operating in Canada’s boreal, covers topics including wetland classification and identification, wetland vegetation, soils and hydrology, as well as best management practices for incorporating wetlands into a project. In addition to providing practitioners with an introduction to boreal wetlands the course also builds understanding of how the information applies to the work they do.

The challenges faced and lessons learned when DUC developed the course included figuring out how to make the content applicable to a wide audience (variety of work and backgrounds); making it flexible for people to take (self-paced, online); including relevant examples to illustrate the practical applications of knowledge gained; determining what is the most appropriate and cost effective technology (platform) for the online course; and understanding the technical expertise required to implement the online offering. Acknowledging the need to address different learning styles, DUC also offers downloadable guides as well as customizable classroom and field training for groups.

**TAKEAWAY:** UP FRONT COURSE DESIGN/CONTENT IS ONE OF THE MOST IMPORTANT CONSIDERATIONS IN AN UNDERTAKING SUCH AS THIS.

Learn more about [Ducks Unlimited Canada](#) and the work they do.

## LEARNING, DOING AND TEACHING RIPARIAN RESTORATION

### LUKE WONNECK, AGROFORESTRY AND WOODLOT EXTENSION SOCIETY (AWES)

Luke gave a brief overview of AWES, its membership and explained why the organization is interested in riparian areas. He highlighted key activities AWES is engaged in (education/extension including presentations, workshops, demonstration sites, tours, as well as providing planting services) and then discussed several projects AWES has developed and implemented, focusing on the important elements of each and how AWES has evolved and improved its approach (facilitated learning model) to educating landowners.

**Riparian Planting Research Project:** planted >82,000 seedlings/cuttings at 28 sites and monitored for 1-2 years; held 26 extension events, developed nine factsheets and their Manual for Riparian Forest Buffer Establishment in Alberta, which contains lessons learned from the planting and monitoring activities.

**Riparian Management Education Project:** developed and delivered eight riparian management courses and five skills development workshops; practical, hands on, activity-based learning opportunities for landowners and land managers to develop their own riparian management plans and learn skills relevant to riparian management and restoration.

**Blindman River Riparian Assessment and Restoration Project:** riparian health assessments and restoration activities that actively involve and educate volunteers and landowners in the importance of riparian management and restoration.

**TAKEAWAY:** COLLABORATION WITH GOVERNMENT, INDUSTRY AND NON-PROFIT PARTNERS HAS BEEN KEY TO THE SUCCESSFUL DELIVERY OF AWES PROJECTS.

Luke's presentation slides are in [Appendix E](#). Learn more about [Agroforestry Woodlot Extension Society](#) and the work they do.

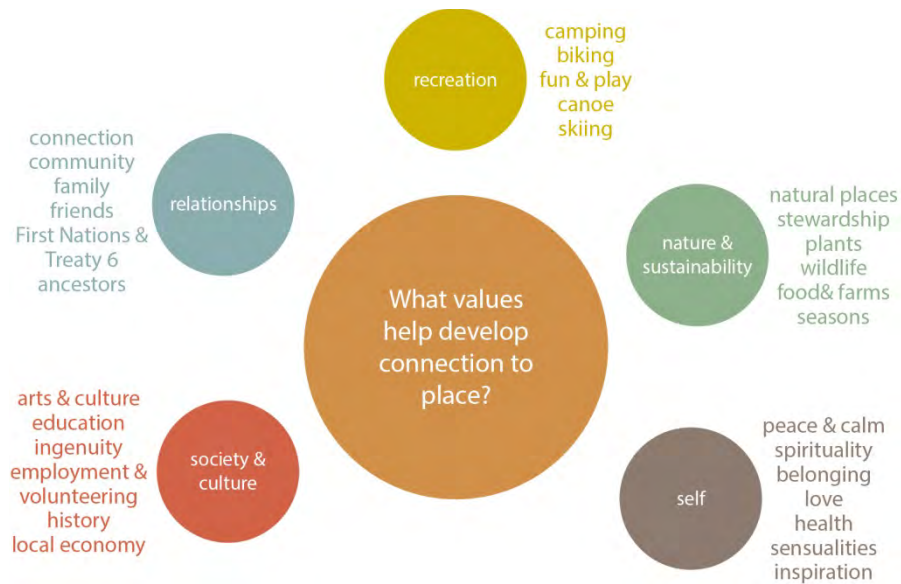
## MAPPING PLACE ATTACHMENT IN THE BATTLE RIVER BIOREGION

### NATHALIE OLSON, BATTLE RIVER WATERSHED ALLIANCE

Nathalie gave an overview of the "Make Your Map" project. Make Your Map is an artistic and bioregional cartography project in the Battle River Watershed of Alberta. These workshops, developed as part of her Masters research, and created from her love of maps, art and place, encouraged people to create personal maps of their special places in the Battle River region. The bonding of people to places, or 'place attachment', fosters understanding of what connects people to place. This can help shape who people are, how they identify and what is important to them. Mapping is instrumental to being human and maps demonstrate what the mapper thinks is important. Having people make maps puts them in a place of power; it shows what is important to them in their community.

Nine participants took part in the first Make Your Map workshop. They had three weeks to make their map at home and could start to create their maps based on values and what places serve those values or start with places and what they get from them. The resulting individual maps were all very different and creative. Participants then came together and created a single map. Through the mapping process, people identified 89 unique locations (water bodies were most commonly identified). The collaborative map was less personal and tended to reflect more community or cultural values. Five place attachment themes and 30 values were described in the Make Your Map project:





**TAKEAWAY:** AN UNDERSTANDING OF PLACE ATTACHMENT CAN LEAD TO A BETTER UNDERSTANDING OF PEOPLE’S VALUES AND HELP FOSTER PEOPLE’S WILLINGNESS TO TAKE ACTION TO PROTECT IMPORTANT PLACES.

Nathalie’s presentation slides are in [Appendix F](#). Learn more about the [Battle River Watershed Alliance](#) and the work they do.

## NETWORK OVERVIEW AND ACTION GROUPS UPDATE

Christina Pickles, Wetland Education Network Coordinator, gave participants a broad overview of the basic characteristics of a network and how a network functions, including the benefits and challenges, and why it’s important to harness these characteristics to enhance wetland education in Alberta. Christina explained the three phases of networks and how these together represent a straightforward way to think about what the WEN can accomplish:



**TAKEAWAY:** NETWORKS ARE NOVEL AND FLEXIBLE COMBINATIONS OF PEOPLE, WHICH ARE MORE NIMBLE AND ADAPTABLE, AND WHICH FACILITATE A COMMON LANGUAGE AND APPROACH ON A GIVEN SUBJECT.

**TAKEAWAY:** NETWORKS ENABLE POOLING OF RESOURCES, IDEAS AND SKILLS, AND FACILITATE THE MOVEMENT AND DISSEMINATION OF INFORMATION QUICKLY AND WIDELY.

## ACTION GROUP UPDATES

The Action Groups have been working together for the past year to discuss and develop various tools, resources and approaches to supporting sector-specific wetland education in Alberta. The following outlines what each action group accomplished:

### AGRICULTURAL ACTION GROUP MEMBERS

Alberta Agriculture and Forestry	County of Vermillion River
Alberta Barley	Crop Sector Working Group
Alberta Environment and Parks	Ducks Unlimited Canada
Alberta Milk	Leduc County
Alberta Pulse Growers	

Over the past year, this group discussed the Wetland Policy, what it is and how it affects agricultural producers. The group also developed five “producer profiles” to tell the stories of producers and the organizations they worked with and how they actively conserve and protect wetlands in their operations. These articles will be available for anyone to use in newsletters, magazines and websites. They will be released at the end of April 2019. Other opportunities identified by this group included connecting with the Environmental Farm Plan and adding more wetland specific content to their information.

### MUNICIPAL ACTION GROUP MEMBERS

Alberta Environment and Parks	Municipal Affairs
B&A Planning Group	Strathcona Country
City of Calgary	Rural Municipalities Association
City of Edmonton	Red Deer River Watershed Alliance
Ducks Unlimited	Wheatland County
Land Stewardship Centre	

As with the Agriculture Action Group, the Municipal Action Group’s main focus was the Wetland Policy; discussing and understanding the roles and responsibilities of municipalities when it comes to policy implementation. Previously, the Municipal Action Group had developed a comprehensive resource for municipalities titled “Your Guide to Making Wetlands Work in Your Municipality”. The group spent time during the year updating the Guide and they also supported DUC’s municipal wetland course.

### EDUCATION AND PUBLIC ACTION GROUP MEMBERS

Alberta Environment and Parks	Ducks Unlimited
Alberta Water Smart	Inside Education
Battle River Watershed Alliance	Lesser Slave Lake Watershed Alliance
Bow Habitat Station	NAIT Boreal Research Centre
City of Calgary	

The Education and Public Action Group spent time exploring the potential of developing broad wetland messages that could be used province-wide, but realized this was a huge task. So they focused their efforts on developing a “Guide to Engaging Communities in their Local Wetlands”, which has a strong connection to the municipal wetland guide. This community wetland guide is expected to be completed in April, 2019.

## INDUSTRY ACTION GROUP MEMBERS

Alberta Land Surveyor's Association  
Altalink  
Alberta Society of Professional Biologists  
Ducks Unlimited

Husky Energy  
NAIT Boreal Research Centre  
MGEO

The Industry Action Group was the most challenging to pull together, and participants who did come together found it was challenging to find common ground among themselves. Follow up discussions with participants in the first meeting and other industry professionals lead the coordinator to pursue a project to survey the professional organizations in Alberta responsible for monitoring the Authenticating Wetland Professionals. This survey is to determine if there is a role for the Wetland Education Network in supporting the on-going education and communication between Authenticating Wetland Professionals in Alberta. The report will be complete by the end of April 2019.

Christina's presentation slides are in [Appendix C](#).

## SECTOR GROUPS VISIONING EXERCISE

One full year in, the WEN has started down the right path but acknowledges there is still much to do. To help guide and support the WEN's efforts going forward, in this segment workshop participants were divided into sector groups (agriculture, education and public, industry, and municipal) and, guided by a facilitator (Dave Mussell, Shelagh Pyper, Janine Higgins, Heather Robertson-Gagne), were asked to provide their responses (individual and groups) to three key questions from a future perspective.

Thinking 10 years into the future:

1. What words does your sector use to describe wetlands?
2. What actions does your sector take when it comes to wetlands?
3. What tools and resources are available to support your sector?

The purpose of this exercise was to enable participants to:

- Focus on the long-term goals of their sector group.
- Share their ideas with colleagues.
- Align their ideas into the start of a vision and goals to provide the Action Groups with some direction.

## AGRICULTURE

Thinking 10 years into the future:

### WHAT WORDS DOES YOUR SECTOR USE TO DESCRIBE WETLANDS?

- Using 'proper' names and positive, common language; ephemeral is included
- An asset; opportunity; bursting with potential
- Flood buffer; drought mitigation; 'sponges'
- A necessary evil
- Profitable
- Recognized as part of the whole
- Resiliency; stability

- Water filtration, water quality
- Habitat
- Natural hydrological connectivity
- Value of small wetlands

#### WHAT ACTIONS DOES YOUR SECTOR TAKE WHEN IT COMES TO WETLANDS?

- Land owners share success stories and teach others
- Nothing collapses as funding disappears
- There is funding available
- Farmers look at more options
- Balanced economic/environment
- Active wetland market; buying 'credits'
- Greater public participation; not just landowners
- Permanent wetlands labelled on land titles (ability to remove acres/ha)
- Different ecosystem services are used (products wetlands can provide); practices are different
- Broad landscape approach
- Make policy fair to everyone who is impacted
- Open conversations on wetlands; no one is afraid
- Consistent process for compliance and information
- Ability to manage wetlands, ditches, dugouts, etc.; reduction of red tape
- There is a clear and concise process, and roles and responsibilities for management of beaver control

#### WHAT TOOLS AND RESOURCES ARE AVAILABLE TO SUPPORT YOUR SECTOR?

- Funding for preservation, restoration and education
- Streamlined funding for stewardship and implementation of projects
- Publicly available maps of wetlands; contour map data
- Easy identification tools
- Centralized resource (hub) and centralized specialist to help with consistency
- Socially-based funding source
- More solid science
- Cost-benefit analysis
- New, adaptive technology
- Education on 'why'
- Continued cooperation with ALUS and other programs
- Support for alternative wetland enterprises
- Mitigation funds go towards these tools

#### EDUCATION AND PUBLIC

Thinking 10 years into the future:

#### WHAT WORDS DOES YOUR SECTOR USE TO DESCRIBE WETLANDS?

- Managed wetlands – economic, social and environmental sustainability
- More constructed wetlands

- More appreciated , valued, recognized, respected and enjoyed
- Classified by type, biodiversity value
- Precarious (10 years hence)
- More threats to wetlands
- More integrated into planning and development, culture
- Seen as an asset rather than a liability
- Gathering place for learning and recreation
- More protected
- Irreplaceable

#### WHAT ACTIONS DOES YOUR SECTOR TAKE WHEN IT COMES TO WETLANDS?

- Demonstration projects – more of them; accessible; successful
- Generate resources for knowledge transfer; train the trainer
- Post-secondary learning opportunities with a practicum or field component; technical programs
- How-to-guide on creating wetland displays and interpretive resources to facilitate education
- Youth empowerment; action by families and action by youth
- Public campaigns that encourage action on wetlands
- Digital/social media campaigns
- Mentorship among municipalities; formal and informal programs
- Resource hub/knowledge base; searchable database of shared resources including resource evaluation component
- Indigenous knowledge about wetlands
- Holistic approach; developing the skills to think in an integrative way
- Public participation, involvement and education
- Experiential learning; bio-blitz, stewardship, citizen science; knowledge of the WPACs, WSGs
- Criteria for evaluating effectiveness of wetland education programs, resources, projects and impact on learners and audiences
- Utilize/leverage existing partnerships with WPACs and WSGs and other community-based groups

#### WHAT TOOLS AND RESOURCES ARE AVAILABLE TO SUPPORT YOUR SECTOR?

- More enforcement personnel with education mandate
- Utilize existing educators; reduce barriers
- Constructed wetlands with educational design built in; including signage and infrastructure
- Rural wetlands developed for education
- Directory and maps of educational maps (rural and urban)
- New curriculum development and curriculum resources for formal education featuring wetlands (includes ecosystem services and functions; social and economic value)
- Place-based knowledge; historical regional and local knowledge (human library)
- Biophysical knowledge of wetlands; benchmarking and monitoring

## MUNICIPAL

Thinking 10 years into the future:

### WHAT WORDS DOES YOUR SECTOR USE TO DESCRIBE WETLANDS?

- An understanding of what a wetland is
- A clear explanation of what a wetland is (why is it a wetland)
- Seen as 'green' infrastructure (a natural asset worth \$)
- Why should I care?
- Wetlands have value (hard to define value); developers would see/understand wetlands have value/are an asset
- Wetlands are not 'puddles', they are not in the way, delaying projects
- MGA doesn't define a wetland but in 10 years it will (Wetland Policy does have a definition)
- Different wetlands have different values
- Policy results in improved understanding of the legislation
- Crown-owned
- The cost to keep wetlands in neighbourhoods would be recognized (a lot of infrastructure is needed to save; more time required in approvals)

### WHAT ACTIONS DOES YOUR SECTOR TAKE WHEN IT COMES TO WETLANDS?

- Green and gray practitioners work together
- Industry and municipalities
- Provincial and municipal co-operation
- Capacity building at municipal level
- Place-based bylaws
- Municipality recognizes responsibility
- A policy or directive so municipality understands their role
- Inter-municipal planning (plan at landscape level)
- Value on wetlands as a communication resource
- Preservation
- Wetlands are at the forefront (higher prestige; pre-planning) of plans and budgets ahead of time; grand plan
- Education programs; landowners are educated
- Tension between original long-term plans and new policies; flexibility so they are followed now
- Procedures in place to align budget and timeline
- Educating staff (first) and landowners (next) about legislation and policy, then in 10 years can educate the public; a lead-by-example approach
- Staff know who to call to get approvals and know constraints
- Incorporate watershed plan with land-use plan
- Align MGA with the policy; municipalities support province and the success of the policy
- Political will is there for development approvals and for conservation policies
- Gap closure

## WHAT TOOLS AND RESOURCES ARE AVAILABLE TO SUPPORT YOUR SECTOR?

- Province has the ability to enforce on public lands
- Policy alignment
- Inventory of wetlands (GIS maps); municipalities ask for shapefiles (varies by municipality; can be a gap)
- Capacity is shared between municipalities across the province; WPACs could play a role – watershed alliances and how-to foster collaboration
- A tool to improve education about non-compliance; education development officers (front line staff); a list of questions to ask landowners (the right questions with the right language)
- Funding to encourage compliance (to help landowners), so support technical studies and to help municipalities
- Case studies showing the costs associated with doing things wrong (failures can help convince)
- Monitoring help from the province (tools and resources); share data

## INDUSTRY

Thinking 10 years into the future:

## WHAT WORDS DOES YOUR SECTOR USE TO DESCRIBE WETLANDS?

- Priority; carbon sink; multi-functional
- Stewardship opportunities
- Hot spots; resource; opportunity
- Important ecological functions
- Constraints
- Important areas for water
- Adaptable; resilient
- Connected
- Sustainability
- Use of wetland names and classes (fen, bog)
- Research and shared learning
- Partnership

## WHAT ACTIONS DOES YOUR SECTOR TAKE WHEN IT COMES TO WETLANDS?

- Sustainable development and restoration
- Protection, minimal disturbances and decreased ecological damage (increase preservation, use BMPs)
- Long term monitoring
- Identify and avoid
- Commitment
- Education and training so all levels in the sector (operator, practitioner, manager) know what a wetland is, their value and what steps they need to take in their role
- Serious avoidance in all industries (municipal development, agriculture)
- Reclamation and restoration
- Province releases all directives
- Consistent reclamation standards across industries
- Knowledge sharing between industries

## WHAT TOOLS AND RESOURCES ARE AVAILABLE TO SUPPORT YOUR SECTOR?

- Pre-disturbance modelling to forecast impacts considering slope, hydrological features, species diversity and composition, soil composition, hydrogeology
- Understanding species diversity in the soil
- Knowledge exchange from the university and public access to research
- Mentoring; good experiences with APSB; access to relevant and up-to-date information
- Networks
- Transfer of knowledge; internal and cross sector (both digital and in person)
- Wider range of training; classroom and field; on the ground demonstration centres
- Better wetland inventory
- Open access to wet areas mapping
- Education on the lack of info available; incompleteness of the wet areas mapping; field tripping
- Connecting the tools to the users; a flow diagram to connect users to the info they need to find (in the order they should implement)
- Common language
- Guidebooks and apps for specific audiences and mobile-friendly to use in the field

## HOW CAN YOUR SECTOR GET TO THIS FUTURE?

- By us (sector) using a common language; use the term 'wetland'
- Identifying the specific audiences within industry and where we should focus our efforts
- How to build relationships so we can have a positive conversation with audiences?
- Approach companies to see if we can come in and do a lunch-and-learn
- Identify values of companies and how we can connect to their emotions
- Learn about the challenges of industry, what they value and where 'our' values overlap
- Group into 'like-value' industries
- Continue to develop the tools that are needed

## POSSIBLE GOALS FOR INDUSTRY ACTION GROUP

- Build something for the companies to use during environmental orientations
- Make wetland training equally as important as H2S
- Sharing environmental knowledge between companies
- Build a case for industry attending these events
- Environmental safety course required to work
- Maintain collaboration between industry and environmental groups
- Get AEP and AER at the table, CAP and CPA present at ASPB, AAFMP annual conferences or AGMs of other professional organizations



## WHERE TO FROM HERE

This spring, and with direction provided from the sector group discussions from this workshop, the first task of the Action Groups will be to identify their short, medium and long term goals. This will, in turn, give the WEN direction and it will help others have a better idea if this is something they want to be a part of.

Alberta NAWMP has committed to providing three years of funding for WEN. Looking to the future, longer term funding will be needed to support a sustainable WEN and new funding ideas and opportunities will be sought.

## WORKSHOP PARTICIPANT SURVEY RESULTS

A total of 24 participants completed the post-workshop survey. In general, a significant majority of respondents rated the event as very good to excellent. In aggregate, the keynote and program profile presentations were also ranked as very good to excellent. The majority of respondents indicated the afternoon WEN update and action group summary, as well as the facilitated sector discussions were very good and they got what they needed from them. Overall, respondents indicated it was a very good day, there was something for everyone, and they reaffirmed the workshop was a good learning and networking opportunity. In general, comments were positive and supportive of the workshop and WEN.

## APPENDICES

### APPENDIX A: WORKSHOP REGISTRANTS

First Name	Last Name	Sector Identification	Organization
Aimee	Boese	Agriculture	Beaver County
Alan	Corbett	Agriculture	Drainage Council
Alexandra	Frederickson	Municipalities	Land Stewardship Centre
Alyssa	Robb	Municipalities	Wheatland County
Amy	McLeod	Agriculture	Cows and Fish
Anna	Kauffman	Agriculture	Government of Alberta
Brian	Deheer	Education/Public	Self-employed
Cassandra	Brooke	Education/Public	Edmonton and Area Land Trust
Cathie	Erichsen Arychuk	Agriculture	County of Vermilion River
Cathy	MacKenzie	Education/Public	Ducks Unlimited Canada
Claudia	Rivera Rios	Other	UofA graduated
Dave	Mussell	Education/Public	Alberta Environment and Parks
Don	Shepert	Agriculture	Alberta Pulse Growers
Emily	Kabotoff	Municipalities	Strathcona County
Erin	Sawyer	Other	Alberta Land Institute
Fiona	Briody	Agriculture	
Glen	Lawrence	Municipalities	Strathcona County
Greg	Hale	Other	BalsamRoot Consulting Inc.
Heather	Robertson-Gagne	Education/Public	Alberta Environment & Parks
Jacob	Bilodeau	Other	Ducks Unlimited Canada
Jacques	Gagnon	Industry	Premier Tech Horticulture
Janine	Higgins	Education/Public	Alberta Environment and Parks
Janna	Casson	Agriculture	Alberta Agriculture and Forestry
Javed	Iqbal	Agriculture	Government of Alberta
Jay	White	Other	Aquality
Jennifer	Muir	Industry	
Jocelyn	Beniuk-Elkins	Agriculture	Alberta Environment and Parks
Jocelyn	Thrasher-Haug	Municipalities	Strathcona County
Karlie	Hanchurak	Industry	PureHM
Kaylyn	Jackson	Other	Fuse Consulting
Kiley	Marchuk	Municipalities	Strathcona County
Kim	Barkwell	Agriculture	
Kirk	Harrold	Agriculture	Harrold Family Farm
Kristine	Dahl	Agriculture	Arvense
Kylie	McLeod	Industry	Ducks Unlimited Canada
Laura	Griffin	Education/Public	Ann & Sandy Cross Conservation Area
Leanne	Mingo	Industry	Ducks Unlimited Canada
Leona	Kidd	Other	
Lorrie	Jespersen	Agriculture	Alberta Milk
Louise	Versteeg	Municipalities	Parkland County
Luke	Wonneck	Agriculture	Agroforestry and Woodlot Extension Society
Mac	Hickley	Municipalities	Alberta Environment and Parks

First Name	Last Name	Sector Identification	Organization
Mara	Erickson	Other	North Saskatchewan Watershed Alliance
Margaret	Reine	Education/Public	Clifford E Lee Nature Sanctuary
Marissa	Koop	Municipalities	B&A Planning Group
Mark	Puczko	Municipalities	City of Spruce Grove
Mark	Patenaude	Other	first nation
Matt	Wilson	Other	Alberta Environment and Parks
Matthew	Dow	Municipalities	Rural Municipalities of ALberta
Megan	Watt	Municipalities	City of Cold Lake
Meghan	Payne	Other	Lesser Slave Lake Watershed Council
Melissa	Chisholm	Education/Public	
Melissa	Chisholm	Other	Self
Michelle	Berg	Education/Public	University of Alberta - Faculty of Extension
Nalini	Mohan	Education/Public	City of Calgary
Nathalie	Olson	Education/Public	Battle River Watershed Alliance
Neil	Kuly	Industry	Premier Tech
Paul	Jungnitsch	Agriculture	Alberta Agriculture and Forestry
Quentin	Bochar	Agriculture	MD of Greenview
Renee	Howard	Industry	Fiera Biological Consulting
Ronald	Pettitt	Agriculture	retired
Rosemarie	Ferjuc	Municipalities	Red Deer River Watershed Alliance
Samantha	Lee	Other	City of Edmonton Forestry
Shelagh	Pyper	Other	Fuse Consulting
Sherry	Heschuk	Education/Public	U of A
Shibi	Chandy	Other	none
Theo	Charette	Industry	CPP Environmental
Trudy	Harrold	Education/Public	
Lisa	Allan	Other	Athabasca Watershed Council
Kari-Lynn	Reed	Industry	ATCO
Jennifer	Edwards	Industry	ATCO Pipelines & Liquids
Billie	Milholland	Other	NSWA
Amanda	Cooper	Other	Government of Alberta
Adam	Kraft	Industry	CPP Environmental
Jay	Woosaree	Industry	Self employed
Wendy	Lapainis	Education/Public	Student
Wanda	Watts	Municipalities	Alberta Environment and Parks

## APPENDIX B: WORKSHOP AGENDA

Wetland Education Network Workshop

Thursday, March 14, 2019

Agenda

8:30 am Coffee and refreshments

9:00 am Welcome and review of the day – Christina Pickles, WEN Coordinator

9:10 am **Activities**

Wetland Metaphors – Nathalie Olson, Battle River Watershed Alliance

Beaver Dress Up – Laura Griffin, Ann & Sandy Cross Conservation Area

9:30 am **Keynote**

Matthew Pyper, Fuse Consulting

Information is not enough: Reaching Audiences with Sticky Science Communication

10:10 am Break

10:30 am **Program Profiles**

Boreal Wetlands Online Training Course – Laura Mingo, Ducks Unlimited Canada

Learning, Doing, and Teaching Riparian Restoration – Luke Wonnek, Agroforestry and Woodlot Extension Society

Mapping Place Attachment in the Battle River Bioregion - Nathalie Olson, Battle River Watershed Alliance

12:00PM Lunch

1:00 pm **Wetland Game**

Laura Griffin, Ann & Sandy Cross Conservation Area

1:10 pm Action Group Updates – Christina Pickles, WEN Coordinator

2:00 pm Break

2:10 pm **Visioning Exercise for Sector Groups**

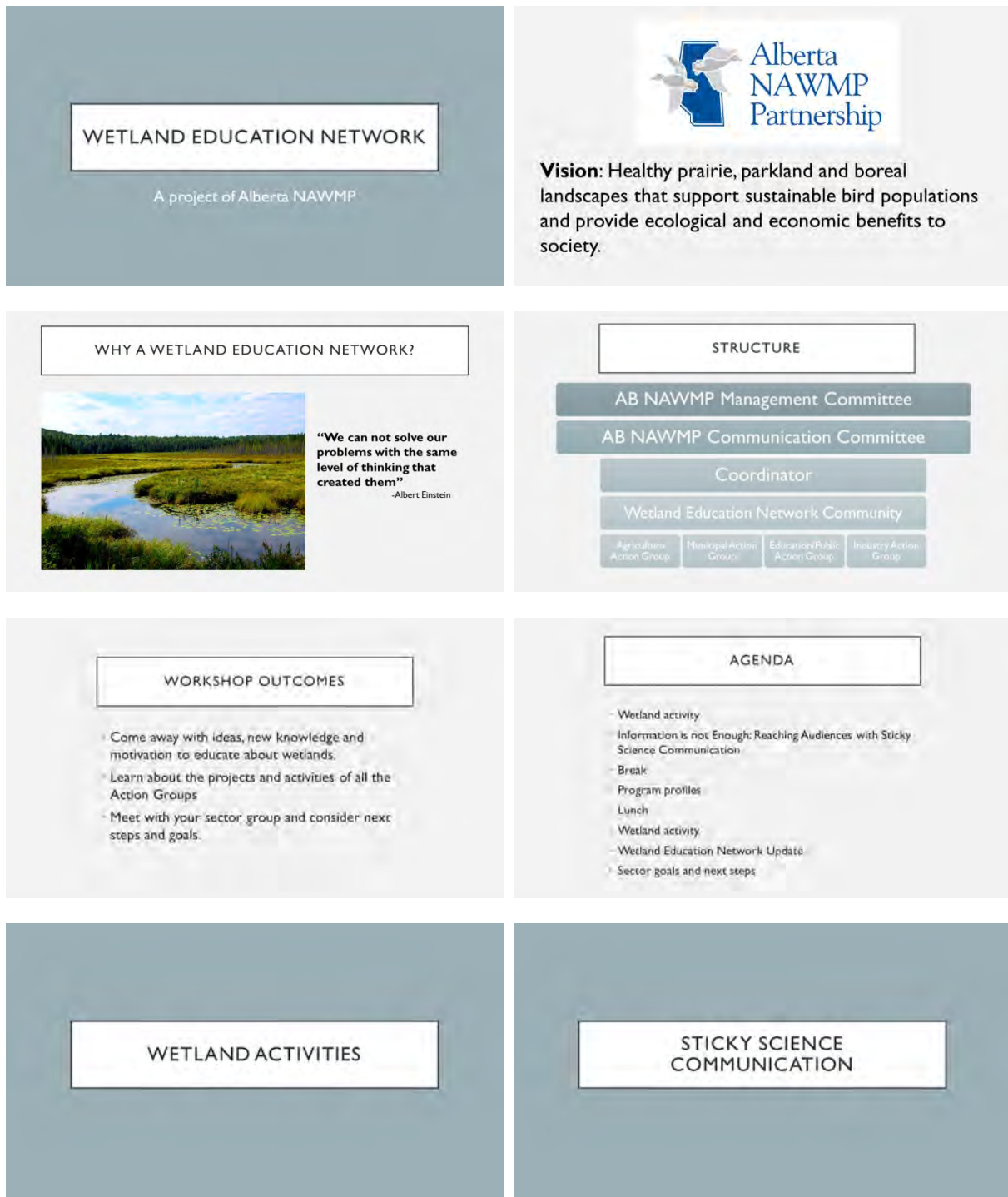
Facilitators: Shelagh Pyper, Dave Mussell, Heather Robertson-Gagne, Janine Higgins

3:10 pm Sharing Results of the Visioning Exercise – Facilitators

3:30 pm Wrap Up and Next Steps – Christina Pickles, WEN Coordinator

## APPENDIX C: WEN OVERVIEW, NETWORK BASICS AND ACTION GROUP UPDATE

### PRESENTATION BY CHRISTINA PICKLES, WEN COORDINATOR



## PROGRAM PROFILES

## NETWORK UPDATE

### WHY A WETLAND EDUCATION NETWORK?



**"We can not solve our problems with the same level of thinking that created them"**  
-Albert Einstein

### NETWORKS

- Novel and flexible combinations of people
- Ability to move information quickly and widely
- Pooling of resources, ideas and skills
- Common language and approach

CONNECT ➡ ALIGN ➡ PRODUCE

### AGRICULTURAL ACTION GROUP

- Ducks Unlimited
- Leduc County
- County of Vermillion River
- Alberta Agriculture and Forestry
- Alberta Environment and Parks
- Crop Sector Working Group
- Alberta Milk
- Alberta Pulse Growers
- Alberta Barley

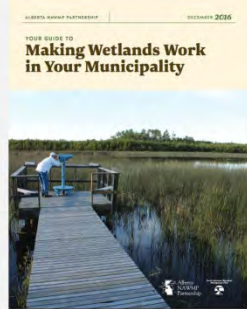


"My take is that no one owns the land forever. As a landowner and producer, I feel that it is my role to protect that land and care for it while it cares for me during my tenure on the landscape," states Robb. "So my land is a small piece of the overall puzzle when you're talking about the overall landscape."

Becky with Northern Sunrise County says, "Once a project is in place, it seems to generate an energy where the producers become inspired and create more and more ecosystem services on their lands. It's a beautiful synergy. It's really rewarding to see - it's soul food."

### MUNICIPAL ACTION GROUP

- Land Stewardship Centre
- Municipal Affairs
- Strathcona County
- Wheatland County
- Alberta Environment and Parks
- Rural Municipalities Association
- City of Edmonton
- City of Calgary
- Red Deer River Watershed Alliance
- Ducks Unlimited
- B&A Planning Group



#### EDUCATION AND PUBLIC ACTION GROUP

- Alberta Water Smart
- NAIT Boreal Research Centre
- Ducks Unlimited
- Battle River Watershed Alliance
- Alberta Environment and Parks
- Bow Habitat Station
- City of Calgary
- Inside Education
- Lesser Slave Lake Watershed Alliance

#### INDUSTRY ACTION GROUP

- Alzalink
- NAIT Boreal Research Centre
- Husky Energy
- Ducks Unlimited
- Alberta Society of Professional Biologists
- MGEO and Alberta Land Surveyor's Association

#### FUNDING

#### NEXT STEPS

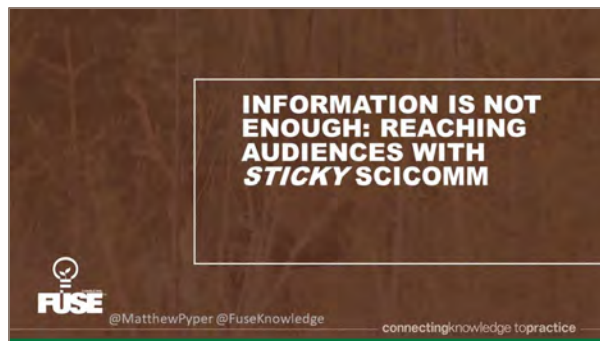
CONNECT ➡ ALIGN ➡ PRODUCE

#### WRAP UP



## APPENDIX D: INFORMATION IS NOT ENOUGH

PRESENTATION BY MATTHEW PYPER, FUSE CONSULTING







There are 127 million hectares of wetlands in Canada

Wetlands provide critical ecosystem services to our communities

Wetlands are the natural habitat of over 600 species of plants, animals and insects.



"Statistics are rarely meaningful in and of themselves. Statistics will, and should, always be used to illustrate a relationship."

Chip and Dan Heath – *Made to Stick*

connecting knowledge to practice





NEW YORK TIMES BESTSELLER

Why Some Ideas Survive and Others Die

**MADE to STICK**

Chip Heath & Dan Heath

WITH ADDED MATERIAL (from 2002-2015)

"By *"stick"* we mean that your ideas are understood and remembered, and have a lasting impact—they change your audience's opinions and behavior"

Chip and Dan Heath – *Made to Stick*

connectingknowledge topractice



### THREE CORE FOUNDATIONS FOR STICKINESS

- 1 Draw on emotions
- 2 Start with Why
- 3 Keep it credible

connectingknowledge topractice

DON'T BE SUCH A SCIENTIST

SCIENTIST REVISITED IN AN AGE OF STICKS

RANDY OLSON

#### Drawing on Emotions

**The three organs of mass communication**

When it comes to connecting with the entire audience, you have three bodily organs that are important: your head, your heart, and your gut.

connectingknowledge topractice

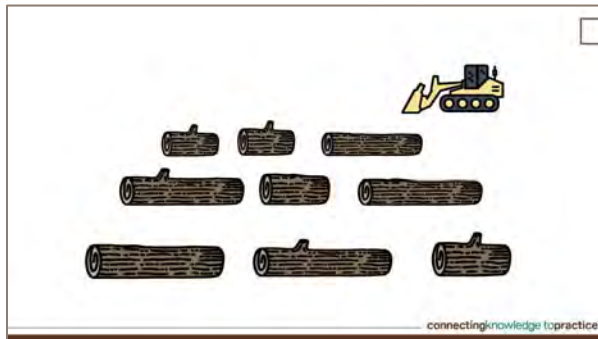
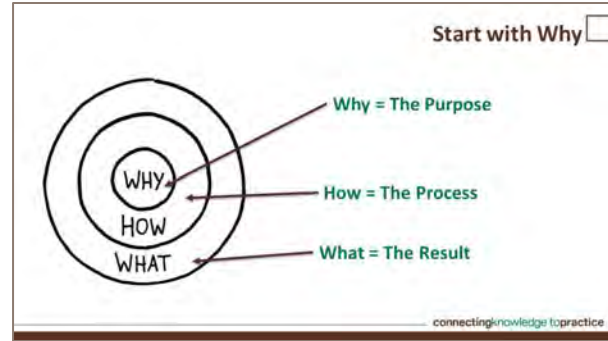
### Why draw on emotions?

- 1 "The objective is to move the process down out of your head, into your heart with sincerity, and into your gut with humor. . ."
- 2 – Randy Olson
- 3

connectingknowledge topractice







### Principle 3: Keep it Credible

Statistics are great, but are most helpful when they are used to help us understand a relationship in the data.

connectingknowledge to practice



### Message 1: Credibility

"You're more likely to drown on a beach in an area protected by a lifeguard than you are to be attacked by a shark."

Florida Museum of Natural History      Made to Stick – Chip and Dan Heath

### Message 2: Credibility

Which of these animals is more likely to kill you?

A Shark      A Deer

The deer is more likely to kill you. In fact, its 300 times more likely to kill you (via collision with your car).

Florida Museum of Natural History      Made to Stick – Chip and Dan Heath

## Principle 3: Keep it Credible

Statistics are great, but are most helpful when they are used to help us understand a relationship in the data.

connectingknowledge topractice

## STICKY SCIENCE COMMUNICATION IN PRACTICE

### DRAWING ON EMOTIONS AND CREDIBILITY WITH INFOGRAPHICS

@MatthewPyper @FuseKnowledge

about 50% of your brain is involved in visual processing<sup>[1]</sup>

70% of all your sensory receptors are in your eyes!<sup>[2]</sup>

0:01 seconds  
we can get the sense of a visual scene in less than 1/10 of a second!<sup>[3]</sup>

It only takes us 150ms for a symbol to be processed + 100ms to attach a meaning to it!<sup>[4]</sup>

People following directions with text and illustrations do

# 323% better

than people following directions without illustrations.<sup>[1]</sup>

NeoMam Studios

Ecology and conservation papers shared over social media have higher citation rates.

Lamb, Gilbert & Ford (2016)  
PeerJ, DOI: 10.7717/peerj.1064

Increased exposure on a diversity of platforms... is associated with increased citation rates for published papers.

As engagement volumes increase, the benefits for citation rates eventually level off. Researchers are encouraged to engage creatively to stand out.

By engaging on social media, scientists can reach more people and likely increase their citations. Twitter, blogs, and Wikipedia are encouraged as part of a diverse engagement strategy.

FUSE

## HUNGER HELPS EXPLAIN HUMAN-WILDLIFE CONFLICT

WELL-FED PUMA  
Puma strongly avoid areas with more human dwellings, even though kill success is higher there.

HUNGRY PUMA  
As puma become more hungry, their avoidance of human dwellings disappears, increasing the likelihood of human-wildlife conflict.

FUSE

connectingknowledge topractice

## Wild pigs are highly invasive

and cause extensive damage to crops and ecosystems. We used eight unique data collection methods to create and validate three detailed maps of wild pig distribution across Canada.

Wild pigs have spread rapidly through the prairies and are thriving despite extreme winters. They currently occupy almost 800,000 km<sup>2</sup> and have an average range expansion of nearly 90,000 km<sup>2</sup> per year.

Our findings indicate that despite limited control efforts, wild pigs are expanding like wildfire. The window to eradicate wild pigs is rapidly closing. An aggressive and immediate management action plan will be needed to mitigate the exponential spread of this species.

UNIVERSITY OF SASKATCHEWAN

connectingknowledge topractice

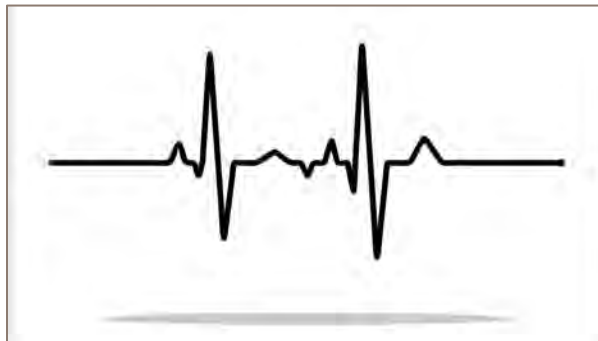
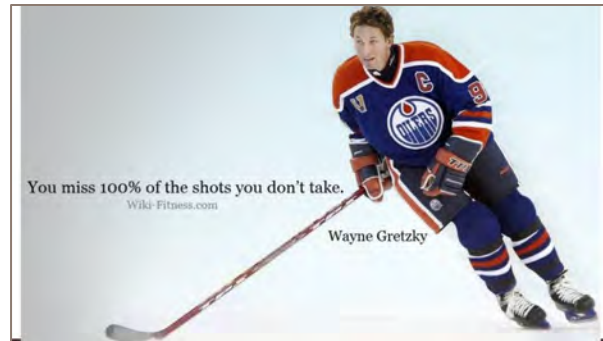
## STICKY SCIENCE COMMUNICATION IN PRACTICE

### STARTING WITH WHY TO CONNECT SILVICULTURAL KNOWLEDGE TO SEISMIC LINE RESTORATION

@MatthewPyper @FuseKnowledge







**Challenge: Take 1 thing you learned today and apply it this week**

**Take one thing you learned today and try it at your next meeting or conference**

Tell me how it worked: [matthew@fuseconsulting.ca](mailto:matthew@fuseconsulting.ca)

connectingknowledge topractice



**Information is never enough**

connectingknowledge topractice





## APPENDIX E: LEARNING, DOING AND TEACHING RIPARIAN RESTORATION

### PRESENTATION BY LUKE WONNECK, AGROFORESTRY AND WOODLOT EXTENSION SOCIETY



**Learning, Doing, and Teaching Riparian Restoration**

Luke Wonneck  
l.wonneck@awes-ab.ca  
587-891-1325

**AWES**  
Agroforestry & Woodlot Extension Society

**AWES Mission:** To increase the awareness of the economic, social and environmental values of agroforestry and woodlots in the agricultural landscape

#### AWES Background

- Non-profit society – began as the Woodlot Extension Program in 2000, renamed AWES in 2010
- Provide extension and planting services to land managers (e.g. farmers, acreage owners, land trusts, various levels of government, industry)
- Rely on grants and fee for service contracts for funding

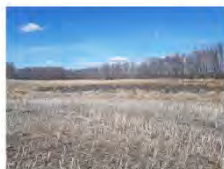


#### AWES Members



#### Why is AWES interested in riparian areas?

- Forest cover can do a lot of good in riparian areas
- Riparian areas often have low crop productivity value, and therefore are “low-hanging fruit” for implementing agroforestry systems



#### Major riparian activities in the past 5 years

- Riparian Planting Research Project 2014-2017
- Riparian Management Education Project 2017-2019
- Blindman River Riparian Assessment and Restoration Project 2018-2019
- Other Riparian Restoration Projects 2017-2019

#### Riparian Planting Research Project 2014-2017

- Funded by Growing Forward 2
- Project partners: Cows and Fish, seven counties
- >82,000 seedlings/cuttings were planted across 28 sites and monitored for 1-2 years
- Also included 26 extension events, plus 9 factsheets and our Manual for Riparian Forest Buffer Establishment in Alberta



#### Lessons Learned

- Survival rate depends on key site conditions:
  - Grass competition
  - Soil compaction
  - Exposure
- Cuttings are relatively unreliable and particularly vulnerable to drought
- Site preparation can have huge benefits to survival rates



## Manual for Riparian Buffer Establishment in Alberta

- 72 page manual provides details of best practices for:
  - Site assessment
  - Design/planning
  - Obtaining stock
  - Site preparation
  - Planting
  - Monitoring and maintenance
- Technical resources (e.g. native tree/shrub species lists, Google Earth Pro tutorials) found in the Appendices



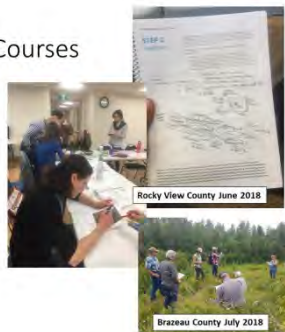
## Riparian Management Education Project 2017-2019

- Funded by the Watershed Resiliency and Restoration Program
- Project partners: AWES, Cows and Fish, 12 counties
- Includes eight "Riparian Management Courses" and five "Skills Development Workshops"
- Have applied for funding to expand the project to other counties and also make course materials available online



## Riparian Management Courses

- Two-day sessions that provide landowners with information and resources to help them to develop their own management plans
- Based on the "facilitated learning model"
- Includes in-class and in-field components
- Well received but relatively low attendance (7-15 participants)



## Riparian Skills Development Workshops

- Hands-on practical field days learning skills relevant to riparian management and restoration
- Examples of skills that have been taught include:
  - Plant ID
  - Stem cutting harvesting and planting
  - Seedling planting
  - Implementing site preparation and mulching
  - Riparian Health Assessments



## Blindman River Riparian Assessment and Restoration Project 2018-2020

- Funded by the Watershed Resiliency and Restoration Program and PUR Project
- Project partners: AWES; Cows and Fish; Red Deer River Watershed Alliance; Fiera Biological Consulting; Counties of Red Deer, Ponoka, and Lacombe
- Includes:
  - GIS-based riparian assessment of 225km of river
  - Ground-based Riparian Health Assessments
  - Restoration activities including planting 50-60K seedlings



## Blindman River Riparian Assessment

- Riparian intactness of 50m wide buffer was calculated along 225km length of river based on land cover data
- Majority of riparian areas (62%) were classified as "low" or "very low" intactness = limited natural vegetation and prevalent human footprint
- Lowest intactness between Rimbey and Bentley
- Therefore we're hosting an information session on the project just north of Bentley on March 27<sup>th</sup>!

<https://www.eventbrite.ca/e/blindman-river-restoration-project-tickets-58339453877>



## Other Riparian Restoration Projects 2017-2019

- We have implemented 10-20 riparian planting projects per year for the past few years (600 to 8,000 seedlings per project)
- Variety of planting designs depending on landowner goals and site conditions
- Funders/partners:
  - County Alternative Land Use Services (ALUS) programs and other environmental stewardship programs
  - Landowners
  - Corporate funders
  - Watershed alliances
  - Environment and Climate Change Canada's Environmental Damages Fund and Eco-Action Fund
  - Canadian Agricultural Partnership Environmental Stewardship and Climate Change Producer Program



## Example 1: Edible Riparian Buffer in Wetaskiwin County

Landowner goals:

- Fruit
- Snow trapping
- Livestock shelter/shade
- Nitrogen fixation for surrounding cropland
- Wildlife habitat
- Water quality and quantity



Wetland 2 (September 2017)



Wetland 1 (September 2017)



Wetland 2 (May 2018) – tillage site prep



Wetland 1 (May 2018) – tillage site prep



Wetland 2 (May 2018) – biodegradable plastic mulch applied



Wetland 1 (May 2018) – straw mulch applied



Wetland 1 (May 2018) – volunteer planting event



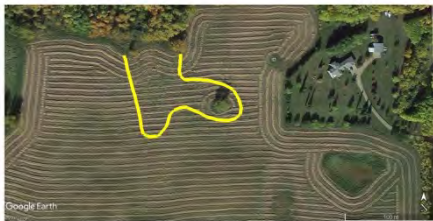
Wetland 2 (May 2018) – volunteer planting event



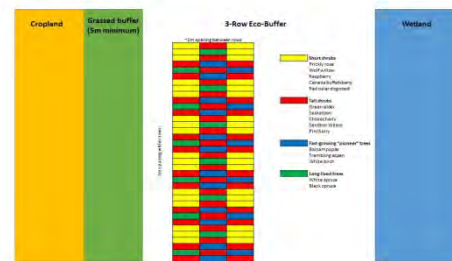
Wetland 1 site visit October 2018



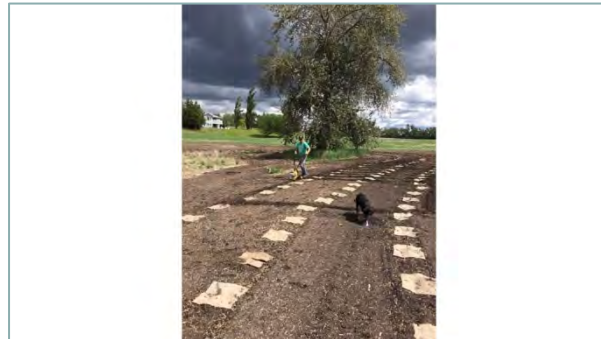
### Example 2: Riparian Eco-Buffer in Parkland County



- Filter and absorb nutrients and other pollutants from the adjacent cropland
- Provide habitat for wildlife such as birds and pollinators







### Concluding Remarks

- Riparian restoration in agricultural landscapes can be challenging
- Overall, our riparian extension events have been well received but attendance has been unreliable
- Collaboration with government, industry, and non-profit partners has been key to our work
- How do we envision that riparian management practices might change among farmers who don't attend our workshops?

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Executive Director  
[nstjean@awes-ab.ca](mailto:nstjean@awes-ab.ca)  
780-643-6732

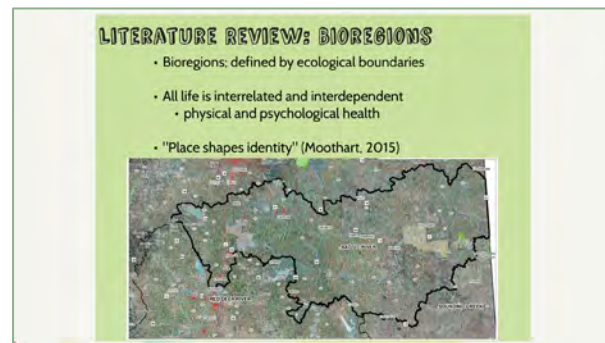
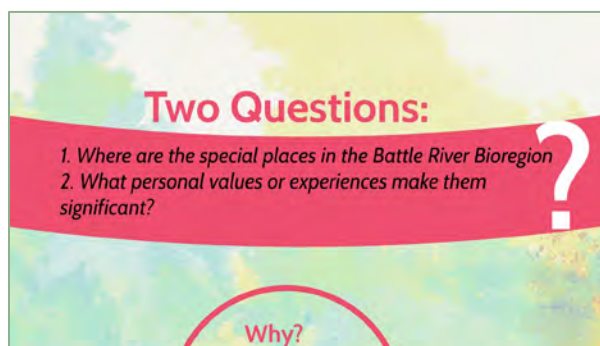
Luke Wonneck  
Agroforestry Specialist  
[l.wonneck@awes-ab.ca](mailto:l.wonneck@awes-ab.ca)  
587-891-1325

<https://www.awes-ab.ca/>



## APPENDIX F: MAPPING PLACE ATTACHMENT IN THE BATTLE RIVER BIOREGION

PRESENTATION BY NATHALIE OLSON, BATTLE RIVER WATERSHED ALLIANCE





## LITERATURE REVIEW: PLACE ATTACHMENT

- Correlation between place attachment and a person's willingness to protect or preserve places
- Can help organizations foster place-specific pro-environmental intentions and behaviors
- Social benefits: community cohesion and happiness
- How to measure? Scale and map-based measures.



## Mapping and Measuring Place Attachment



Place Attach

- Social
- Economic
- Life Sust
- Learning
- Spiritual
- Heritage
- Aesthetic
- Intrinsic/
- Recreatic
- Biological

## Place Attachment Values

- Social
- Economic (Agriculture or Tourism)
- Life Sustaining
- Learning/research
- Spiritual
- Heritage/cultural
- Aesthetic
- Intrinsic/existence
- Recreation
- Biological

# MAPPING

(Bioregional) "Maps become a source of collective knowledge about a place - a level of knowledge that no single individual, corporation, or government agency is ever likely to match."  
 (Aberly, 2002)

## LITERATURE REVIEW: MAPPING


- "Mapmaking... is as important to making us human as language, music, art, and mathematics." (Sobel, 1998)

## LITERATURE REVIEW: MAPPING

- "Mapmaking... is as important to making us human as language, music, art, and mathematics." (Sobel, 1998)
- Maps demonstrate what the mapper thinks is important
- Radical Cartography: He who holds the map, holds the power


### Parish Maps

"In about creating a community expression of values and about beginning to assert ideas for involvement, it is about taking the place in your own hands." (Clifford, 1996)



### Common Ground

"The meeting a personal map to visually demonstrate a special place, the map maker is put in a place of power." (Lydon, 2000)




## Parish Maps

... is about creating a community expression of values, and about beginning to assert ideas for involvement, it is about taking the place in your own hands." (Clifford, 1996)



## Common Ground

"By creating a personal map to visually demonstrate a special place, the map maker is put in a place of power." (Lydon, 2000)




## LITERATURE REVIEW: MAPPING

- "Mapmaking... is as important to making us human as language, music, art, and mathematics." (Sobel, 1998)
- Maps demonstrate what the mapper thinks is important
- Radical Cartography: He who holds the map, holds the power


### Parish Maps

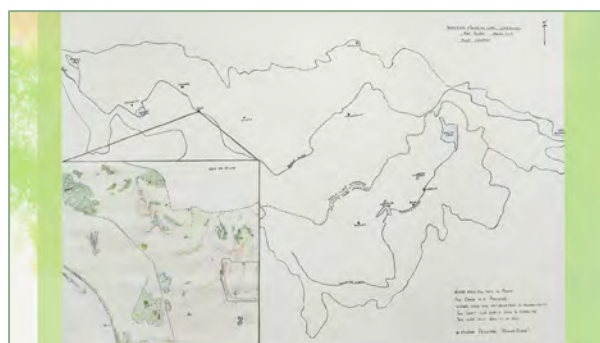
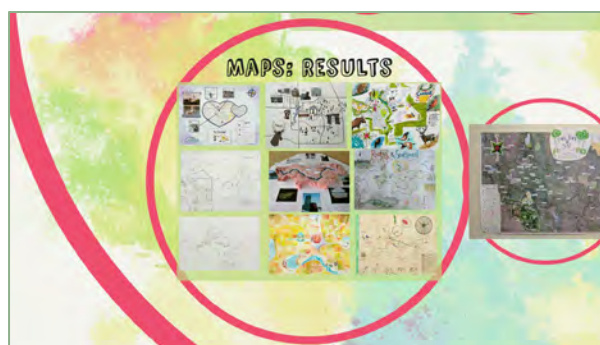
"In about creating a community expression of values and about beginning to assert ideas for involvement, it is about taking the place in your own hands." (Clifford, 1996)



### Common Ground

"The meeting a personal map to visually demonstrate a special place, the map maker is put in a place of power." (Lydon, 2000)











**MANY THANKS TO:**

- MAEEEC Cohort and RRU
- Thesis Committee:
  - Mitchell Thomashow &
  - Elizabeth Halpenny
- The Battle River Watershed Alliance
- My family, friends and lap companion




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