Looking Back for a Clear View of the Future: Technology Transfer and Communication

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Recommendation #4

Recommendation 4

"Technology development, transfer, and communication need to be improved between developers and user communities".

Talk Agenda

1. Communication Barriers
2. Science Delivery and Knowledge Exchange – What We Are Learning
3. Success Stories – Then/Now
4. Next Steps – Next 10 Years

Communication Barriers

"What We Have Here is a Failure to Communicate"

Cool Hand Luke

The Warden

Communication Barriers

My Personal Experience

- **Don't Speak the Same Language!**

- **What Managers want and What Managers ask for is often not the same thing.**

  "I need acres of Fire Regime Condition Class for the US"

  When what they want is a fire risk map

- **What Scientist Deliver and What Managers need is often not the same things.**

  "This isn't what I asked for"

Don't Speak the Same Language

The Question


Scientist

- Don't understand the managers questions
  "They don't know what they want"
- Don't think managers are asking the right question
  "They don't need that, they need this"


Managers

Don't think scientists understand the question or needs
"When are scientist going to study something I can use"

Don't Speak the Same Language

The Solution

Scientist

Wants to answer the question based on their research

"I have this model …"

Managers

Wants science to defend their decisions

"We need science to prove…"

Barriers in Communication

Presentation of information

Scientist

- Talk at a level managers don't understand – to specific and technical

Managers

- Talk in language scientist don't understand – to general and not technical

Barriers in Communication

Presentation of information

Scientist

- Talk at a level managers don't understand – to specific and technical
- Advance Education – masters, doctor

Managers

- Talk in language scientist don't understand – to general and not technical
- Basic education - undergraduate degrees

Barriers in Communication

Presentation of information

Scientist

- Talk at a level managers don't understand – to specific and technical
- Advance Education – masters, doctor
- Specialists in their field

Managers

- Talk in language scientist don't understand – to general and not technical
- Basic education - undergraduate degrees
- Generalist

Barriers in Communication

Physical Barriers – Work in two different worlds

Scientist

- Scientist want to take time to do research

Managers

- Managers need it yesterday

Barriers in Communication

Physical Barriers – Work in two different worlds

Scientist

- Scientist want to take time to do research
- Some questions can't be answered with science – value questions

Managers

- Managers need it yesterday
- Wants science to answer value questions

Barriers in Communication

Physical Barriers – Work in two different worlds

Scientist

- Scientist want to take time to do research
- Some questions can't be answered with science – value questions
- Can't provide absolutes – always a degree of uncertainty

Managers

- Managers need it yesterday
- Wants science to answer value questions
- Need absolutes

Barriers in Communication

Physical Barriers – Work in two different worlds

Scientist

- Scientist want to take time to do research
- Some questions can't be answered with science – value questions
- Can't provide absolutes – always a degree of uncertainty
- Want to solve the problem using complex solutions

Managers

- Managers need it yesterday
- Wants science to answer value questions
- Need absolutes
- Managers want simple solutions

Science Delivery and Knowledge Exchange …What are we learning….

- **Social Science can inform science delivery efforts:**

  (*Wright 2010, JFSP Fire Science Brief #124, unpublished dissertation)*

  - Expect a time lag for adoption/diffusion of research products
  - Fire Ecologists are early adopters – key spanner for scientists
  - Fuels specialists – recognize/formalize role for delivering science, support/educate
  - Cultivate work environment for learning/reflection/debates
  - Kocher, et.al, 2012 – consolidate info/improve connections

- **Land Grant Universities – the Extension Model:**
  - Informal Adult Education – learner participates
  - Research ↔Extension ↔User
  - Assessments and Evaluation are key tools

Science Delivery and Knowledge Exchange ….what are we learning…

- **Interactive Research**
  - Collaborative Science Cycle - FS Review, 2009
  - Coproduced knowledge/science -
  - Bitterroot Ecosystem Mgmt. Research Project

- **Science/Manager Collaborations**
  - Principles of Collaboration -
    - Building sustainable relationships
    - Managing Expectations
    - Respectful consideration of diverse interests
  - RMRS – Future Forest Webinar Series

Principles of Effective Science Application and Delivery*

- **Implement a fully collaborative science cycle**
  - Collaborations between scientist, resource specialists & land managers throughout the science process

- **Create opportunities to develop relationships** -
  - Research scientists are accessible and available for for face-to face interactions.

- **Develop mutual understanding of the different management and science cultures and demands**
  - Resource specialists and managers are sophisticated users of science and research scientists understand the demands of the application arena.

- **Develop science delivery and application capacity**
  - Involve staff skilled in and dedicated to the job of science application -- Fire Modeling Institute, FERA...

* Regan, et.al. , Science Delivery: Formalizing Mechanisms for Science/manger Partnerships at the Rocky Mountain Research Station. Internal report, 2011.

Then and Now…
Science Managers Collaborations

Then (Circa 2000):

- Fire Modeling Institute
- FERA
- Tall Timbers
- FRAMES

Now:

- Fire Modeling Institute
- FERA
- Tall Timbers
- FRAMES
- Wildland Fire Research, Development & Applications
  - National Fire Decision Center
  - NIFTT
- Threat Centers (East and West)
- JFSP Consortia
- Universities - Most Natural Resource Schools have some program
  - Wildland Fire Science Partnership (U of I, U of M, RMRS)
  - National Center for Landscape Fire Analysis (U of M)
- Federal Research - Most Natural Resource Research Programs have programs
- Private Research Organization
- Others…

Sorry if we missed your organization.

Then and Now...

Mediums

Then (Circa 2000):

- Conference, publications, papers

Now:

- Conference, publications (more journals), papers
- Webinars
- Websites (Wiki)
- YouTube
- Twitter
- Communities of Practice
- Networks
- Whole Organizations
- List servers and Blogs
- Podcast / PEP
- Other social media
- Focused field tours
- ....

Next Steps

Are We Making A Difference?

In general, yes!

- Science information that is more useful and accessible
- More informed decisions
- More interagency coordination
  - Around fire issues using science based solutions
- More interdisciplinary work related to fire (fisheries, wildlife, etc)

What's next

- Organizational integration is important in today's budget climate
- Improve metrics to measure success
- Continued integration of social science into the process
- More interactive research
- Ongoing and challenging complexity in fire research addressing fire management issues