

Yellowstone Ecosystem Subcommittee Spring Meeting Minutes
April 30- May 1, 2015

Members present:

Joe Alexander, Shoshone National Forest
Mary Erickson, Gallatin and Custer National Forests
Melany Glossa, Beaverhead-Deerlodge National Forest
Loren Grosskopf, Wyoming County Commissioners Association - Park Co
Cornie Hudson, BLM – Montana
Steve Iobst, Yellowstone National Park
David Kampwerth, USFWS- Idaho
Art Lawson, Wind River Tribal Fish and Game Department
Gregg Losinski, Idaho Department of Fish and Game
Brian Nesvik, Wyoming Game and Fish Department
Tricia O'Connor, Bridger-Teton National Forest
Tom Rice, Montana Association of Counties - Beaverhead County
Mark Sattelberg, USFWS – Wyoming
Chris Servheen, USFWS Grizzly Bear Recovery Coordinator
Garth Smelser, Caribou-Targhee National Forest
Sam Sheppard, Montana Fish Wildlife and Parks
Frank van Manen, USGS Interagency Grizzly Bear Study Team
David Vela, Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway
Leander Watson, Shoshone Bannock tribes
Forrest Whiteman, Northern Arapaho
Norman Willow, Northern Arapaho

April 30, 2015 1:00 p.m.

Welcome and Introductions: Brian Nesvik

- Introductions and roll call

Fall 2014 Meeting Minutes Approval: Brian Nesvik

- Motion by Loren Grosskopf to approve fall 2014 minutes
- Jim Hart noted a correction in his title and requested Madison County be changed to Beaverhead County
- Motion seconded by Joe Alexander with amendment

Motion Carried

Introduction: Brian Nesvik

The YES committee is one of six subcommittees of the Interagency Grizzly Bear Committee and is made up of a variety of state, federal, tribal and local agencies. This committee is charged with sharing information, providing advice and making recommendations specific to the Yellowstone Ecosystem.

Demographic Changes in the GYE Grizzly Bear Population: Frank vanManen

- Outline
 - Background
 - Changes in population trend
 - What are potential causes?
- Greater Yellowstone Ecosystem
 - National Park lands, 10,344 km²
 - Recovery Zone 1982, 23,828 km²
 - Grizzly bear distribution Bjornlie et al. (2014) 1990-2010, 50,280 km²
- Challenges of Grizzly Bear Population Studies
 - Low density and solitary
 - Low observability (activity pattern, habitat)
 - Remote and difficult terrain
 - Achieving adequate sample size
 - IGBST uses multiple methods for stronger inference
- Estimators used by IGBST- all estimators showing same pattern
 - Method 1: Chao2 Estimator
 - Method 2: Known-Fate Analysis
 - Method 3: Population Reconstruction (Minimum Known Alive)
 - Method 4: Mark-Resight of Radio-Marked Females with Cubs
- Proximate Causes of Slowing Population Growth Evidence from Known-Fate Analysis
 - 1983-2001- Robust population growth
 - Cub survival= 0.64
 - Yearling survival=.082
 - Adult survival=.95
 - 2002-2011-Little to no population growth
 - Cub survival =0.55
 - Yearling survival=0.54
 - Adult survival=0.95
- Changing Age Structure Population Reconstruction
 - See decline in younger age classes in and population and larger proportion of older animals in the population
- Ultimate Cause(s) of Demographic Change
 - Hypotheses
 - Resource decline
 - Increasing bear density
- Carrying Capacity, The “Resource Decline” Hypothesis

- Whitebark Pine Decline – 2009
 - Landscape Assessment System Scores (Mcfarlane et al. 2013)
- Lack of Evidence for “Resource Decline” Hypothesis
 - Grizzly bear selection of WBP stands declined
 - Evidence of diet shifts
 - No evidence of increasing home-range size
 - No evidence of decline in body condition
 - No evidence of decline in body mass
 - No evidence of association between survival or reproduction and WBP decline
 - Timing mismatch
- Carrying Capacity, The “Bear Density” Hypothesis
- Grizzly Bear Density Index
 - Changes in density over time
- Evidence for “Bear Density” Hypothesis
 - Effect is greater as density increases.
 - Starting in early 2000s, where bear density is higher, cub survival is lower
- Potential Density-Dependent Drivers
 - “Intraspecific Killing”
 - “Interference Competition”
- Alternative Explanations
 - Decline of cub and yearling survival due to poor body condition as food resources decreased
 - No evidence for this. Body condition of cubs highly correlated to mothers, no change in body fat for females detected.
 - Wolf predation on cubs and yearlings
 - Little information to support this hypothesis
- Conclusions
 - Four independent methods show slowing of population growth since early 2000s
 - Proximate cause: lower survival of younger age classes
 - Ultimate cause: higher bear densities (correlation)
 - Drivers: intraspecific killing? Increased competition?
 - Pattern follows predictions for populations of large vertebrates reaching carrying capacity (Eberhardt 1977)
 - A biological indicator of achieving recovery success

Question from Loren Grosskopf: When you are talking about females with cubs, are you talking about females with cubs of the year or females with any age cub?

Response by Frank vanManen: When I refer to females with cubs I am referring to females with offspring less than one-year-old. We are changing terminology, instead of using Fcoy, we are starting to use the term “females with cubs” and we will refer to females with yearling offspring as “females with yearling”.

Grizzly Bear Management on Tribal Lands: Collaborations between WGFD, USFWS, and IGBST: Dan Thompson

Preface by Pat Hnilicka -USFWS

- USFWS Lander, Wyoming
 - Primary function of office is to assist the Eastern Shoshone and Northern Arapaho tribes on Wind River Indian Reservation
 - Work closely with tribes not only with grizzly bears but with all management of fish and wildlife on the 2 million acres of the Wind River Reservation
 - Relationship beneficial to Service and tribes
- Presentation is about the excellent collaborative work done since 2006
 - Different groups of people coming together for the common purpose of furthering the knowledge of grizzly bears occurring on Wind River Reservation

Dan Thompson- Wyoming Game and Fish Department

- Background
 - Animals such as grizzly bears have spiritual significance for many members of the public
 - The inherent interest and controversy behind large carnivores requires collaboration and knowledge sharing
 - Man-made boundaries do not matter to wildlife
 - Important to work together to better understand and better manage wildlife under this premise
 - The impetus for this presentation was to highlight just some of the work done among agencies collaboratively on the Wind River Reservation for the betterment of wildlife and provide a factual basis for conservation and recovery across jurisdictional and cultural borders
- Cooperation and Information Sharing
 - Increasing distribution of grizzly bears
 - At the request of the tribes, Wyoming Game and Fish worked with the E. Shoshone and N. Arapaho nations and the USFWS to better understand grizzly bear population demographics on the Wind River Reservation
- Wind River Reservation, areas of focus
 - Owl Creeks
 - Wind River Range
- Starting Out
 - 2006 Owl Creeks Trapping
 - 6 grizzly bears, 2 black bears
- Gathering Baseline Information
 - WRR Camera Studies
 - Documenting presence/absence of grizzly bears in the Wind River Mountains

- 2008 - Several individual grizzly bears photographed in Wind River Mountains on tribal lands
- Capture Efforts
 - 2010 Wind Rivers
 - Six (6) black bears, no grizzly bear activity
 - 2011 Owl Creeks
 - Four (4) grizzly bears, one (1) black bear
 - 2014 Wind Rivers
 - One (1) grizzly bear, 11 black bears
- Insight from Captures
- Data → Knowledge
 - Movements, habitat use, and expansion
 - Survival, condition, genetics, diet, reproduction
- Additional Work and Synthesis
 - Additional wildlife monitoring and capture
 - Increased knowledge → better management
 - Landscape level analyses to recover and manage species (Yellowstone Grizzly Bear)
- Real World Applicability
- Management Plans
 - Language taken from the signed plan:
 - “The intent of this plan is to support the co-existence of grizzly bears and people. It looks neutrally upon grizzly bears and considers them as a wildlife species for which management is essential due to tensions that will arise between the needs of grizzly bears and the needs of people. Traditional views of the Eastern Shoshone and Northern Arapaho Tribes (Tribes) recognize grizzly bears as an elder relative, as strong, as great and as deserving of respect and placed here by the Creator for a purpose.”
 - “Tribes have sole authority for managing grizzly bears within the Wind River Reservation (Wind River) boundaries, and will seek assistance from and cooperation with the Yellowstone Ecosystem Subcommittee (YES*), the Interagency Grizzly Bear Study Team (IGBST) and the Wyoming Game and Fish Department (WGFD) .”
- GYE Grizzly Bears
 - Work toward monitoring of grizzly bears in the Wind Rivers and Owl Creeks occurred due to collaboration with the Northern Arapaho and Eastern Shoshone Tribes
 - Work done with permission of tribes at their request
- Conservation and Management
 - Collaborative strategies and ecosystem-wide monitoring leads to successful recovery
 - *The Reality of Recovery*
- Conflict Resolution
 - Work closely with tribes to address conflict resolution with large carnivores

- The Future?
 - Continue to work collaboratively with the tribes for the betterment of wildlife and people
- Perseverance
 - As grizzly bears expand we will work with the Tribes and residents of the Wind River Reservation and beyond to monitor and better understand grizzly bears throughout the System
- Awards and Acknowledgement
 - Tribal Wardens were honored with a special recognition from the Wyoming State Chapter of The Wildlife Society for their contributions to better understanding of carnivores and wildlife on tribal lands
 - Bobby St. Clair, Ken Smith, Ben Snyder, Ben Warren, and Western Thayer

Question from Joe Alexander: The Shoshone National Forest is both to the north and south. Is there anything we can do better work together or to be consistent with our tribal neighbors?

Response from Dan Thompson: Maintaining communication, like we have. The Game and Fish conducted wildlife captures in the forest, just outside of the Reservation and we meet with the Councils and got permission to cross those lines if need be. I think maintaining a level of communication is important for all of us.

Comment from member of public: Good day. My English name is James Walks Along. I am from the Northern Cheyenne. I understand this young man here has a lot to do with this meeting here. Chris, I don't know what your name is, but

Chairman Brian Nesvik: Sir, we will allow public comment at the end. You will have an opportunity to speak then.

James Walks Along: I will make a statement and shall not be neglected on the statement.

Brian Nesvik: You will have an opportunity to make a statement at the end of the meeting.

James Walks Along: I am the tribal historic preservation office from the Cheyenne Tribe. I did not receive any type of notice concerning consultation.

Brian Nesvik: Sir, we will not allow public comment at this time, and I am going to ask you to leave.

2014 GYE Population Update and Review of Demographic Monitoring Criteria: Mark Haroldson

- 2007 Demographic Recovery Criterion
 - Criterion 1
 - ≥ 48 Females with cubs estimated using model-averaged Chao2
 - Not < 48 in any two consecutive years
 - Criterion 2

- 16 of 18 Recovery Zone Bear Management Units occupied by females with young, and no two adjacent units unoccupied during running six year sum of observations
 - Criterion 3
 - Independent female mortality < 9% of this population segment, not exceeded in 2 consecutive years
 - Independent male mortality < 15% of this population segment, not exceeded in 3 consecutive years
 - Dependent young mortality < 9% of this population segment from human causes, not exceeded in 3 consecutive years
- Greater Yellowstone Ecosystem
 - National Park lands, 10,344 km²
 - Recovery Zone 1982, 23,828 km²
- Demographic Management Boundaries
 - Conservation Management Area 2007 (Conservation Strategy), 95,225 km²
- Workshops
 - Produce a more accurate population estimate
 - Re-evaluate mortality limits
 - Discuss possibility of zoning ecosystem for mortality management given expanding population
- 2012 Yellowstone Ecosystem Subcommittee Spring Meeting
 - Motion carried to adopt the DMA for population estimation and counts of mortalities to evaluate sustainable mortality thresholds, also continue developing Mark-Resight estimator for females with cubs
- 2012 Yellowstone Ecosystem Subcommittee Fall Meeting
 - Motion carried to adopt updated demographic vital rates presented in the workshop report for population estimation
- 2013 Demographic Recovery Criterion
 - Criterion 1
 - ≥ 48 Females with cubs estimated using best available method
 - Not < 48 in any 2 consecutive years
 - Criterion 2
 - 16 of 18 Recovery Zone Bear Management Units occupied by females with young, and no 2 adjacent units unoccupied during running 6 year sum of observations
 - Criterion 3
 - Independent female mortality < 7.6% of this population segment, not exceeded in 2 consecutive years
 - Independent male mortality < 15% of this population segment, not exceeded in 3 consecutive years
 - Dependent young mortality < 7.6% of this population segment from human causes, not exceeded in 3 consecutive years
- Why count females with cubs?
 - Easily identifiable segment of the population
 - Summed over 3 consecutive years provides a simple estimate for the number of reproductive (i.e., adult) females in the population
 - Based on an average reproductive cycle of 3 years

- Trend over time for this segment of the population is representative of population trend in general
- Basis for total population estimate
- Annual sightings of females with cubs
 - Observation Flights
 - Conducted annually with the primary purpose of sighting females with cubs
 - Systematic, provides a minimum level of search effort throughout the GYE
 - Contributes sighting of females with older (i.e., yearlings and 2-year-olds)
 - Ground-based sightings
 - Opportunistic
 - Primarily agency observers
- Counting females with cubs using standardized methodology (Knight et al. 1995)
 - Does not require radio-marked bears
 - Method was design to be conservative and estimate minimum number of females with cubs
 - Minimizes mistakes of identifying observations of the same family as different families
 - Conservative mortality limits
 - Process contains some subjective criteria
- Criteria for determining “unique” females with cubs (Knight et al. 1995)
 - Distance between sightings
 - 30 km between sighting
 - Description of family group
 - Primarily number of cubs
 - Dates of sightings
 - Same day sightings
 - Improbable patterns of movements
- Applying Chao2 estimator to counts of females with cubs
 - Attributes of Chao2 estimator (Keating et al 2002, Cherry et al. 2007)
 - Statistically valid confidence intervals
 - Accounts for sighting heterogeneity
 - Reasonable for our data
- Model averaging annual Chao2 estimates of females with cubs
 - Estimating trend (λ) using Chao2 estimated FCOY (Harris et al. 2007)
 - Annual estimates of females with cubs vary
 - Regression smoothes variation and allows us to detect changes in trend
 - We use model-averaged estimate of females with cubs to derive total population estimates
- Estimate of total population size is derived from the model-averaged Chao2
- Vital rates for the period 1983-2001, and 2002-2011
 - Vital rates derived from radio-marked bears 1983-2001 vs. 2002-2011
 - Cub survival, 1983-2001: 0.64, 2002-2011: 0.055- decreased
 - Yearling survival, 1983-2001: 0.82, 2002-2011: 0.54-decreased
 - Independent male survival, 1983-2001: 0.87, 2002-2011: 0.95-increased
- Number of Females with Cubs 2014
 - Number of unique Fcoy=47
 - Chao2 estimator=59

- Model-averaged estimate=60
- Total Population estimate 2014
 - Independent females (≥ 2 years old) =263
 - Independent males (≥ 2 years old) = 263
 - Dependent young (cubs and yearlings)=230
- Total (95% confidence interval) = 757 (674-839)
- Counts of females with cubs derived for Knight et al. 1995 rule-set are biased low
- An unbiased estimate for numbers of females with cubs, Higgs et al. 2013
- Mark-Resight to Estimate F_{COY}
 - Higgs et al. 2013. *Journal of Agricultural, Biological, and Environmental Statistics*
 - Uses numbers of unmarked and radio-marked F_{COY} seen during observation flights
 - Moth site considerations: greater sightability, but few radio-marked bears
 - Variation in annual estimates requires smoothing of trend data
 - Small number of sightings of marked F_{COY} affects precision
- Three-year Running Average Chao2 vs. Mark-Resight 2001-2013
 - Chao2 showing bias, lower than Mark-Resight

Question from Joe Alexander: Can you talk about the issue on moth sites, not counting females with cubs for the Mark-Resight.

Response from Mark Haroldson: The issue is that we have a hard time getting collared bears on moth sites in general. We have a lot of bears on moth sites, but we have very few collared animals on moth sites. If we included sighting of females with cubs on moth sites, it would artificially inflate the estimator because we do not have very many marks (collared bears) on those sites. The technique we have been developing to account for that is we fly separate moth only flights that provide a census of bears on moth sites. For the last three years, the Wyoming guys have been doing moth only flights. They are flying all the moth sites on two different days and counting the females with cubs on the moth sites that we then add into the mark-resight estimate. It seems to be working. Last year, they saw 220 different bears and 19 females with cubs. Our three year running average for the Mark-Resight estimator would have been 78 in 2013, which includes 2012, 2013, and 2014, so if we took the average number of females with cubs from the moth only flights for the three year period we would get 15. Fifteen plus 78 is 93 and that would be our estimate for total number of females with cubs in 2013. We know we have a bias on the moth sites and that's what we come up with so far to deal with it.

Summary of 2014 Research and Monitoring: Mark Haroldson

- Observation Flights 2014
 - 54 aerial observation areas
 - Round 1: 51 units, 104 hours
 - Round 2: 43 units, 89 hours
 - 3 units not flown
 - 193 survey hours
 - 473 groups (679 grizzly bears)
 - 52 observations of females with cubs
 - 58 observations of females with older young
- 2014 Sightings of females with cubs
 - 119 observations

- 78 aerial (66%)
 - 41 ground (34%)
 - 50 unique females with cubs
 - Number of cubs = 96
 - Mean litter size = 1.92
 - Litter sizes
 - 16 single (32%)
 - 22 twins (44%)
 - 12 triplets (24%)
 - 3 unique female with cubs (4 sightings) outside demographic monitoring area (DMA)
- 2014 Females with cubs estimates under Revised (2013) Demographic Criteria
 - Unduplicated count=47
 - Chao2=59
 - Model-Averaged Chao2=60
- Population Estimate under Revised (2013) Demographic Criteria
 - Independent females (≥ 2 yrs old), Estimate=263 (95% CI, 210 lower, 317 upper)
 - Independent males (≥ 2 yrs old), Estimate=263 (95% CI, 205 lower, 321 upper)
 - Dependant young (COY and yearlings), Estimate=230 (95% CI, 208 lower, 253 upper)
 - Total Estimate=757, 95% CI, 674 lower, 839 upper)
- Mark-Resight estimates for numbers of females with cubs 1997-2014
 - Mean Mark-Resight FCOY for 2014 = 54
 - 3 year running average (2012-2014) =78
- Occupancy by Females with Young (cubs, yearlings, or 2-year-olds) 2014
 - 18 of 18 Bear Management Units (BMUs) occupied during 2014
 - 18 of 18 BMUs occupied at least 4 of last 6 years (2009-2014)
- Known and Probable Mortalities 2014
 - 27 known and probable mortalities during 2014
 - 19 human-caused
 - 8 natural (1 sex unknown)
 - 6 (4 M, 1 F, 1 cub unknown sex) outside Demographic Monitoring Area
 - 1 additional known mortality from 2013
 - Cub-of-the-year in Grand Teton NP
 - Undetermined cause
- Cumulative Count of Known and Probable Mortalities by Week 2009-2014
 - 2013 and 2014 relatively low mortality compared to 2010, 2011, 2012
- 2013 Demographic Mortality Criteria
 - Count mortalities within Demographic Monitoring Area (DMA)
 - Females with cubs sighted within DMA and Chao2 used for population estimate
 - Mortality limits
 - 7.6 % independent F
 - 15 % independent M
 - 7.6 % dependent young (human-caused only)
- Revised Mortality Limits 2014 (Chao2, DMA)
 - Estimated total mortality for Independent females (≥ 2 years old)=7
 - Sustainable mortality limit = 20
 - Year result= under
 - Estimated total mortality for Independent males (≥ 2 years old)=17

- Sustainable mortality limit = 39
 - Year result= under
- Estimated total mortality for dependant young (cubs and yearlings)=2
 - Sustainable mortality limit = 18
 - Year result= under
- Annual Report and other products are available at the IGBST website: <http://www.nrmc.usgs.gov/research/igbst-home.htm>

I&E Subcommittee Update: Gregg Losinski

- The challenge of getting the word out
 - Misinformation in the media
 - Bears are big news, stories get picked up
 - Notebooks provided with recovery timeline and contact information to help provide accurate info in media
- IGBC webpage- information always available on website
 - Project that involved the development for a bear education curriculum- available on website
- Educational initiatives
 - Bear trailer and display at Salt Lake City
 - Although outside of ecosystem, many people contacted planned to recreate in areas occupied by bears.
 - Training with bear spray
 - Looking to build a charging bear simulator
 - Signage
 - Bear spray
 - Seeing more business carrying it and advertizing that they carry it.
- Getting ready for WHART situations
 - I&E people need to be involved
- Sanitation and infrastructure
 - Shift in thinking starting to occur
- Bear-Resistant product testing
 - We are setting the standards
 - Slovakia bear-resistant dumpster passed 60 minute test after revisions
 - Dicks Sporting Goods testing new line of coolers
- Footage available for use for educational purposes of different scenarios of humans/bears interactions
- Still work to do related to I&E

Question from committee member: We are seeing a growing number of international visitors to the ecosystem, especially from China, Korea, Japan and soon to be India. They come with a very different

mindset as it pertains to wildlife interactions. For the first time in Grand Teton, we had a lot of our safety messages translated. What type of considerations are the subcommittee looking at for those international constituencies that we are seeing more and more throughout the ecosystem?

Response by Gregg Losinski: That's a good question and Grand Teton is a great example of how one agency is jumping on that because they see it right in front of them. Hopefully through the committee structure, we can share that because we do not want to recreate the wheel. I can you from the experience over the last 20 years getting the message out in Spanish has been a challenge. These are all areas that we need to work to but it will take time. If your agency does that, it would be critical that they share. Communications within communications has always been a challenge so I encourage YES member keep their PIO and communication staff is plugged in.

Board of Review Report Update for Human Fatality Incident in the GYE: Chris Servheen

- **Members of the Board of Review¹**
 - Steve Cain, Grand Teton National Park, Senior Wildlife Biologist, Moose, WY
 - Kate Wilmot, Grand Teton National Park, Bear Management Specialist, Moose, WY
 - Kevin Frey, Montana Fish, Wildlife and Parks Department, Bear Management, Bozeman, MT
 - Dan Tyers, USFS, Greater Yellowstone Ecosystem Grizzly Bear Management Coordinator, Bozeman, MT
 - Mark Haroldson, USGS, Interagency Grizzly Bear Study Team, Bozeman, MT
 - Frank van Manen, USGS, Interagency Grizzly Bear Study Team, Bozeman, MT
 - Chris Servheen, USFWS, Grizzly Bear Recovery Coordinator, Missoula, MT²
 - Brian DeBolt, Wyoming Game and Fish Department, Bear Management, Lander, WY
 - Dan Thompson, Wyoming Game and Fish Department, Large Carnivore Section Supervisor, Lander, WY
 - Dan Bjornlie, Wyoming Game and Fish Department, Large Carnivore Section, Lander, WY
 - Kerry Gunther, Yellowstone National Park, Bear Management Supervisor, Yellowstone National Park, WY
 - (¹Arranged in alphabetical order by agency affiliation, ²Chair of the Board of Review)
- **Situation**
 - Adam Thomas Stewart, a 31-year old man working as a temporary employee for a USFS contractor, was killed by a bear in Cub Creek on September 4, 2014.
 - The location of the fatality was along a trail on the way to one of the vegetation plots Mr. Stewart was assigned to monitor.
 - Mr. Stewart was working alone at the time of his death.
 - Mr. Stewart had left the trailhead that morning and hiked approximately 5 miles where he set up his camp.

- He then left his camp and was apparently on his way to the vegetation sampling plot he was assigned to, which was about 3 miles from his campsite, when he encountered a bear and was killed.
- Mr. Stewart was due out of the area on September 5, 2014.
- His employer reported him missing on September 7, 2014 by calling the Fremont County Sheriff's Department.
- On the afternoon of September 7, a sheriff's deputy found Mr. Stewart's car at the Brooks Lake parking lot and left a note on it asking him to contact the sheriff's department.
- A search operation was initiated on September 8 when Mr. Stewart's car was still at the trailhead.
- Extensive search operations were undertaken in the area starting on September 8. Mr. Stewart's remains were located on September 12, approximately 1.8 miles from his campsite in heavily timbered habitat.
- Aerial view of the incident site shown. The plot location Mr. Stewart was to visit is noted in the distance on top of the plateau.
- Overview map of the incident site shown. Red arrows indicate assumed direction of travel from the camp to the fatality site.
- Cause of death
 - Mr. Stewart's body was almost totally consumed and scattered in a food cache typical of a bear.
 - The Fremont County Coroner's Office conducted an autopsy on September 14, 2014. Forensic pathologist James Wilkerson stated, in his opinion, Adam Stewart "died of blunt force injuries consistent with a bear bite."
- Chronology of events

9:51 AM	Mr. Stewart is at the Brooks Lake trailhead where his vehicle was left. Time is from a single GPS coordinate on Mr. Stewart's Garmin GPS device.
1:21 PM	Mr. Stewart's employer (Mr. Stephen Rust) "pings" Mr. Stewart's Delorme InReach Explorer GPS device and receives a location between the Brooks lake parking area and Mr. Stewart's camp in Cub Creek. This location is sent presumably while Mr. Stewart was hiking in to his campsite.
Early afternoon	Mr. Stewart sets up his camp approximately 5 miles from the trailhead. He leaves his camp with a day pack in the afternoon on his way to the plot site.
2:33 PM	Mr. Stewart takes a photo that shows cliff faces on the south side of Cub Creek. Location of the photo is shown in Figure 6. This is assumed to have been taken along the route between his camp and the fatality site. The time was recorded on the photo.
Mid- to late	Mr. Stewart encounters a bear(s) along a game trail as he

afternoon	proceeded toward the plot site. He is killed at the encounter site.
9/5	Mr. Stewart is due out of Cub Creek.
9/7 12:56 PM	Mr. Stephen Rust, Mr. Stewart's supervisor calls the Fremont County Sheriff's Department and reports that Mr. Stewart is overdue from a trip into an area above Brooks Lake.
3:48 PM	The Fremont County Sheriff's office finds Mr. Stewart's vehicle at the Brooks Lake parking area and leaves 2 notes on the vehicle asking that he report to the Sheriff's office.
9/8	No report from Mr. Stewart and his vehicle is still at the trailhead. A search and rescue operation is initiated.
9/12 afternoon	Mr. Stewart's remains were located along a game trail approximately 1.8 miles from his campsite in Cub Creek.
9/13	Mr. Stewart's remains are flown out of the area via helicopter.

- Situation
 - The Cub Creek trail goes through timber and eventually enters high elevation grizzly bear habitat.
 - The route to the vegetation plot Mr. Stewart was assigned to survey took him through timbered habitat on a game trail and it was along this trail that Mr. Stewart's remains were found.
- Cache in the foreground where Mr. Stewart's remains were found mixed in with the remains of a mule deer. Flags indicate remains. The assumed direction of travel into the site by Mr. Stewart is noted by the red arrow. Red arrow stops at the apparent site of the attack as noted by the presence of Mr. Stewart's hat and sunglasses and noted by red flags at that location.
- The view along the game trail in the assumed direction of travel by Mr. Stewart. The presumed attack site is in the foreground as noted by the flag where Mr. Stewart's hat and sunglasses were found. Red arrow points to human blood on a log. It is believed Mr. Stewart's body was dragged over this log toward the cache site. Cache site shown in previous photo is immediately behind trees on the left. Note limited sight distance in this area.
- General map of the fatality site shown

- Situation
 - The fatality site where Mr. Stewart's remains were found had limited visual sight distance because of relatively thick vegetation and undulating topography. From the direction we assume Mr. Stewart was travelling, the trail approaches the fatality site over a slight rise so that a person approaching the site could not see ahead until they came over this rise.
- Finding of the investigation
 - When Mr. Stewart's remains were found, they were scattered in a cache and mixed in with the remains of one of the mule deer carcasses at the site. The other mule deer carcass was approximately 10 yards away. There was no available evidence as to why the remains of 2 mule deer were present at the fatality site.
- Situation
 - Based on the condition of the mule deer carcasses, we assumed that the remains of both deer were present before Mr. Stewart entered the site. There was extensive evidence of bear presence in the area. From the condition of Mr. Stewart's remains, he had been deceased for some time. His backpack was found at the fatality site as were the marker flags that he would have used at the vegetation plot, indicating he was on his way to the vegetation plot when he was killed.
 - It appeared that he was on his way to the plot location when he encountered a bear (or bears) on the game trail. One photo of the landscape was recovered from his camera from the Cub Creek area. The photo shows the cliff faces of the Continental Divide on the south side of Cub Creek.
 - The time stamp on the photo was September 4 at 2:33 PM. The photo was probably taken looking south from the north side of the Cub Creek drainage prior to Mr. Stewart's crossing into the unnamed tributary to Cub Creek where his remains were found, which indicates the photo likely was taken after Mr. Stewart set up camp and before he was attacked at the fatality site.
- The last image on Mr. Stewart's camera shown.
 - The time stamp was 2:33 PM on September 4. Location where the photo was taken is approximately 525 yards (0.3 mile) from the fatality site
- Presumed location of where the last photo was taken by Mr. Stewart at 2:33 PM - from inside red circle. Yellow lines bound the edges of the photo. Location where the photo was taken is approximately 525 yards (0.3 mile) from the fatality site
- Situation
 - The weather on Sep. 4 was sunny and cool with light winds and no precipitation. When Mr. Stewart's remains were found more than a week later, they were covered with 1-2 inches of snow. Between September 4 when he set up his camp and September 12 when his remains were found, a storm went through the area and wind blew over his tent. Nothing at his campsite was disturbed by bears. He had stored his food properly by hanging it at his camp and it was undisturbed.

- After the discovery of Mr. Stewart's remains on September 12, Fremont County Sheriff Officers and Wyoming Game and Fish Department officers flew into the site by helicopter arriving at 5:32 PM. There were two bear day beds at the fatality site. Mr. Stewart's blue backpack was evident on the surface of the cache but most of his remains were covered with vegetation and dirt.
- The fact that there were two mule deer carcasses at the fatality site seems unusual. Whether these mule deer were killed by a bear (or bears) or other animals, such as a mountain lion, are unknown. Both mule deer carcasses were thoroughly consumed, apparently by bears because they were cached.
- Mr. Stewart's remains were cached by a bear with the remains of one of the deer. The bones were intermingled so that when the victim's remains were transported from the scene, some mule deer bones were inadvertently included.
- Hairs were collected at the fatality site from trees and branches, the cache materials, and from Mr. Stewart's remains. In addition samples were obtained approximately 0.5 mile below the site of the fatality where WGFD personnel conducted additional monitoring efforts. Sixteen extracted DNA samples were sent by WGFD on September 19 to Wildlife Genetics International (WGI) for DNA analysis.
- The results produced by WGI identified 3 grizzly bears, one female and two males, and one male black bear from all samples collected in the area. One male grizzly bear and one male black bear were identified at the fatality site.
- One male grizzly bear (captured) and one female grizzly bear (hair sample) were identified at a trap site location approximately 0.5 mile below the site of the fatality. None of these bears were known bears in the Yellowstone ecosystem, indicating that none of the bears identified genetically had previously been captured.
- Findings
 - Mr. Adam Stewart hiked alone into Cub Creek on the Bridger-Teton National Forest on September 4, 2014. He was employed by Nature's Capital, Inc. to complete vegetation plots as part of a contract with the USFS. Mr. Stewart set up his camp approximately 5 miles from the trailhead.
 - Mr. Stewart was killed by a bear on the afternoon of September 4 while hiking on a game trail on the way to a vegetation plot site.
 - Mr. Stewart was alone and there was no evidence of bear spray or firearms at the fatality site or at Mr. Stewart's camp. He was wearing light-weight trail shoes and was known for rapid trail hiking in remote areas. The fatality site had poor visual sight distance and was unusual because there were two mule deer carcasses where Mr. Stewart's remains were found.
 - The available evidence indicates a strong possibility that the fatal attack was the result of a combination of: 1) an encounter with a bear on a food source; and/or 2) a surprise encounter with a bear due to poor visual sight distance at the fatality site. Given the evidence, it is likely that a combination of these factors was the cause of Mr. Stewart's encounter with a bear that resulted in his death.

- The conclusion of the Board of Review is that Mr. Stewart likely surprised a bear at close range that was at the site of two mule deer carcasses. There was limited visual sight distance at the fatality site.
- The evidence suggests the likely impetus for the attack by a bear was a combination of defense of a food source (the deer carcasses) and a surprise encounter in an area of limited visual sight distance, and not predation.
- The long time period between the apparent death of Mr. Stewart on September 4 and the collection of the samples on September 13, made it impossible to determine which, if any, of the bears documented at the site were directly responsible for Mr. Stewart's death.
- Recommendations of the board of review
 - There is no guarantee of safety when working in bear country.
 - However, the Board of Review recognizes that an awareness of the hazards involved when working in bear country can often mitigate potential dangers.
 - Therefore, it is the recommendation of this Board that all entities (Federal, State and Private) that commission their representatives (permanent, seasonal, contractor, university affiliates, and/or volunteers) to work in bear country review bear safety training protocols.
 - The Board also recommends that non-agency work groups in bear country have and implement a bear safety plan that, at a minimum, contains the 5 standard practices for working safely in bear country including:
- Recommendations for all non-agency work groups in bear habitat:
 - 1. Bear Safety Training – To provide a basic understanding of bear behavior including defensive and predatory aggression. There are many sources of bear safety information including but not limited to:
 - The video: Staying Safe in Bear Country produced by the Safety in Bear Country Society and the International Association for Bear Research and Management.
 - The book: Bear Attacks: Their Causes and Avoidance written by Dr. Stephen Herrero.
 - 2. Work Party Size – Working in group sizes of 2 or more people or from horseback has been shown to reduce the risks of bear attack. Workers should be made aware of this fact and the potential risks of working alone in bear country.
 - 3. Use and Availability of Bear Spray – Bear spray has proven to be effective at stopping aggressive bear behavior during surprise encounters when the person involved has time to deploy it. All organizations should communicate this fact to their representatives/employees/volunteers and strongly encourage them to carry bear spray and to be familiar with how to rapidly deploy it. Moreover, organizations should consider providing bear spray for each of their representatives working in bear country.
 - 4. Trip Itinerary – A standard practice for working in the backcountry on day or overnight trips is to provide supervisors with a trip itinerary (similar to a flight plan). This can decrease search and rescue time and reduce risks to Search and Rescue

personnel while also providing for more expedient location of lost or injured people and prompt medical care if needed.

- 5. Worker Check-in – Although worker check-in will not prevent bear attacks, check-in's may lead to quicker recovery and medical attention should an attack occur. A standard practice for workers on day-trips in the backcountry is to check-in with supervisors when returning from the field. A standard practice for workers on overnight backcountry trips is to check-in on a prescribed schedule, usually on a daily basis. Optimally, check-in schedules and the response to check-in failures are arranged before heading into the field. There are many available technology systems to allow regular check-in of field personnel such as cell phones, satellite phones, SPOT devices, or other similar technology.
- Summary - Recommendations of the board of review
 - The Board encourages all organizations with representatives working in bear country to review and evaluate the application of these standard safety practices.
 - The Board reiterates that there is no guarantee of safety when working in bear country and that application of these practices may not have changed the outcome of the Adam Stewart fatality.
 - The Board believes that adherence to these standard safety practices should reduce the risk of future bear attacks on personnel working in bear country, speed medical care, and reduce the risks to Search and Rescue personnel involved in recovery efforts.

Comment from Greg Losinski: Two years ago, we had incidences where two contractors were injured by bears in the Upper Snake region and we did work with Forest Service and BLM to work with the contractors to give them the education. We also had a highway project going through Island Park where we did give the construction crew training. Chris is right, the more the word gets out there, the more these folks want the training. That's part of what everyone here can do in their agencies, is think about what populations we can work with. We have been training our Master Naturalists which are citizen scientists in bear safety for number of years now. If anyone needs help with materials or programs, let us know.

Grizzly Bear Delisting Update: Brian Nesvik

- Background
 - When bears were relisted after their brief delisting in 2007, there were several issues identified by the courts. After it went through a series of appeals, the last item essentially was the issue of white bark pine.
 - The IGST's work on the food synthesis report, that was a sum of all the literature, was the last thing required to satisfy the courts concern and to show that there was information indicating that white-bark pine was not limiting the grizzly bear population.
 - The food synthesis report prompted support from YES and IGBC to recommend to the USFWS that they move forward with a delisting rule a year and a half ago.
- Current

- USFWS has reached out to the three states and provided some ideas of what some considerations may be if they decide to move forward with a delisting rule.
 - Had multiple meeting with states already, USFWS asked states for feedback
 - Discussions as recently as the last couple of weeks over this issue
 - No draft rule, no final decision by the Service if they will recommend or propose a delisting rule.

Question by Loren Grosskopf: If the USFWS decided not to move forward (we still have the court's decision on white bark pine and all the scientific data that has been accumulated), what's the next step? Is there another avenue to force the issue and go back to court and have them act on it?

Response by Brian Nesvik: I don't believe so. There is probably a legal remedy, but I am not in a position to speak about other remedies. Chris, do you have response to that?

Chris Servheen: The court voided the previous delisting so in order to move forward, there would have to be another proposal to delist. Bears were delisted for two years but that was overturned by the courts in 2009 which voided the delisting so we would have to start over again. The Director of USFWS is the one that makes the decision and he has not decided yet whether we will propose a new delisting rule. It's in his court and as Brian said, there are talks going on with the states.

Public Comment:

Dewey Vanderhoff: I am a citizen from Cody and I have been following the grizzly bear since I was in hunting camps since 1974. I was going to ask a question, but I will frame it in the form of a comment. What I did not see out of the grizzly work in the three states, the Northern Rockies, the American West, is any intention to let the bear expand up the continental divide into Idaho into other habitat areas inside and outside the primary conservation area in Wyoming or the San Juans or the Uinta Mountains. In other words, I do not see translocation or even relocation of grizzly bears being talked about. We are all dealing with the GYE, the Primary Conservation Area and Yellowstone and I have never agreed with the notion that bears have to be kept inside an imaginary line and managed for numbers and situations within that zone when there is 98 percent more habitat in North America that would welcome bears. I am just curious, what are the impediments and aversions to allowing the bear to expand to all suitable habitats outside of greater Yellowstone as well as adjacent to Yellowstone? That's what I am not hearing here today.

James Walks Along: I just want to say a few words here. It pertains to participation and what you are doing here. I gave my introductions before. I represent the Northern Cheyenne Tribe. I am the Tribal Historic Preservation officer for the Northern Cheyenne Tribe and I deal with a lot of federal agencies. From the Balkan oil patch to flyways of the golden and bald eagle, all pertaining to preservation and I stand here kind of disappointed. I represent my tribe and the fact that our tribal government and the Northern Cheyenne Tribal legislature have adopted and passed a resolution to the fact that we should be consulted in the endeavor of this great animal. (Mr. Walks Along referred to what the grizzly bear is called in his native language.) My father is named that. Our spiritual mountain is called Bear Butte. We have a lot of history with this animal and a lot of stories to be told. I would like to share that at a time

when we can sit at a table face to face and can discuss these things. All we are asking is that we be part of a formal consultation with all you federal agencies and its mandated in that way. I have two Presidential executive orders from Bill Clinton in 2000 and a presidential order from our now president Barak Obama that says it is paramount that federal agencies deal with the tribes in this endeavor concerning this great animal. That's all I ask. I have a resolution from my tribe and I ask you to honor that and I wish you to speak the truth on that. I have a declaration from the Northern Cheyenne Tribal president that was done this last fall. I wish you would honor that. To be included in the management policies for this great animal. I have heard some good things from all the people here concerning the bear and my condolences go to the family of the one that lost his life. That is something we need to talk about and be included as tribal members. I have allied with 18 tribes of the northern plains and they are my close friends and I will relay this message that I formally ask you guys to formally consult with all 18 of us on the northern plains. That includes the Lakota tribes of North Dakota and South Dakota, and includes the tribes of Kansas, Nebraska, and the tribes of Idaho and Wyoming. That's all I ask and I appreciate this time to express that. I would like to hear from the federal agencies, they can get hold of my office and I can convey this information to our tribal fellow colleagues. We would like to have a say in this. That all I ask. I apologize when I came up here and got cut off. That's never happened before; I have never experienced that before. I come from a family that respects that, so I appreciate that.

Comment from Bob Model: I am chairman of the Boone and Crocket Club, America's oldest national conservation organization founded by hunters in 1887. The Club favors state management because that's the foundation of the system that recovered the grizzly bear in the first place along with other big game animals beginning around the turn of the 20th century. We also think that a solution to the impasse may be to focus on problem bears. No one has a population estimate, only the index numbers from statistical models. So rather than try to manage a number we don't have, lets manage a real life problem that we face, which is problem bears.

Comment from Louisa Wilcox. I am Louisa Wilcox from Livingston Montana. I appreciate the presentations; there was a lot of good information. I have a couple comments, one about science and one about public outreach and I want to recognize and congratulate the long-term work of Mark Haroldson of the Study Team and Gregg Losinski with Idaho Fish and Game. We have all gotten grey together on behalf of bears. One point about science relative to Marks presentation; I know you all know that grizzly bears are incredibly slow reproducing animals and I don't think Mark would disagree with me when I say his figure about a 30 percent reduction in mortality in the last year does not make a trend. One year, two years, three years. That why all of the graphs go back to 1983 and 2002, which publications and reports from the Study Team indicate that since 2002, the population is more or less static and possibly declining; Just wanted to point that out. Relevant to public information and Gregg made this point about the organization of the study Team's organization relative to his, he shouldn't feel embarrassed. There is more money in science than in public outreach and it has always puzzled me and I think maybe it's time to change that. Public outreach is not just going out with a prepared message or video and presenting it to people and training people how to use bear spray, it's also listening and I hope that this committee would take the listening charge a little more seriously in the future.

Committee member Leander Watson: My name is Leander Watson and I am a member of the Shoshone-Bannock tribes here as technical staff. I want to reiterate again to you guys that we have multiple people here from our tribe and they are technical staff. There is a consultation process that you guys have to abide by and I am here to read off the declaration from our council to the Yellowstone Ecosystem Subcommittee here for the record:

The Fort Hall Business Council of the Shoshone-Bannock Tribes of Fort Hall, Idaho opposes the federal government's proposed removal of the Yellowstone grizzly bear from Endangered Species Act protections through the US Fish and Wildlife Service, recognizing that the federal government's resolve to remove the grizzly bear from the Endangered Species Act protection contravenes the American Indian Religious Freedom Act. Our tribe is one of the few of the 26 federally recognized tribes which the federal government openly acknowledges has original ancestral connections to Yellowstone National Park and the greater Yellowstone ecosystem regions. The connection between our tribe and the land has existed hundreds and thousands of years and requires the USFWS to consult with the Shoshone-Bannock tribes since the American Indian Religious Freedom Act states the laws pertaining to the conservation and preservation of natural species and resources were never intended to impact American Indian religious practices. The secretarial order issued by the Secretary of the Interior and Secretary of Commerce pursuant to the Endangered Species Act of 1973 clearly sets forth the framework to be followed when actions taken under authority of the ESA affect tribes. With the proposed delisting of the grizzly bear, the USFWS is in contravention of this order which directs that agency to solicit traditional knowledge and comments from and utilize the expertise of affected tribes during the consultation process and incorporate with the affected tribes to develop and implement recovery plans in a manner to minimize social and cultural impacts on tribal people.

The Shoshone-Bannock Tribe has been afforded no such consultation throughout the US Fish and Wildlife Service's process for proposing a new rule to delist the Yellowstone grizzly bear despite the supposed protection of religious practices of traditional tribal people by public law 95-341. In respecting our unique cultural imperatives and preservation of our sovereignty, the Shoshone-Bannock Tribe renounces the federal government's desire to delist the grizzly bear from the Endangered Species Act protections. We oppose the legislative resolve to trophy hunting of grizzlies on reservations and extirpation of the grizzly bear from reservation lands. Additionally, in recognition that the Shoshone-Bannock Tribes Fish and Wildlife Department has a seat on the Interagency Grizzly Bear Committee, Yellowstone Ecosystem Subcommittee, this letter of support from the Shoshone-Bannock Tribes counteracts any votes previously cast by the Shoshone-Bannock Tribes Fish and Wildlife Department in favor of delisting the grizzly bear. Our council hereby officially strongly opposes this position in delisting the Yellowstone grizzly bear. Respectively, Nathan Small, Chairman of the Fort Hall Business Council.

Norman Willow: I wanted to echo what our brother tribes said about consultation with the tribes. We have a respect for all animals; we just want to protect them because they taught us about our family structure. We learn from the animals, the wolves, they all taught us. We don't want delisting of the grizzly bear. From our tribe, they said it has a lot of power. I was told when I was younger if you come upon the grizzly bear, you worship them, then you get the hell out of there. We have a lot of respect for the grizzly and we don't want to have them hunted or taken. I just wanted to echo what was said by our

brother tribes here, we just want to have that consultation and we are here to work with everyone here. I understand there is aggression from a bear and that's a different story, that's why we have these meetings here I guess, to come to some kind of conclusion of the grizzly. Thank you.

Chairman Brian Nesvik: To both of you gentlemen, I appreciate your attendance here today. I think you said it very well, these meetings are for a reason and I think we may have some opportunities now that may have not existed in the past. We did not always have participation when a lot of these discussions occurred in the past so what I am hearing from you, is your desire to be engaged in the process and that's encouraging, speaking for the whole committee.

Leander Watson: Just another word to the consultation process. There are different processes. With our tribe, we expect consolation with the USFWS or Forest Service, whoever it may be, to come to speak with our council.

Chairman Brian Nesvik: We can certainly engage in those discussions.

Comment from Buster Tolman: Locally, the local game wardens and the people who take care of the bear depredations have the best idea of what to do or solve a situation and shouldn't have to depend on what Cheyenne says or what someone out-of-state says. The people who work the bears here probably have the best idea and I feel their hands are tied much of the time. I think more ideas or listening should be done or given to the local game warden or bear management people than has in the past.

Meeting adjourned for day

May 1, 2015

Scent Marking Behaviors of Yellowstone Grizzly Bears: Kerry Gunther

- Yellowstone National Park recently worked with National Geographic to deploy remote cameras to capture footage of bears
 - National Geographic is doing an issue dedicated to (YNP) and managing large carnivores with human populations on both private and public lands.
 - Studying bears in YNP since 1940 but there are still interesting things to discover
- Used remote cameras to look at bear behavior without influencing behavior
 - Camera placed at the "bear bathtub", a remote small spring in the interior for YNP
 - Bears would come to site to scent mark, swim, and cool off
 - Observed scent making behavior that had not been previously observed
- Audience viewed footage captured by remote cameras

Question from committee: Do the bears have scent glands in their chests or necks that they are rubbing?

Response from Kerry Gunther: That's a good question and I am not aware of the answer. We know that they scent mark with their feet a lot. I don't know about the use of their chin and chest; it's really the first time I have seen that. It will be something interesting for us to look into.

Question from Brian Nesvik: Was there any consistency or trend to the time of day?

Response from Kerry Gunther: We did not have the cameras working after dark to save battery. I thought it would be the hottest part of the day that they used it but it was throughout the day. Most use was late in the season. This is an area that was surrounded by white bark pine. It seemed to key in when they were feeding on that resource.

Question from committee: How many bears?

Response from Kerry Gunther: We have not gone through all of the footage, but there was definitely a black bear with three cubs and at least three different grizzly bears.

Bearwise Program Cody, WY: Evolution and Adaptation: Dusty Lasseter

- Winds of Change
 - 1970 – New bear management program
 - (1) maintain populations of grizzly and black bears as part of the native fauna at levels that were naturally sustainable
 - (2) eliminate human food and garbage from the bears' diet
 - (3) reduce bear-inflicted human injuries and bear-caused property damage
 - (4) reduce the number of bears removed from the park in management actions
- Bear wise Community Program goals
 - Maximize Human Safety
 - Discourage bears from residential areas
 - Minimize Property Damage
 - Minimize Livestock Losses
 - Minimize Human Interactions with Bears
 - Minimize Human-Caused Bear Mortality
- Taste of Success: Wapiti Valley conflicts (excluding livestock conflicts)
 - From 2000-2005 there were 64 conflicts
 - From 2005-2010 there were 17 conflicts
 - From 2010 to 2015 there were 12 conflicts
 - In 2013 there were 2 conflicts
 - Last year through part of this year we have not had a single conflict at a developed site.
- Educational initiatives
 - G&F Personnel ~75 presentations, contacted ~3000 people
 - Schools: Elementary, Middle, High, College
 - Clubs, Ranches, Professional Organizations, Hunter Education Classes, County Commissions
 - Large Carnivore Country Workshops
 - Nine different towns in Wyoming
 - Spoke to 270 people

- Inert Bear Spray
 - Bear booths and educational trailer
 - Bear booth at 7 events, bear trailer 2 events
 - Educational handouts
 - Traveling library display in Worland and Thermopolis
 - PSAs
 - Radio PSA's
 - Newspaper Ad's
 - Press Releases
 - Restroom's and Busses
 - Door hangers and Staying Safe DVD's
 - Captured footage of captive bear for educational use
 - Mailings
 - Mailed to 2000 magnets to Park County residents that live in occupied grizzly bear habitat
 - Teton County Compliance with Regulations
 - Signing
 - Temporary Closures
 - Grizzly Bear Expansion
 - Billboards
- Conflict prevention
 - Removing Attractants
 - Securing Attractants
 - Adverse Conditioning
- Carcass Management
 - To date, picked up: 100 Horses, 169 Cows, 287 Calves, 74 Yearlings, 23 Bulls, 35 Others. Total 688 in 499 trips
- Electric fence
 - Permanent Fence: Apple Orchard/Garden
 - Temporary Fence: Apiaries/Apple Trees/Residents with Unsecured Attractant, outfitter camps
- Aversive Conditioning
 - Deter Bears Eating Grass/Clover
 - Unwelcome mat
 - Alternative for trapping
- Infrastructure
 - Anchor Dam
 - Sinks Canyon
- Grant Proposal
 - Carcass Management Program \$13,200
 - IGBC grant for \$5,000

- Federal Funding \$4,000
- Future
 - Expanding conflict prevention efforts statewide
 - Making presentations available online
 - Bear Spray for hunters
- Challenges
 - “Non-securable” attractants
 - Public mindsets and tolerance
 - Securing Funding

Update on Distribution and Moth Site Use by Grizzly Bears in the GYE: Dan Bjornlie

- Methods to Estimate Distribution
 - Allows inclusion of all confirmed grizzly bear location data
 - Tracks, DNA, verified observations, etc...
 - Defines outer perimeter of occupied range without overestimating
- Overlaid grid system (3x3 kilometers grid cells) over GYE in GIS program and added grizzly bear locations
 - Any cell that had one or more grizzly bear locations was assigned a 1
 - Used neighborhood analysis
 - Used Spatial statistical program
- Historic Distribution 1980
 - Ground & aerial reconnaissance
 - Time lapse cameras at bait stations
 - Opportunistic sightings and sign
 - 16,160 km² by 1980
- Historic Distribution 1990
 - Verified sightings, mortalities, and captures
 - Increase in telemetry data
 - Expansion in all directions
 - Increase in "outliers"
 - 23,971 km² by 1990
- Historic Distribution 2000
 - Traditional VHF telemetry
 - Very beginning of GPS data
 - More expansion to north and south
 - 33,298 km² by 2000
- Historic Distribution 2010
 - Major increases in GPS location data
 - Continued expansion to northwest and southeast
 - 50,280 km² by 2010

- Current Distribution 2014
 - Continued increases in GPS location data
 - Outlier areas becoming occupied range
 - 58,314 km² by 2014
 - Continued expansion to northwest and southeast
 - Increase in "outliers"
 - Filling in suitable habitat
- Areas of expansion
 - Heart Mountain
 - Increase in grizzly activity in recent years
 - Now included in main distribution
- No "doughnut hole" effect
 - Population still centered on core based on female with cubs locations
- Distribution Area by Jurisdiction

Jurisdiction	2010		2014	
	Area (km ²)	Percent of Total	Area (km ²)	Percent of Total
Idaho	4,508	9.0	4,893	8.4
Montana	11,970	23.8	14,508	24.9
Wyoming	21,843	43.4	26,231	45.0
National Parks	10,237	20.4	10,237	17.6
Wind River Reservation	1,721	3.4	2,445	4.2
Total	50,280		58,314	

-
- Implications of Increased Distribution
 - Private Land within Grizzly Distribution
 - Dramatically increased since 1980
 - Grizzly Bear Mortalities on Private Lands
 - 12% in 1970s to 26% in 2000's
- Summary
 - Grizzly bear distribution increased from 50,280 km² in 2010 to 58,314 km² in 2014
 - Increase of 16%
 - No "doughnut hole" effect
 - Largest population growth occurred in 1990s, largest distribution increase occurred in 2000s
 - Reflective of increasing densities in core
 - Increase in private land area and mortalities within grizzly distribution as bears establish in new areas
 - Follows trend in overall increase in distribution

Question from Loren Grosskopf: Has there been any documented expansion into the Bighorns yet?

Response from Dan Bjornlie: No, we have not seen anything. There were a few locations just west of the Pryor Mountains, nothing any farther than that.

Grizzly Bear Use of Army Cutworm Moth Sites: Dan Bjornlie

- Information from Relationships between Army Cutworm Moths and Grizzly Bear Conservation: dissertation by Hillary Robinson
- Moth Life Cycle
 - Lay eggs in fall in low elevation plains areas
 - Larvae develop through winter
 - Feed on emerging plants in spring
 - Pupate and emerge as moths in June
 - Migrate to high elevation
 - Feed on alpine flowers July - September
 - Return migration
- Moth Migration
 - Late spring/early summer
 - Migrate from Great Plains and Intermountain West
 - Found in most mountain ranges in GYE and throughout Rocky Mountains
- Grizzly Bear Use of Army Cutworm Moth Sites
 - Found in talus slopes at or above 10,000 feet in elevation
 - Right combination of open spaces free of snow but access to water/snow below
 - Use interstitial spaces between talus rocks
 - Emerge at night and feed on nectar of alpine flowers
 - Moths have very high caloric value
 - 98% fat and protein
 - Grizzly bears in NW Montana estimated to eat 40,000 – 60,000 moths per day (White et al. 1999)
 - Can supply nearly half of annual caloric requirements in a 30-day period
 - Little to no pesticide residue from agricultural practices
- Historic use
 - Use of moth sites known in NW Montana in 1950s
 - First documented use in the GYE in the 1980s
 - First radio-collared GYE grizzly bear documented in 1986
- Grizzly Bear Use of Army Cutworm Moth Sites
 - Regular use only documented in Absaroka Mountains east of Yellowstone National Park
 - Why don't all grizzly bears use moth sites?
 - Influences of distribution and density?
 - Juxtaposition of talus and alpine meadows and flowers?

- Sites
 - Increase in number of sites
 - Percent of sites used has been consistent over time
 - Site use varies with year and snow cover patterns
 - 46 total sites: 31 "confirmed", 16 "possible"
 - Merge together over time
- Number of grizzly bear observations/hour
 - Hours flown consistent
 - Since 2000, dramatic increase in bears using moth sites
- Why dramatic increase since 2010?
 - Expansion into area of moth sites
 - Learned behavior passed on to cubs and other bears
- Summary
 - Moths migrate from long distances to many mountain ranges of GYE
 - Grizzly bear use of these sites only documented in Absaroka Mountains east of Yellowstone National Park
 - Local phenomenon
 - Bears using moth sites do not move long distances to sites
 - Army cutworm moths are a very high calorie food source
 - Significant increase in moth site use by grizzly bears since 2010
 - Not due to increase in search effort
 - Likely due to expansion in grizzly bear distribution and learned behavior

Question from Mary Erickson: I was thinking about your comment on the Gallatin Range. Do we know if the density of moths is the same on the Gallatin Range?

Response from Dan Bjornlie: Hillary did some work in the Gallatins. Mark, what did she find?

Mark Haroldson: No big concentrations. We have moth sites on Electric Peak but we don't have bears using them. Quadrant and Electric Peak, we know we have large concentrations of moths but we have not documented bear use. I think there are some confirmed sites in the Tetons too.

Dan Bjornlie: Yes, in the Wind Rivers. We don't have much density in the Wind Rivers yet.

Question from David Vella: What about the moth populations themselves? Are we seeing increases, decreases in population? Do you have a sense of that?

Dan Bjornlie: I don't have much of a sense of that. It doesn't seem like we have seen much change, they have been pretty consistent.

Update on U.S. Forest Service Projects and Collaborative Efforts throughout the GYE: Dan Tyers

Management-related Projects with GYE-wide Significance –*Status Updates*

- **2011 Strategy Session Lake Ranger Station**

- GYE Executive Managers and IGBST met
- Thematic:
 - Science based approach to management
 - Anticipate the issues
 - Large-scale and long-term
 - Collaborative
- Short List – Grizzly Bears and:
 - Management to Research
 - Island Park Timber Management Area
 - Forest Service Livestock Allotments
 - Moth Sites
- Project Additions
 - Carcass Availability
 - GYE Campground Assessment
- #1 Grizzly Bear Use of Forest Successional Stages in Island Park, Idaho
 - Montana State University, Interagency Grizzly Bear Study Team, Idaho Fish and Game, Caribou-Targhee National Forest, and Wildlife Conservation Society
 - Montana State University , MS Thesis Project , Range Science Department , Nichole Walker
 - Committee, Drs.:
 - Bok Sowell – MSU
 - Lance McNew – MSU
 - Frank van Manen – IGBST
 - Dan Tyers – USFS
 - Linking Research to Management In response to:
 - Forest Plans have timber management standards for grizzly habitat
 - Long-term studies add refined information to incorporate in Plan revisions
 - CTNF – Island Park
 - Extensive harvesting in accordance with 1985 Forest Plan
 - Salvage beetle-killed lodgepole
 - Timber Harvest in the GYE – Controversial Issue
 - Assess Long-Term Effects of Timber Harvesting on Grizzly Bears
 - Island Park – Opportunity to investigate harvesting effects > 25 years post disturbance
 - Study Area
 - Base Map: Timber Stands
 - 699,647 acres (2,710 km²)
 - 5,529 treated stands
 - Base Map for Analysis
 - Treated timber stands
 - 699,647 acres (2,710 km²)
 - 5,529 treated stands

- Covariates
 - Harvest date
 - Reforestation
 - Thinning
 - Untreated stands (2011 C-T Map)
 - Dominant forest canopy
 - Mature forests
 - GPS Collar Locations 2000-2010 map
 - Long-term Landscape Level Assessment
 - Grizzly bear use among silvicultural treatments and successional stages
 - Cover types
 - Timeline: Projected completion – November 2015
- #2 Context of Forest Service Livestock Allotments in GYE-wide Grizzly Bear Use
 - Objective: Assess the relationship of grizzly bears to Forest Service allotments at an ecosystem-level
 - Linking Research to Management: In Response to:
 - Need for data for administrative documents
 - Increase in grizzly numbers and distribution
 - Need for broader context for bear use of allotments
 - Forest by Forest Allotment Data
 - Allotment boundary
 - Years active
 - Livestock type
 - Stocking rates
 - Seasonal use duration
 - Conflict information
 - Grizzly Bear Movements Data
 - Timeline: Allotment data – January 2016
- #3 Moth Site Management
 - Assess Grizzly Bear use of Moth Sites at a Landscape and Population Level
 - Linking Research to Management in Response to:
 - Travel plan management
 - Commercial use
 - Public information and safety
 - Timeline: 2016
 - Consensus on objectives – IGBST
 - Manager's input
 - Budget and implementation
- #4 Carrion Abundance and Grizzly Bear Scavenging in the Gardiner Basin, Montana, and Yellowstone National Park, 1989-2015
 - Montana State University, MS Thesis Project, Range Science Department, Brooke Regan

- Committee, Drs.:
 - Bok Sowell – MSU
 - Lance McNew – MSU
 - Frank van Manen – IGBST
 - Doug Smith/Kerry Gunther – YNP
 - Dan Tyers – USFS
- Background: ungulate carrion
- Project addition, In response to:
 - Conservation Strategy – Monitoring major foods:
 - Winter-killed ungulates – spring transects
 - 30 YNP
 - 11 Gardiner Basin GNF/YNP
 - Data Synthesis Report
- Study area
 - Gallatin NF
 - Proprietary jurisdiction
 - Multiple use
 - YNP
 - Exclusive jurisdiction
 - Bear management closure
- Questions
 - Temporal trends in relative carrion abundance – Gardiner Basin vs YNP
 - Differences in utilization of carrion by grizzlies – Gardiner Basin vs YNP
 - Ecological correlates related to probability of grizzly use
- Carcass counts conducted 1989-2014
- GB carcass counts and grizzly bear use, percent of bear use low
- Expected outcomes
 - Patterns in relative carrion abundance
 - Correlates of grizzly bear use of carrion
 - Application: understanding changing food resources
 - Application: grizzly bear habitat management
- Timeline
 - Completion – Spring Semester 2017
- #5 Greater Yellowstone Ecosystem Campground Assessment *Forest Service, Dan Tyers - Grizzly Bear Habitat Coordinator*
 - Project addition In response to:
 - Secure best management:
 - Individual campgrounds
 - GYE – wide
 - Catalyst: tragic event plus new era in bear management
 - Putting Our House in Order

- Chronic conflict: Address known problems
 - Agency Preparedness: New paradigm
- Standardized Assessment – Each FS campground
 - Forest level analysis
 - GYE comprehensive plan
- 164 Campgrounds –Infrastructure Inventory
- Forest by Forest Workshops
- Management Priority, SNF Campgrounds sorted by GB Risk (largest to smallest) > by Ratio Boxes to Sites (smallest to largest) > then by Campground Name
- GYE Campground Assessment – 2 Mitigation lists: 2014 – 2016
 - Infrastructure needs – prioritized purchasing
 - Administrative changes and projects – decision making
- Infrastructure Needs 2014 – 2016
 - Site boxes
 - Dumpsters
 - Kiosks
 - Gates
- FY14 Expenditures
 - FS \$192,926 + GYC \$125,000 = \$317,926

Total Contrib. in FY14 by:	Forest	GYC	Total
Beaverhead-Deerlodge	\$0	\$0	\$0
Bridger-Teton	\$34,496	\$21,555	\$56,051
Caribou-Targhee	\$48,800	\$30,335	\$79,135
Custer-Gallatin	\$39,630	\$26,555	\$66,185
Shoshone	\$70,000	\$46,555	\$116,555

- Fiscal Years 2015 & 2016
 - 1:1 FS/GYC match at \$125,000 annually
 - Minimum project investment = \$750,000
- Timeline: Initial Plan and Agreement: 2014-2016
- Thematic
 - Science based approach to management
 - Anticipate the issues
 - Large-scale and long-term
 - Collaborative

Future meeting:

Brian Nesvik: I am interested in the committee thoughts on the next meeting and rotation in locations.

Loren Grosskopf: Upon review of the last minutes, we selected option three, which would be Jackson in the fall, Bozemen in the spring of 2016 and back to Cody fall of 2016. I request the committee consider keeping Cody in the loop of the three cities. I think it's really important to have Cody here. On behalf of our county, I would like to thank everyone for being here the last few days. I would move that we keep the schedule we agreed upon last year.

Mary Erickson: It's been a great meeting in Cody and I was going to share that the YES meetings have traditionally been combined with meetings of the Greater Yellowstone Coordinating Committee. Speaking on behalf of that group, we also appreciated the chance to meet in Cody and in our discussions after the public meeting, our suggestion was to acknowledge the rotation now of the three communities. In doing that, our next meeting will be in Jackson, then Bozeman, then back to Cody. That would then shift the time of year in each community which would have some advantages in connecting with different people who are here at different times. We would endorse that if everyone was supportive. That would put our next meeting in Jackson in the fall.

Brian Nesvik: If we have general consensus from the group, we will proceed as we agreed upon a year ago at this meeting. Proposed dates for the next meeting is Nov. 3-4 in Jackson, venue to be determined.

Loren Grosskopf: Could we consider when we meet the first day where everyone will stay overnight, moving the meeting later in the afternoon from 2-6 p.m. or 2:30-6:30 p.m. for example which would allow for more of the public to attend who work during the day. That would allow them to attend the public comment period. Why not start later in the afternoon?

Brian Nesvik: Any disagreements with taking that approach? I think that's a good idea.

Loren Grosskopf: This is my second year as a committee member and one thing that has become perfectly obvious is the success story of grizzly bears and the recovery process. Isn't it about time that this committee and the Study Team do something to celebrate the recovery, the success, the story of it? Regardless of what happens with delisting, it seems like it's time to do something formal and I think this committee would have the capacity and all the information to do that. On both sides of the argument, endangered species is always controversial. This is a case where someone should do something to celebrate that success. It seems like it's time to at least talk about it and maybe make it an agenda item for the next meeting. It seems like that's missing, we study the bears and we talk about the increased numbers but and I think we should also celebrate the success somehow.

Brian Nesvik: I have a proposal. Maybe the way to approach this is to get you and a couple of volunteers together to work on that idea and present something to the committee at the fall meeting for their consideration.

Mark Haroldson: If I could just mention that last fall we took on the task of writing another Yellowstone Science issue. The last one that was focused on bears was when we delisted in 2007, there was an issue dedicated to the grizzly bear story in Yellowstone. There will be another issue coming out in September

or October that will be all about bears so the timing will be consistent with the next meeting. A lot of the stuff you saw today and a lot of other articles will be in that issue.

Mary Erickson: I would be happy to reach out to Loren and other committee members to discuss what the appropriate way is to acknowledge the recovery effort and the celebration of how far we have come.

Brian Nesvik: We have Dan Thompson, Mary Erikson, Loren Grosskopf and Chris Servheen as volunteers

Loren Grosskopf: Are we adding you?

Brian Nesvik: I would be glad to be a part of that.

Public Comment:

Member of the public: I don't really have a comment, but a question. I wasn't here yesterday and maybe my question has already been addressed. Here is my concern. We have an island population, Yellowstone ecosystem bears are an island population as such and they will always be an island population and susceptible to events such as demographic, environmental or catastrophic. Given the reality, what is being done to open up linkage zones to other populations? Here is my two part question: Is anything being done at all to revive the 1990s plan to translocate bears into central Idaho? It was developed in the 90s and approved at the time until the Bush administration took over. B: Is there any effort being made to secure linkage zones between that future population and the Bob Marshall country or to maintain the connectivity that the Yellowstone population will need to exist into perpetuity.

Brian Nesvik: I appreciate your time and concern with genetic connectivity. I will ask that Mr. Chris Servheen and Mr. Frank vanManen address your question with you individually right after the meeting.

Kurt Bales: I would like to thank you everyone for meeting here and appreciate the turn out. It is great that you came into our community and hear our issues. In my option, it is time for the grizzly bear to be delisted. We have been living with them for years and the Game and Fish is doing a tremendous job of helping us cope with problems and bears. The Bear Wise program has exceeded our expectations in our area. We still have bears there but they are not sticking around the buildings and eating the dead carcasses. I compliment you on a job well done and appreciate it. I think it's time and I think your numbers show it, that distribution and the leveling off the cubs survival rate are pointing to it, it's time to get bears back into state management.

Louisa Wilcox: I want to take a moment to acknowledge Dan Tyers. He has been doing incredible work for a long time. It is a little weird how he spends his spare time. It's not just collecting world class data on carcasses, but the white bark pine data set is unbelievable and all the data he collected on outfitter camps in an effort to improve how outfitters live with grizzly bears in the Gardner district, and it goes on and on. And he always has young people, there is always a slide of a young person, and that the real

legacy and hopefully the legacy of more than just Dan. Young people who will follow in his footsteps, getting experience with data collection, caring about bears, being out there on the ground.

Dan one time asked me, when we were having a nice discussion about delisting, which I don't agree is appropriate. Dan asked me, "What is your George crossing the Delaware moment then?" If you don't have a symbolic victory like George crossing the Delaware, what is the victory that you can anticipate or the agencies can look forward to? I have thought about that for years, it was years since we had that conversation, and I think the answer was actually in his program. Maybe there isn't a "George crossing the Delaware" moment. My family came from the Valley Forge area, my ancestors had a paper mill right by Valley Forge and they made the very first continental congress money because there was no money to go the soldiers to keep them going. No one knows who my family was. Maybe there isn't a "George crossing the Delaware" moment for everyone. Maybe it is dumpster by dumpster, campground by campground, as Dan has outlined. Outfitter practices change in different areas, rancher's practices change, electric fence, dogs, and the whole entourage. Maybe that's the "George crossing the Delaware" moment and I think maybe if we get our sights off delisting, not delisting and go into what can we do for problem situations, what can we do for communities in a positive way, maybe that's the celebration we are looking for described here by the agencies that we need to celebrate. Maybe we need to celebrate the small things, the small victories that people like Dan do every day. I don't think very many people in this room know how much Dan does. Thank you.

Bob Joslin: My name is Bob Joslin, I live in Lander, Wyoming. I wish I could have said this earlier. Mister chairman and the committee, thank you for coming to Park County. I hope that at your next meeting, you would consider the fact that we have bears down in Fremont County too and you might consider coming down there because I know my friends with the Eastern Shoshone, the Arapaho tribes would also appreciate that. Please take that into consideration.

Lee Livingston: As Park County Commissioner, I would like to thank Chairman Nesvik and the YES committee for coming to Park County. We like to see you here and we are glad to see the great turn out. Speaking as a native from Cody, Wyoming, an outfitter, a permit holder, a citizen of Park County: I have been in a unique situation, I started going to the mountains about the same year as the bear was listed, I visited one of the hunting camps where one of the last legally taken bears was harvested, I now own that camp, I have had it for the last 20 years. I have watched the evolution of the recovery of the grizzly bear for a long time. I don't look that old but I just passed my 30th year as a professional guide and 20th year as a professional outfitter and with exception of a few experts in here, I don't know many people who have spend as much time in grizzly county, working with them and living with them as I have and my crew. We have watched this success; it has been a success story. We have learned how to deal with them and we have learned how to live with them. When I was a kid in camps, you had a dump out back, that's just what you did. You dug a big pit and that's where the garbage went, you burned what you could burn and buried it. We don't do that anymore, we have changed, we have learned how to live with them. The proof is in the pudding with the reductions in outfitters and grizzly conflicts. They are slightly on the increase in some areas just because of the densities. This is a success story folks and it is time, I am going to echo my good friend Kurt Bales comments, it is time to delist. The boots on the ground people who have been working with these bears and the ones who would continue to work with

them is the Wyoming Game and Fish Department and with the help of other agencies, they have some great intelligence and experience out there to take care of these bears and make sure they continue forward. I agree with Kurt again, if we get them delisted, I don't see much change, the management will continue with the guys that brought them to this point and have done so very successfully. This is a success story, they need to be delisted and managed as a recovered species.

Bonnie Rice: My name is Bonnie Rice with the Sierra Club. I think there has been a lot a great work done here in terms of increasing population and distribution that we have been hearing about. I think that is great and there is a success story there definitely. I would like to echo the first gentleman's comments in terms of connectivity and the fact that this is still an isolated population both genetically and demographically and so what does that mean in terms of a recovered population? For us and our two million supporters around the country that is very interested in Yellowstone grizzly bear recovery, that's a really important question. An integral part of the definition of endangered species act is that we have a self sustaining population. So my question would be, is a self-sustaining population one that is still so isolated as the Yellowstone population is?

Kathleen Jachowski: My name is Kathleen Jachowski, Executive Director of Guardians of the Range, a grazing focused organization in this part of the state. What I am going to say, I said on the first day and it really speaks to the infrastructure of GYCC, in a very specific in a way to the great stuff we saw today on distribution and recovery, that's why I am mentioning it here to the subcommittee. I made the suggestion that I really think the GYCC needs it own subcommittee on socioeconomics. The reason for that is I understand and fully appreciate the outstanding science that goes into this whole effort. I know that you need a socioeconomic subcommittee because as you see the distribution changing and reaching out. If you don't have that, in my view, your scientifically putting a membrane right there, it's not recognizing that as bears increase, they are moving out into those greater socioeconomic areas and we need to have an intellectually robust look at that as you go along, not as you hit a bumper or firewall along the way as you reach into greater society outside the great natural areas that we have. I wanted to bring it up again so that you will look at that and really think about having that subcommittee because the great recovery stuff we saw here today, the distribution changes, the populations, you need to bring robust intellectual capital along with you as you go and not pick it up along the way.

Brian Nesvik: Thank you Kathleen. For the record, we will take that as a YES comment. You referred to the GYCC and I understand the two meeting are held in conjunction. The YES committee will consider your comment.

Meeting adjourned