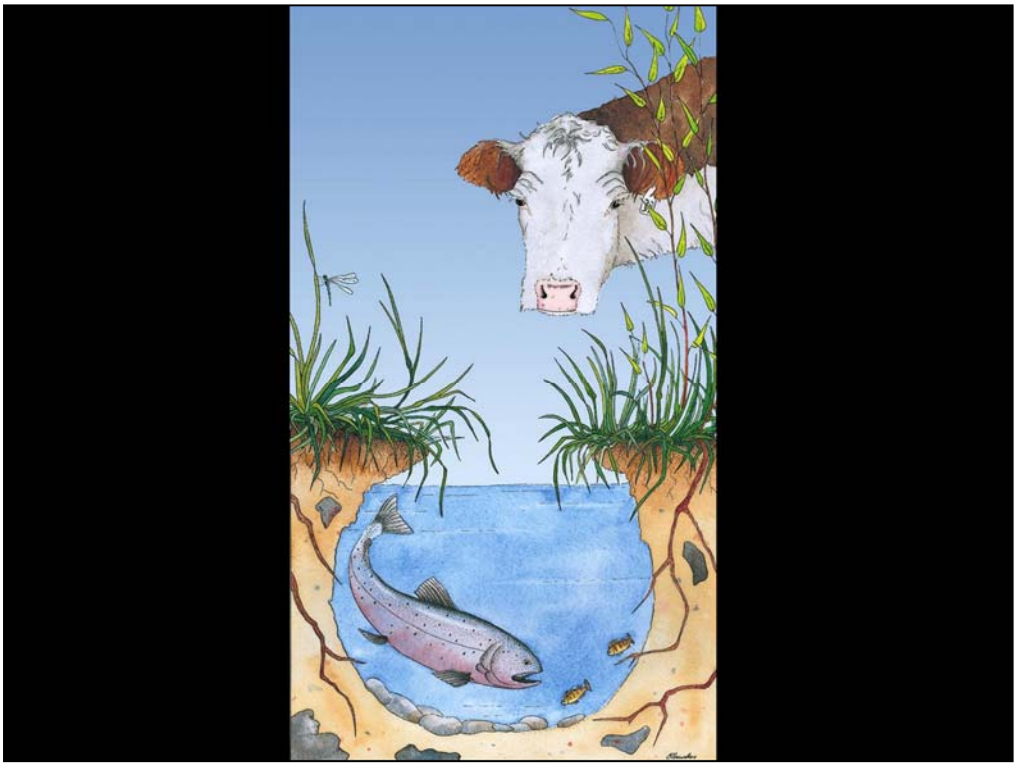


The Alberta Riparian Habitat Management Society-"Cows and Fish" was established in 1992 through a partnership between the Alberta Cattle Commission (now Alberta Beef Producers); Trout Unlimited Canada; the Canadian Cattlemen's Association; Alberta Environment; Alberta Sustainable Resource Development, Alberta Agriculture and Rural Development; Agriculture and Agri-Food Canada's Agri-Environment Services Branch (formerly Prairie Farm Rehabilitation Administration), Fisheries and Oceans Canada; and later by Alberta Conservation Association . Cows and Fish partners are working with farmers, ranchers and other landowners to foster a better understanding of how improvements in grazing and other management on riparian areas can enhance landscape health and productivity for the benefit of all who use and value riparian areas.

Key to the initial success of the partnership has been the cooperation of a number of southern Alberta ranchers that have applied riparian grazing strategies to restore riparian health or have shared existing grazing practices which have been successful in maintaining riparian health. That success has spread and can be seen in the diverse awareness and education activities Cows and Fish facilitates across Alberta. In addition to providing awareness and riparian health training across Alberta, Cows and Fish is currently working in partnership with dozens of municipalities and local community groups to do watershed-based awareness programs, workshops, and riparian health assessments.

Those original ranching families knew cows and fish could co-exist, it was just a matter of getting the management worked out to maintain healthy riparian and upland rangeland, and sharing those underlying management principles with others.

Riparian areas are those areas of water-loving vegetation and moist soils next to rivers and streams,

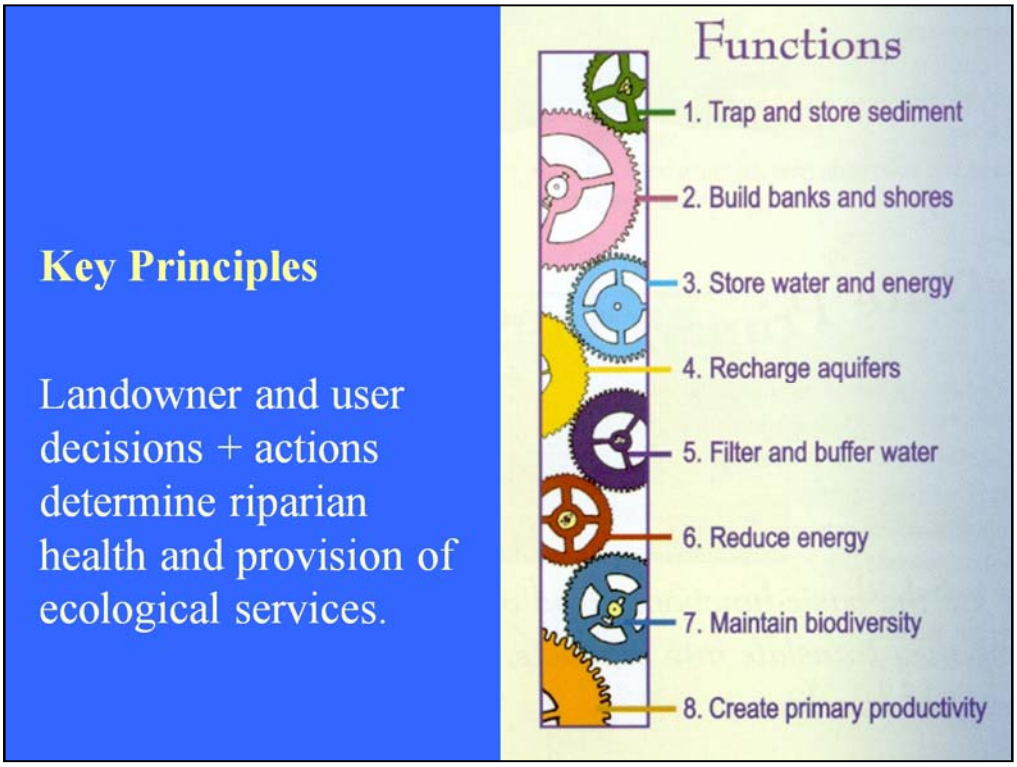
…and lakes and wetlands.

We help people understand the importance of riparian areas, even when there is no visible water, whether it is for water quantity or quality, fish and wildlife habitat,…

How do we know if stewardship is occurring, if people are caring for our landscapes, supporting and promoting functioning ecosystems?

Water quality is one of the main drivers of improved riparian health, at least from the public's perspective, and so how do we achieve improved riparian health and subsequently, water quality? The answer is that we need to increase stewardship.

We promote and build stewardship through a series of key underlying principles, including this one—riparian areas are an extremely small proportion of the landscape as a whole (2-5%), but are much more important to health landscapes and people than their small size would suggest.



Our evaluations and our past work strongly shows us that individual landowners and land users are the ones that will determine the health of our landscape, so their decisions and actions are key. Resource managers seldom manage the land directly (except some say in crown land), but rather the landowner and user make the decisions and thus decide what ecological functions will occur (knowingly or unknowingly).

Our experience and evaluations tell us that a key to success is the underpinning approach that if we want healthier riparian areas, we have to start with education and awareness so people value and understand these areas. Basic messages such as:

-water flows downhill;

-2x velocity = 4x work=64X sediment

-vegetation is the 'root' of the solution

-successional pathways in woody veg.

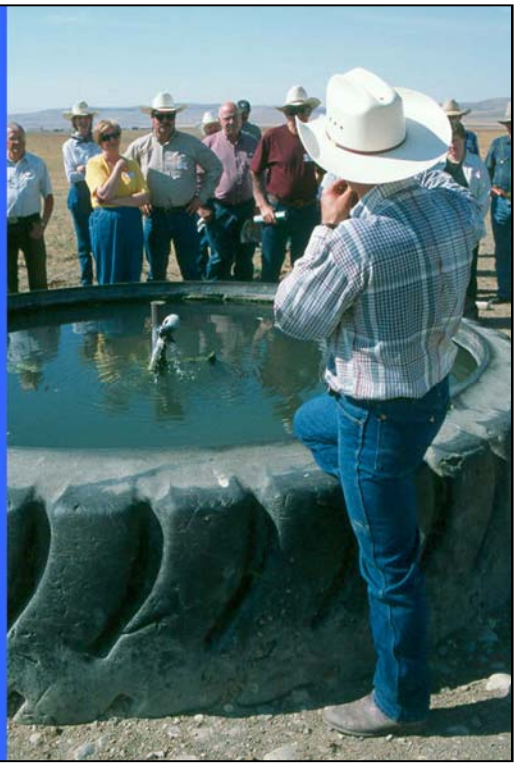
-maintain the capital; live off the interest

-80% of Alberta's fish & wildlife rely on these areas

-every sediment particle is a potential source for a water quality contaminant to hitch a ride

Key Principles

Management changes are practical, economical, restorative and sustainable.

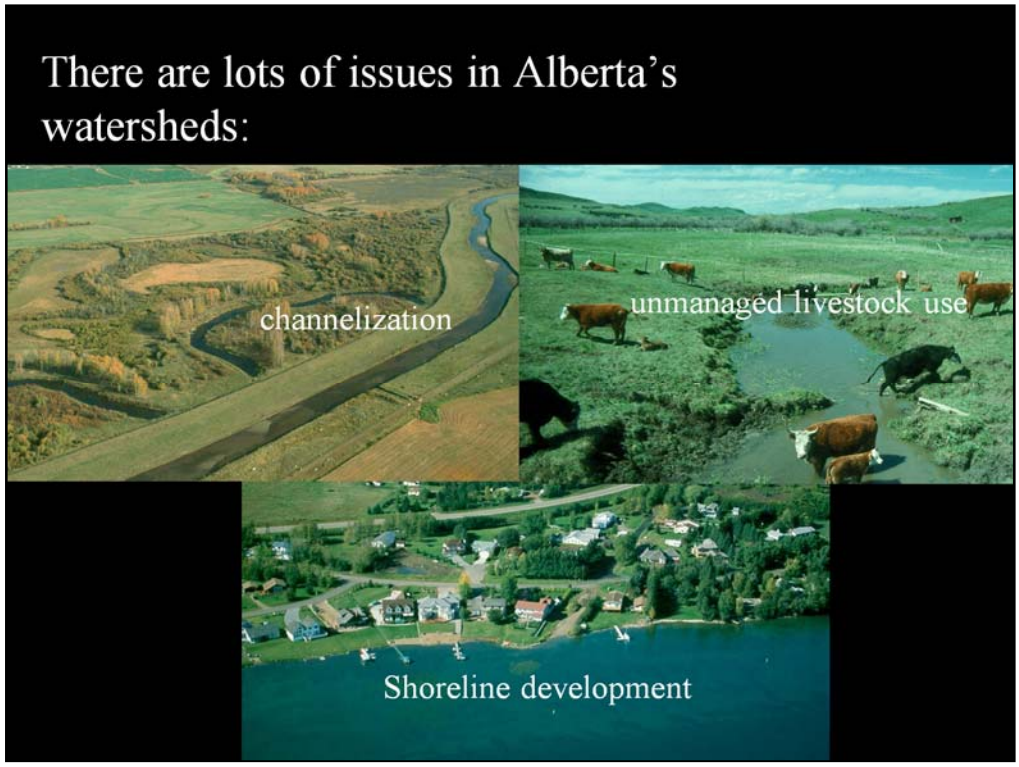


We have to work with landowners and land users to find realistic management practices that improve riparian health and can be sustained long-term.

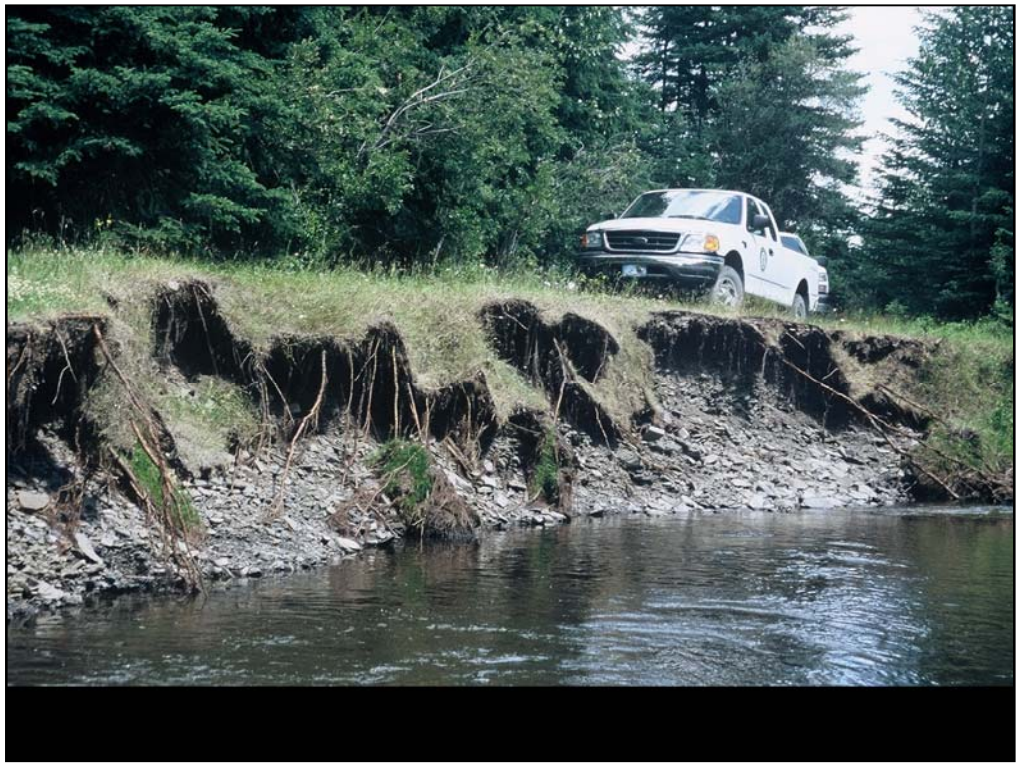
Key Principles

The appropriate scale to work at is the community, watershed level.

The watershed and community scale is best suited for having an impact because it links together geographically-linked actions, as well as links and rebuilds a community network, since often local community members need to get to know each other and reconnect.



It's also critical we are honest about there being lots of impacts to riparian areas, and acknowledge all uses can negatively impact health, without finger pointing.



We help people understand the basics, like the need for deep, binding roots, which lawn grass just doesn't have, and the implications of this to erosion, water quality, and fish habitat.

It's critical we work with farmers, ranchers, and others who own and manage the land, to implement riparian management that improves the function of these areas, like sediment trapping and rebuilding of streambanks.

"The real substance of conservation [stewardship] lies not in the physical projects of government, but in the mental processes of citizens… all the acts of government, in short, are of slight importance to conservation except as they affect the acts and thoughts of citizens."

Aldo Leopold, 1937

The key point in the Aldo Leopold quote: it isn't all the projects/programs that government (or even organisations do), but rather what individual citizens (landowners, managers & users) do that is key, and so to do that, we must affect people's thinking, which will affect their actions.

Aldo Leopold is considered the father of conservation in North America.

"We end, I think, at what might be called the standard paradox of the twentieth century: our tools are better than we are, and grow better faster than we do. They suffice to crack the atom, to command the tides. But they do not suffice for the oldest tasks in human history: to live on a piece of land without spoiling it."

" A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise."

A. Leopold 1949: A Sand County Almanac

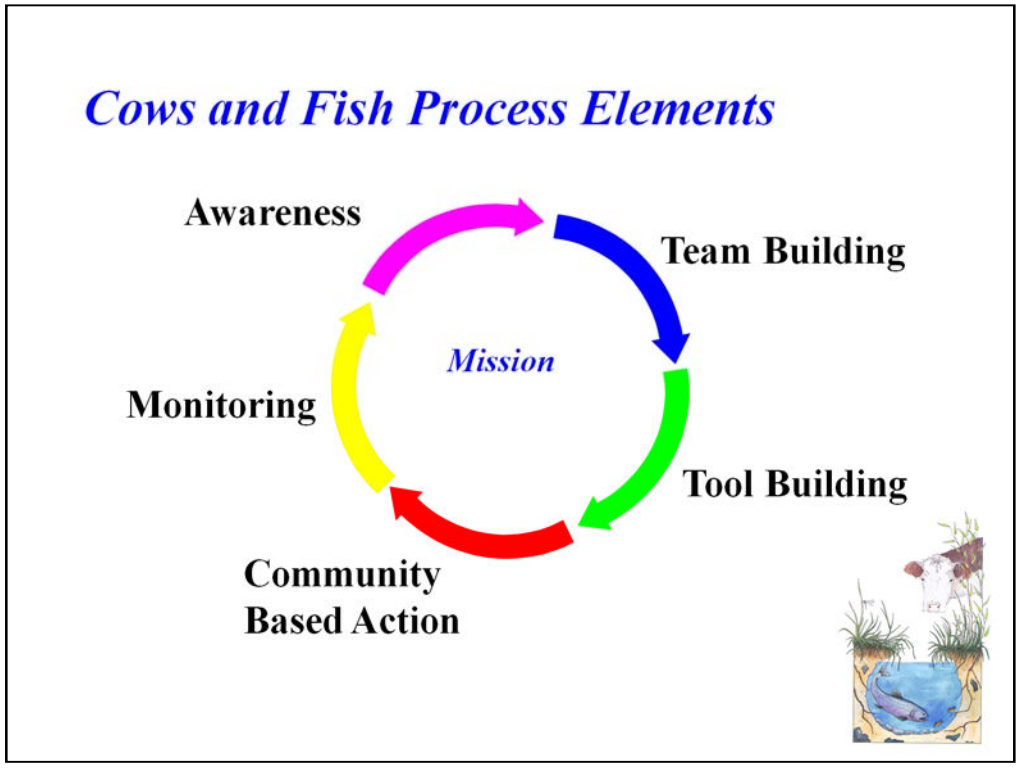
What is stewardship? We hear a lot about what stewardship is, and sometimes it seems that everything every natural resource agencies does, counts or reports on is now called stewardship. We think that stewardship is really only some of these things, and should consist of these 3 elements.

Acts and regulations do exist (and are necessary), but Cows and Fish is not about regulation & enforcement—we're about promoting proactive, voluntary approaches, because most people are not doing things on purpose to negatively influence the ecosystem, they just need to be more informed and aware. Stewardship is not about enforcement, having people be regulated or follow the law, it's about choosing to be proactive and doing what is best for sustainable management (which may be even more than is required by law, or equal to).

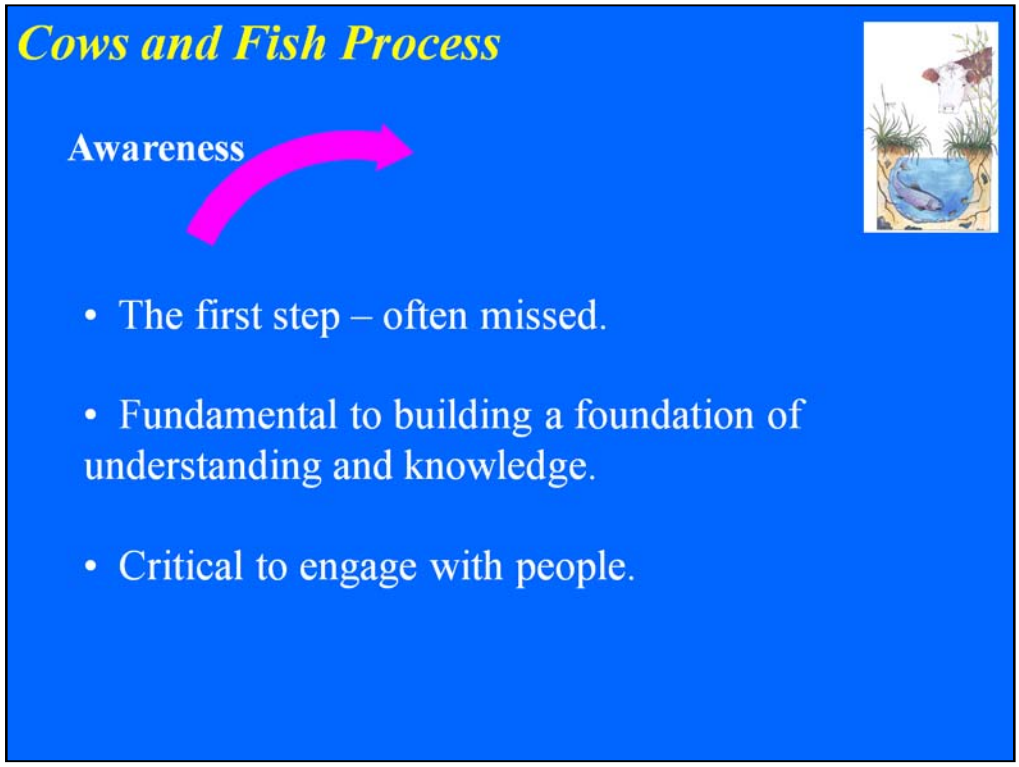
Conservation and stewardship, like Cows and Fish, are not about paying people to do the right thing…what happens when the payment or incentive is no longer there? People sometimes do need financial assistance or rewards for doing what benefits the ecosystem, but is shouldn't be the reason they make a change.

Protecting small postage stamp-sized areas doesn't do much…this is clearly ineffective in the context of the land use and health and impacts it has to water quality and riparian habitat. It isn't that we shouldn't start somewhere, even if it is small, but our efforts, like this or other small restoration projects need to be considered for the actual value and impact they provide. That's why getting people to think a bit bigger, on the local watershed scale, on their whole land base is important.

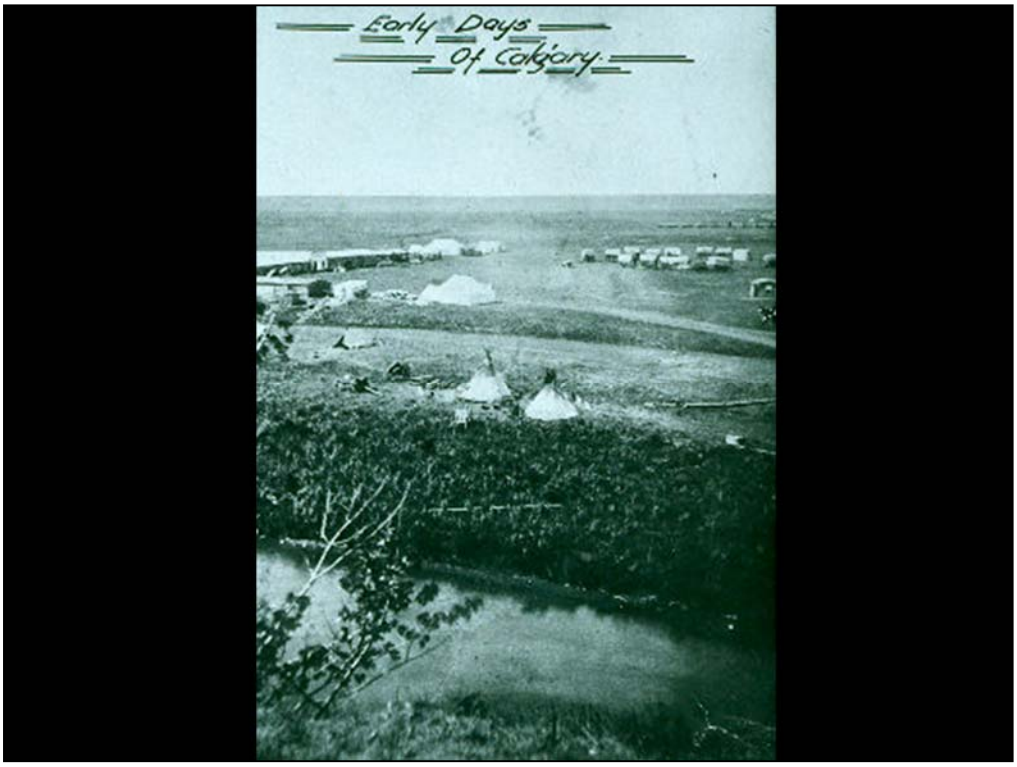
Making changes to our landscapes, to riparian areas is not quite as easy as losing 30 pounds in 30 days (if only it was that easy!)…



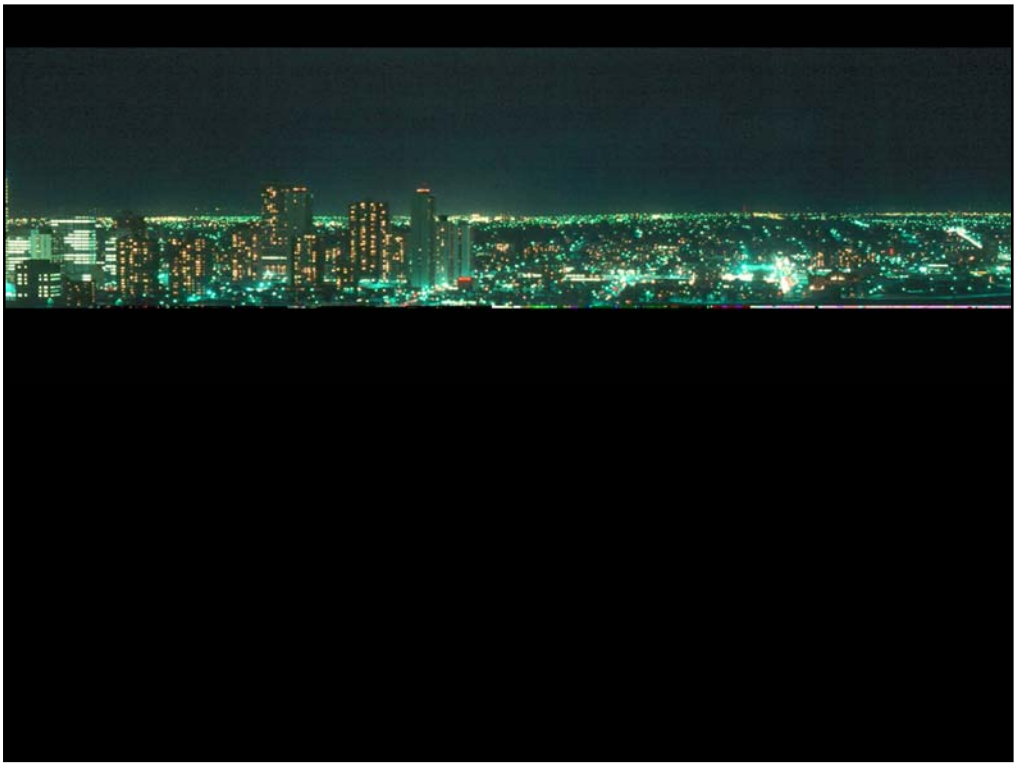
Our process underpins all our efforts, and it is taking this approach that has made us successful. Following an approach that recognizes people need to understand the reasons why first, before they can take action, and letting them drive that process, is key.



Awareness is really about giving people the requisite knowledge they need about riparian areas, how their landscape around them functions and we quite often hear 'we've been doing education for years, we've done enough education'…but clearly people aren't sufficiently educated about their riparian areas (or other natural resources) and maybe past efforts have been ineffective. Awareness is also ongoing, it doesn't just get done once, and then you are finished, but rather it is needs to keep reaching new generations; people don't learn everything they need to know from 1 factsheet, 1 presentation, 1 interaction, but rather need to build on what they've learned, and gradually learn more, even turn to new topics once one are has been mastered.



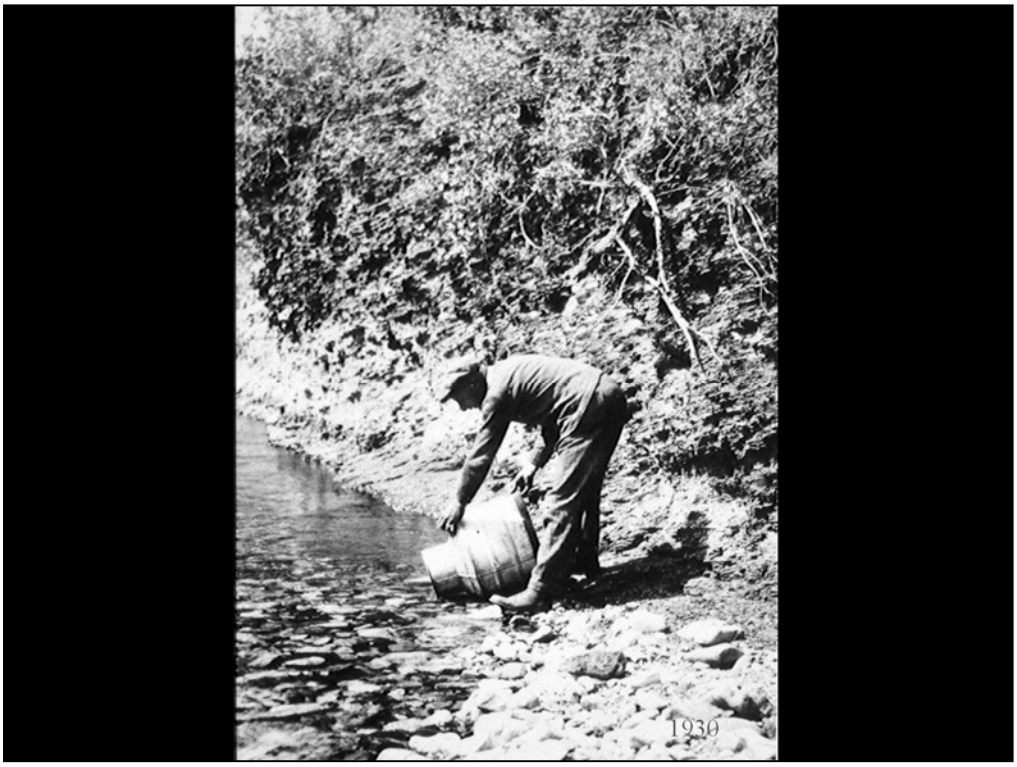
This is the City of Calgary, over 100 years ago, and we find if very important to use historic imagery to capture people's attention, to show us what the landscape really looked like because we often don't remember or realise how much the landscape has changed, even over our own lives.



City of Calgary, modern day—pretty different from the historic image

HISTBOW019 1897 flooding in Calgary, small boat/canoe to get around

HISTHIG010 1910 Cartwrights fishing Highwood River (south of Calgary), showing we've been fishing these waters for a long time.



HISTHIG003 1930 restock trout fry in tributary to the Highwood River, from Dominion Government fish hatchery. If we felt it necessary to stock fish by 1930, when the population of Alberta was tiny, around 600,000-650,000, when Alberta had only been partially settled for 30-40yrs, then imagine the impact to the fishery by now/present day.

Awareness is the first and most important element to our Process.

We recognise that riparian areas, like other ecosystems and elements of our landscape/watershed are complex, but there are basic, elemental messages about ecology and how these are function or 'tick' that are non-threatening and easily understood, such as the importance of deep-binding roots to hold streambanks together, like rebar is used in concrete foundations of buildings to provide structural support.

…elemental messages like ‘healthy riparian areas can be messy’…these fallen logs are integral to creating habitat structure in the water (as well as on land), slowing down water, creating deposition, and becoming entrained in the channel (crossways) to create stair-step effects, again reducing the erosive force of the water.

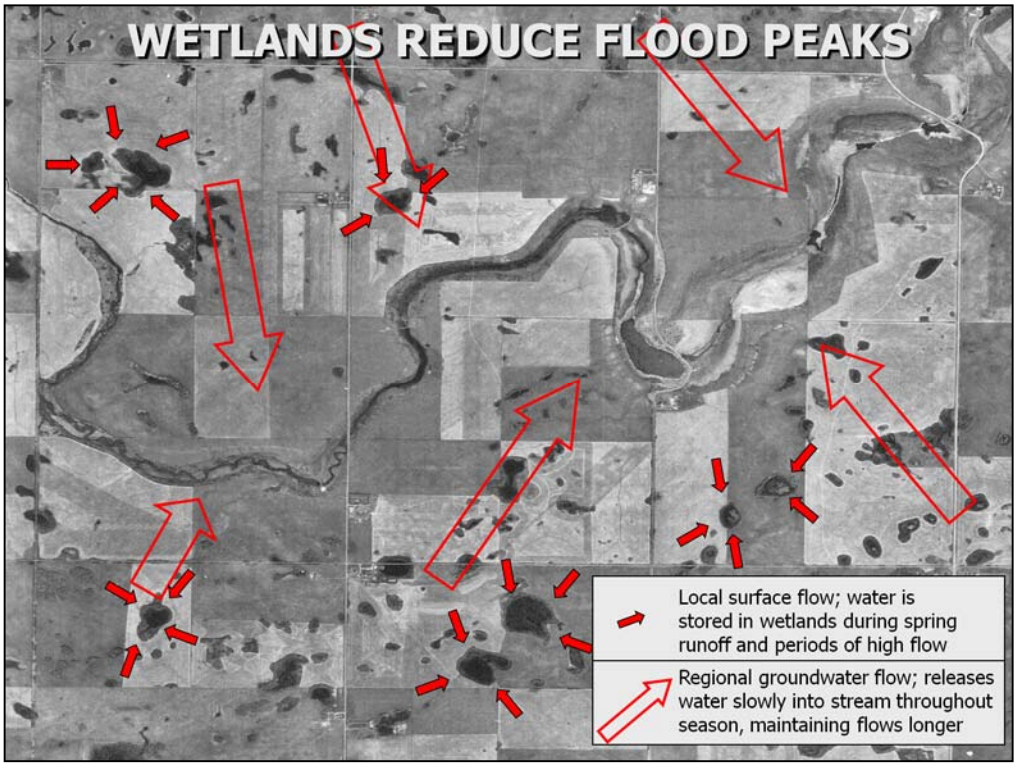
Basic ecological idea: ‘good mud’..key to functioning riparian areas. This slide shows some good mud in a riparian area trapped in the residue after a spring flood. The carry over is necessary to trap sediments like these, bind soil, and dissipate stream energy.

Clearly if the water gets up to the 2 little culverts, there's too much water, and it's going to cause erosion at the road…this about not understanding how the system works and looks year round. Clearly the original culvert plan isn't and won't meet this stream's high flow needs…it needs more careful planning and understanding of how systems work all year round and year after year.

It's just about helping people understand the basics of how streams and rivers work…they move…and when this farm yard was established, obviously the stream wasn't so close, or they didn't recognise this fundamental feature of riparian areas.

Riparian areas are ecologically defined…but our management can influence how they express themselves on the landscape—helping people understand this is about making them aware of what they see and "read" the landscape better.

Defining the riparian area isn't as simple as looking at the vegetation sometimes…clearly the water and soil didn't change along these lines, but rather management is the reason for the way in which the rip area is expressing itself



Helping people understand how wetlands are interconnected to streams and whole watersheds as flood protection is another way of helping people understand how the whole system works together.

Hypothetical Case

Illustration: C. Smyth

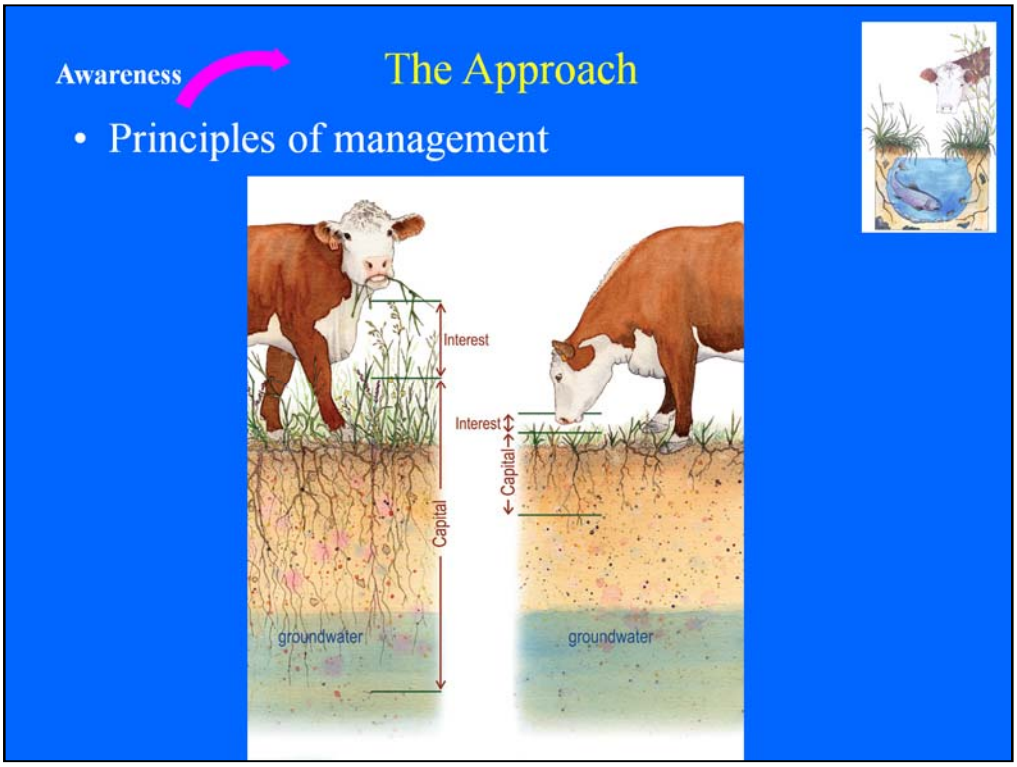
Helping people see below the surface, to understand processes they cannot readily see, is integral to what we do. Water can be present as surface water, underground water or ground water. Plants in the riparian like to keep their roots wet, or if they are species that grow in the uplands, they will be more lush than in the uplands.

People need to understand the consequences of not having healthy, well vegetated riparian areas…sometimes a before & after comparison is the best way to show that.

Bow River at Southland park before and after June 2005 flood.

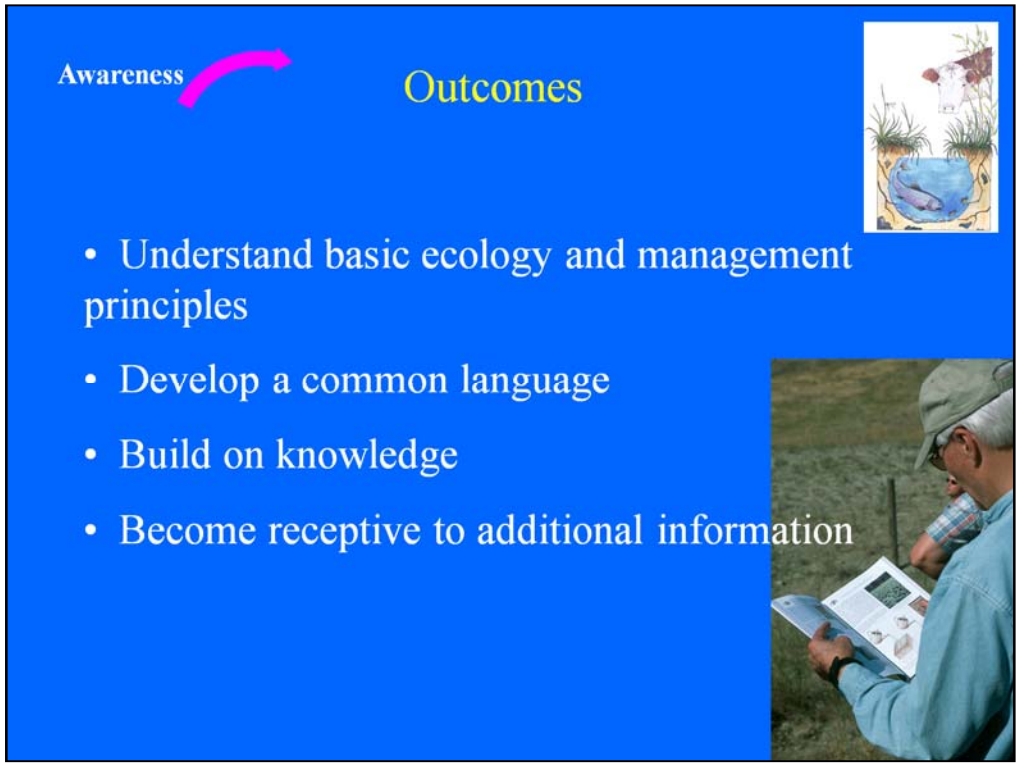
People need to understand the consequences of not having healthy, well vegetated riparian areas…sometimes a before & after comparison is the best way to show that.

Bow River at Southland park before and after June 2005 flood. Note that this heavily used area, lacking vegetation on the banks is an urban off-leash dog park.

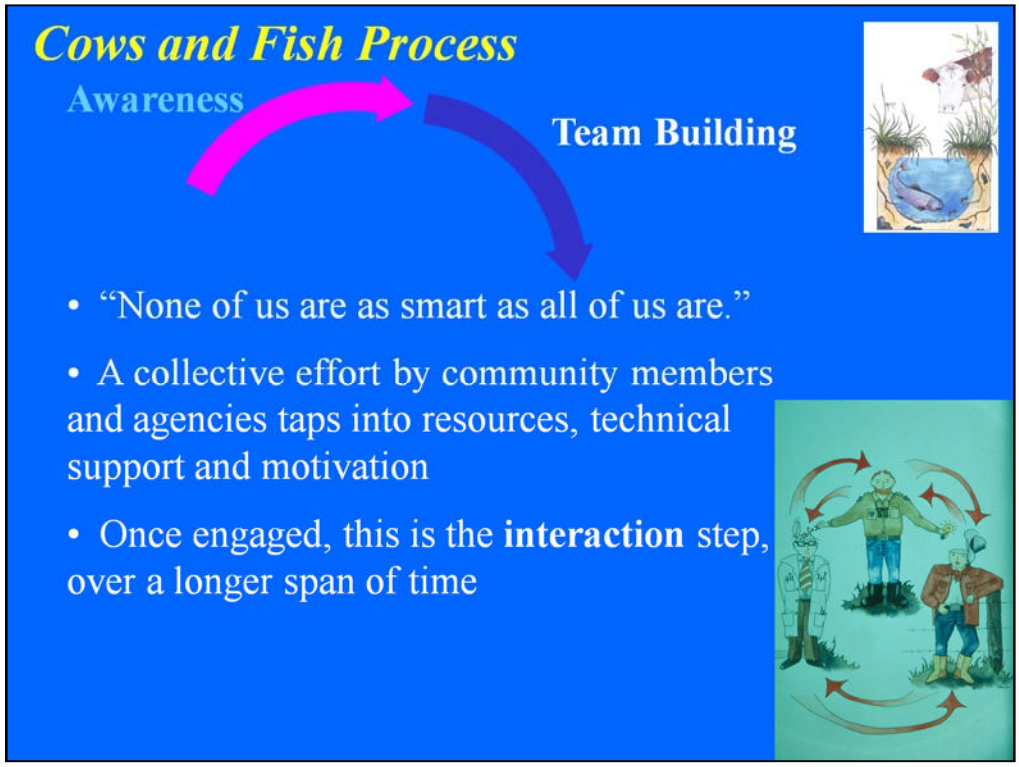


Helping livestock producers and managers understand grazing impacts through analogies to capital & interest…if you eat the capital, you have a lot less interest in the future.

In addition to the dozens of awareness messages and presentations we give to adults each year, we also work on many rural youth education activities, including environmental & ag-fairs and Classroom Agriculture Programs. Here, one of our staff is delivering *Cows, Fish, Cattledogs and Kids!*, an interactive game show about riparian areas and grazing.



What are the outcomes of doing awareness…?



Team building is about bringing people together, sharing ideas and even rebuilding rural (or other) communities. It is about taking the scientific knowledge (scientist), the wisdom and experience from landowners (rancher) and linking them.

- Talk to the neighbours; get neighbours to talk with each other

Share information, knowledge and perspective

We also participate in social and clean up activities like the Blueweed Blitz (weed pulling in a riparian area); here, our staff are working with the group to not only have a physical impact on weeds, but more importantly to work with the community to build capacity and community pride.

'Who you gonna call?' Knowing who has expertise, resources and ideas is part of helping build a team that will help the local community. See who else can help and invite them in.

Our efforts at encouraging riparian area management that is more than just streambank fencing has really begun to pay off. Organisations like Alberta Conservation Association and some Trout Unlimited Canada chapters, who historically only supported complete exclusion of cattle from waterways, are now working with community groups, demonstration sites, and providing funding to many riparian grazing projects that don't rely on streambank fencing as the only viable management option. Along the Milk River, for instance, the ACA, with other partners, is working with ranchers on grazing plans as part of MULTISAR (Multiple Species At Risk)…not grazing exclusion. Cows and Fish is a partnership, and we are very fortunate to have great delivery support by people like Public Lands, and as part of our joint efforts to promote healthy, sustainable landscapes, we have been working with them, foresters, and wildlife managers in the boreal to expose them to successful grazing strategies in the forest, including riparian areas, and to help discuss how to deal with grazing and timber allotments that overlap.

Team Building

Outcomes

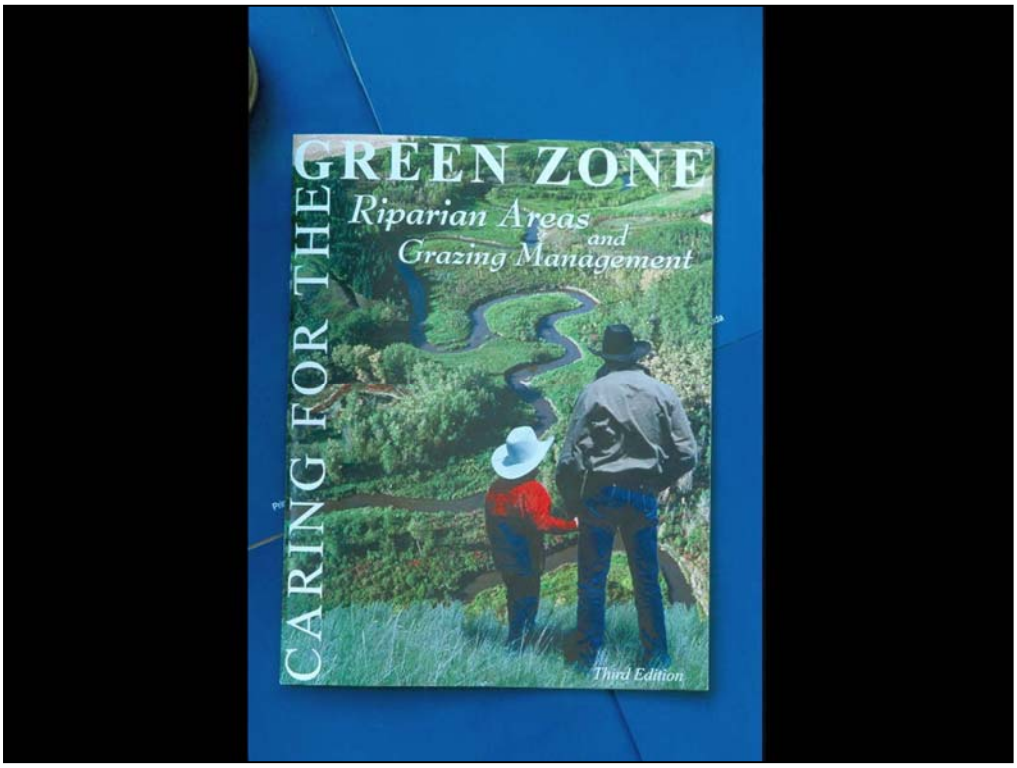
- Build a community
- Work as a group
- Make more effective use of resources
- Increase geographic scope of action – to a watershed scale, including uplands

Cows and Fish Process

Tool Building

- Awareness is a process of gaining understanding of how things work.
- Literacy is making things work, with an acquired knowledge of options, alternatives and opportunities.
- What "**tools**" do landowners need to be able to make decisions about management changes?

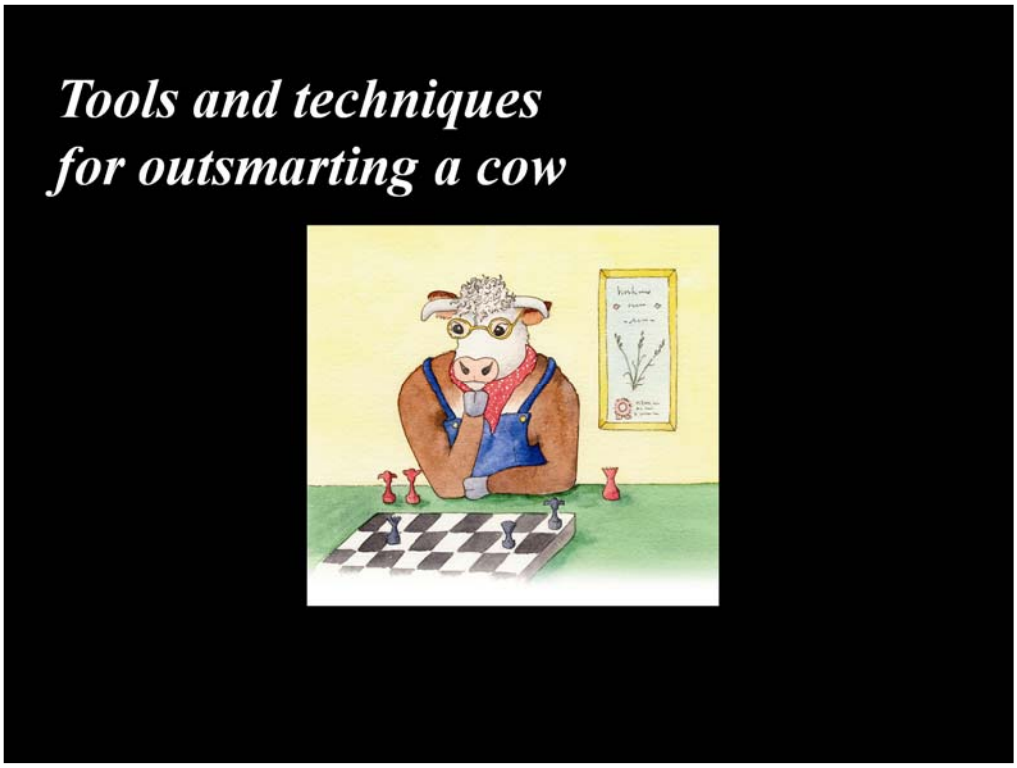
Literacy is tool building-providing options and alternatives that take awareness to action, helping people understand what is in the realm of the possible.



Sometimes those tools can be provided in a written format, such as this document, which has real – ranch case studies included.

Profile sites: good examples of existing management choices. It's about getting producers to share their experiences, in person at community events, but also for site research, digital stories, and letting others share these producers' experiences via presentations and written material as well.

We regularly assist with the selection of potential demonstration sites, discuss the design of them, and work with the local resource staff to monitor them, including setting up and encouraging them to include regular photographic monitoring.



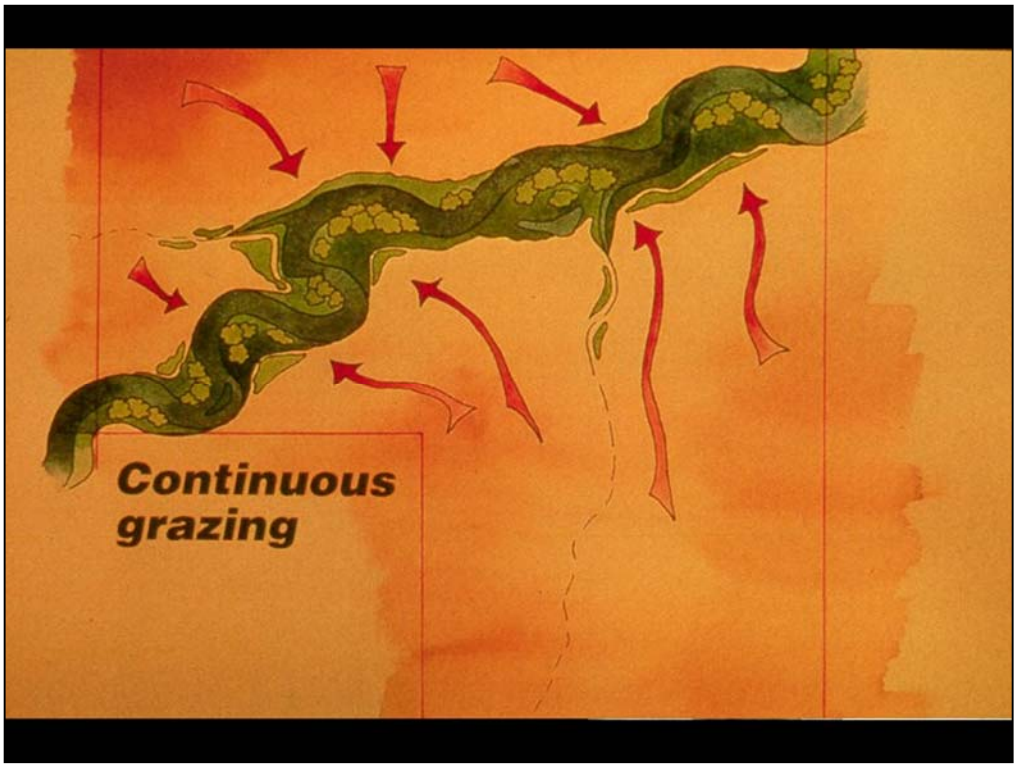
Or one could say, they are the tools and techniques to try and outsmart a cow – what riparian management is all about. Some other tools you can look at incorporating into your operation are:

a) Alter livestock distribution using salts, fencing, water development, or herding.

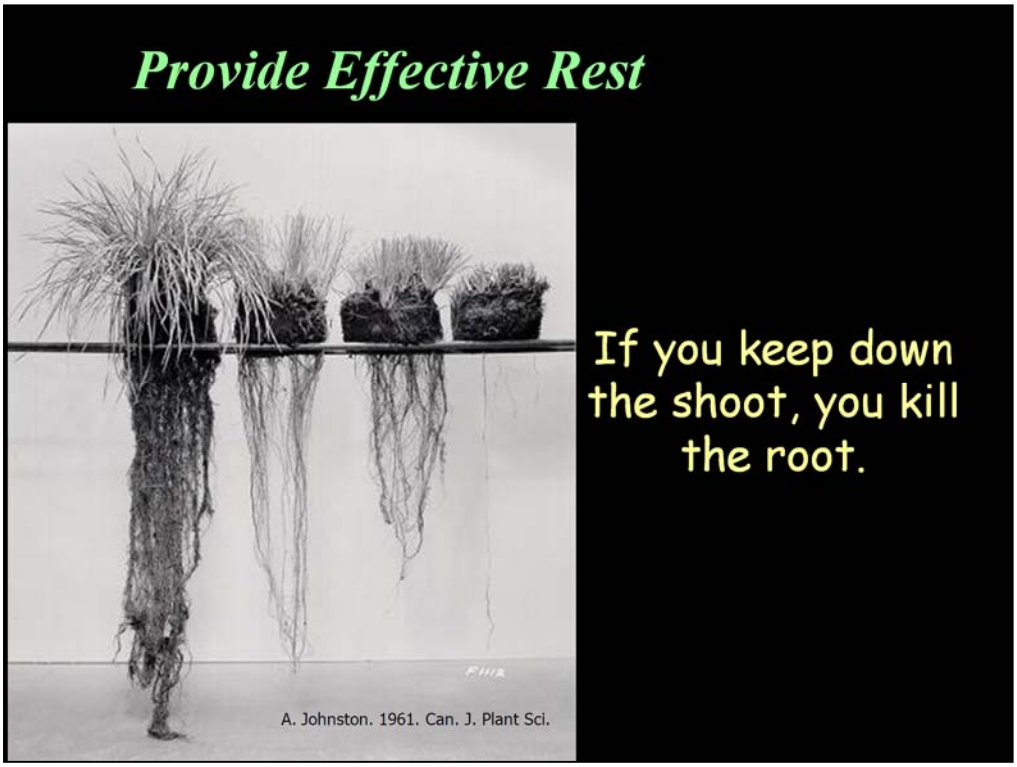
b) Change how animals access water by providing an offstream watering site or a hardened, graveled access point.

c) Control the timing of grazing when riparian areas are vulnerable by avoiding riparian grazing in the spring.

d) add more rest to the grazing cycle to enhance plant vigor, allow seedling tree and shrub species time to reach a more grazing resistant stage, and allow for bank building.



Continuous grazing and long grazing seasons are the heart of the problem. Riparian areas are magnets for livestock; there is usually plenty of water, forage and shelter. Riparian areas are essentially the “local taverns” of the bovine world. We need to manage where and when livestock graze to prevent them from spending too much time in these areas.

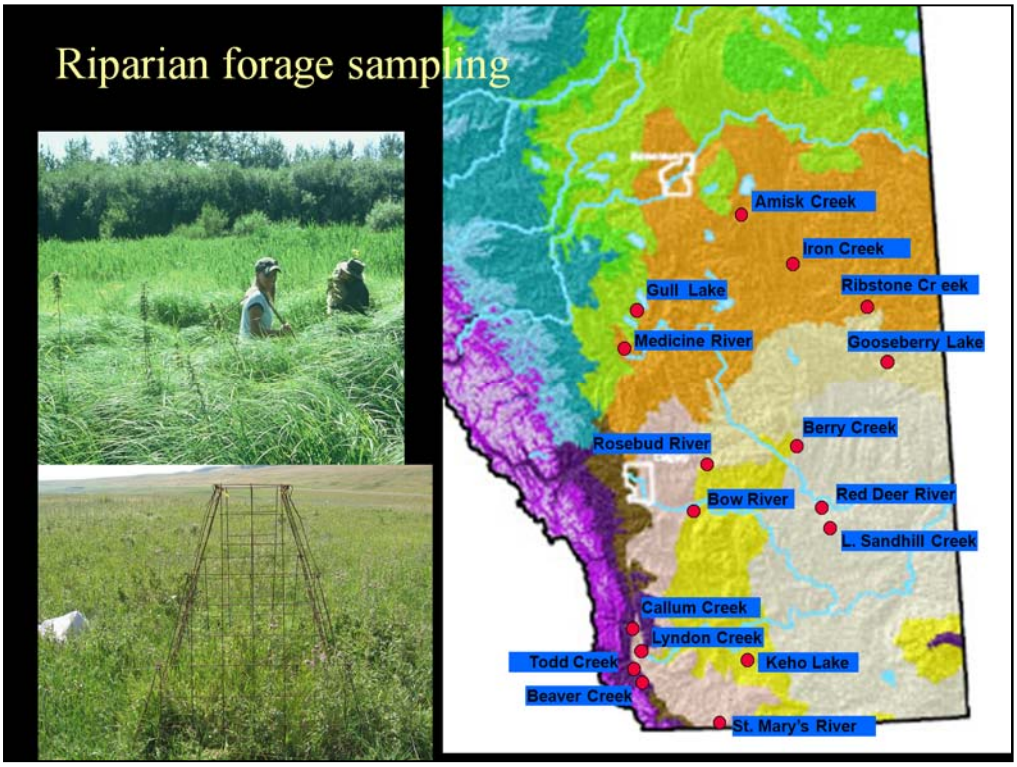


Maintaining healthy plants means maintaining roots too, and in riparian areas, these are particularly important because they hold the banks together and filter water.

Research context:

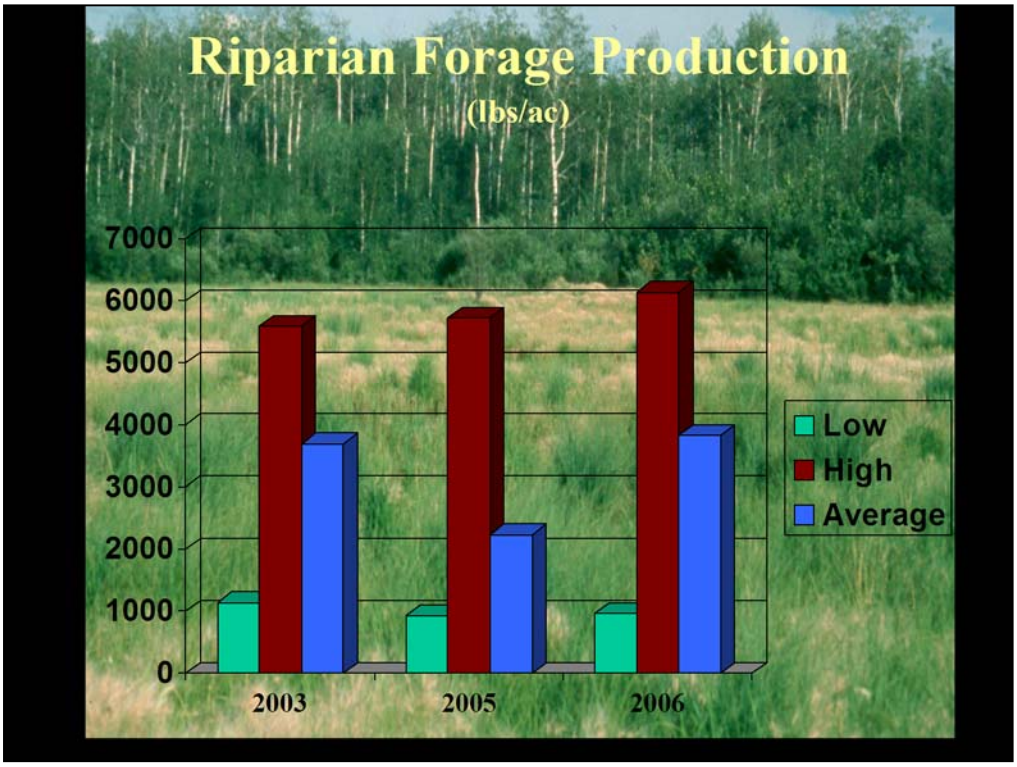
Sods containing single plants of F. scabrella were removed from an ungrazed stand, trimmed to 6 x 6 x 4 inches, and transplanted into metal containers filled with a 60:40 mixture of loam and sand. Four clipping intensities were used: clipped at the end of 16 weeks and at 4-week intervals to stubble heights of 1.5, 3, and 5 inches. The susceptibility of rough fescue to defoliation was demonstrated in a greenhouse study by Johnston (1961) where 20% defoliation, achieved by cutting individual plants of rough fescue at 12-cm heights every 4 weeks, resulted in a reduction of 48% root growth and 21% top growth.

Using analogies like ‘riparian areas are like a drive thru’ can be one way to help livestock producers understand that these areas need thoughtful management to remain productive and healthy.

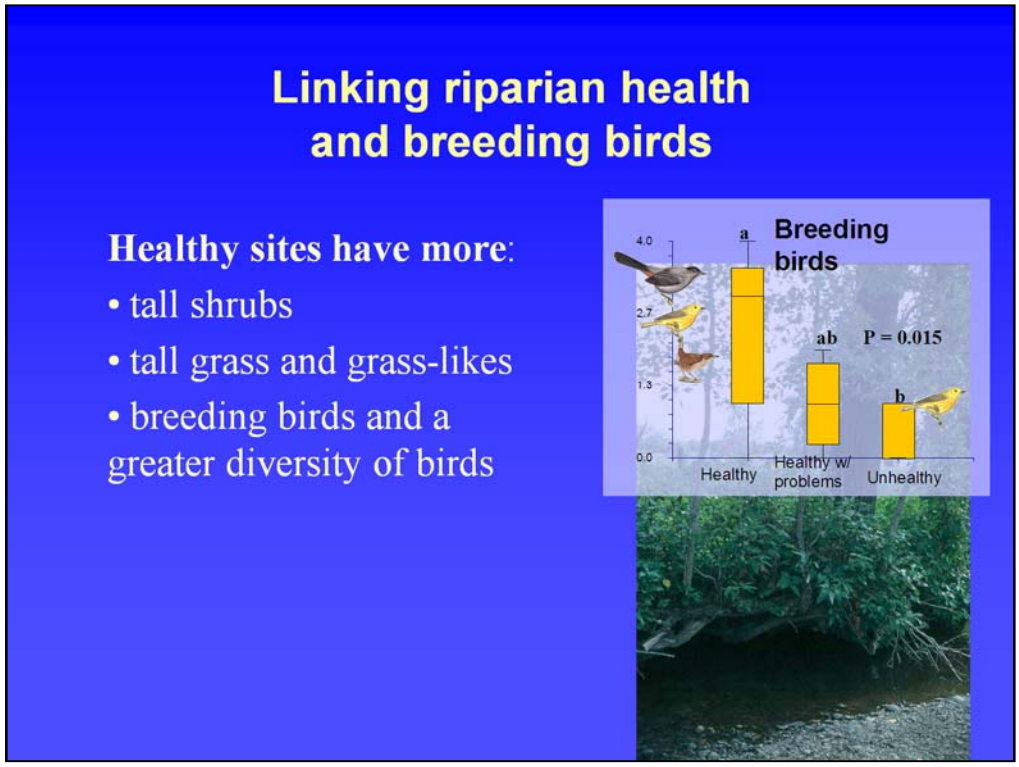


As part of a multi-year effort to understand forage productivity in riparian areas (where almost no data existed in the province), we oversaw the collection of riparian forage production data. If you know how much production there is, and it's variability, you can manage it more effectively, factoring it into the grazing plan.

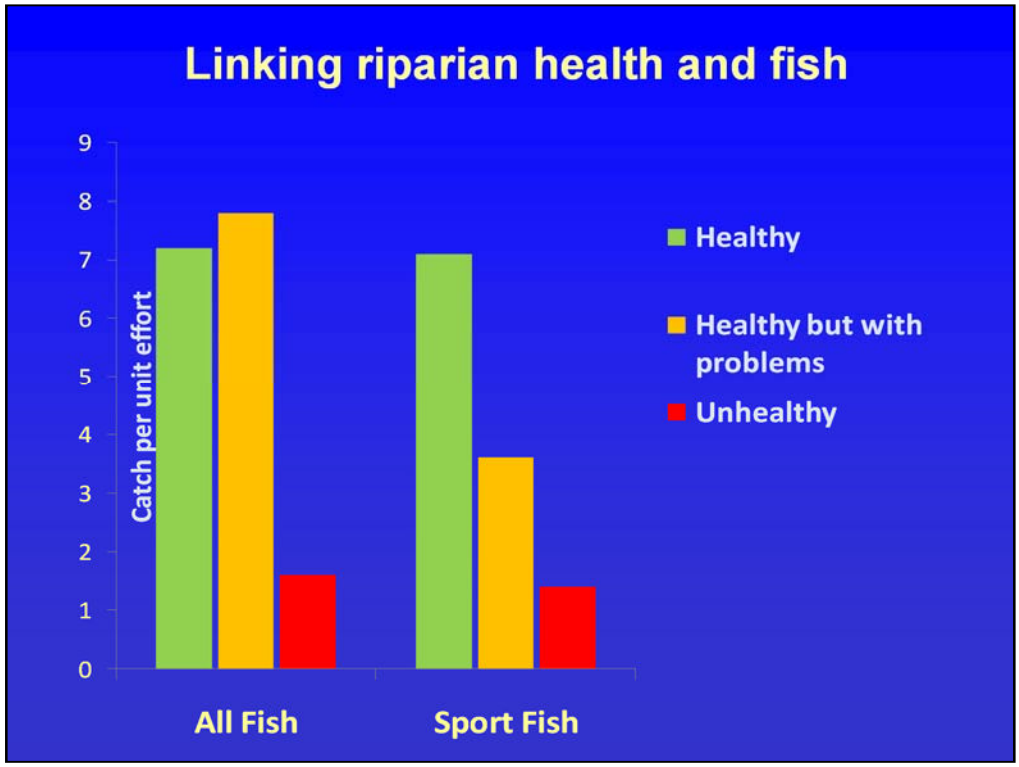
Sometimes in association with demonstration sites we also collect research information, such as riparian forage production, which assist the landowner, but can also be used to build improved management tools across the province. We strive to promote sound monitoring based on our experience and recognition for the need to use the information to assist others. These photos are of 2 sites that our staff have been working with local resource agency staff on to increase local and provincial understanding of riparian forage productivity.



Results from riparian forage research—note high variability between sites.



Research we have worked on linking riparian health, breeding birds and forage showed some interesting results that help ranchers look for key features to promote wildlife, through management of vegetation.



Todd, Bob and Pekisko Creeks

Within the Oldman River and Highwood Riber basins

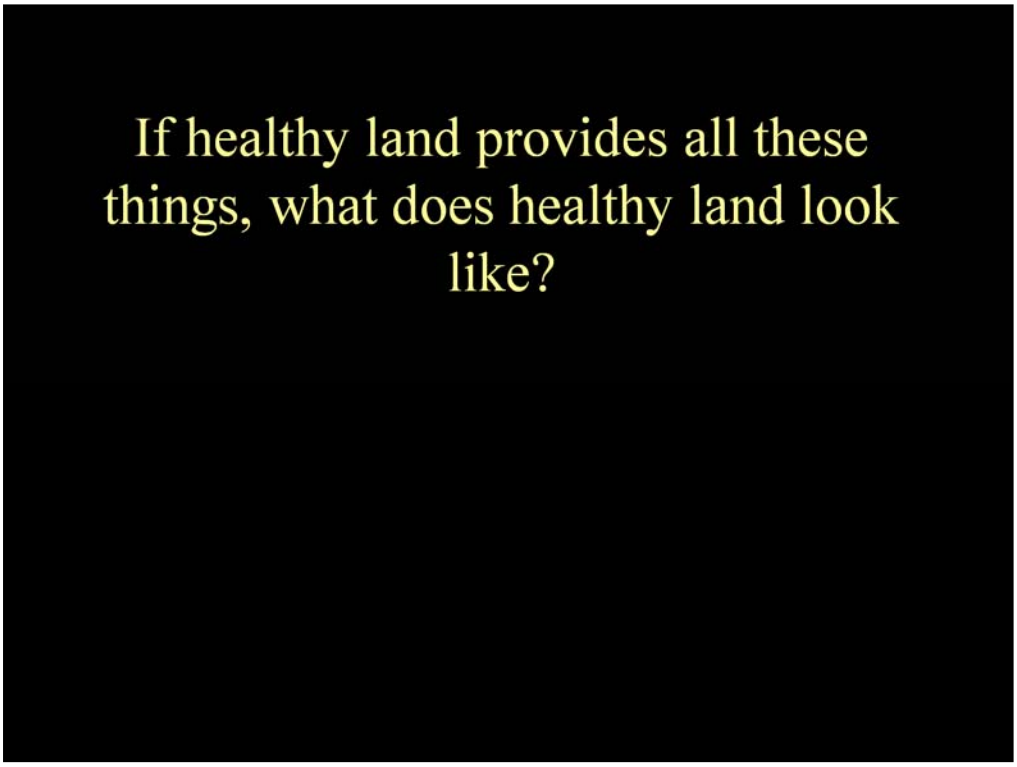
Fisheries Biodiversity:

Understanding the Link to Riparian Health

Cows and Fish

Alberta Riparian Habitat Management Society Report No. 039 . Palliser Environmental Services.

Note that healthy but with problems Sport Fish number was estimated from the figure 8 in the report



This is the key—helping people know what healthy, functioning landscapes look like, and then how to get them.

Hands-on field days where landowners learn about riparian health, plants and management are extremely valuable tools, such as this grazing school for women.

We work less around wetlands—although they are intrinsically included in our riparian work, they are seldom the focus of community group work, since they often form to work together on larger waterbodies that many of them share, whether streams, rivers or lakes, but this is an area still needing additional attention.

Learning to identify riparian plants, and to do a riparian health assessment are types of tool / capacity building

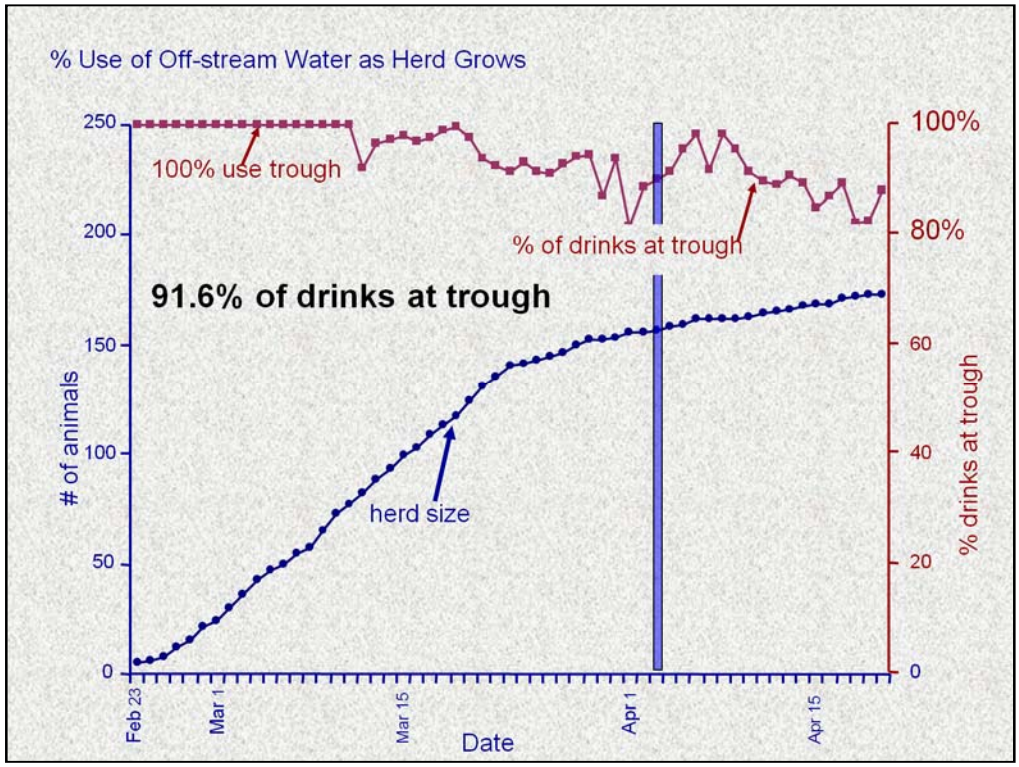
Getting people to look at both sides of a waterbody, and all around it helps them see the how things on both sides are connected, and, for smaller waterbodies, how management has to be connected, especially livestock grazing use.

Part of what we need to do is think about about vision. People are used to or want beaches, but that's not necessarily part of a naturally functioning system for many lakes. There are consequences to our actions (nutrification and erosion, loss of habitat), and we can change what we are used to/ expect to see—we have to change the vision / expectations people have.

This central image is a vision from the cottage country in Ontario, where the vision of trees and intact habitat on the lake is accepted, normal.

We have to keep progressing, taking things to the next step for livestock producers—like linking cattle behaviour research and making it relevant to their management on the ground.

Having research that emphasizes key points can support your point, take away barriers, and help strengthen the message of sound range management.



Cattle do prefer to drink from troughs, even when the waterbody is unfenced—we just have to give them the off-site watering system.

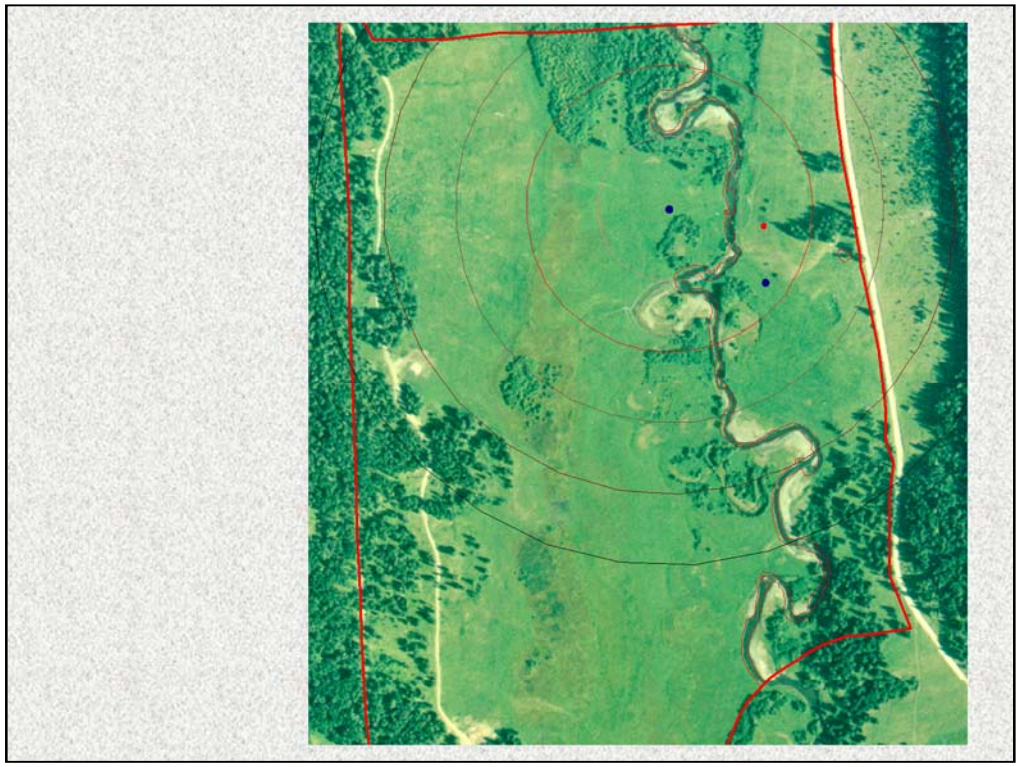
Total - 173 cow-calf pairs Trough use Feb 23 - Apr 20: 91.6%

•*Veira, D. 2007. Meeting water requirements of cattle on the Canadian prairies. The Rangeland Journal. 29: 79-86.*

•*Veira, D. and Liggins, L. 2002. Reducing cattle impact on water quality through the use of off-stream waterers. Journal of Animal Science 80 (Suppl. 1), 229.*

•*Veira, D. and Liggins, L. 2002. Do cattle need to be fenced out of riparian areas? Unpublished report prepared for the Cattle Industry Development Council. Beef Cattle Industry Development Fund – Project #95, 1999-2002.*

•*Veira, D., L. Liggins, L. Brown, and B. John. 2001. Drinking behaviour of cattle with access to natural and developed water supplies. In: Proceedings of the Society of Range Management 54th Annual Meeting. Pp. 129-130. Society for Range Management: Denver, Colorado.*



The Troughs were placed in proximity to the most heavily used crossing location (based on GPS data).

The west trough, located along an existing trail was well used; the east trough was little used and was ineffective at promoting the cows to spend less time drinking from the stream.

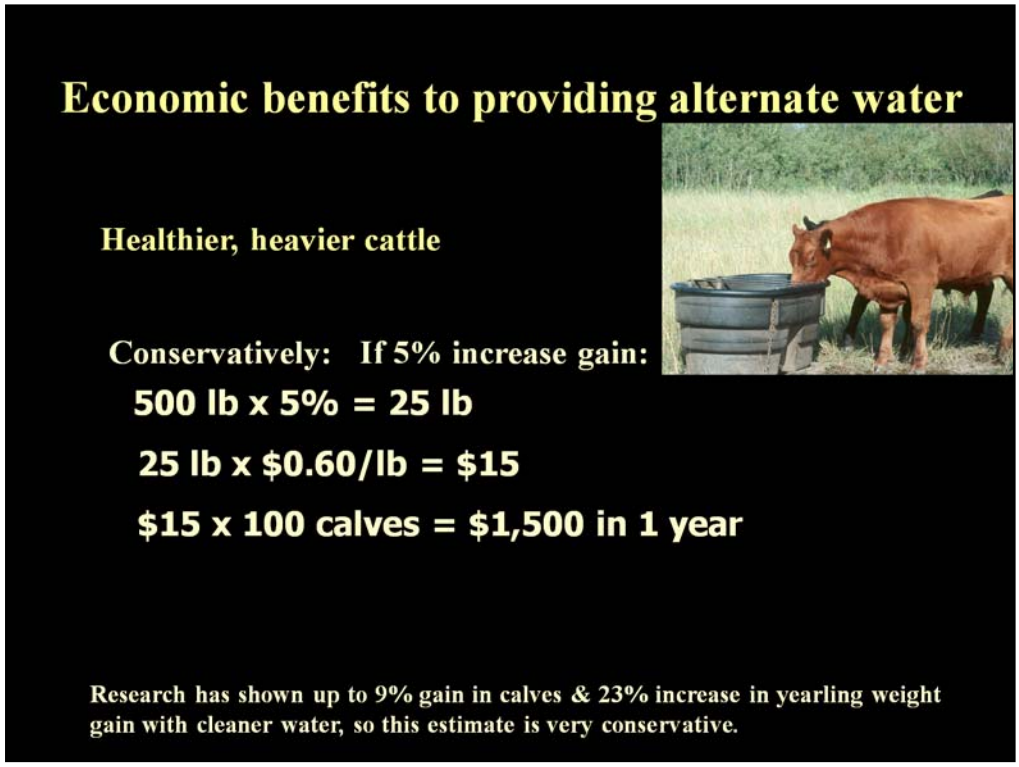
So this third study really emphasizes that in large pastures, where the trough is placed is really important. It also shows that without fencing, a single trough is not sufficient since the most well used trough only caused a significant decrease in stream use within a 200 m radius.

With several strategically placed water troughs, alternately filling and emptying troughs can be a way of allowing portions of the pasture to rest while other areas are grazed more heavily (Ganskopp *et al. 2007).*

References:

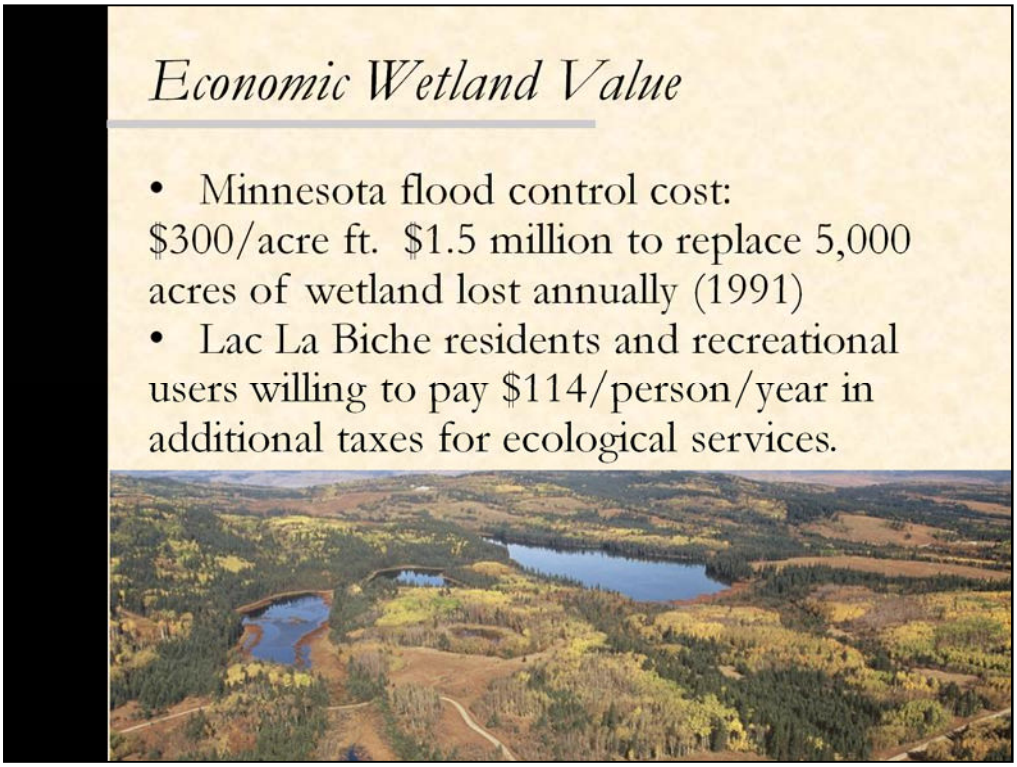
•*Newman, R.F and D. Veira. 2005. Monitoring cattle use of riparian areas and water sources. Annual Report. BC Ministry of Forests and Range, Kamloops, BC (Mimeo.) 22 p*

•*Ganskopp, D.C., George, M., Bailey, D., Borman, M., Surber, G., Harris, N. 2007. Factors and practices that influence livestock distribution. University of California Division of Agriculture and Natural Resources. Rangeland Management Series, Publication 8217. 20 pp.*



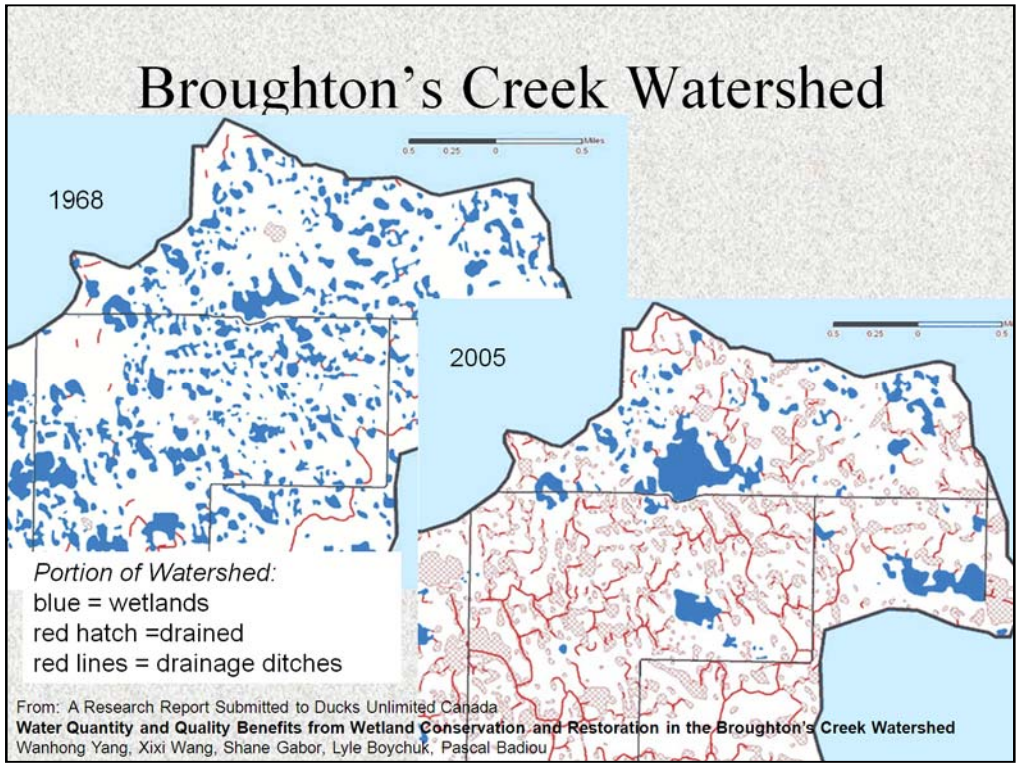
Using economic is part of building good tools and helping livestock producers understand the benefit of their management decisions—it pays to have healthier cattle, and alternate water sources.

Research referred to: Effect of water quality on cattle performance. W.D. Willms, O.R. Kenzie, T.A. McAllister, D. Colwell, D. Veira, J.F. Wilmshurst, T. Entz, and M.E. Olson. Authors are with Agriculture and Agri-Food Canada



We need to make the economic case for sound riparian management, and watershed management.

Eric Kimmel, a graduate student of Dr. Olweiler, in 2006 for the Red Deer Brook wetland in Lac La Biche County, Alberta. Kimmel determined that local residents and recreational users of Lac La Biche are willing to pay an average $114/person/year in additional taxes, which represents the value placed upon the ecological services provided by the Red Deer Brook wetlands to the residents, e.g., flood control, storm protection and groundwater and subsurface water recharge. In addition, more value was placed on the wetland than on any other potential economic development. He determined that the net economic benefit of the wetland is $8,169/acre. Consequently, it would be in the best interest of Lac La Biche County to explore policy options to protect the Red Deer Brook wetland, and likely other wetlands in the county.



Drainage of wetlands has huge ecological impacts, as well as economic and water quality treatment impacts.

From: A Research Report Submitted to Ducks Unlimited Canada

Water Quantity and Quality Benefits from Wetland Conservation and Restoration in the Broughton's Creek Watershed

Wanhong Yang, Xixi Wang, Shane Gabor, Lyle Boychuk, Pascal Badiou

Wetlands are valuable for water quality

Wetland loss in Broughton's Creek watershed since 1968 resulted in:

- 31% increase in N and P load from the watershed
- 41% increase in sediment loading

From: A Research Report Submitted to Ducks Unlimited Canada
Water Quantity and Quality Benefits from Wetland Conservation and Restoration in the Broughton's Creek Watershed
Wanhong Yang, Xixi Wang, Shane Gabor, Lyle Boychuk, Pascal Badiou

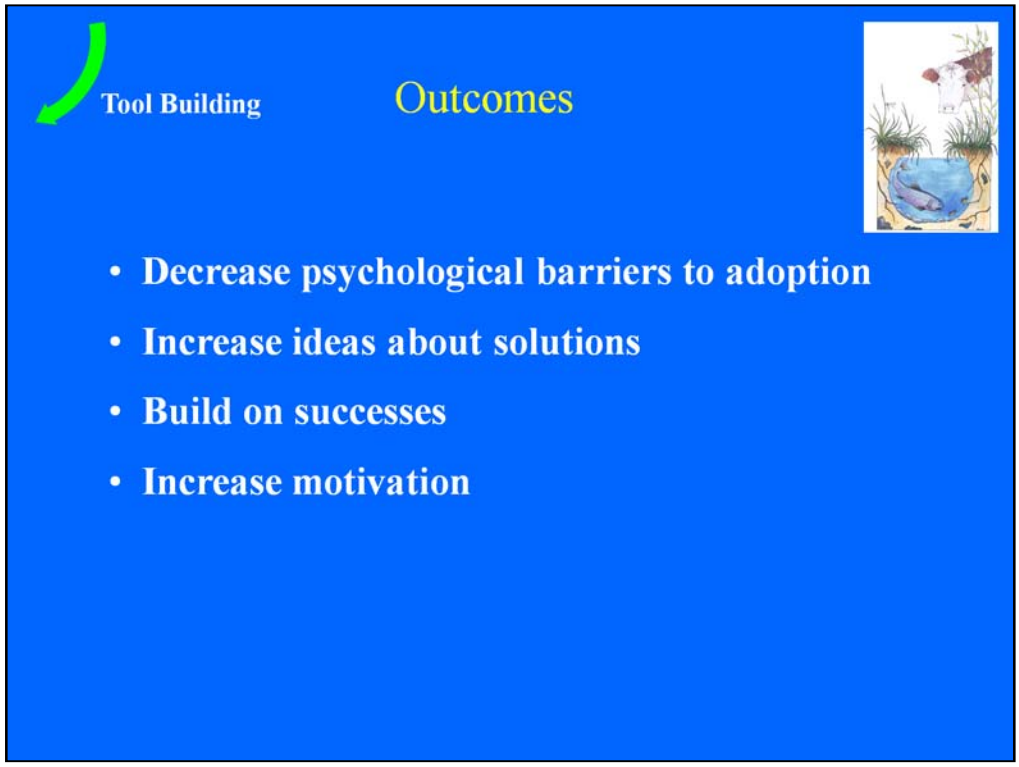
-The 25,139-ha Broughton's Creek watershed is located within the Little Saskatchewan River Conservation District (LSRCD) in western Manitoba

-land uses in the Broughton's Creek watershed consist of 71.8% agriculture, 10.8% range land, 9.5% wetland, 4.0% forest, 2.5% transportation,

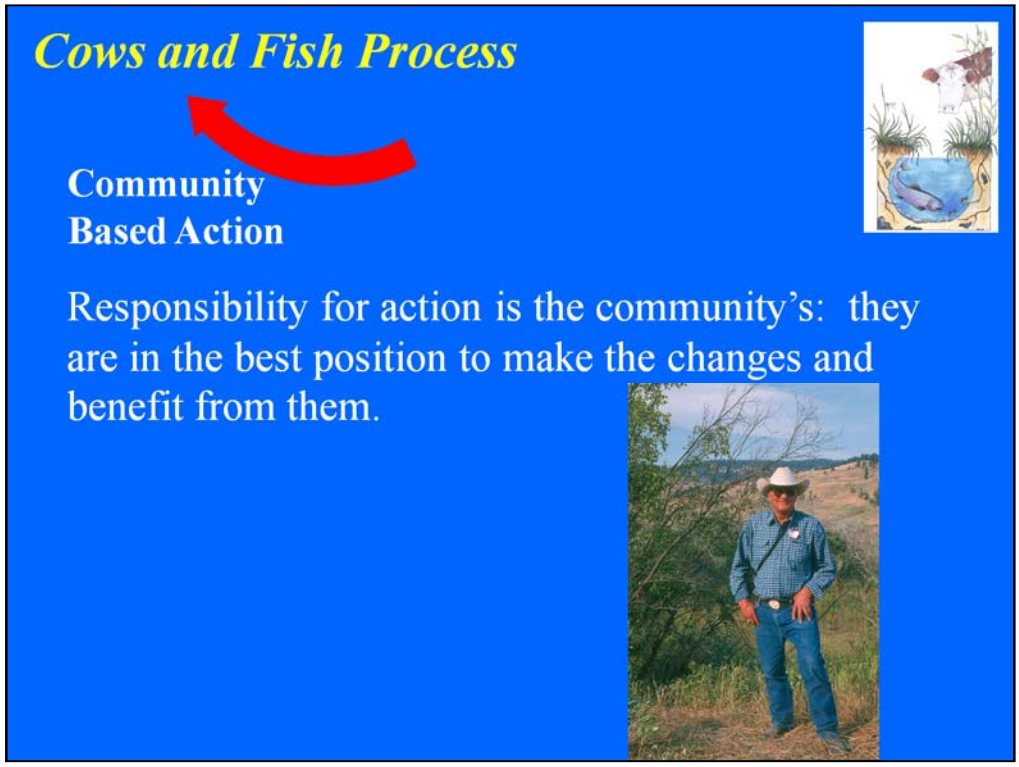
1.4% alfalfa and 0.1% other

-Under the full wetland restoration scenario, scenario VI, 619 ha (2.5%??) of wetlands are restored with a total wetland area of 2,998 ha

-Hence, restoring wetlands in the watersheds drained by the major tributaries (e.g., LSR) of the Red River of the North is likely to alleviate the eutrophication stresses being suffered by the Lake Winnipeg. Canada's sickest lake.

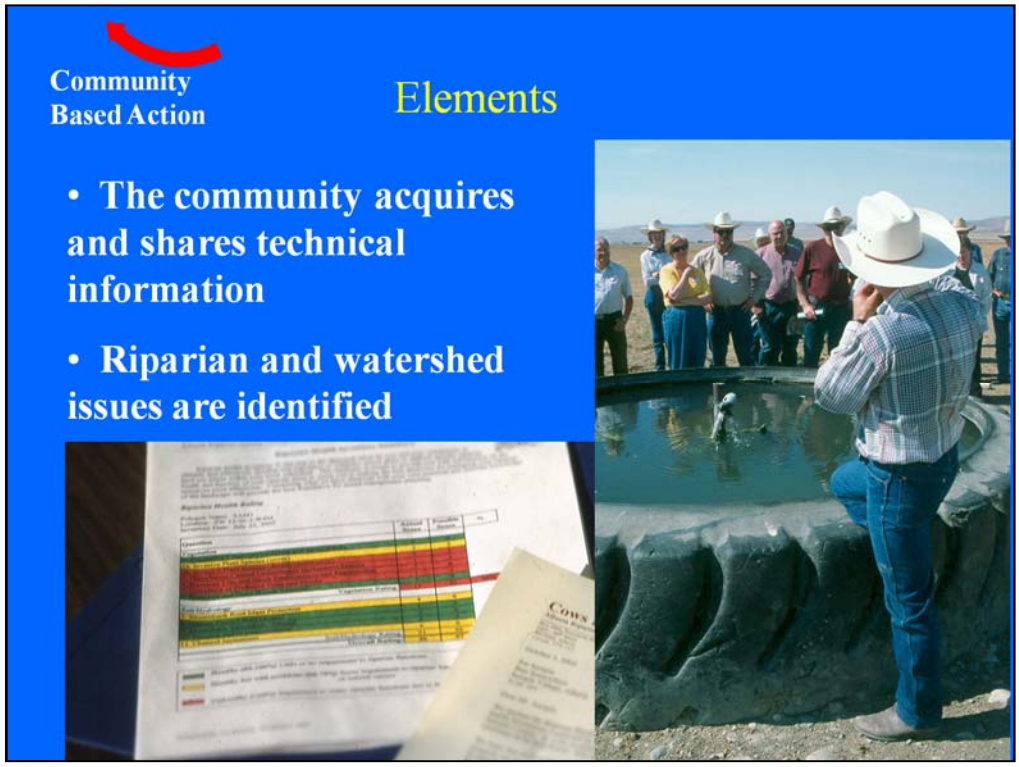


We need to help people get past the barriers that prevent them from taking action, and providing diverse tools and ideas does that.



Our emphasis is on ensuring the local community drives the decision-making, determining there is a need and the pace at which they begin to tackle issues, set priorities, etc.

Our process isn't about deciding what the community should do or needs to do, it's letting them to identify issues, decide how and at what timeline to address them and by what approach. Of course our role is to provide guidance, experience and ideas from other communities too, with technical assistance, but communities must drive the process in order to have long-term commitment and feel it is their solution, their success.



Some of the process may be helping determine the health of their watershed, to identify issues, as well as success stories.

Management changes should be based on sound science, best practices at the time, and be locally supported.

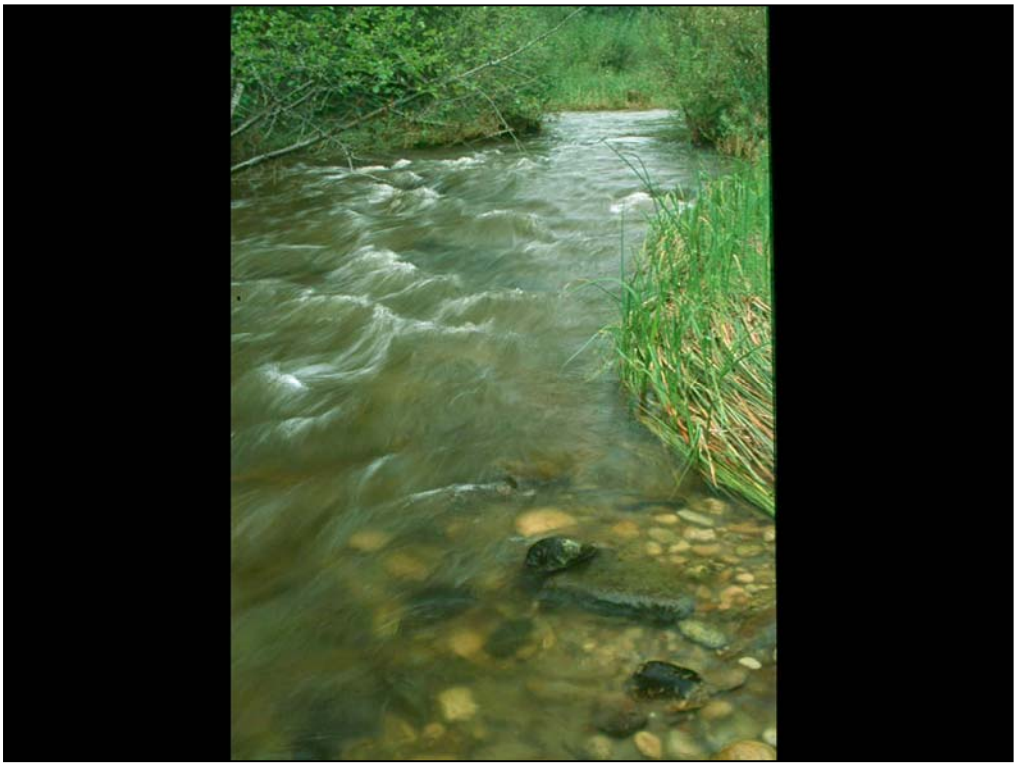
The community/landowners take action to improve health of their landscape/riparian area—this is a temporary electric fence that the rancher moves to prevent his cattle from accessing the stream, to rebuild banks and begin returning willows to the system (photo on right shows new native water-loving grasses filling in along stream edge)

Think broadly about riparian areas, including lake front residents and cottage owners, and getting them walking along the lakeshore together to see and discuss issues. We really began that work in 1999, but over the years it has increased considerably, as lake front residents and stewardship groups spring up and look to have assistance in learning and managing their lakeshores more effectively.

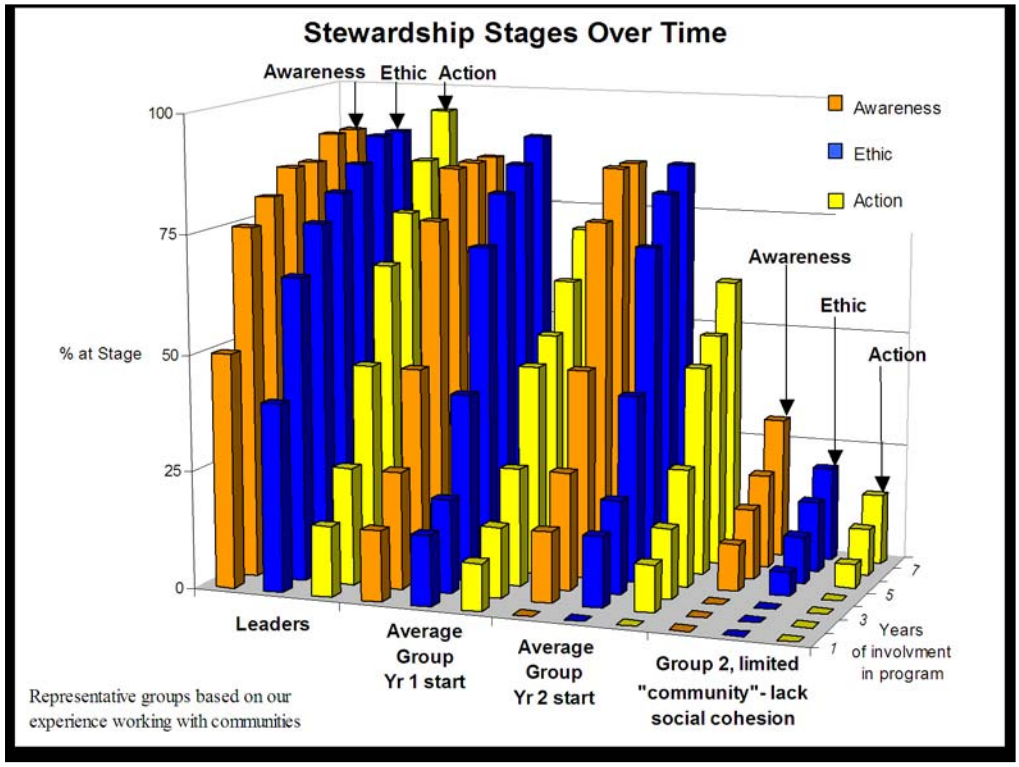
The key to community-based action is that the community and landowners identify the issues and they own the solutions. They are much more likely to remain in the area and continue on, even when agencies are reorganized, staff take new jobs, or priorities prevent you from working with the community, the community still exists.

We believe very strongly in monitoring and evaluation, not only for helping move riparian health forward, to ensure ecological function is improving, but to ensure our program delivery, tools and techniques are well-designed and effective.

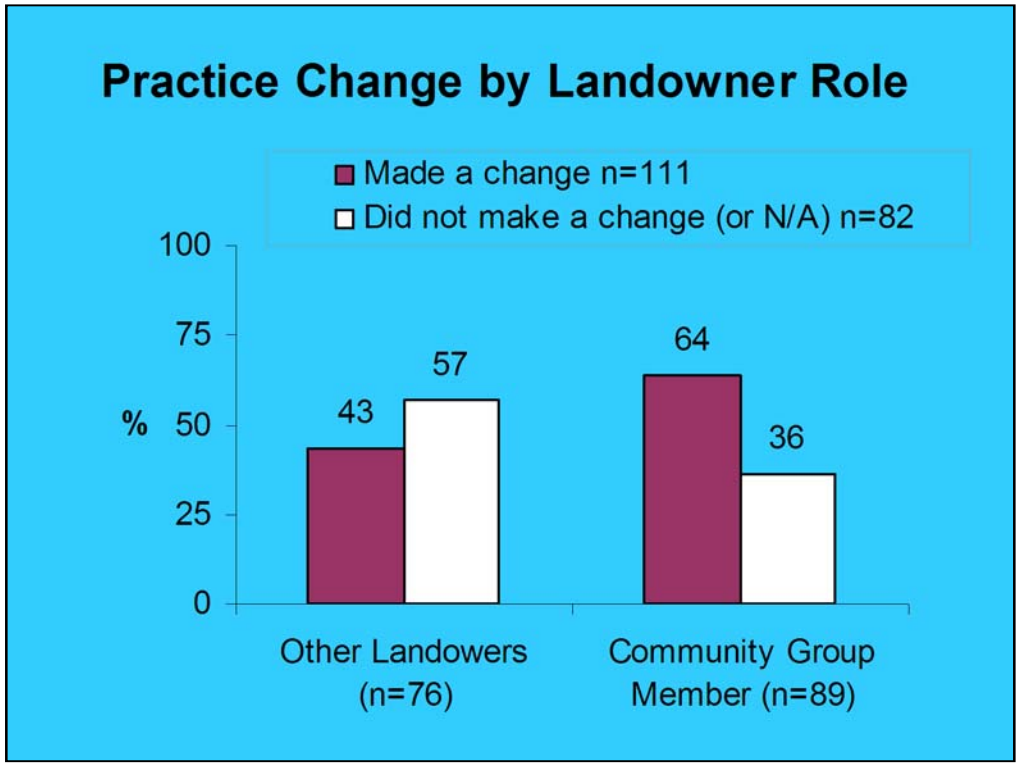
We know it can take a long time for riparian areas to heal, or water quality to improve, but in the mean time, we should also be looking at social science measures like attitude, knowledge, action and beliefs, because these will be what enable landscape health to change.



Whatever the change, did the management changes produce positive results? Whether it's water quality, riparian health or other…we often don't have time and resources to monitor, but we need to include monitoring wherever we can.

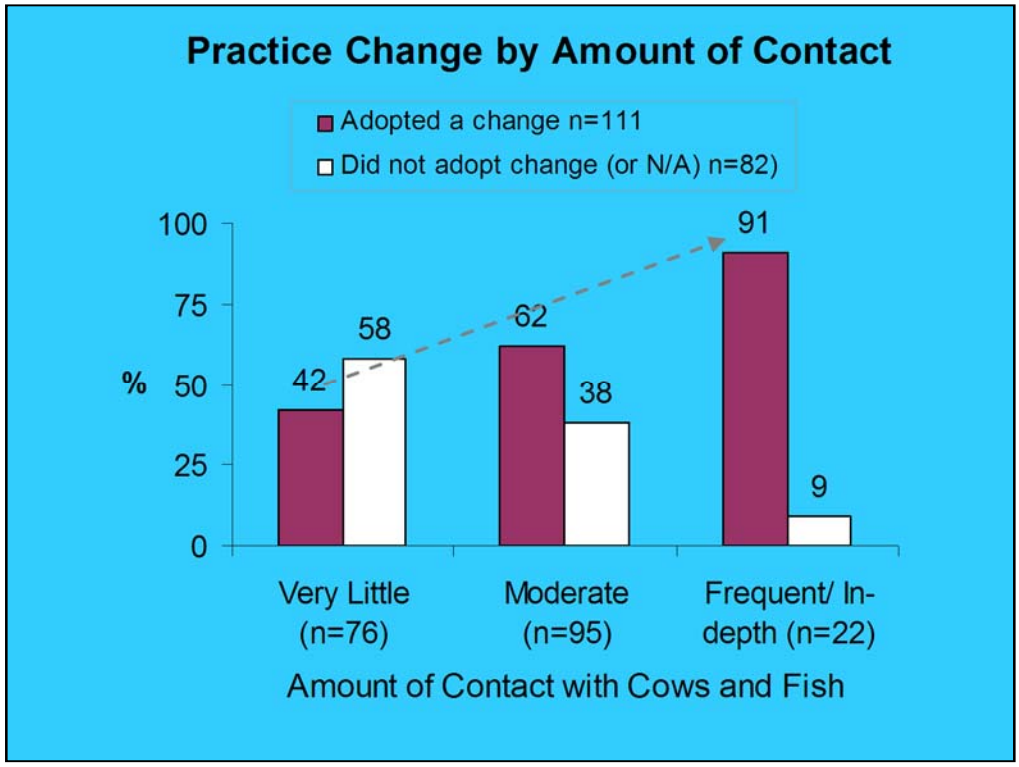


This is a conceptual overview showing how stewardship takes time… you have people starting at different times, people changing at different rates, and ultimately, this means the process of education, tool-building, and supporting community based action must be ongoing.



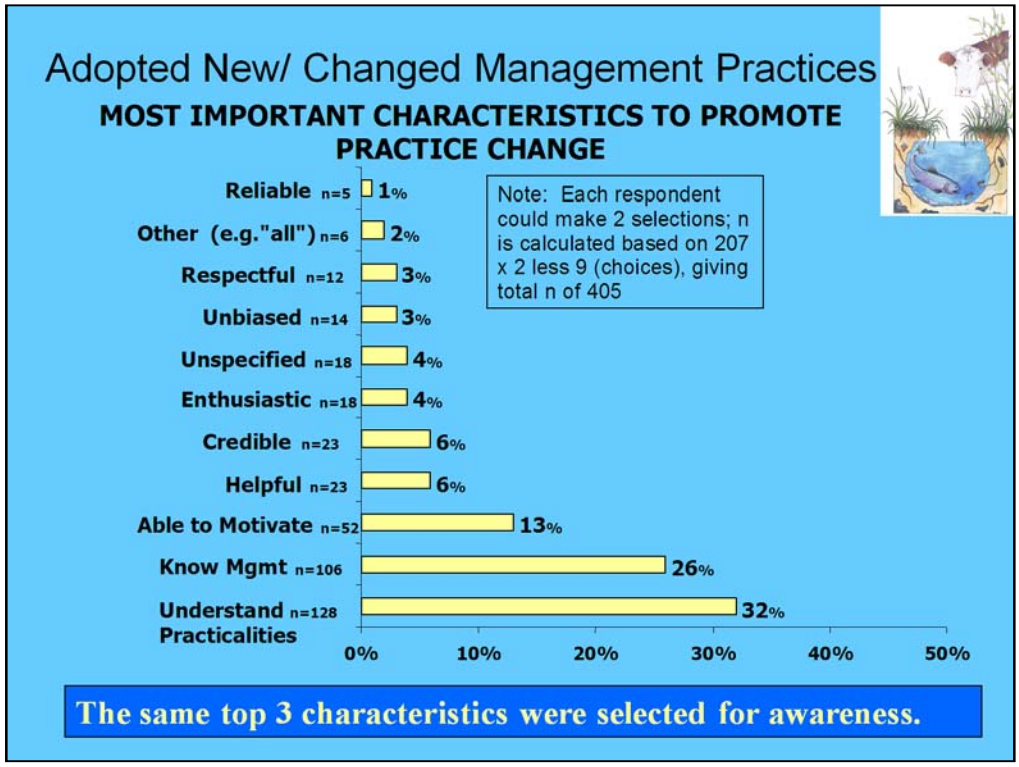
We know from our work and evaluations that people who are part of a community/watershed stewardship group are much more likely to make a practice change than those landowners who participate in riparian health inventory without being part of a group. This is likely because of the opportunity to network with neighbours, repeat interactions at awareness/riparian management activities, and learning/changes via social norms.

Bateman, Nancy G. 2001. Evaluation Report of the Cows and Fish Community Riparian Health Assessment Process. Prepared for Cows and Fish - Alberta Riparian Habitat Management Program, Lethbridge, Alberta. 72pp Cows and Fish Report No. 014.



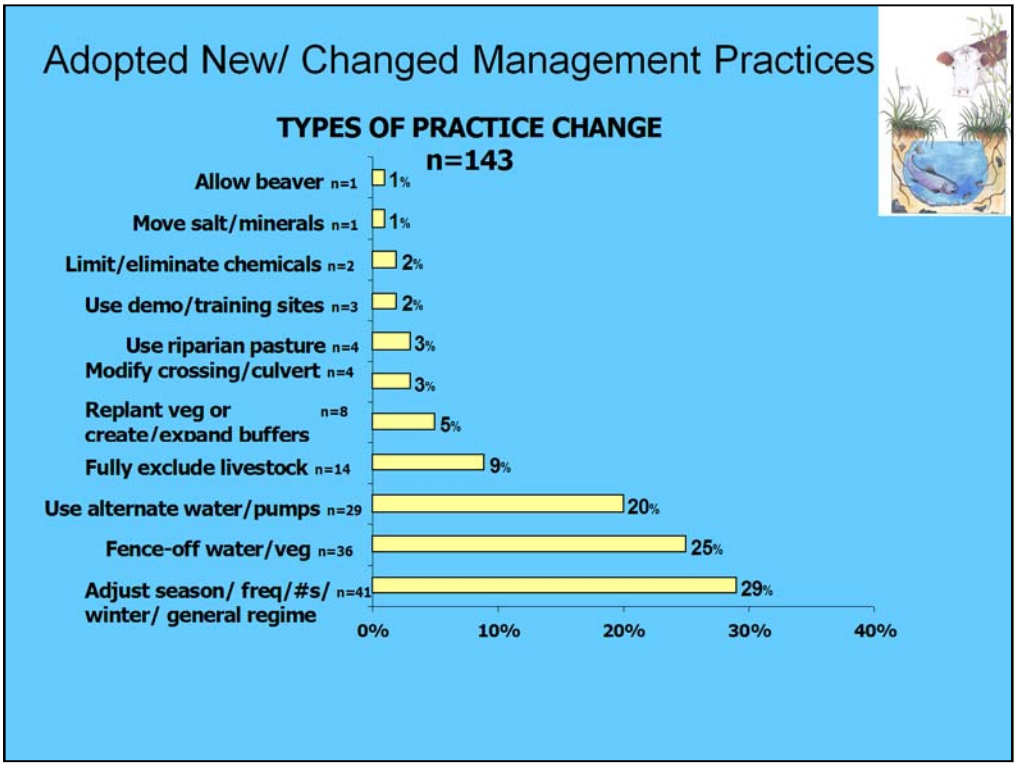
We know from our work and evaluations that people who felt they had more contact with us are much more likely to make a practice change than those landowners who have much less contact. This is likely because of repeat interactions at awareness/riparian management activities, as well as an opportunity for a diversity of learning styles and messages to be transmitted, in addition to the opportunity for greater networking with other landowners and learning/changes via social norms.

Bateman, Nancy G. 2001. Evaluation Report of the Cows and Fish Community Riparian Health Assessment Process. Prepared for Cows and Fish - Alberta Riparian Habitat Management Program, Lethbridge, Alberta. Cows and Fish Report No. 014. 72pp.



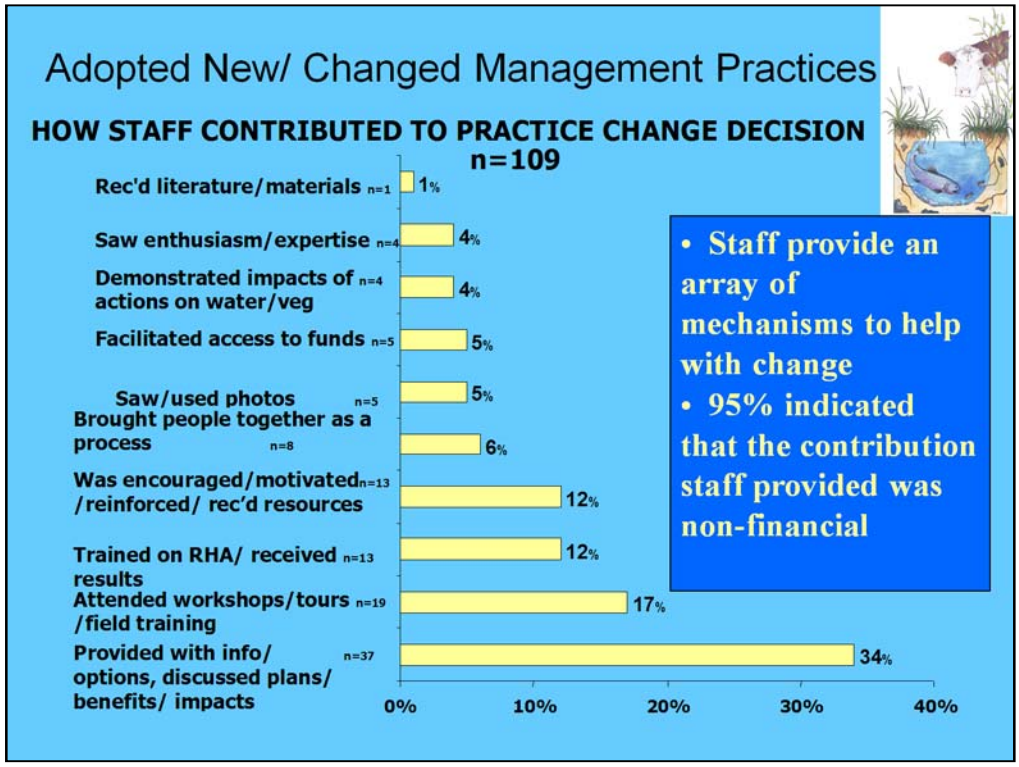
Participants in the evaluation were asked what characteristic of Cows and Fish staff was most important to help them adopt management changes—being knowledgeable and seen to understand the practicalities of the landowners situation were by far the most important characteristics—we have to establish and foster these characteristics in our staff and by how we deliver our programs.

Bateman, Nancy G. 2001. Evaluation Report of the Cows and Fish Community Riparian Health Assessment Process. Prepared for Cows and Fish - Alberta Riparian Habitat Management Program, Lethbridge, Alberta. Cows and Fish Report No. 014. 72pp.



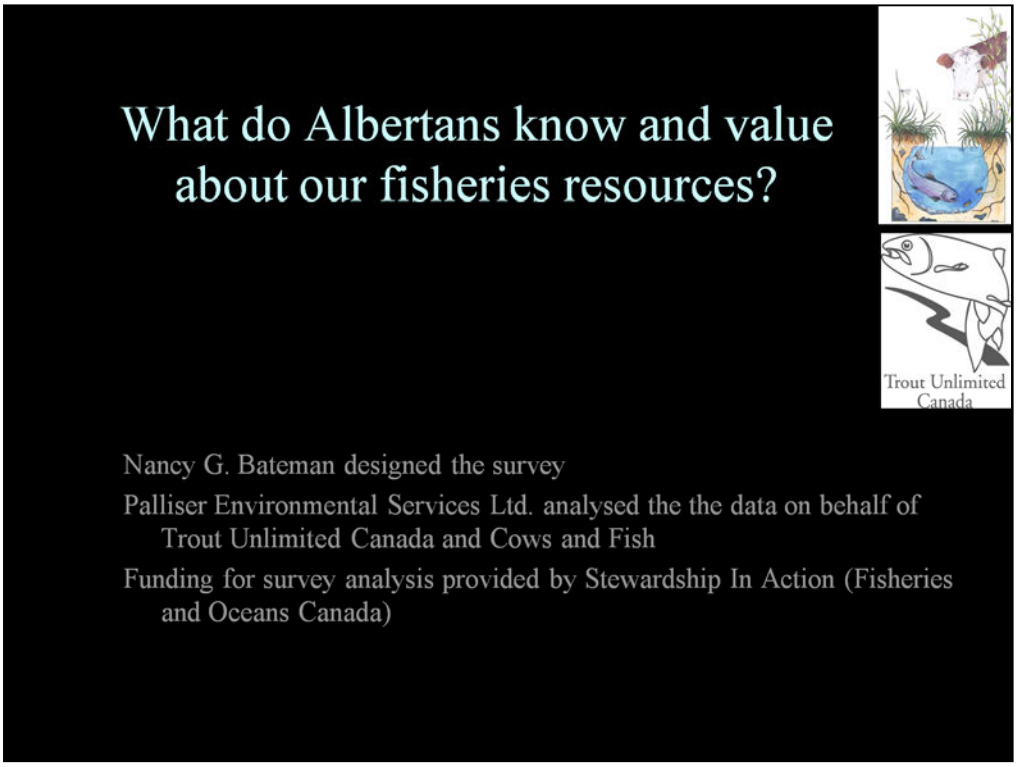
Note the very wide diversity of changes that were made, and recognise this is why ongoing learning, and an emphasis on the principles, rather than prescriptive management choices, is so important. 88% of practices indicated respondents understood the underlying principles of management.

Bateman, Nancy G. 2001. Evaluation Report of the Cows and Fish Community Riparian Health Assessment Process. Prepared for Cows and Fish - Alberta Riparian Habitat Management Program, Lethbridge, Alberta. Cows and Fish Report No. 014. 72pp.

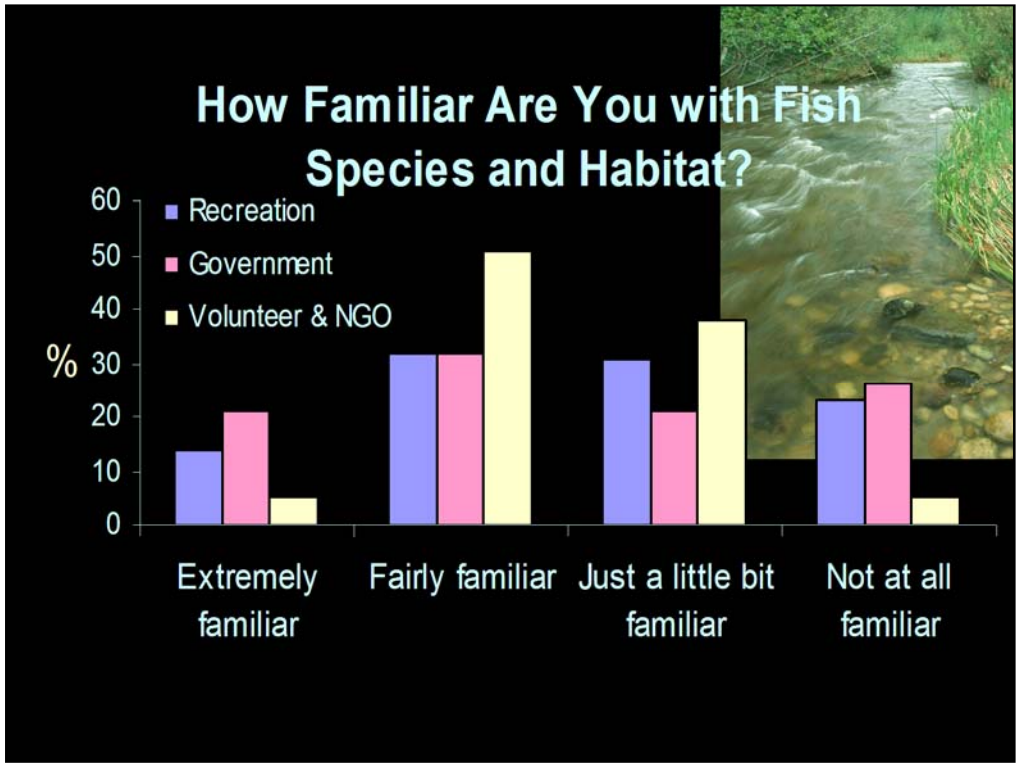


Responses indicate staff have provided a diverse array of mechanisms to promote change and respondents experienced many successful ways that helped in the process of change. 95% of responses were related to non-financial motivators and assistance.

Bateman, Nancy G. 2001. Evaluation Report of the Cows and Fish Community Riparian Health Assessment Process. Prepared for Cows and Fish - Alberta Riparian Habitat Management Program, Lethbridge, Alberta. Cows and Fish Report No. 014. 72pp.

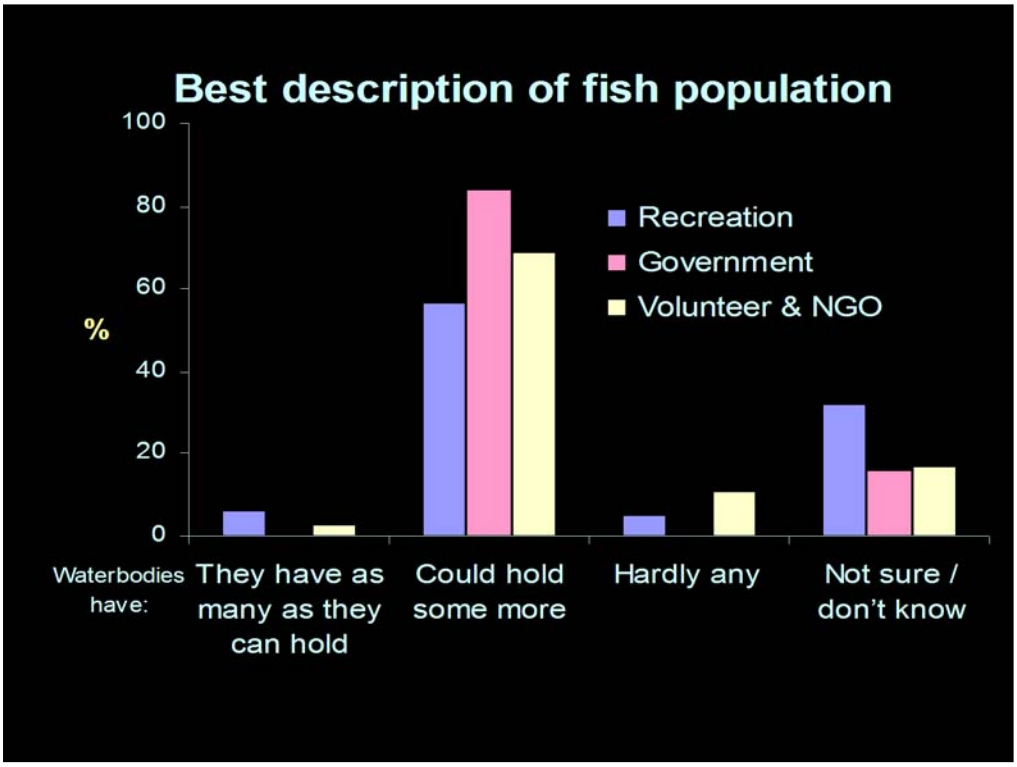


Palliser Environmental Services Ltd. 2008. The Magic and Mystery of Fish Survey: A Survey of Albertans. Prepared for: Alberta Riparian Habitat Management Society - Cows and Fish and Trout Unlimited Canada. Cows and Fish Report No. 037. 38pp.



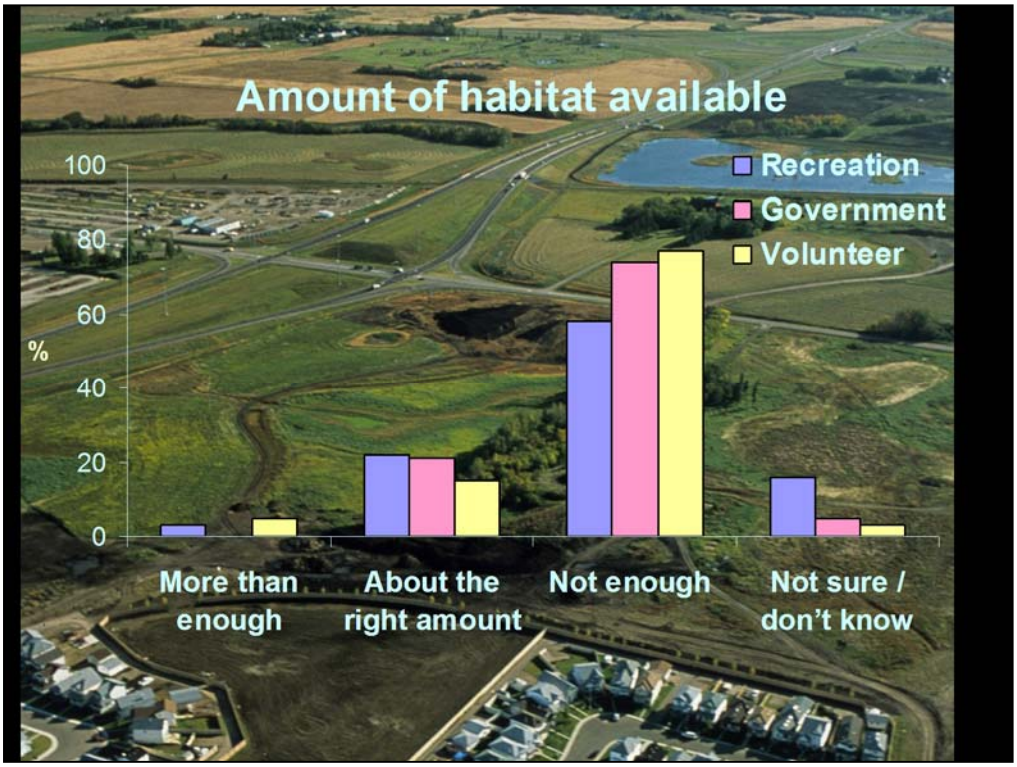
Note that the volunteers/NGO's are mostly likely to feel they are fairly or just a little familiar, but rarely to be extremely familiar nor not at all familiar.
About ¼ of government employees involved in land and water resource management are not at all familiar with fish species or their habitats—this is concerning, and must be addressed via professional development planning.

Palliser Environmental Services Ltd. 2008. The Magic and Mystery of Fish Survey: A Survey of Albertans. Prepared for: Alberta Riparian Habitat Management Society - Cows and Fish and Trout Unlimited Canada. Cows and Fish Report No. 037. 38pp.



A surprising number of people didn't know if the waterbodies could have more fish than they currently do, yet the majority believe there could be more fish—people need to understand how to achieve this.

Palliser Environmental Services Ltd. 2008. The Magic and Mystery of Fish Survey: A Survey of Albertans. Prepared for: Alberta Riparian Habitat Management Society - Cows and Fish and Trout Unlimited Canada. Cows and Fish Report No. 037. 38pp.



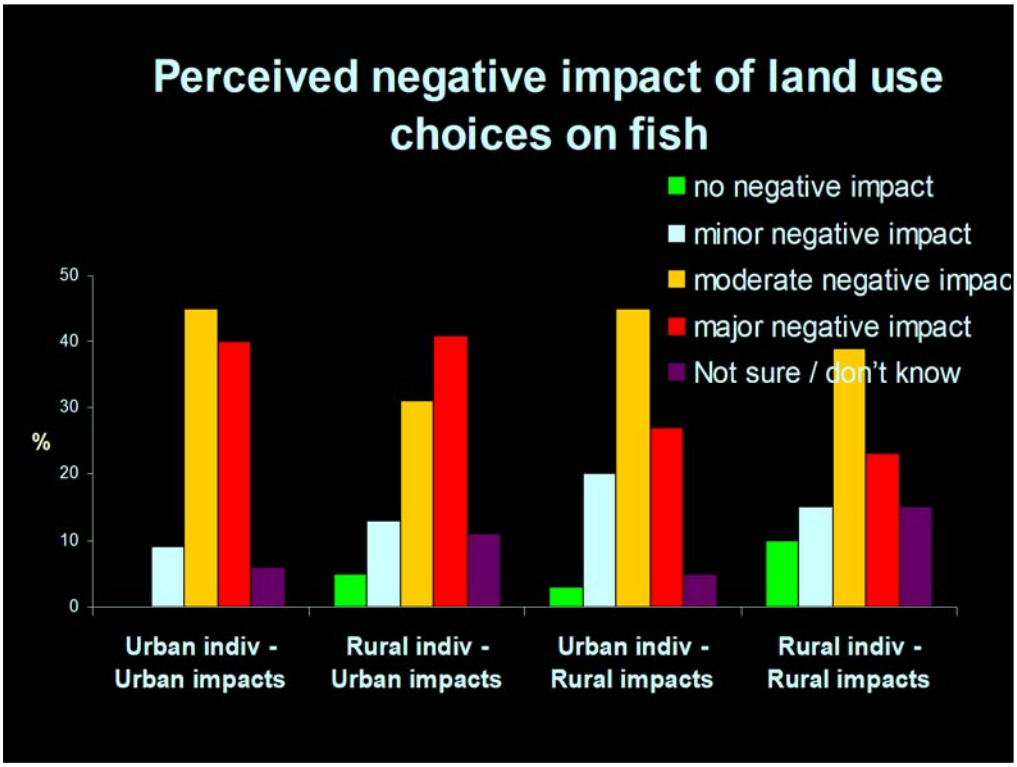
In terms of different kinds of involvement in the fishery, there was very similar perceptions about the amount of fish habitat available in Alberta. However, no government individual felt there was more than enough, and those involved via recreational fishing were quite a bit more likely to indicate they did not know how much habitat was available.

Palliser Environmental Services Ltd. 2008. The Magic and Mystery of Fish Survey: A Survey of Albertans. Prepared for: Alberta Riparian Habitat Management Society - Cows and Fish and Trout Unlimited Canada. Cows and Fish Report No. 037. 38pp.

True or False?	% of All Correct	Urban	Rural	Rec'n	Gov.	Volunt'r & NGO
Native fish have been successful at adapting quickly to habitat changes we made (False)	58	61	52	61	74	82

People think that evolution happens in their lifetime/ that adaptations can occur very rapidly, which of course is not correct—we have to address this misconception in our awareness/extension programs.

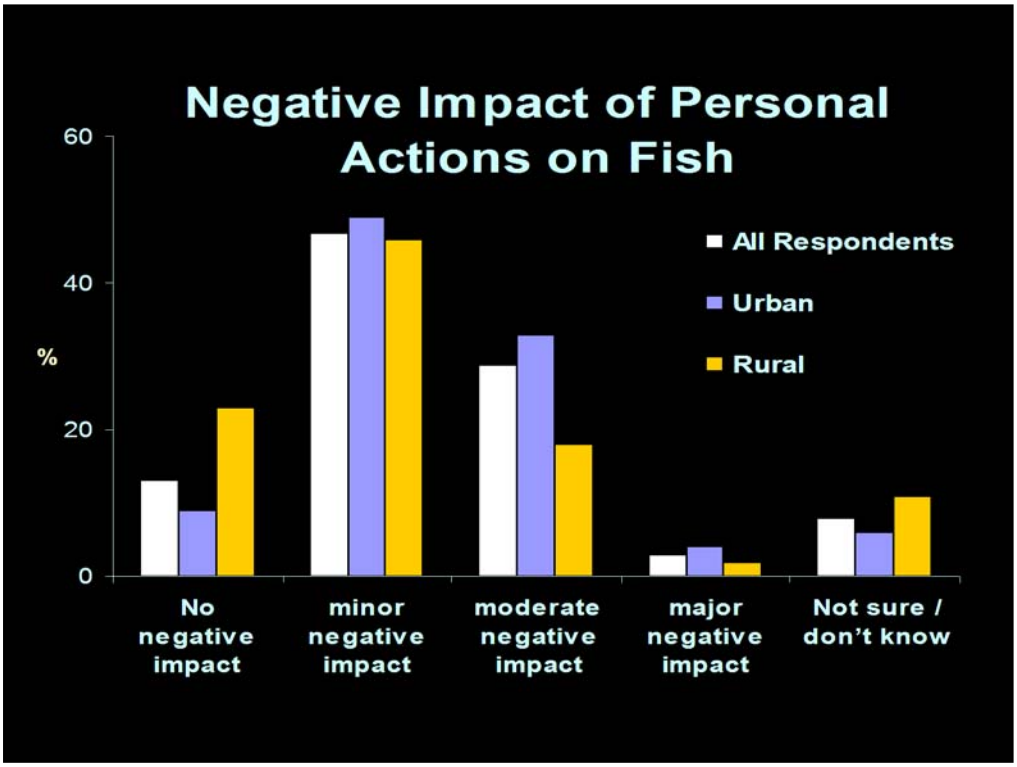
Palliser Environmental Services Ltd. 2008. The Magic and Mystery of Fish Survey: A Survey of Albertans. Prepared for: Alberta Riparian Habitat Management Society - Cows and Fish and Trout Unlimited Canada. Cows and Fish Report No. 037. 38pp.



Note that urban respondents felt that there were more moderate impacts in both urban & rural situations compared to rural respondents and none of them felt that urban impacts did not exist.
25-45% of people feel there are moderate to major impacts—the lowest is over 20% of rural people see major rural impacts, compared to personal impacts, which is about 3%

Rural individuals tended to feel that urban impacts were more severe than rural impacts, compared to urban individuals who felt no or minor impacts were more common for rural situations than they were for urban ones.

Palliser Environmental Services Ltd. 2008. The Magic and Mystery of Fish Survey: A Survey of Albertans. Prepared for: Alberta Riparian Habitat Management Society - Cows and Fish and Trout Unlimited Canada. Cows and Fish Report No. 037. 38pp.



Almost no one feels there are any major personal impacts and only 20-30% see moderate impacts (compared to impacts of urban or rural people as a whole)
Urban residents are more likely to feel they personally have a moderate or major negative impact, compared to rural individuals.

Rural individuals are more likely to feel they have no personal negative impact.

Palliser Environmental Services Ltd. 2008. The Magic and Mystery of Fish Survey: A Survey of Albertans. Prepared for: Alberta Riparian Habitat Management Society - Cows and Fish and Trout Unlimited Canada. Cows and Fish Report No. 037. 38pp.

Select up to 3 factors that you feel pose the greatest threats to fish and fish habitat in Alberta.

Lack of knowledge was ranked highest (selected 80 times), followed very closely by domestic/industrial effluents (selected 79 times), and then by agricultural activities (selected 61 times) and fourth was removal of plants from in waterbodies, or at or near the shore/bank (selected 57 times)

Palliser Environmental Services Ltd. 2008. The Magic and Mystery of Fish Survey: A Survey of Albertans. Prepared for: Alberta Riparian Habitat Management Society - Cows and Fish and Trout Unlimited Canada. Cows and Fish Report No. 037. 38pp.

In terms of monitoring riparian health, we use the riparian health assessment & inventory, which looks at various vegetative, soil/hydrologic related characteristics of a site and scores a site based on whether it is unimpaired / functioning, or to varying degrees, resulting in a score and a health category rating. We selected this method because of it's basis in scientific detail (inventory) that could be completed by skilled and trained staff and particularly, the ability to readily translate and share that with landowners and other non-scientists (via the assessment). The work was originally developed at the Riparian and Wetland Research Program, U. of Montana, by Paul Hansen, with colleagues Bill Thompson and Bob Erhart. We continue to work with them (since 1997) on modifying, updating and applying the tool. We have Alberta forms/manuals and our field workbook on our website

The forms/user's manuals for riparian health assessment & inventory (the data collection sheets & how to fill them out) are at:

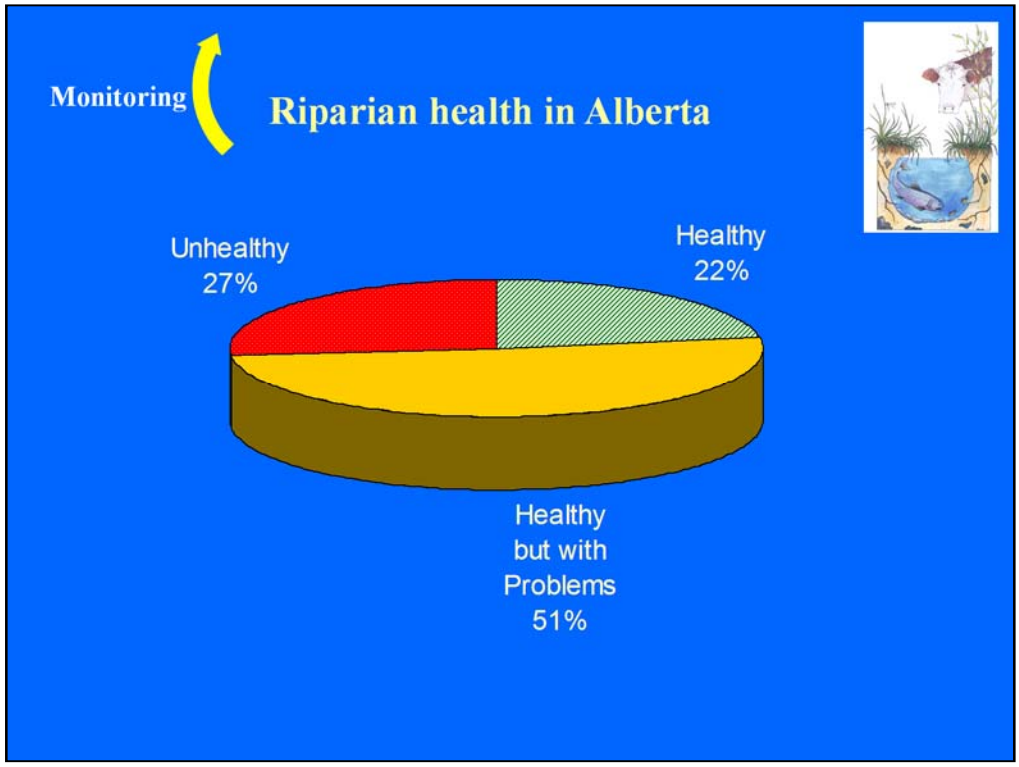
http://www.cowsandfish.org/riparian/health.html then Scroll down to Download our Riparian Health Assessment Forms and User Manuals

The coil bound field workbooks (more for lay person use than data collection) are found at: http://www.cowsandfish.org/pdfs/StreamsFieldWkbk2005.pdf

http://www.cowsandfish.org/pdfs/LakeswetlandFieldWkbk2005.pdf

We have made some updates and minor changes since the 2005 versions, but I don't have those pdf's online yet.

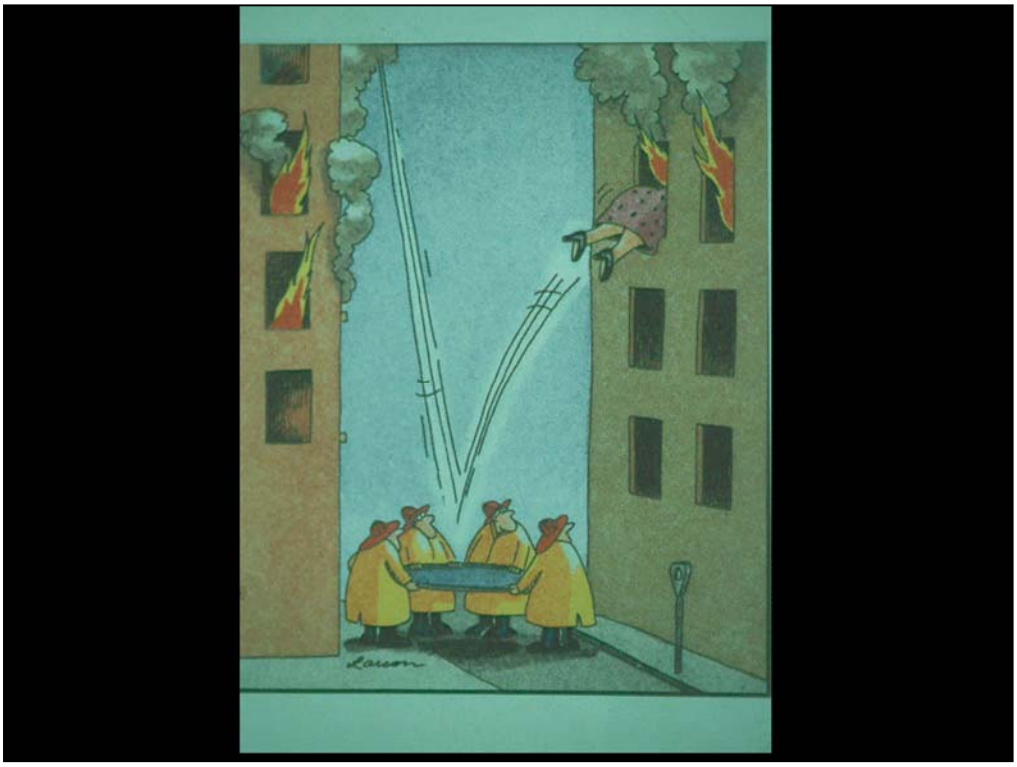
(for US forms/manuals, see http://www.ecologicalsolutionsgroup.com)



One of the tools we use is the riparian health assessment and inventory method, which helps us determine where the province is at from a riparian health perspective: Graph shows Alberta riparian health 1997-2006 inclusive, 1,490 sites. We have currently examined over 2,000 sites with this tool.

Our work with communities across Alberta, at their request, shows there are a lot of riparian areas that are not healthy, and so we know there is room for improvement in riparian health and management.

Without monitoring we cannot know if we are succeeding, or on the right track. Even our new extension documents are built using focus groups/ informal reviews / review of knowledge survey results to ensure they are meeting the need.



We want to know we aren't just jumping from one fire to another.

Where are we today? Well, Cows and Fish is a world of contradictions—keeping things that work from the past, like images from slides, because they do work, but developing new tools and new ways of sharing ideas to motivate people, to maintain that momentum, such as with digital stories….there are always new calls to take, ideas to plant and changes in the hearts and minds of people to see happen! One of these things is our digital stories, which have been a great way to share personal stewardship messages of landowners and livestock producers, along with staff stories, showing why people do what they do.

We have been working with the Center for Digital Storytelling (www.story**center**.org) for several years now to help capture and share these powerful short digital stories. Go to our website (some on home page) and look at a selection of relevant stories. http://www.cowsandfish.org/photos/digital.html

(view digital story here) – Loving Fish, by Lorne Fitch, explains how and why Cows and Fish got to the approach we use today, from Lorne's own perspective.

Working with Communities: Sharing our experience

1. **Use a template, process or pathway** to guide participants and your work.

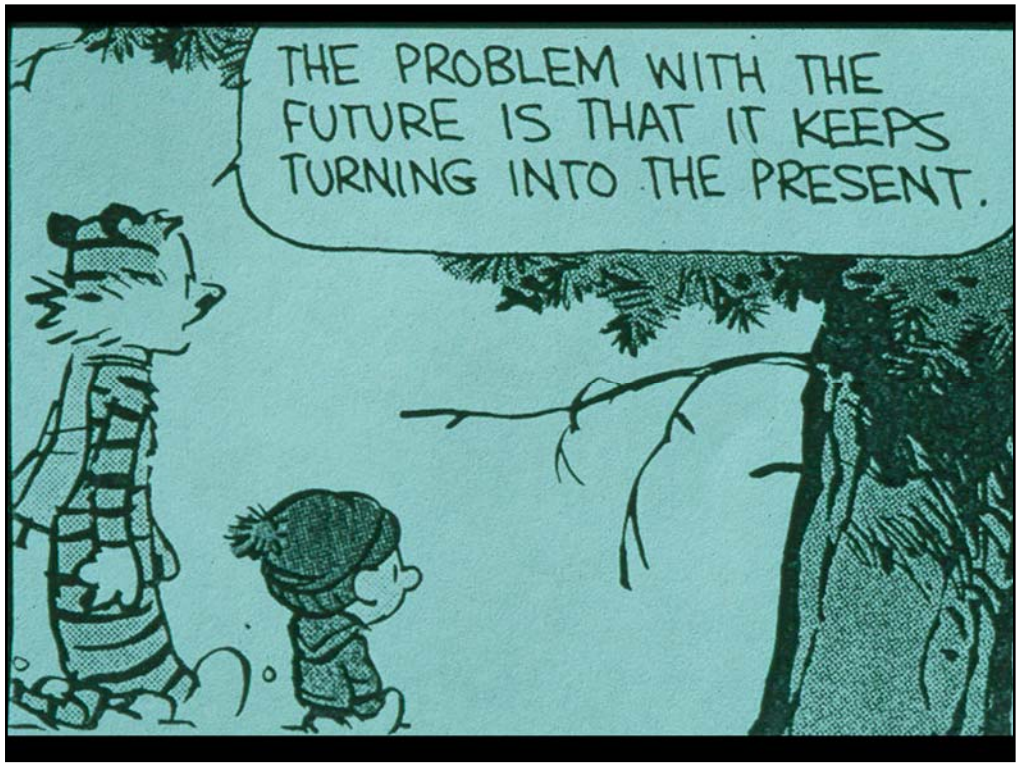
2. There are **key characteristics** for message deliverers to have - develop trust and credibility.

3. **Frequent, varied contact is necessary to build trust** and a cumulative body of knowledge.

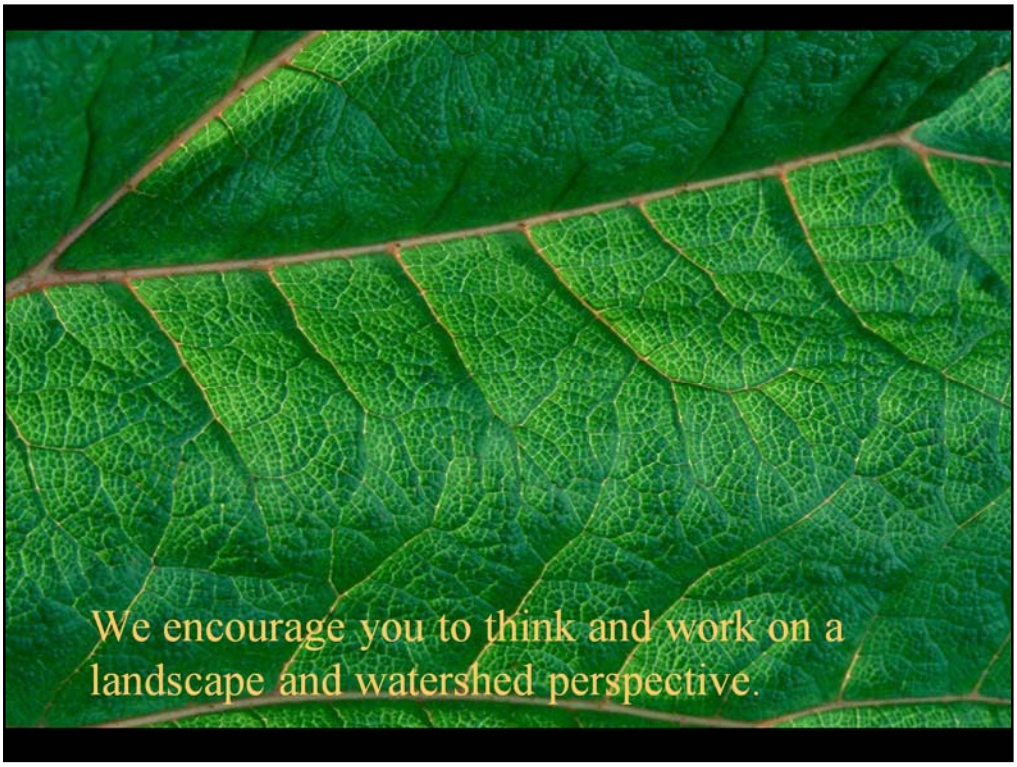
4. This takes time, time is money-we/you need resources for the long haul to deliver this approach

Working with Communities: Sharing our experience

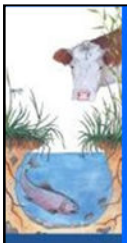
7. **Confer ownership** of the process and progress to a community; this approach leaves a legacy. Recognize that landowners and local community groups must drive riparian management activities in order for them to be accepted, effective and long lasting.
8. **Monitor** to gauge trends and success.
9. **Repeat**, as necessary, **everywhere**!



This little cartoon quip could be seen as negative or positive…in Alberta and Canada, riparian areas are on the radar screen and on the minds of landowners and land managers more than they ever have been before—which is a good thing.



Our experience strongly suggests that working at a community/watershed level is the most effective use of time and resources…I encourage you to do so in your work.



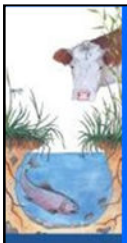
Cows and Fish

Cows and Fish Supporters and Members:

- Alberta Beef Producers
- Trout Unlimited Canada
- Canadian Cattlemen's Association
- Alberta Sustainable Resource Development
- Alberta Agriculture and Rural Development
- Alberta Environment
- Fisheries and Oceans Canada
- Agri-Environment Services - Agriculture and Agri-Food Canada
- Alberta Conservation Association
- Landowners and Community Groups

Funding Associates:

AESA



Cows and Fish

Contact Info

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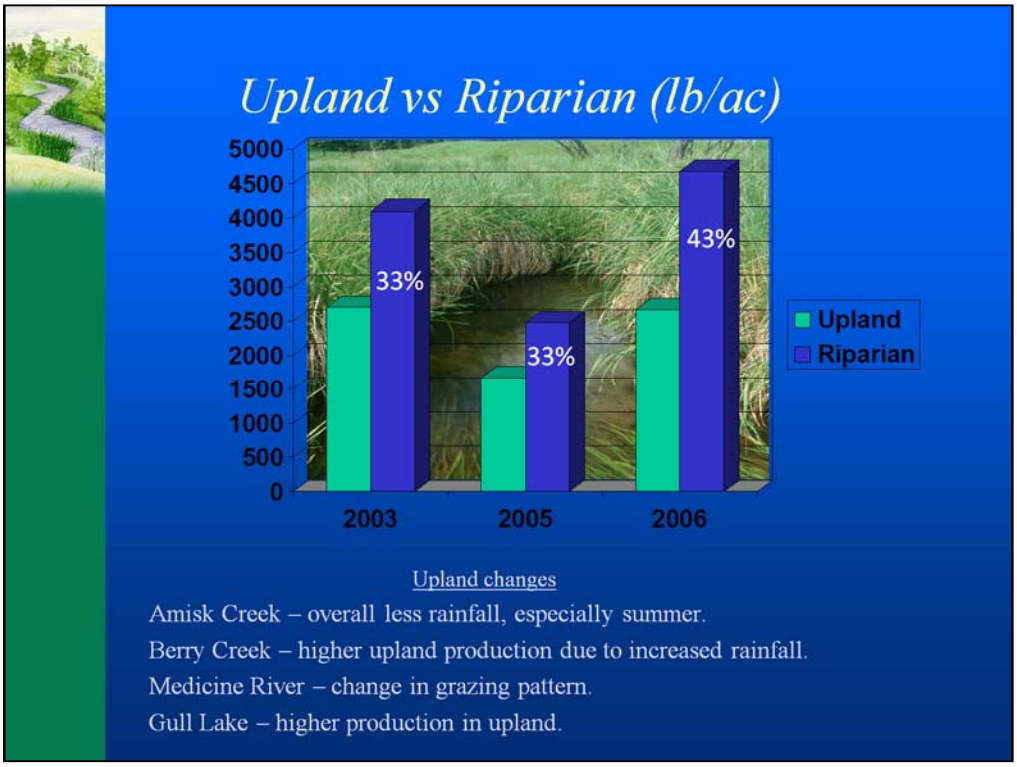
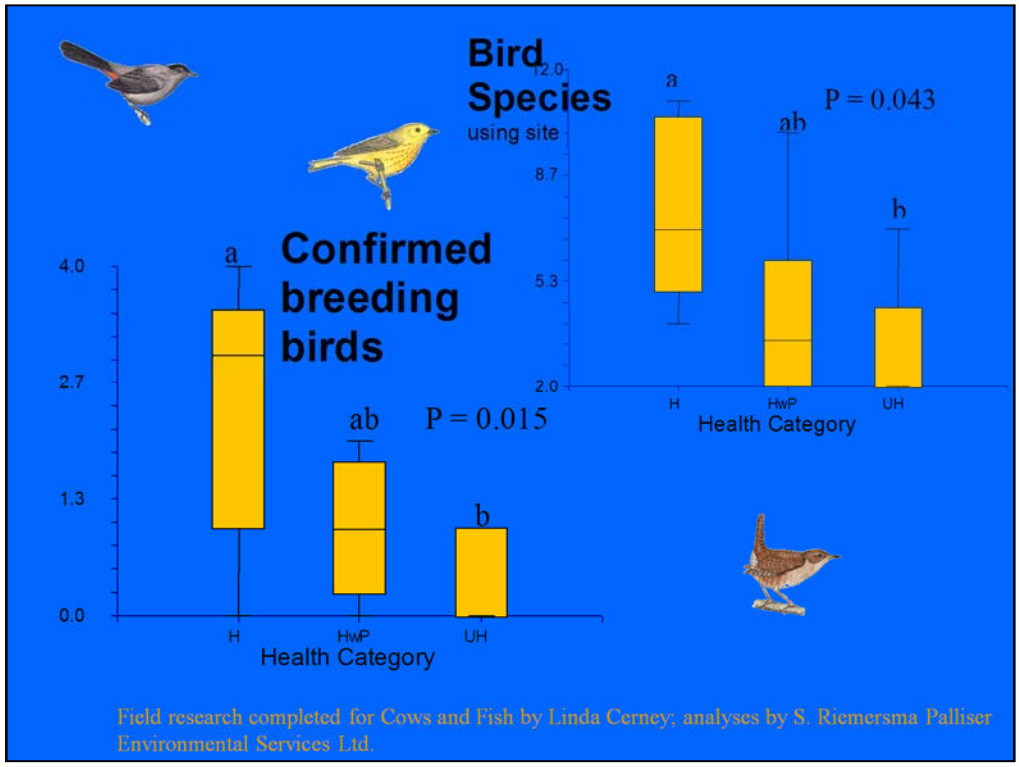
nambrose@cowsandfish.org
www.cowsandfish.org

Additional slides of interest follow

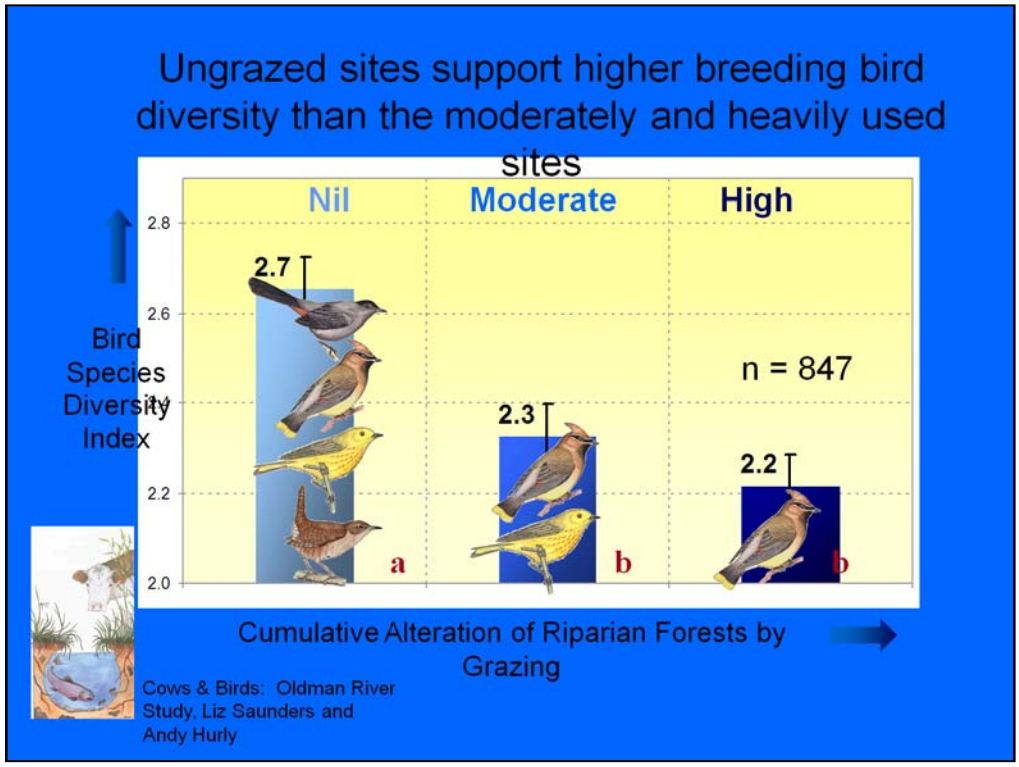
Some keys to successful watershed groups:

- Long term plan/program
- Proactive acknowledgement of issues
- The ‘right’ people
- Fun & informal events
- Unique & hands on activities
- Understand & embrace history
- Supportive & regular local coordination
- Activities & programs have impact

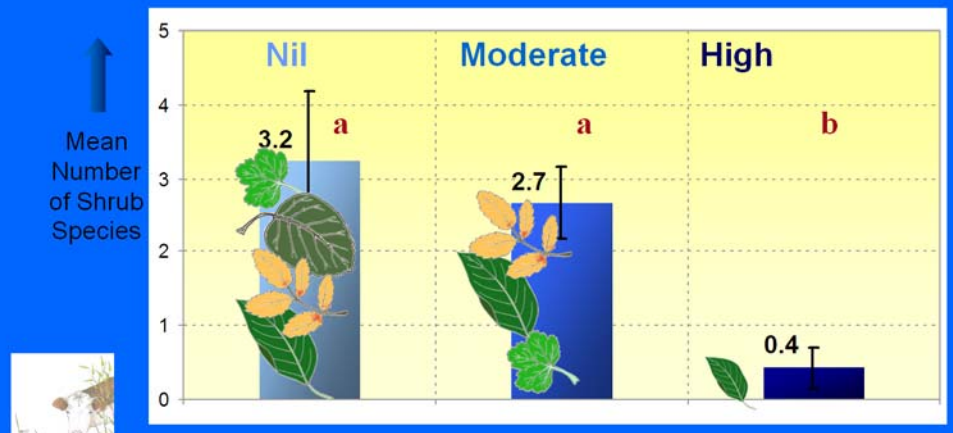

Upland vs Riparian (lb/ac)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
33%
33%
43%
2003
2005
2006
Upland
Riparian
Upland changes
Amisk Creek – overall less rainfall, especially summer.
Berry Creek – higher upland production due to increased rainfall.
Medicine River – change in grazing pattern.
Gull Lake – higher production in upland.



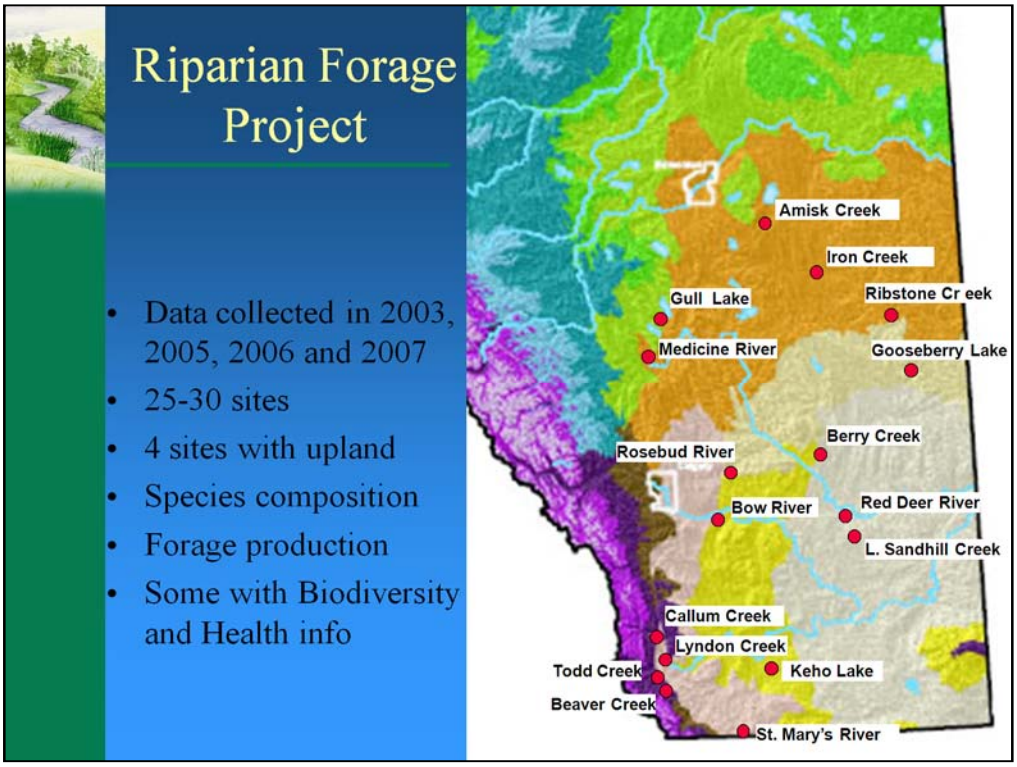
Research we have worked on linking riparian health, breeding birds and forage showed some interesting results that help ranchers look for key features.

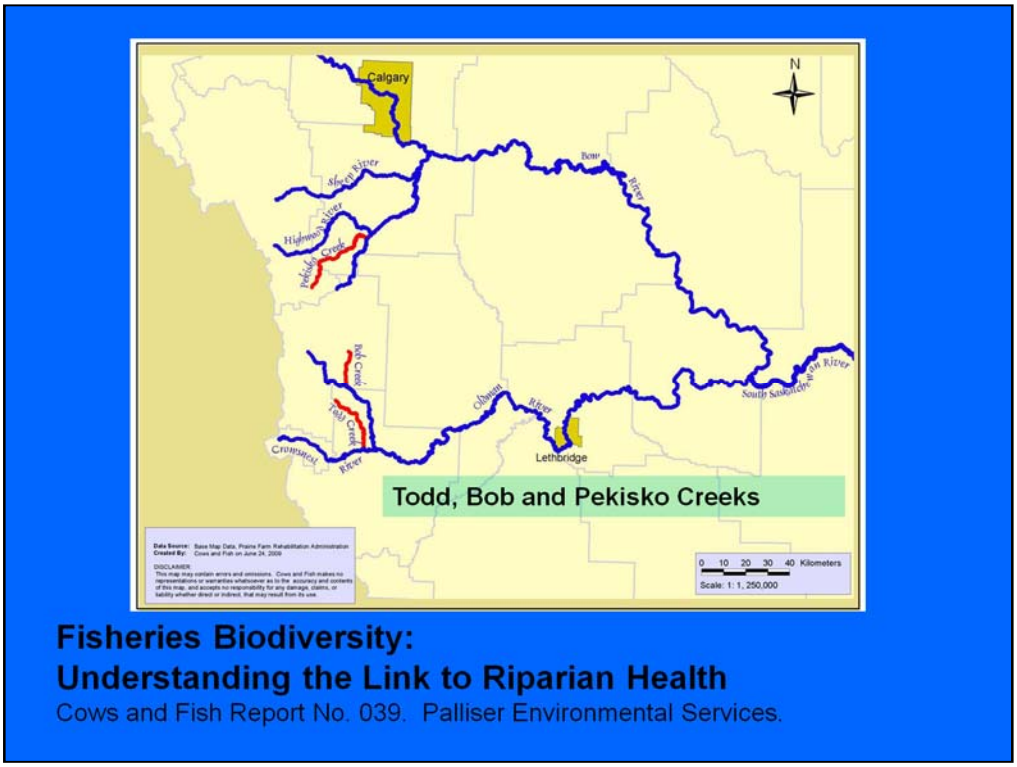

Ungrazed sites support higher breeding bird diversity than the moderately and heavily used sites
Nil
Moderate
High
2.8
2.6
2.2
2.0
2.7
2.3
2.2
a
b
b
n = 847
Bird Species Diversity Index
Cumulative Alteration of Riparian Forests by Grazing
Cows & Birds: Oldman River Study, Liz Saunders and Andy Hurly

Shrub diversity is greater in ungrazed & moderately used compared to heavily used sites



Cows & Birds: Oldman River Study, Liz Saunders and Andy Hurly


Riparian Forage Project
• Data collected in 2003, 2005, 2006 and 2007
• 25-30 sites
• 4 sites with upland
• Species composition
• Forage production
• Some with Biodiversity and Health info
Amisk Creek
Iron Creek
Gull Lake
Ribstone Cr eek
Medicine River
Gooseberry Lake
Berry Creek
Rosebud River
Bow River
Red Deer River
L. Sandhill Creek
Callum Creek
Lyndon Creek
Todd Creek
Keho Lake
Beaver Creek
St. Mary's River

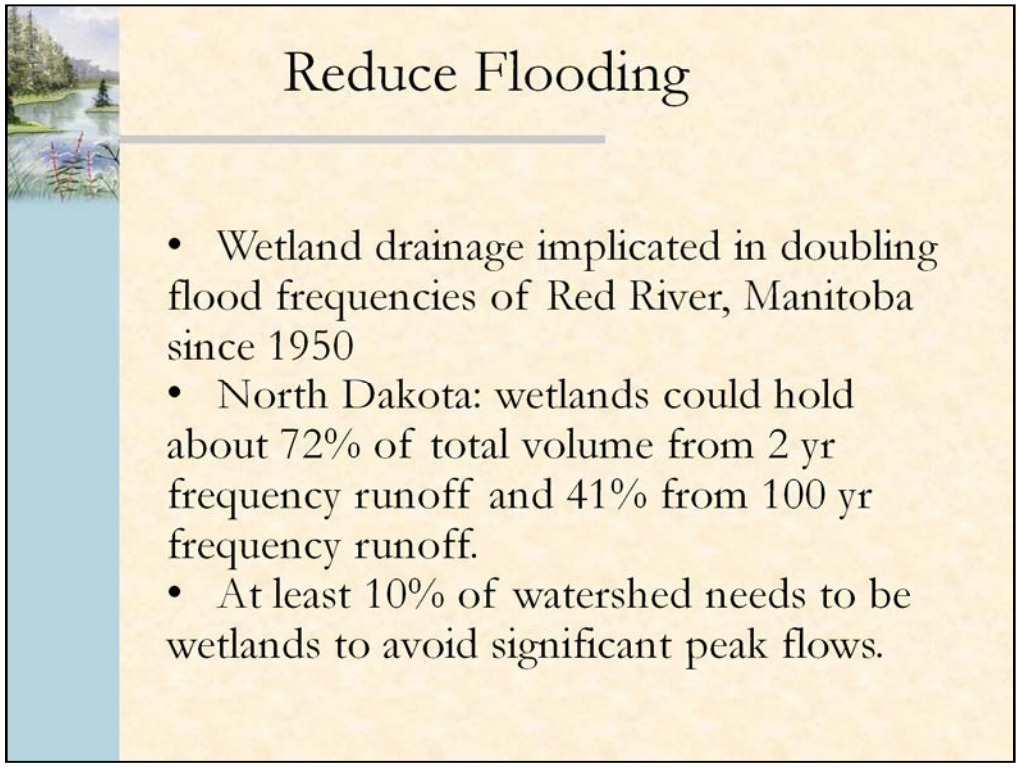


Fisheries Biodiversity:

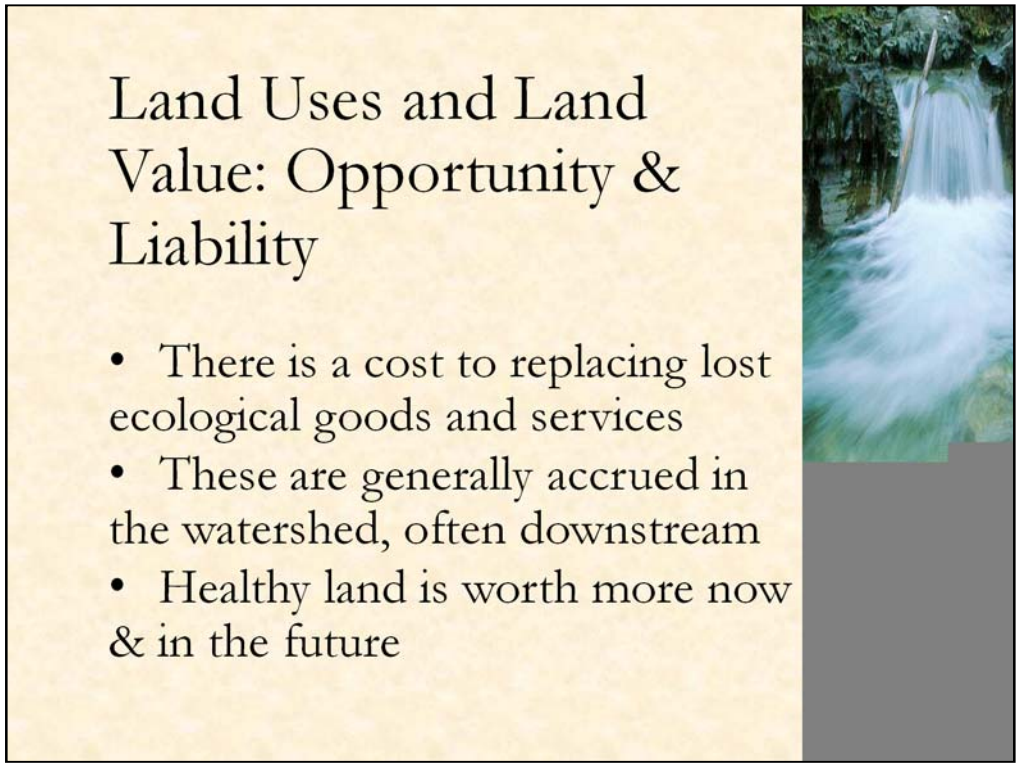
Understanding the Link to Riparian Health

Cows and Fish

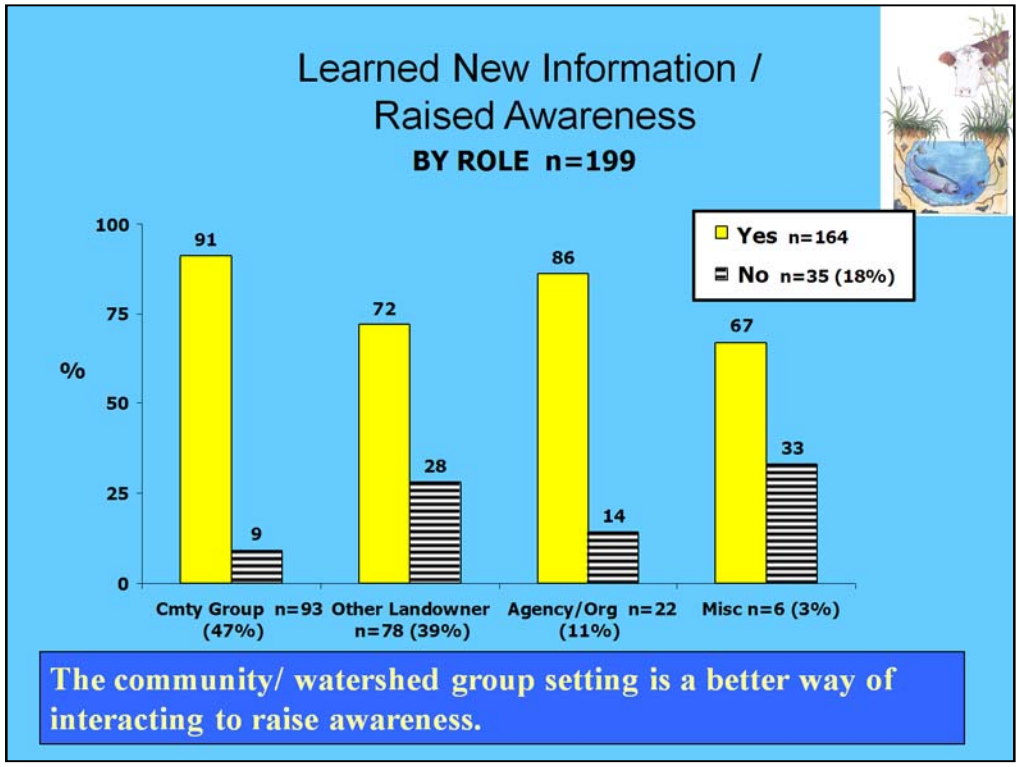
Alberta Riparian Habitat Management Society Report No. 039



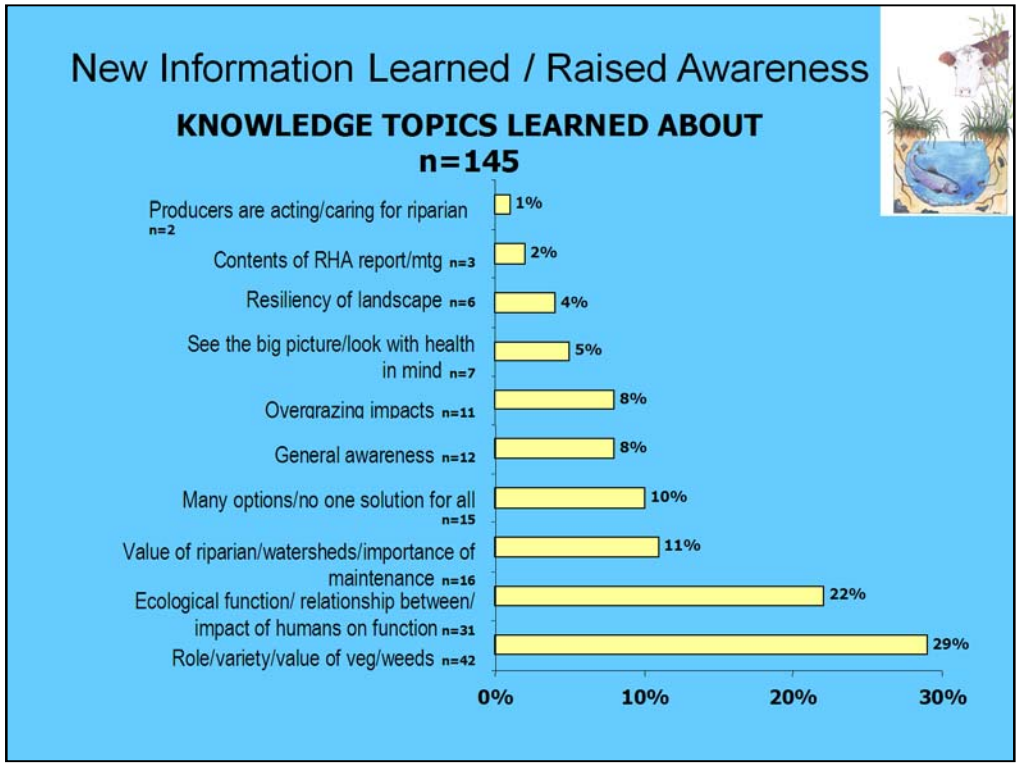
At least 10% of watershed needs to be wetlands to avoid significant peak flows and contaminants from being moved downstream.



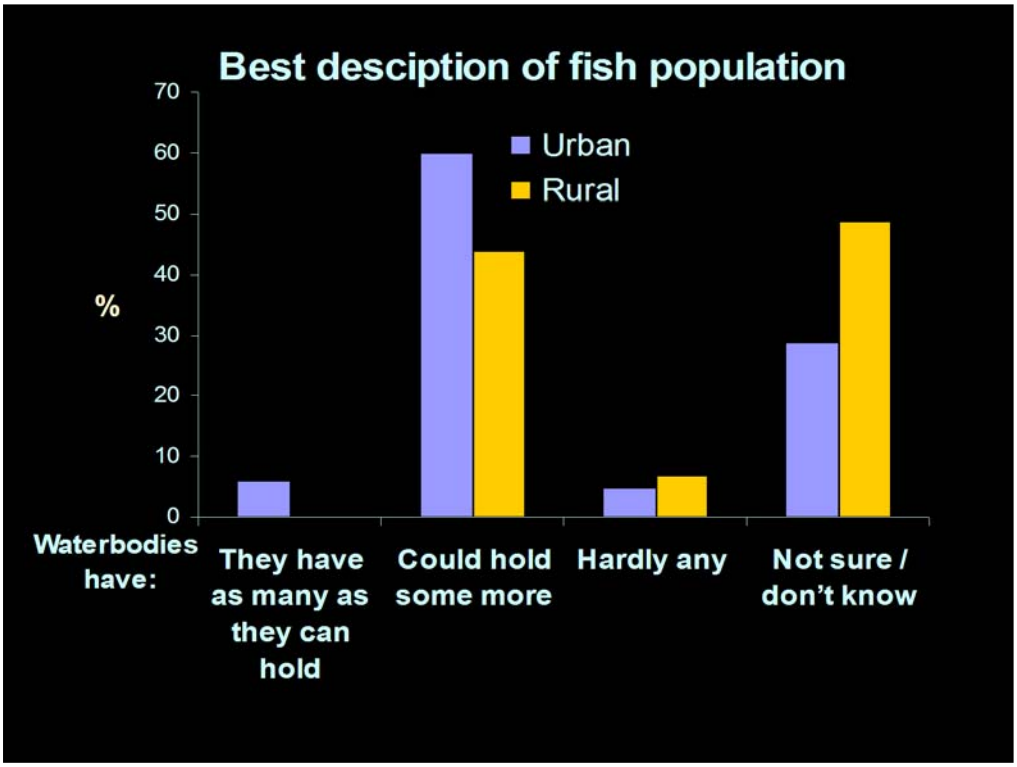
Growing research and experience shows that land values and opportunities are greater for grazing and recreational/development when land is healthy.



Ecological change, like improved water quality across an entire watershed may take decades, once all the management changes are initiated, but changes to knowledge and action can also be measured and may be seen much sooner than landscape/ecosystem level change. This research indicated that people had learned new information/raised their awareness as part of working with us, but importantly, it showed that those who took part in the riparian health assessment & C&F process as part of a community group (Cmty Group) were much more likely to learn info than other landowners.



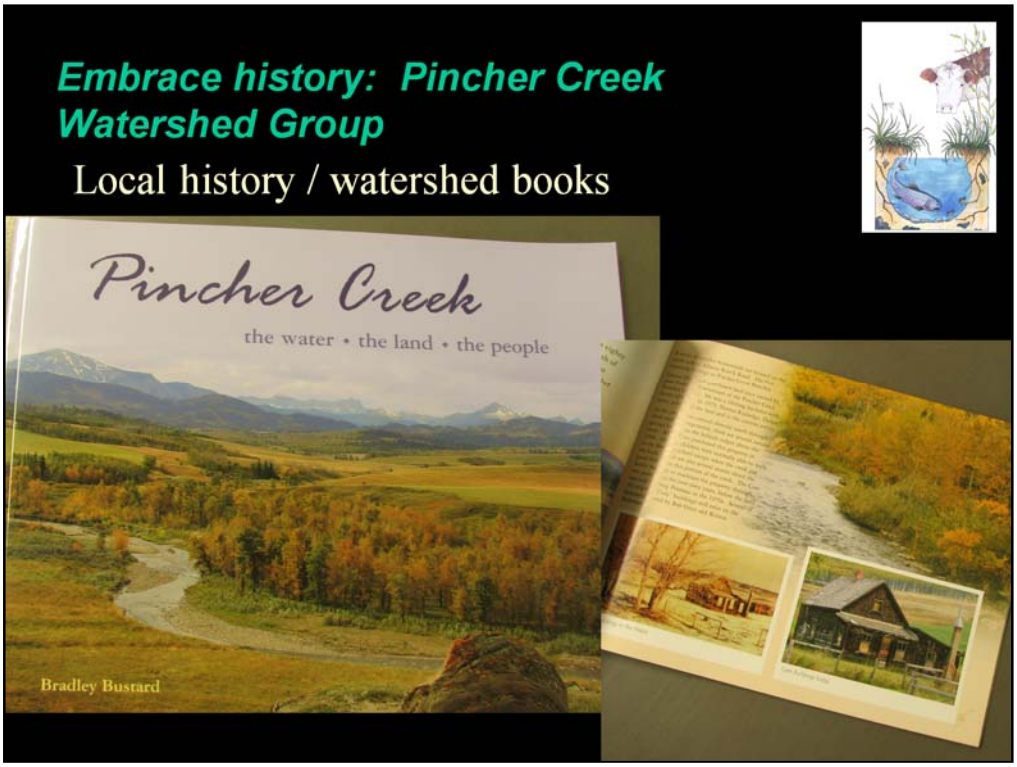
There is no one thing that people learn, but the big picture concepts that people described that they'd learned is very positive.



Which one of the following categories best illustrates how you would describe the overall fish population in Alberta at this time?

No rural individuals felt that Alberta waterbodies have as many as they can hold, and many more rural Albertan's were unsure of how many fish are in Alberta's waterbodies. For urban individuals, the vast majority felt that waterbodies could hold some more fish.
Very few individuals felt that "Hardly any fish" was a good description of Alberta's fish populations.

Providing hands-on activities is a great way to keep people involved, such as days where people see the fish and riparian aspects together. Activities with the group not only create measurable involvement, build awareness/ knowledge of issues, but just as importantly, they help the community to build capacity and community pride.



Local groups that have pulled together their local history around their stream have really been a wonderful way to engage the overall community and watershed.