W506
Using Science-Based Solutions in Conservation of Threatened and Endangered Species:
Sage-Grouse Case Study
Annual Meeting
August 9-10, 2016
Park City, UT
MINUTES

Participants:

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Kathleen Clark (Governor Herbert's Office)
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Mapping Information Pathways

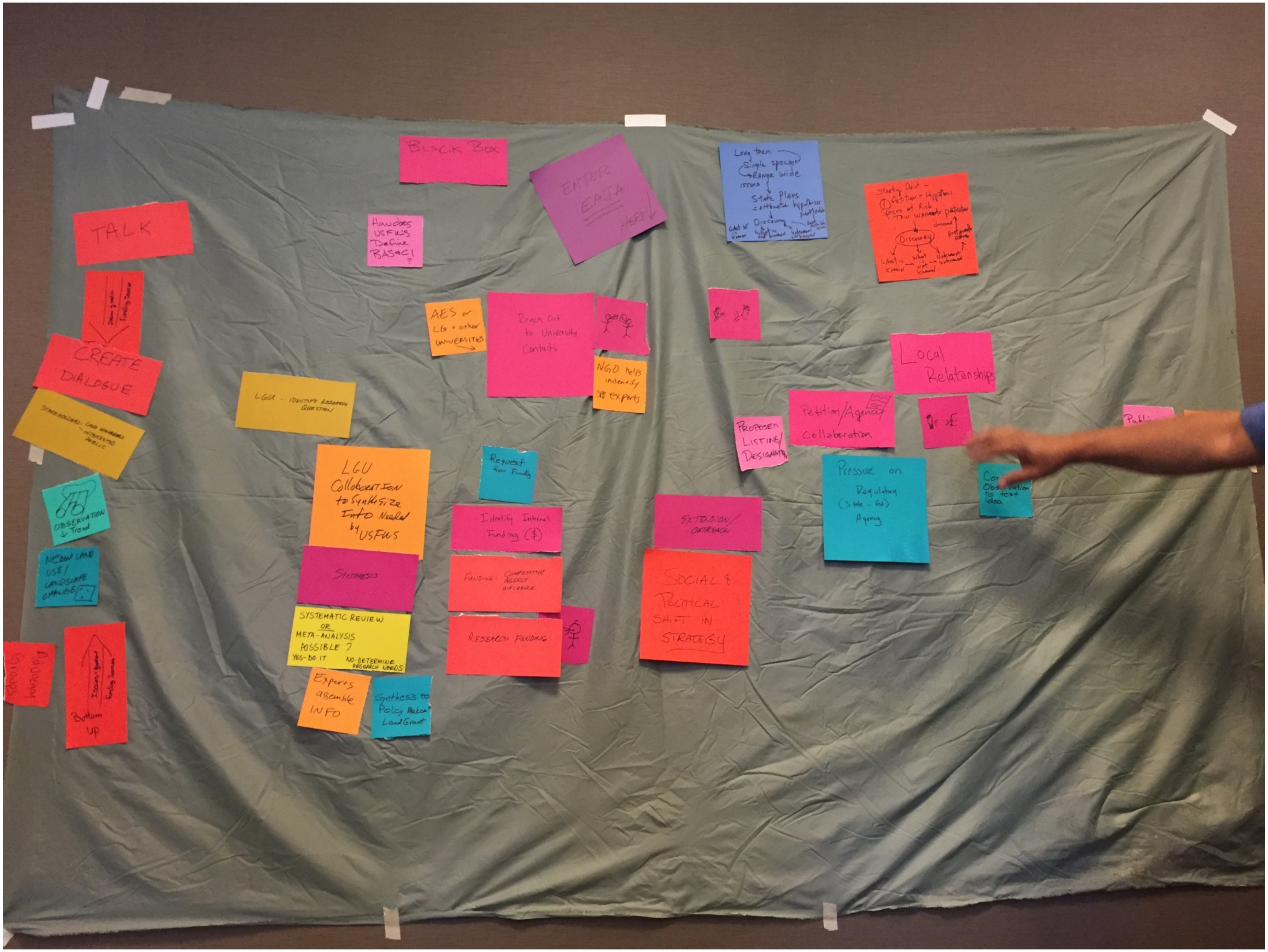
Group engaged in an iterative, interactive, organic process to develop a map of how information flow from awareness of species sensitivity/decline to ESA listing decision and beyond.

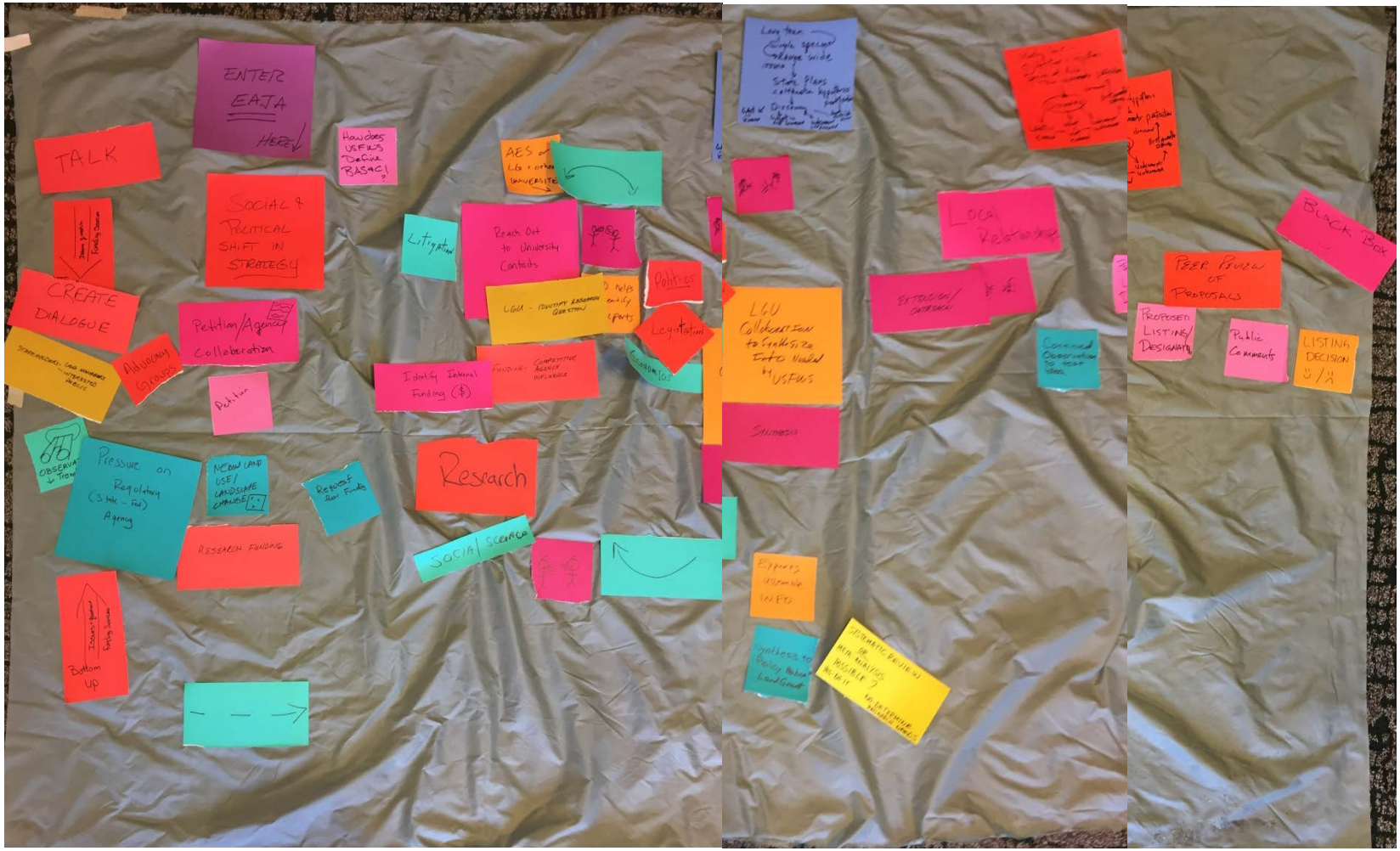
Expert Input and Feedback

NEED USFWS PRESENTATION

Ah-Ha Moments from Expert Input

- Politics does play a role in ESA decision making
- Governors' offices are unaware of LGU expertise
- People are tribal. "Best available science" defaults to trusted/internal/favorite science
- The science process doesn't function without relationships
- The USFWS National Priority list is an exciting opportunity (cross-reference this with Wildlife Action Plans)
- LGUs have an education problem: internally don't always know what we have to offer
- LGUs educate many wildlife/natural resources students—are they leaving without knowing what LGUs (AES & CES) do?
- LGUs don't necessarily have a mechanism in place to have states find/give credibility to LGU science.


BLACK BOX
ENTER EAJA HERE
TALK
CREATE DIALOGUE
LGU - IDENTIFY RESEARCH QUESTION
AES or LG + other UNIVERSITIES
Reach Out to University Contacts
LGU Collaboration to Synthesize Info Needed by USFWS
Request for Funding
Identify Internal Funding ($)
Synthesis
SYSTEMATIC REVIEW OR META-ANALYSIS POSSIBLE ? YES-DO IT NO-DETERMINE RESEARCH NEEDS
RESEARCH FUNDING
Experts assemble INFO
EXTENSION/OUTREACH
SOCIAL & POLITICAL SHIFT IN STRATEGY
Petition/Agency Collaboration
Pressure on Regulatory (State - Fed) Agency
Local Relationships
OBSERVATION Trend
Bottom up


ENTER EAJA HERE
TALK
SOCIAL & POLITICAL SHIFT IN STRATEGY
CREATE DIALOGUE
Petition/Agency Collaboration
Advocacy Groups
Petition
Litigation
Reach Out to University Contacts
Politics
Legislation
Identify Internal Funding ($)
Research
SOCIAL SCIENCE
Pressure on Regulatory Agency
NEW LAND USE/ LANDSCAPE CHANGE
Request for Funds
RESEARCH FUNDING
Bottom Up
LGU Collaboration to Synthesize Info to Value by USFWS
Synthesis
LOCAL Relations
PEER REVIEW OF PROPOSALS
BLACK BOX
Proposed Listing/ Designation
Public Comments
LISTING DECISION

- There is a gap between capacity in LGUs for social science and what they could do
- The process for inserting science into ESA decision making is nowhere near clear
- No system to reward LGU scientists for involvement and some danger of getting involved.
- Unclear role of social science in ESA decisions
- Understanding people is critical to effective species conservation
- LGUs could help define integrative questions of research
- Science to inform the decision-makers is everyone's job at the LGU
- Need to get the message out about what LGUs do that makes a difference
- Does the USFWS or any other agency know that they are a potential consumer of Extension/LGU information?
- How can LGUs better engage agencies on behalf of traditional extension audiences?
- State agencies like USFWS manage wildlife/land so we need to work with them as clients
- LGU/Extension role: conduit for communication between different kinds of clients (e.g., ranchers and USFWS/BLM/USFS)
- Two roles for LGUs/Extension if USFWS is a client: 1) interpreter, 2) researcher
- Even internally, LGUs may be unfamiliar with what other researchers in their institution do
- Lack of connection between AES and CES within institutions
- Need to link the right levels/individuals within LGUs with USFWS (i.e., state specialists and not county agents)
- Insert "find a LGU expert in that" into the SSA process as it develops

Players/Partners in the Information Pathway

- Agricultural associations
- For profit corporations
- Commodity groups
- Municipalities/Local governments
- Tribes
- Students
- State legislators/legislations
- Governors offices
- Western Governors Association
- LGU researchers/scientists
- Extension Specialists
- AES/CES Directors
- State/Federal Agencies
- NGOs
- Environmental Groups (litigious)
- Landowners
- Working groups
- Funding agency program managers (public and private)
- Courts

Role of the Western Governor's Association in ESA Decisions

- Bi-partisan view of policy
- Western issues
- Ensure a voice for all in decisions
- Promote the use of best science
- Insertion point for science, including social science
- Seekers of expert opinion
- Influence decision makers (USFWS, BLM, etc.)
- Influence direction/priorities for LGUs
- Protect "western agenda" an communities

Role of Agencies

- Data sharing
- Identification of experts (internal and external)/provide expertise
- Decide what "best available science" is (Feds only)
- Determine process (Feds only)
- Decide data needs
- ID at-risk species
- Provide funding
- Permitting
- Collect monitoring data
- Create and implement land management plans
- Produce scientific publications
- Conduct science
- Communicate science and educate the public
- Synthesize science
- Apply science to management decisions
- Make ESA determinations (Feds only)

Role of LGU Scientists

- Be aware of other experts
- Identify research interests
- Pursue funding
- Identify knowledge gaps
- Mentor students
- Publish results
- Conduct research
- Data quality control
- Apply science to management
- Build partnerships/relationships
- Evaluate the effectiveness of conservation actions (determine cause/effect)

- It is a challenge to increase the visibility of LGUs without offending research partners (e.g., USGS)/competing for funds
- There is an opportunity for new revenue streams (Wildlife Conservation and Restoration Program) coming from AWFA
- Quantify management actions (e.g., results chains)
- Provide expert advise
- Serve as expert witnesses in court
- Conduct peer reviews
- Educate/communicate science to stakeholders

Roadblocks

- Politics
    - Need to know how to play the game
    - Preferred policy may not be consistent with science
- Lack of knowledge/awareness of LGU expertise
- "Best available science" defaults to trusted/internal/favorite science
- Lack of relationships
- Internal lack of awareness of capacity of AES/CES
- No mechanism for states to fund LGU science
- Social science not formally part of the ESA decision making process (pre-listing; it is considered post-listing)
- Complicated process
- Some professional risks to involvement (science "weaponized")
- No reward system for researcher involvement
- LGUs don't always view agencies as "clients"
- Disconnect between CES and AES
- Lack of formal "consultation" by LGU experts in process
- Multistate mechanism is underutilized to address ESA issues:
    - Lack of awareness by individual faculty that the multistate mechanism exists
    - AES directors not recruiting for multistate efforts
    - Few incentives for faculty to participate (and incentives vary widely across the system)
    - Each state funds travel/participation differently
    - Younger faculty missing out on opportunities when only one member per state is funded
    - Core process of how multistate collaborations are formed/managed unclear
    - NIMSS not searchable enough to be useful to USFWS
    - Competition/artificial boundaries internally with college cost centers/extension cut out?
- Structure of individual universities
    - Where is Natural Resources? Are AES and CES under same roof/administration?
- Funding structure of AES is not responsive to the needs of states/citizens vs. individual faculty

Recommendations for Improving the how LGU Science gets into the Pipeline

- Each LGU should create a dynamic, searchable database of research that includes all outputs (academic publications, fact sheets, etc.) (from all research, not just those with AES/CES appointments) that include a brief discussion (abstract) in layman's terms.
- LGUs need to create a list of "experts" to be given to agencies.
- WGA should push to have USFWS be required to consult LGUs in the early listing process.
- AES Directors should invite agency personnel to field days.
- Extension and Experiment Station need to develop a relationship with USFWS to increase awareness of LGU scientific capability in terms of ESA. In addition they need to develop a database of LGU scientist capabilities.
- LGU scientists need to be encouraged to participate in regional projects in order to be more effective in getting their knowledge into the ESA process.
- LGU scientists need to be encouraged to develop personal relationships with counter-parts at USFWS.
- Extension and Experiment Station Directors need to work with USFWS to develop a clear path to get LGUs to decision/policy makers.
- AES/CES need to promote LGUs as different than other agencies that that we engage in the entire scientific process.
- Faculty need assurances (in-writing) of support to engage in these difficult problems that are controversial.
- AES/CES should create small seed grants for engaging in difficult and complex socio-ecological issues; should also create recognition mechanism.
- AES/CES needs to emphasize Natural Resources projects equally to production agriculture projects equally ASAP.
- W506 Administrative Advisors should write a letter to USFWS to request a comment on the listing process.
- W506 Administrative Advisors should provide the WGA and USFWS a database with LGU areas of expertise.
- The current structure for input to the listing process and Status Assessment does not include input from our group and the thought process was not available. A more current accounting of the vetting process of the ideas used to make the decision should remove the "black box" and make the process more transparent.
- WAES Directors should discuss, coordinate, decide actions to expand resources and create minimum consistency to support faculty to participate in regional/multi-state projects. This would eliminate inconsistencies across states about resource support, create minimum levels of sustainable funding to enable 2-3 faculty per state to attend/participate, and create an expectation for recruiting faculty from across an interdisciplinary pool to participate. This should be done during fall 2016 to bolster activity and set precedent for next W506 meeting. Recommend revisiting and then solidifying clear policy by May 2017.
- WAES Directors should allocate new resources to facilitate development of inter-disciplinary collaborations that structure social science activity into multi-state, large-scale research efforts.

This would provide a more comprehensive analysis of landscape-level impacts for ESA issues, justify the need for baseline social science data in western states to federal agencies for land/resource management needs in absence of required NEPA elements. This should be done during FY17 by establishing a framework to develop this explicitly.

- WAES Directors should establish an ESA-initiative across the western-LGUs to coordinate region-wide efforts that transcend state boundaries. This would overcome the gap with federal agency policy levels that dictate landscape/regional-level decisions for species that cut across state boundaries and look at more complex levels / scales of interactions via the more coordinated effort. This should be done during Spring 2017 (to be more organized by January 2017 W506 meeting as a specific and tangible action toward W506 Objectives 2 & 3).
- WAES Directors should establish a regional 'policy' entity that enables (but does not require) participation from each institution in order to facilitate communication, coordination, and relationship building across local, state, & federal entities for more effective policy on transboundary ESA processes. Create framework FY17, establish entity by Dec 2017.
- Send faculty to Introduction to Species Status Assessment (CSP3910), February 6-10, 2017 at NCTC: https://nctc.fws.gov/NCTCWeb/catalog/CourseDetail.aspx?CourseCodeLong=FWS-CSP3910

Additional Recommendations:

- LGUs need to be less siloed
- LGUs have not been briefed on the state Wildlife Action Plans, and need to be
- Understand new threats and land uses to see what might be coming down the pipe
- FWS should reach out to LGUs more
- Need to understand what the definition of BAS & CI is
- Important to understand legislative funding priorities are set. E.g., USU has to go through a vetting process to request funds from the legislature
- Peer review should have a better system that is clearer [I think this refers to a particular kind of peer review of FWS generated publications of summaries or something]
- Social science is relevant but it is hard to see how to fit into the system
- David Wilms suggested small working groups for how to move forward (how to better use data? how to incentivize?)
- Perhaps out of WGA a better partnership for a fund to help response with more rapid research needs related to ESA
- Clarify relationship between state offices (like PLPCO) and AES or CES: people within Gov's office may be assigned to be agency contact, but is AES seen as an agency at all?
- Would be helpful if AES or CES [or someone else] developed a cheats sheet of ESA research capacity -- a catalogue of expertise
- Directors want to know how, with a specific species, how to work together. Also, that can they do to encourage extension colleagues to get more involved in these processes?
- Identify one or more contacts that can establish relationships with federal agencies at the national or regional level to convey proposals from the W506 ESA Sage-grouse Committee for

funding range-wide research on sage-grouse. Coordinate multi-state Hatch grant program to provide seed/partial match to accomplish this.

- Experiment Station Directors should improve the linkages between their faculties and decision makers at the state level within their states.
- The W506 should foster relationships between committee members (and others?) and staff (e.g., Pat Diebert) of key federal agencies.
- Compile a database of faculty expertise within each university that can eventually be uploaded to a website that state and federal agency personnel can access to better engage with university faculty when needs arise to find expertise about species that may be considered for listing under the Endangered Species Act.
- Encourage AES directors to identify ways to make better connections with state wildlife agencies so that faculty expertise is available to better inform the future process the USFWS undergoes to address a listing petition under the Endangered Species Act. States that provide habitat for listed species are asked to provide data to the USFWS and AES could help make better connections with these state agencies to provide data that may be available in the labs of various faculty members.
- Each state AES system should have a prominent, easily searchable, online database of personnel by expertise. The onus of keeping this up-to-date should lie with individual faculty/AES/CES staff to update their directory listing annually.
- State AES programs should foster clearer expectations and formal understandings of the role of extension/CE and of AES research. Programs should less often blur the distinctions and send mixed incentives/expectations for jobholders.
- AES should make greater efforts to raise awareness of the expertise available to important agency stakeholders who should be encouraged to draw on this expertise EARLY in the process rather than later.
- Deans/Department Chairs/ other administrative/institutional heads should better “advertise” the utility and opportunity afforded by multi-state HATCH projects.
- AES Directors should develop pathways and incentives for LGU Scientists and Extension faculty to collaborate on shared scientific objectives
- AES Directors should provide travel costs for multiple faculty that are part of research groups from the same university to attend meetings
- CES and AES should recognize our broad scale of clientele to include state and federal agencies along with local communities and individuals
- AES Directors should develop relationships/agreements with state entities (agencies, legislature, NGOs) to provide funding for research needs
- AES and CES Directors should find ways to provide more incentive for faculty to be involved in this process
- AES and CES Directors should find ways to be more flexible in funding research opportunities to meet the needs of arising issues
- LGU representatives should engage USFWS through (trainging/symposia/conference) to inform decision makers of the capabilities LGUs represent and the value in engaging LGUs as objective

third-party partners in pre-listing/ critical habitat (CH) designation and the listing/CH designation process.

- LGUs (in partnership with feds/other funding sources) should develop a formal mechanism and associated funding through which USFWS could identify area experts and develop relevant research, data collection, and monitoring for species in which USFWS need greater knowledge – ideally identify those species in partnership with USFWS a few to several years out. This should manifest itself as single or multistate, multidiscipline research, data collection and monitoring endeavors. It would include producing scientific outputs addressing identified potential threats. I envision this including developing social and economic sciences to inform decision makers about possible outcomes of listing or other species/ecosystem conservation efforts – this would be timely as designation of critical habitat occurs following listing a species as Endangered and would substantively contribute to the body of knowledge necessary to make defensible decisions. The key would be the ability to provide useful output to USFWS within the time frame mandated by the ESA.
- As USFWS has not explicitly defined best available scientific information (BASI); LGUs should appropriate the opportunity and "define" science for USFWS. We all know that science is defined by accepted scientific methods employed by each discipline; however, this isn't about actually defining science but about process – we can improve (objectivity and data/inference quality management) the process by holding the agency to as high a standard as scientists hold themselves. Personally, drop BASI and go to defining what science is and describe spectrum of defensibility (as Pat said – defensible science). Congress would likely need to mandate USFWS adopt "definition" as this suggestion would meet systemic internal resistance to adopt an "outside" contribution.

  LGUs should also appropriate the opportunity to inform the WGA the manner in which the listing/designation process can be improved – specifically how LGUs are integral to improving the ESA process.

  These include:
    - SSA, proposed listing, proposed CH designations written as scientific documents synthesizing the scientific (and commercial) information relevant to determining the degree a species may be in imminent threat of extinction. Ostensibly this already occurs but in practice there is great variability in quality of USFWS proposed actions.
    - LGUs provide scientific information, identify data gaps and develop research and produce outputs relevant to species/ecosystems identified by USFWS.
    - LGUs provide expertise in relevant disciplines to peer review SSA, proposed listing and proposed CH designation documents. Held to the high standard inferred by "peer review". Special attention should be paid synthesizing information representing non-science to science and resultant inferences (weak, robust, etc.). Also, attention should be paid to experimental design, sampling design, and inferential space violations.

  USFWS should be mandated to seek expertise and research opportunities through LGUs to develop defensible science and to seek peer-review of USFWS documents at LGUs in all states potentially impacted by USFWS proposed action. For example, LGUs could develop a mechanism by which they can meaningfully engage if they get an SSA to review. LGU species

scientists “experts”, wildlife/range/economic/etc. CES specialists, biometricians, etc. would be the go-to faculty for conducting the review. LGUs would also identify other area-expertise relevant to the SSA peer-review w/in LGU or at other institutions (e.g., expert in occupancy modeling at non-LGU to review core of an SSA treatment of occupancy modeling and subsequent inference). In addition, experts in disciplines relevant to identified “threats” and socio-economics relevant to impacted human activities would be included as peer-reviewers.

- LGUs should focus on engaging USFWS, Forest Service, BLM, BIA, NRCS and other relavent land management agencies that are required by regulation to implement the laws of the United States (ESA, CWA, CAA, etc.). Work with industries to improve their knowledge and understanding of natural resources stewardship so they may be proactive in addressing conservation needs or concerns.

Other Potential Specific Outcomes (facilitator’s perspective/suggestions):

- Dave/Eric/Jim/post docs doing sage-grouse modeling large-scale
- JD/Tex/other working social science into ESA decision-making process (may have to be a separate social science working group
- At next meeting Jan 16-18, maybe have a more specific social-science role section of the meeting.

State Reports: Impact and Accomplishments

Wyoming:

The U.S. Department of Labor Statistics proposed to change the rules around foreign workers (i.e., sheep herders from South America) that would have resulted in increased labor costs for sheep producers. The Wyoming Wool Growers asked the University of Wyoming to help estimate the economic impacts of this policy decision on the sheep industry in Wyoming. Researchers used an existing computer model to evaluate the impact of increased wages on producer bottom line and the industry as a whole. They conclude that fully implementing the proposed policy would put many producers out of business and dramatically shrink the industry in Wyoming. Other western states where sheep production is prevalent, such as Idaho, Utah, Montana, and Oregon, would likely experience similar results. Scientists also investigated the economic importance of sheep production on the Wyoming economy. Researchers shared their conclusions with the American Sheep Industry who used it to advocate for policy change. Ultimately, wages for foreign workers did go up, but the increase was less than initially proposed and was phased in over a longer period of time. The revised policy helped maintain sheep industry profitability and kept sheep producers in business that would likely have had to get out under the original policy proposal.

Elk in the Jarbidge Mountains of northeastern Nevada. University of Wyoming researchers provided estimates of nutritional carrying capacity for elk for a Hunt Unit in Nevada that were adopted as elk herd objectives by the Forest Service, NDOW, and a local grazing association; herd objectives were later changed.

University of Wyoming established a monitoring framework for Northern Goshawk territory occupancy monitoring for Forest Service Region 2. The sampling frames are individual National Forests as well as the entire region.

University of Wyoming scientists are evaluating the efficacy of regulations that are the basis of the Wyoming Sage-grouse Executive Order. We have found many results and provided recommendations.

In the western U.S. the threatened and endangered listing of salmon and steelhead caused profound changes in both in-stream, riparian, and upland management. One of the management practices that has been promoted from the beginning of range management is to develop off-stream water with the intent of improving livestock distribution. This had not really been studied in a scientific process. Research initiated by scientists at Oregon State University and the Eastern Oregon Agricultural Research Center – Union Station, continued at the University of Wyoming, replicated the development of off-stream watering sites and studied distribution changes, cattle weight changes, water quality impacts, ranch economics (and a little sociology), and community economics. What we found and published on was that it is an effective treatment and increases ranch profitability over a 25 year period (life of the equipment). It is regularly listed as a management option in planning as opposed to just fencing off the riparian areas.

Montana

Montana State University researchers provided managers with a Score Card to evaluate grizzly and sage grouse habitat on Montana State Trust Lands. Graduate students developed the Score Cards, including rational and literature review, to ensure that they were based on habitat needs for these species. Lower scoring areas were prioritized for habitat improvement efforts, advancing conservation for these species.

In Montana, researchers changed AUM allocation of sheep to cattle.

Research from Montana State University was used to evaluate sage-grouse habitat improvement projects.

Idaho

In Idaho between 2010 and 2012, there were several state political initiatives to increase deportation rates for immigrant laborers. These policies had the potential to create a labor shortage for the Idaho dairy industry. University of Idaho researchers conducted a socioeconomic analysis of what would happen to the productivity and sustainability of the Idaho dairy industry if labor policy changed to deport immigrant workers.

A team of University of Idaho PhD students conducted a social-ecological impact analysis that was included in a BLM Environmental Impact Statement for a project to address juniper encroachment that was affecting sage-grouse habitat across approximately 2 million acres. This NSF-funded education-research project created a unique participatory methodology to address social-ecological resilience in a matrix that made it easy to collect the sociological and economic impacts required for an EIS as part of

the NEPA process. The BLM is now interested in replicating this process with other projects throughout the state to expand agency options for NEPA. In 2014-15 a refereed journal article was published in Ecology & Society to describe methodology & results in the hopes that processes throughout the country could be planned with greater efficient and attention to socio-economic impacts.

Nevada
University of Nevada, Reno data and habitat models are being used to inform Nature Conservancy mitigation planning for Newmont and Barrick mining companies in northern and central Nevada.

California
University of California Davis scientists contribute to an informal Nerodia Working Group that addresses the impact and management of invasive watersnakes (*Nerodia sipedon* and *N. fasciata*) with USGS, USFWS, California DFW, a few environmental consultants. Research on the distribution and ecology of these species was imitated to fill knowledge gaps on basic ecology and biology. These non-native snakes in California pose a risk to native amphibians, fish, and other reptiles, including ***SEVERAL*** ESA-listed species. This research identified the distribution, current establishment, significant risk posed by the species to native listed species, and the feasibility of trapping. Results were shared with the Working Group and in Conservation Science Webinar Series sponsored by our state CDFW. This generated funding from the USFWS and private land-manager/NGOs to address the problem. Now, although imperfect and incomplete, the state, USGS, and USFWS are now all actively involved in eradication and rapid-response efforts. The CDFW obtained Section 6 funding for their eradication efforts and USGS is using discretionary funding to assist in rapid responses of a newly discovered population in southern California.

University of California scientists are researching how roads affect desert tortoises and the possible benefits of roadside fencing, which is widely proposed as a positive mitigation to deal with ongoing rapid development of BLM-managed lands by renewable energy companies. This work is currently ongoing, funded by the BLM, and includes rapid, frequent communication with the USNPS, USFWS, USBLM, and CDFW regarding our preliminary findings as the study results come in and congeal.

Referenced during the Meeting:

- Murphy, D.D. & Weiland, P.S. Environmental Management (2016) 58: 1. doi:10.1007/s00267-016-0697-z http://link.springer.com/article/10.1007/s00267-016-0697-z
- Introduction to Species Status Assessment (CSP3910), February 6-10, 2017 at NCTC: https://nctc.fws.gov/NCTCWeb/catalog/CourseDetail.aspx?CourseCodeLong=FWS-CSP3910

2017 Annual Meeting
January 16-18, 2017 in either Tucson or San Diego. Sarah Lupis to investigate potential venues.