Yellowstone Ecosystem Subcommittee Spring Meeting Minutes
March 26-27, 2014, Jackson, WY

Members present:
Joe Alexander, Shoshone National Forest
Mark Sattelberg, USFWS – Wyoming
Sue Consolo-Murphy, Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway
Mary Erickson, Gallatin and Custer National Forests
Pat Flowers, Montana Fish Wildlife and Parks
Melany Glossa, Beaverhead-Deerlodge National Forest
Loren Grosskopf, Wyoming County Commissioners Association - Park Co
Cornie Hudson, BLM – Montana
Clint Kyhl, Bridger-Teton National Forest
Brent Laren, Caribou-Targhee National Forest
Gregg Losinski, Idaho Department of Fish and Game
Frank van Manen, USGS Interagency Grizzly Bear Study Team
Brian Nesvik, Wyoming Game and Fish Department
Steve Schmidt, Idaho Department of Fish and Game
Chris Servheen, USFWS Grizzly Bear Recovery Coordinator
Mike Stewart, BLM - Wyoming
Tom Rice, Montana Association of Counties - Beaverhead County
Dan Wenk, Yellowstone National Park

March 26, 2014, 1:00 p.m.

Welcome and Introductions: Brian Nesvik

- Introductions and row call

Fall 2013 meeting minutes approval: Brian Nesvik

- Motion by Tom Rice to approve fall 2013 minutes as written; seconded by Loren Grosskopf
  Motion Carried

Re-evaluation of Yellowstone grizzly bear population dynamics not supported by empirical data: Response to Doak and Cutler: Frank vanManen

- Response to Doak and Cutler (2013), Re-evaluating evidence for past population trends and predicted dynamics of Yellowstone grizzly bears
  - Rebuttal is published in the Journal of Conservation Letters
- Two primary arguments from Doak & Cutler
  - Search effort to estimate number of females with cubs-of-the-year (F_{coy}) increased over time

    - IGBST population projections are biased high because they did not take into account survival senescence and reproductive senescence
- Quotes from Doak and Cutler (2013)
    - "…we actually know very little about the past trends of this population, and hence about their likely future fate"
    - "…with rapidly accelerating impacts …..it is quite likely that the population is now, in fact, declining."
- IGBST approach
    - Use the simulations of Doak and Cutler
    - Examine the premise, implementation, and interpretation of their simulations
- Doak & Cutler argument: Search effort increased
    - Search effort = number of flight hours
    - Simulations of the observation process of females with cubs-of-the-year (F_{COY}) with known number of F_{COY} (N = 70)
    - Examine effect of more flight hours on trend of F_{COY} by applying Chao2 estimator to the simulated data
- Flight hours increased as search area expanded
    - Survey flights accounted for only about a third of all F_{COY} sightings during 1986–2010
    - Hours increased to account for population expansion
- IGBST flights vs. Doak and Cutler (2013) simulation
    - IGBST flights: every unit ~2 hrs
    - Doak & Cutler simulation: Entire ecosystem every hour
        - Simulations overestimated number of unique bears "observed"
        - Direct correspondence between flight hours and number of F_{COY} "observed"
- Doak and Cutler simulations not supportive of their own conclusions
    - Increase in flight hours could not explain the 4% annual population growth documented by IGBST
    - Even less support when we account for increase in search area
    - Even when assuming that the "observation process" reflected reality (which it did not)
    - Detailed in rebuttal paper
- Argument 1: Examining the Doak and Cutler approach
    - Definition of search effort did not account for increase in survey area nor other observation data
    - Simulations do not reflect observation process
    - Doak and Cutler's simulations do not support their own conclusions
- Doak and Cutler simulations confirmed estimated bias in F_{COY} count using Knight et al. (1995) "rule set" for Unique F_{COY}
- Doak & Cutler's 2nd argument: IGBST failed to account for senescence
    - Refers to survival senescence and reproductive senescence
    - Argument based on simulations of population projections
- Survival senescence

    - "Constant survival" is the survival function IGBST uses, Doak and Cutler argue that it does not account for the fact that animals are dying and not surviving that long.
    - The function Doak and Cutler developed for survival senescence was so severe that it gave almost no chance for reproduction after the age of 20
        - Not realistic of this population, not a typical function
    - Looking at empirical data, can account for age effect on survival, but you don't need to because it makes no difference.
        - Mark Haroldson made this argument in 2006
- Reproductive senescence
    - Schwartz et al. (2003) and other biologist developed reproductive senescence curve based on 20 populations
    - Doak and Cutler used an incompatible baseline with the "curve" of Schwartz et al.
    - This approach is comparing apples to oranges
- Argument 2: Examining the Doak & Cutler Approach
    - Improper survival senescence
    - Improper baseline for reproductive senescence
    - IGBST examined this before (Haroldson et al. 2006; Harris et al. 2006,2007)
    - Our results confirmed previous findings
- Additional Data Contradict Doak and Cutler's Assertions
    - Mark-Resight Estimates of F_{COY} (3-year running average; excluding moth sites)
    - Several Population Estimators Show Same Trend (3-yr running averages)
    - IGBST uses multiple data sources to increase inference
    - Percent new captures remains high
    - Stable or positive population trend, or high density, is prerequisite for range expansion
        - Early 1980s: ~24,000 km^2
        - Now: ~50,000 km^2
- Scientific debate is critical to the scientific process and can lead to important new insights. However, based on our examination, the simulations and analyses that formed the foundation of D&C's critique led to conclusions that are not supported by empirical data.

Question from Pat Flowers: As part of the evaluation and critique, did you actually speak with them about your analysis of their critique?

Response by Frank van Manen: Initially, there was some correspondence. The last communication was when Mark Haroldson invited Dan Doak to meet with the Study Team and present the results because Doak had indicated he was finding some interesting patterns that might contradict our finding; nothing ever came of that. We have had some recent exchanges because we provided data to Dan about the flight areas and some of the Mark-Resight data.

Question form audience: Is there a published peer-review of your critique?

Response by Frank van Manen: Yes. What I covered was the published, peer-reviewed rebuttal to the critique of Doak and Cutler.

<u>Update on food synthesis report and publications</u>: Frank van Manen, Mark Haroldson

- Food Synthesis Topics and Publications (available on IGBST website)
    - Diversity of grizzly bear diet
      Gunther, K., R. Shoemaker, K. Frey, M. A. Haroldson, S. L. Cain, F. T. van Manen, and J. K. Fortin. 2014. **Dietary breadth of grizzly bears in the Greater Yellowstone Ecosystem**. Ursus (in press).
    - Whitebark pine habitat selection
      Costello, C. M., F. T. van Manen, M. A. Haroldson, M. R. Ebinger, S. Cain, K. Gunther, and D. D. Bjornlie. **Influence of whitebark pine decline on fall habitat use and movements of grizzly bears in the Greater Yellowstone Ecosystem**. Ecology and Evolution (in press).
    - Body condition
      Schwartz, C. C., J. K. Fortin, J. E. Teisberg, M. A. Haroldson, C. Servheen, C. T. Robbins, and F. T. van Manen. 2013. **Body and diet composition of sympatric black and grizzly bears in the Greater Yellowstone Ecosystem**. Journal of Wildlife Management DOI: 10.1002/jwmg.633.
      Schwartz, C. C., , J. Teisberg, J. K. Fortin, M. Haroldson, C. Servheen, C. Robbins, and F. T. van Manen. 2014. **Use of isotopic sulfur to determine whitebark pine consumption by Yellowstone bears: a reassessment**. Wildlife Society Bulletin (in press).
    - Meat as an alternative food source
      Ebinger, M. R., M. A. Haroldson, F. T. van Manen, S. Podruzny, J. K. Fortin, K. A. Gunther, P. J. White, S. L. Cain, P. Cross, D. D., Bjornlie, and C. M. Costello. **Estimating grizzly bear use of large ungulate carcasses using GPS telemetry data.** (in prep.)
    - Changing mortality risk
      Haroldson, M. A., F. T. van Manen, M. R. Ebinger, M. D. Higgs, D. L. Bjornlie, K. A. Gunther, K. L. Frey, S. L. Cain, B. C. Aber. **Trends in causes and distribution, and effects of whitebark pine production on grizzly bear mortality in the Greater Yellowstone Ecosystem.** (in prep.)
    - Changes in movements
      Costello, C. M., F. T. van Manen, M. A. Haroldson, M. R. Ebinger, S. Cain, K. Gunther, and D. D. Bjornlie. **Influence of whitebark pine decline on fall habitat use and movements of grizzly bears in the Greater Yellowstone Ecosystem**. Ecology and Evolution (in press).
    - Home range as indicator of density vs. resource effects
      Bjornlie, D. D., F. T. van Manen, M. R. Ebinger, M. A. Haroldson, D. J. Thompson, C. M. Costello. 2014. **Extrinsic and intrinsic influences on home-range size of an opportunistic omnivore: climate-induced resource decline or density dependence?** PLOS One doi 10.1371/journal.pone.0088160.
    - Vital rates and density vs. resource effects

van Manen, F. T., M. A. Haroldson, M. R. Ebinger, D. D. Bjornlie, D. J. Thompson, C. M. Costello, and G. C. White. **Density dependence, whitebark pine decline, and vital rates of Yellowstone grizzly bears.** (in prep.)

- Mahalovich, M. F. 2013. **Grizzly bears and whitebark pine in the Greater Yellowstone Ecosystem. Future status of whitebark pine: blister rust resistance, mountain pine beetle, and climate change**. Report 2470 RRM-NR-WP-13-01, U.S. Department of Agriculture Forest Service, Northern Region, Missoula, Montana, USA.
- Greater Yellowstone Whitebark Pine Monitoring Working Group. 2014. **Summary of preliminary step-trend analysis from the Interagency Whitebark Pine Long-term Monitoring Program—2004-2013: Prepared for the Interagency Grizzly Bear Study Team**. Natural Resource Data Series NPS/GRYN/NRDS—2014/600. National Park Service, Fort Collins, Colorado.

- Gunther et al. (2014) Broad Dietary Shifts 1943-2009
  - Dynamic system over time; bears have switched to different diets over time as changes have occurred in the ecosystem
  - Map created of grizzly bear foods with high caloric value
    - Not every bear has access the same food resources
- Update: Mortality analysis
  - Has the number of human-caused grizzly bear mortalities increased as whitebark pine resources declined?
  - 172 human-caused, fall mortalities during 2000-2012 of bears $\geq$2 yrs
  - Poisson regression of annual mortality counts
  - Factors considered:
    - WBP cone production
    - Female vs. male
    - Inside vs. outside Recovery Zone
    - Time trend
  - Predicted female mortality: Good vs. poor WBP year
    - Inside recovery zone: In a good whitebark pine year mortality depressed
      - Still functioning to reduce mortality
  - Predicted female mortality: Inside vs. Outside Recovery Zone
    - Greater shift outside of Recovery Zone
  - Human-caused fall mortalities 2000-2012
    - Tend to be more on periphery of occupied range
    - Increase in mortality is partially explained by range expansion and increase in population size
  - Predicted effect female mortality inside Recovery Zone
    - In a poor whitebark pine year, effect size would be 3-4 mortalities
  - Predicted effect female mortality outside Recovery Zone
    - In a poor whitebark pine year, effect size would be 6-7 mortalities
    - Further outside of Recovery Area, less white bark pine.

- Mortality impact not apparent in annual survival estimates
- Research Question: *Has the number of human-caused grizzly bear mortalities increased as whitebark pine resources declined?*
    - Yes; Relatively small effect size. Population has also increased
    - Potential contributing factors:
        - WBP decline
        - Population growth
        - Range expansion
    - No evidence of effect on survival of bears ≥2 yrs

Question from Brian DeBolt: The number of mortality increase, does that reflect the proportion of mortality based on a low population or just the number?

Response by Frank van Manen: This is absolute numbers we are looking at here. You are correct, you have to relate that to the total population size and that's what we are doing with the table that shows survival is mostly .95. We are looking at the population level. Does it have any effect on that, and it is apparent from those estimates, that it does not.

Response by Mark Haroldson: During the 2000-2012 time period, the other indices of population trend indicated that we were stable to slightly increasing during that period. There was potential for increase in population but it was not alot. Over the long term, when we look at the proportion of independent female mortality as a proportion of our estimates of female with cubs, that proportion has been relatively flat from '83 on.

Frank van Manen: In other words, mortality for females as a proportion of the population really has not changed. Even through the absolute numbers increase, the proportion has not.

Question by Pat Flowers: In reference to Kerry's graph of grizzly bear foods with high caloric value: It looked like when there were significant changes in food resources, like when the garbage was no longer available, the forbs seem to be the go-to food, then later in the graph, the same spike appeared with forbs. Are there any implications to that? What are your thought on that shift?

Response by Frank van Manen: I would hesitate based on those data to draw that conclusion or inference. I am not dismissing it as a possibility. When we compiled the data, the data sources were not set up to address that specific question.

Response by Kerry Gunther: Garbage did have higher kilocalories per gram than the average for forbs but there are literally hundred of forbs bears will feed on. On average, if they do a little more work, they can come up with the same amount of calories.

Frank van Manen: That's why we can't make that statement because we did not have an opportunity to look at caloric value and intake. That would require a more complex study to address that question. We have done that with some of the alternative foods that we have seen bears consume in response to whitebark pine decline, as we have documented in the Food Synthesis report.

Question by Loren Grosskopf: If you look just at the core area, and you take all the mortalities off the surrounding areas, the survival rate inside the core area is still stable?

Response by Frank van Manen: Correct. It is .95 even in the core but population growth is still close to flat. That is what you would expect because that is where the population is the densest.

2013 Population and Mortality Update: Mark Haroldson

- Update from fall presentation
  - # of observations and mortalities slightly changed
- Greater Yellowstone Ecosystem
  - National Park Lands = 10,344 km^2
  - Recovery Zone = 23,828 km^2
  - Demographic Monitoring Area = 49,931 km^2
  - Conservation Management Area = 95,225 km^2

Counts of females with cubs of the year for trend and population estimation

- Population estimates using alternative demographic criteria
  - Previous
    - Count females with cubs-of-the-year (FCOY) within Conservation Management area
    - Use 1983-2001 vital rates and derived age structure for estimates of population segments
  - Updated
    - Count FCOY occurring within Demographic Monitoring Area
    - Use 2002-2011 vital rates and derived age structure for estimates of population segment
- 2013 Sightings of FCOY in the GYE
  - 183 observations
    - 107 Aerial (58.5%)
    - 76 Ground (41.5%)
  - 58 unduplicated FCOY (new high)
    - Mean litter size = 2.17
    - Litter sizes
      - 8 single (14%)
      - 35 twins (60%)
      - 14 triplets (21%)
      - 3 quartets (5%)
  - 14 sightings from 4 unique FCOY had observations outside the demographic monitoring area (DMA)
    - 1 of these 4 was only observed outside the proposed DMA
- Population Estimate using FCOY sightings

    - Model averaged estimate of Chao2 is 59 unduplicated females
- FCOY estimates using alternative demographic criteria
    - 59 unduplicated females using both previous and updated criteria
    - When translated into population estimates:
        - Using previous criteria: 629 bears
        - Using updates criteria: 741 bears

Documenting grizzly bear mortalities and evaluating annual mortality limits

- Mortality limits evaluated under alternative demographic criteria
    - Previous
        - Count mortalities within Conservation Management Area (CMA)
        - FCOY within CMA used for population estimate
        - Mortality limits
            - 9 % for independent F
            - 15 % for independent M
            - 9 % for dependent young (human-caused only)
    - Updated (Based on updated science from the IGBST (2012) that shows some vital rates have changed in the 2002-2011 time period from those observed during 1983-2001)
        - Count mortalities within Demographic Monitoring Area (DMA)
        - FCOY sighted within DMA used for population estimate
        - Mortality limits
            - 7.6 % for independent F
            - 15 % for independent M
            - 7.6 % for dependent young (human-caused only)
    - Known and probable mortalities 2013
        - 28 known and probable mortalities during 2013
            - 23 human-caused
            - 3 natural
            - 2 undetermined cause
            - 1 sex unknown pending DNA
        - 6 (all males) outside demographic monitoring area
        - 1 additional known mortality from prior to 2013
            - Undetermined cause
            - Outside DMA
    - Did not exceed mortality limits evaluated under alternative demographic criteria
        - Still need to determine sex of one mortality
            - If female, will not exceed mortality limit
            - If male, will not exceed mortality limit

Comment by Dan Bjornlie: We just received an email indicating the mortality of unknown sex was a female.

Question by Dan Thompson: With high female with cubs counts this year, we expect to see a reduction next year because a female with COY this year, will not have cubs of the year next year.

Mark Haroldson: Good point. We will probably have a low cub count this year because a lot of females last year were encumbered with cubs and were not available for breeding.

Question by audience: With concerns about decrease in whitebark pine and cutthroat trout, has there been a change in the data you collected on physical condition of bears?

Response by Frank van Manen: That was an important question and a question addressed in the Food Synthesis report. We looked at body weight for example and percent body fat especially because it is a good measure of changes in the ecosystem that might be reflected in individual changes in body condition. We did not see any patterns.

In the analysis that Chuck Schwartz did, he did see a decline in percent body fat in females from 2006 on but that was a very small sample size. For the Food Synthesis report, we did an additional analysis with additional data that gave us a better inference. We did not find evidence that body weight or percent body fat in males and females was declining as a function of food decline.

Member of audience: I assume that bears, being highly adaptable, chose other foods to get their energy and fat reserves. Follow up question. The second indicator of health would be seeing triplets and quadruplets and you wouldn't have that if you didn't have high quality foods out there?

Response by Frank van Manen: Correct. That is an argument we have made in the Food Synthesis report. We have not seen a change in fecundity. To follow-up on the previous question; Bears are seeking out and finding alternative foods. We see an increase in use of meat resources for example, that could be elk, it could also be ants or other animals.

Question by Christine Wilcox: In terms of litter sizes. How does that sync up with the fact that mortality limits have been changed because of a reduction in fecundity?

Response by Mark Haroldson: All of those things work together. It was not varied by fecundity, it was varied by survival.

Christine Wilcox: Fecundity has decreased and survival of male bears in particular has increased?

Mark Haroldson: Survival for independent age males has increased and we have seen a decline in cub survival. The transition probability of females transitioning from one state to another; the stable state transition probability for females in the cub state has been about the same.

Frank van Manen: I want to point out that there has been no decline in fecundity.

Mark Haroldson: It has remained about the same. When we model the population, those rates reduced a little bit. When we modeled what female survivorship gives us a lambda of 1, given all these other parameters, that has declined a little bit. Survivorship used to be able to down to .89 to have a lambda of 1, now we go down to a survivorship of.924 to have a lambda of one.

Break

I&E Subcommittee update: Gregg Losinski

- Wildlife Management Institute contracted to do I&E prep work
  - Working on a new coloring book
  - Working with I&E chairs and Committee members to address needs
- Bear Spray message continue to be disseminated
- Bear Education trailer
  - Idaho utilizes volunteers with the Master Naturalist program to staff trailer at festivals and other events
  - New addition to trailer is an articulated grizzly bear skeleton
  - Trailer used in conjunction with opening of Disney movie "Bears", will distribute curriculum and educational materials
- Partnership is key in education and information efforts
  - Strive for educational messages not alarmist messages
- Science based curriculum being developed

Brian Nesvik: Agenda changes announced

Grizzly Bear Conservation Fund: Yellowstone: Dan Thompson

- Background
  - In October of 2012, the Interagency Grizzly Bear Committee (IGBC) entered into an agreement to establish a Grizzly Bear Conservation Fund (GBCF) in partnership with the National Fish and Wildlife Foundation (NFWF)
  - IGBC members view the GBCF as an important tool in coordinating and leveraging investments in the recovery, conservation, and management of one of North America's most iconic species
  - IGBC members from: 5 Federal land management and science agencies, 4 state wildlife management agencies, and 2 Canadian provincial government agencies
  - Each system has varying issues and obstacles to overcome
- Yellowstone Ecosystem
  - Represents one of the nation's greatest success stories for conservation
  - Continued success of this population is dependent on understanding:
  - Adaptability in a changing environment
    - Conflict and mortality (grizzly bear/human interactions)
    - Monitoring critical habitat and population characteristics

- Three Overarching Themes
    - Habitat Conservation
    - Promoting Coexistence and Reducing Mortality
    - Population Monitoring and Management
- Habitat Conservation
    - Two primary needs or issues to address:
        - Changes in food resources and resource availability in the GYE
        - Road management – Hazards assessment
            - Fund a Forest Service field crew of 2 for one summer field season.
            - The Forest Service is prepared to then manage the data and complete associated annual reports
- Promoting Coexistence and Reducing Mortality
    - The success of grizzly bear recovery and expansion in the Greater Yellowstone Ecosystem inherently brings more issues related to conflict with human beings
    - As bears expand it is likely that we will have a higher probability of interactions and conflicts between bears and people
    - Efficacy of Translocation
        - Capture and relocation
        - Homing behavior of relocated bears
        - Multiple factors impacting the technique
    - Storage and securing of attractants
        - Multi-level and multi-agency approach
            - Land management authority
            - City, county jurisdictions
            - Different stakeholder usage and acceptance
            - Collaborative approach
    - Examples identified:
        - Palisades Transfer Site: Placement of a “gap zapper” electrified mat and electric fencing at this site along the Madison River, on Bureau of Land Management (BLM) land, to keep black and grizzly bears from accessing garbage.
        - Grand Teton National Park (GTNP): Bear-resistant food storage boxes. Over the last 5 years GTNP has installed nearly 400 bear-resistant food storage boxes in campgrounds and other developed areas.
        - Yellowstone National Park (YNP): Bear-resistant food storage boxes. YNP with the help of private donations has fully outfitted 4 of 12 campgrounds with bear-resistant food storage boxes. This project would provide 40 new boxes annually toward the remaining 1100 campsites in need of boxes.
        - US Forest Service: High priority campground dumpsters and food storage boxes. In 2012, we inventoried all GYE Forest Service campgrounds for property associated with the bear management program. Noted 55 of 164

campgrounds without dumpsters and 2,074 of 2,970 campsites without IGBC approved food storage containers.
    - Bear Friendly Land Development Guidelines
        - Educational component
        - Ties back to attractants
- Information and Education Programs
    - Critical component of management
        - Press releases and PSA's
        - Public presentations (workshops, lectures)
        - Printed material (pamphlets, articles)
        - School presentations
        - Signage (kiosks, posters)
        - Informal contacts
        - Social media
    - WGFD Carcass Removal Program
        - Started as pilot program
        - Attractant removal and public tolerance
- Population Monitoring and Management
    - "Interactive" population modeling
        - Human perturbations
        - Ecological and climate changes
    - Continued evaluation of the GYE population through standard monitoring techniques
- Update from IGBC
    - GBCF Educational Handouts (Short and Long Term Versions)
    - GBCF Deposit Agreement Samples
        - Each IGBC Member Organization develop its own Deposit Agreement with NFWF consistent with Congressional intent and applicable laws, regulations and policies
        - Sample deposit agreement and "Statement of Work Sample"
- Recovery of a Population is Neither Cheap Nor Easy
    - Relentless efforts and sacrifices for those entities responsible for the day to day activities in order to adequately monitor and manage grizzly bear populations
    - At the End of the Day the Dividends can be Priceless

Bearwise, Conflict Management and Creativity in the Jackson Area: Dusty Lasseter

- Wyoming Bear Wise 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
- Statewide educational efforts
  - This year: ~75 presentations for schools, clubs, ranches, professional organizations, Hunter Education classes, County Commissions.
  - Nine Staying Safe in Bear Country workshops statewide, ~400 people attended
  - Bear booth and trailer
    - Attended nine events
  - PSAs in print, radio, press release, and ads
  - Educational review
    - Hunter Safety material
    - IGBC pamphlets and bear spray video
  - Signing
- Conflict prevention: three pronged approach
  - Removing attractants
  - Securing attractants
  - Adverse conditioning
- Carcass Management program
  - Removed 585 carcasses
- Electric fence
  - Permanent and temporary fencing of apple orchard/gardens, bee apiaries, outfitter camps
- Attractant management
  - Use of Conex containers at outfitters camps
  - "Unwelcome" matt
- Grant Proposals
  - Temporary Electric Fence $1,950 + $500
  - Carcass Management Program several grants
  - Educational Supplies for Traveling Bear Trailer $1,000 + $250
  - Bear Resistant Carts asked for $10,000 but unsuccessful
  - Bear Resistant Carts Atlantic City $6734
  - Inert Bear Spray Grant asked $4,000 but unsuccessful
- Future
  - Expanding conflict prevention efforts statewide
  - Making presentations available online

- Challenges
    - "Non-securable" attractants
    - Public mindsets and tolerance
    - Providing sufficient infrastructure

Question by Loren Grosskopf: Are you expecting or do you have funding to expand the Carcass Management Program?

Response by Dusty Lasseter: We do not have funding so we have to use the money where it is most effective. When we originally designed the program, we focused in areas that historically had a high degree of conflicts. Where bears are expanding into now in the Park County area, I don't think it's viable to expand the program there because other attractants are not addressed/secured.

Committee discussion and vote on conditional support decision from fall YES meeting: Brian Nesvik

The agenda item concerning a committee discussion and vote on the conditional support decision from the fall YES meeting probably did not need to be in the agenda. This was voted on and passed by the committee. As was discussed at the fall meeting, the conditional part of this was the completion of the Food Synthesis Report. As promised during the fall meeting, there was a follow-up phone call and those that had concerns with the conditional part of that, all agreed with the Food Synthesis Report and there is no need for further action by this committee.

Committee discussion location of YES meetings: Brian Nesvik

Brian Nesvik: Call for discussion on the potential for moving YES meetings around the ecosystem to allow for more public participation.

Pat Flowers: We went through this cycle 10 years ago and moved it to Cody and then Idaho Falls for just the reasons you described. Our experience was that there was not a lot of interest in other communities. Our intent at that time was more outreach and we did not get any interested parties showing up so we came back to Bozeman and Jackson because there seems to be a strong, consistent interest there.

Brian Nesvik: Another part of the question would be if things have changed in 10 years.

Chris Servheen: I agree with Pat. We did move it around and we did not get a lot of people at the other locations. I do not see a need to move it but some of the other entities should weigh in on it.

Steve Schmidt: I am comfortable with leaving the arrangement as is.

Loren Grosskopf: It seems practical to leave it where the most people are coming from. If moving it results in more participation, then moving it seems logical. From a travel standpoint,

Joe Alexander: I think there is interest in having it in Cody, how much interest I don't know. I am sure the community would be interested in having a bunch of people there. It would certainly be cheaper

than Jackson. I think there would be some advantages to it but I don't have the experience the other do. My sense is that there would be interest for the occasional meeting there.

Gregg Losinski: One thing we could consider is using the internet to post presentations, etc.

Mary Erickson: I appreciate hearing the history. I do not have a preference in location but it is important to keep the GYCC meeting and YES meeting together. Right now, people know what to expect in terms of Bozeman/Jackson. If we were going to move it around, I think we need a two year schedule.

Steve Schmidt: Traditionally, the fall meeting was held in Jackson and the spring meeting in Bozeman. That's the way it was for number of years.

Brian Nesvik: Give this some thought. The primary concern here is making sure that the public does not feel disenfranchised by not having a close opportunity to participate.

Loren Grosskopf: If we had this meeting in Cody, I think we would get at least this many people.

Brian Nesvik: In Wyoming, Cody and Jackson are the two epicenters of interest. I have heard interest out of Cody and Lander, but mainly Cody.

Joe Alexander: From my experience, most people attending the meetings are associated with an agency represented on the committee.

Brian Nesvik asked for a show of hands of people associated with an agency represented on the committee.

Discussion and update about the potential delisting process for GYE grizzly bears: Chris Servheen

- Any listing or delisting of any species requires a threat analyses the US Fish and Wildlife Service does to evaluate the five factors that are evaluated for listing/delisting of a species.
- We are involved in the threat analysis on the Yellowstone population at this point.
    - Analysis/decision should be done by fall of this year
- Once the analysis is finished, the Director of the Fish and Wildlife Service will make a decision whether or not we will have a proposed rule
- The 5 factors are:
    - Present threat and destruction or modification of habitat or range
    - Overutilization of the species for commercial, recreational, scientific, or educational purposes (death of species and how many die in terms of sustainability)
    - Disease or predation the effects the species
    - Inadequacy of regulatory mechanisms
    - Other natural or manmade factors effecting the continued existence of the species

Question by Brian Nesvik: What do you see this process looking like? Will there be agency involvement in drafting the rule once the threat analysis is done?

Response by Chris Servheen: As the last time when we developed a rule, we would involve all the agency partners in the process.

Brian Nesvik: Pre-comment period?

Chris Servheen: Yes, all the agencies would be involved in the development of the document. Then it would go out to public comment, if there was a proposed rule. We are all partners in the recovery process so we do not do it unilaterally.

Brian Nesvik: Is the drafting going to be coordinated through the Denver office? When the rule is drafted, will it go for a regional review?

Chris Servheen: If there is a rule, it would be reviewed at the regional level, the Solicitors level, the Washington level (USFWS) and all the agency partners would be involved in that process.

Brain Nesvik: Will the Denver office be involved in the regional review before it goes to the Solicitor, then Washington? There is a cross or overlap of USFWS regions, that's why I ask.

Chris Servheen: The Denver office would be involved in the process. USFWS has two different regions, Idaho is in a different region of the Service, but we coordinate across regions all the time.

Mary Erickson: If there were a decision to move forward with a delisting rule, what is the forecast for general time frame?

Chris Servheen: I don't have a "crystal ball" but I would suspect that it would before the end of the calendar year. The majority of a proposed rule is a threats analysis, that's what determines if a species is listed or not.

Mary Erickson: If there were a decision, the proposed rule would probably be out this year, but then there is a public comment period and a process to evaluate comments. I am familiar with NEPA process timeline but not with the time frame of this process. From the time a proposed rule comes out to the final rule, how time consuming is that, is it a year, 18 months, six weeks?

Chris Servheen: It was about a year last time. It depends on the public comments received. If there is a proposed rule, there would be comments on the proposal, then we evaluate the comments to determine whether we could respond to all of those to propose a final rule, so it all depends on the comments. The key issue is what we are doing right now is the threats analysis to determine whether we are going to have a new proposed rule or not and our director will be involved in the decision and we are still in that process.

Brain Nesvik: Do you see any issue with threats analysis based on your experience?

Chris Servheen: We are in the process of doing the threats analysis.

Loren Grosskopf: Is the subcommittee involved? As the Committee, what's the next step for us?

Chris Servheen: The committee will not be involved in the analysis but certainly, the committee decided to charge the Study Team with producing the Food Synthesis because there was a question about changes in food supply and how that would affect grizzly bears, so the production of that document was very helpful in evaluating threats to habitat because that provides a tremendous amount of biological information to use in the threats analysis. As the lead agency for the Endangered Species Act, the USFWS leads the threat analysis, it is a USFWS responsibility.

Loren Grosskopf: Do you need further information from this committee?

Chris Servheen: We have everything we need. All the information the Study Team provides on a regular basis is a real wealth of knowledge and we will use that in the threats analysis. Keep in mind that we know more about his bear population than we know about any other bear population in the world.

Loren Grosskopf: Is funding an impediment to moving delisting forward?

Chris Servheen: No, it is not.

Brain Nesvik: The reasons for the questions are that we have a significant number of our publics and constituents that ask these questions. These are the kinds of questions I field from reports. Other questions are; how much patience do we need to have? Not only from the public, but politically as well.

Chris Servheen: I get those questions too. We are doing our best, going as fast as we can, and we are doing the job right. We will do everything we are required to do to get the job done.

Public comment by Steve French, Yellowstone Grizzly Foundation: I have a two part question. Having lived and worked in this area for 40 years, I am aware that road kills are very common. I know that grizzly bears and other scavengers take advantage of these and I've know some individual bears that cruise the roads because some of these animals will wander off in the woods. In Yellowstone, it is a common practice that if an animal dies of natural causes near a developed area or by auto collision, they are deposited on service roads and used by grizzly bears and they are a very valuable nutrients to grizzly bears. When you talked about removal of domestic livestock, is there any thought of putting that back in the ecosystem where bears can get it or are you concerned they will develop a taste for domestic livestock?

Response by Dusty Lasseter: What we saw with the carcass pits is that they were drawing bears off of natural forages through adjacent developed areas or through calving pastures and there might be associates effects/conflicts of bears in those locations.

Public comment by Steve French, Yellowstone Grizzly Foundation: Since 1975, what would be the rough amount of money the Wyoming Game and Fish Department has spent on grizzly bear recovery efforts in coordination with IGBST, IGBC, and YES. Does Game and Fish know how much they have spent in what is now approaching 40 years?

Brian Nesvik: We looked at this in an estimate two years ago and at that time, it was about 37 million dollars over that period of time. Right now, we are spending about 1.7 to 1.9 million dollars a year.

Steve French: What is the source of that income?

Brian Nesvik: The source of the income comes from our Game and Fish operating fund which comes from hunting license sales, Pitman-Robertson federal excise tax, etc; sportsman's dollars.

Deidre Bainbridge, attorney: Another source of income which would be helpful for the Game and Fish to be involved in is restitution. We had a case that was resolved recently and the judge refused to order restitution because the prosecutor could not define what restitution meant in terms of grizzly bears in Wyoming. This team should come up with some number of what it costs the state of Wyoming for a grizzly bear, so the person testifying could have that number for what restitution is for a dead grizzly bear. So, those who want to support the Game and Fish who are in the court room are can say we want restitution for the Game and Fish.

Brian Nesvik: This issue came before the Wyoming Legislature this past year specifically out of Teton County and so this is on the Travel, Recreation, and Wildlife interim joint committee's list of interim study topics. This issue will be addressed by the legislative committee in the interim to gain fidelity and clarity for judges to understand their abilities to assess restitution in grizzly bear cases and others as well. Currently the way the process has worked for a couple decades is that there is a recommendation from the Wyoming Game and Fish Commission that is provided to all the judges in the state. Obviously, assessment of restitution is a judicial discretion issue. There are recommendations out there for judges to use; $25,000 is the recommendation for grizzly bears and the way that was developed was based on a variety of factors including the amount of money the Department spends, the value to Wyoming folks, etc. It has been identified as an issue and, I don't know the desires of the committee for how they would influence this, but at least the state of Wyoming has decided to address this through the legislature.

Deidre Bainbridge: It is not appropriate to be addressed through the legislature. It would be appropriate for the agency that has the money out of pocket to be able to say, we spent X amount of money on education, prevention, etc for the benefit of us to be able to have this public resource, so this much money is restitution, divided by how many bears are in the ecosystem. It's not that hard to come up with something that could be concrete and conveyed to the judge. To me, the legislature is not where it belongs, it belongs to you, deciding what your out of pocket loss is.

Brian Nesvik: I appreciate your point.

Tim Mayo: Most recently in the last year, has the bear population growth stabilized? My understanding in reading recent documents is that the bear population has stopped growing, stabilized.

Frank van Manen: It is between 0 and 2.2 percent growth.

Tim Mayo: And that based on, the biggest cause of mortality human-caused, correct?

Frank van Manen: That is correct.

Tim Mayo: So, we are having little or no growth?

Frank van Manen: Up to 2.2 percent growth. For a grizzly population, that is still growth. It's certainly not negative.

Tim Mayo: Substantially, it has leveled off compared to where it has been the 10 preceding years.

Frank van Manen: It has leveled off. As we mentioned numerous times, the population growth has slowed down; that is the proper interpretation. We have fairly strong evidence that density is a regulating factor.

Tim Mayo: When you are calculating the current population growth, is that based on the new formula for counting bears or the old formula or is that aside?

Frank van Manen: That is based on what we call known fate monitoring. We maintain a large sample of radio-collared bears in the ecosystem and from that we estimate survival of different age groups, fecundity, reproduction and those are the estimates that go into the estimate of population growth. The techniques that I showed earlier (Chao2 and Mark-Resight estimator) are confirming those same finding. We essentially have three methods that all corroborate that interpretation.

Tim Mayo: If we had a catastrophic event in the Greater Yellowstone Ecosystem, like the '88 fires or devastating drought, can you as an expert say how much we would see in population decline?

Frank van Manen: There is no evidence that the '88 fires affected the population size. I know what your asking, but there was no evidence of population decline after the '88 fires. In fact, population growth was very robust at that time, between four and seven percent.

Tim Mayo: So now, it has stabilized or slowed down so we have probably reached a capacity.

Frank van Manen: That's what we have interpreted in our findings. We have strong evidence that population is reaching carrying capacity and we are seeing density dependant regulatory effects starting to take place within the population.

Mark Erikson: Usually, this part of the session is done as public comment, not a question and answer session. I am not opposed to it but this is a very different use of this time.

Brian Nesvik: If you have a comment, provide a comment. If you have a question, we will try to address it quickly but we need to be respectful of others that want to make comments.

March 27, 2014, 8:00 a.m.

Committee discussion on location of YES meetings continued: Brian Nesvik

Brian Nesvik: Presented the following options for future YES meeting locations:

	Option 1	Option 2	Option 3
Fall 2014	Jackson	Cody	Bozeman
Spring 2015	Bozeman	Bozeman	Cody
Fall 2015	Jackson	Jackson	Jackson
Spring 2016	Bozeman	Bozeman	Bozeman
Fall 2016	Jackson	Cody/Jackson TBD	Cody

Steve Schmidt: When I consider similar ventures that Idaho Fish and Game has pursued in the past, we have learned that location is not as important as timing in terms of getting the public to attend. I suggest that, regardless of when we hold the meeting, if we are not going to hold an evening session, it would be difficult to get public attendance. We need to discuss our objective or what we hope to achieve by changing the location.

Brian Nesvik: I think the point is, since this is an ecosystem-wide committee, is to provide an opportunity for those that have an interest in YES to attend a meeting without having to travel five or six hours.

Mary Erickson: I will weigh in for option three because GYCC has made tentative commitments to Bozeman in recent listening sessions. We were trying to get to a pattern with Jackson in the fall based on the point that the cost of Jackson will be better in the fall.

Dan Wenk: I support Mary's position.

Brian Nesvik: At this point, I have heard more in favor of option three. Are there any other comments?

Steve Schmidt: I really do not care which option we choose, but I believe we should offer some opportunity for those who work during the day to come and comment at the end of their work day.

Brian Nesvik: I think that is valid.

Is there consensus for option three? Since there is consensus for option three, we will move forward with option three.

Committee discussion dates of fall YES meetings: Brian Nesvik

- Committee selected October 29-30, 2014 for the Fall YES meeting dates in Bozeman.

Improvements and efficiencies in GYE grizzly bear monitoring and management: Dan Thompson

- History of GYE Bears
  - 1889 – Bears gathered to feed on garbage
  - 1902 – Prohibited "hand-feeding" bears
  - 1910 – First reported incidents of bears seeking human food along roads
  - 1916 – First bear-caused human fatality
  - 1931 – Park quantified amount of conflicts
  - 1931-1969 – Annually averaged 48 bear-inflicted injuries, > 100 property damages
- Retrospective
  - 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
- "Status"
  - 2007 - The Yellowstone grizzly bear population was deemed recovered and delisted
  - 2009 - Federal District Court overturned the delisting
    - Regulatory mechanisms (overturned by appeal)
    - Impacts from declines in Whitebark pine
- Work Smarter and Harder
  - Revisions and Improvements
  - Obviously much has changed with how we do things since the Craigheads first had their station wagon rammed
- Adaptive Framework
  - Developed in order to use the most up-to-date techniques (this includes field aspects)
  - Implement the current data to assess population
  - Goal is to accurately portray the population status and trend
- Population Monitoring
- Capture
  - Trap site areas and monitoring
    - Behind gates, forest service closures, private land issues
    - Use of remote cameras to document animal usage of potential sites (non-target issues)
    - Signage of trap areas and trap sites
  - The SAFETY FACTOR
    - Paramount! Field crew, public, and animal
  - With large carnivores trap site location is top priority
    - Need to have placement in area of activity for target species
    - Safety issues (wandering people, crew, wildlife)
    - Visibility

        - Thermal regulation
        - Non-target issues (bears and wolves)
        - Release
    - Immobilization and site specific situations
        - Choice of trap type
    - Use of reversible immobilization drugs
        - Kreeger et al. 2013: *Use of carfentanil…*
- *A Bear in Hand*…
    - Genetic and disease monitoring
    - Oxygen
    - Body condition (bioimpedance analysis)
    - Ancillary
- Tracking
    - Collar types: VHF or GPS
        - Dependent on objectives and other factors
        - We DO NOT collar "just because"
    - Scale of assessment: Fine-scale or coarse?
    - What does and does not work?
- Movement Data
    - Habitat selection
    - Perceived versus real issues
    - Competition
        - Intraspecific, Interspecific
    - Relocation
    - Again to Safety (and $$)
- Leading to Real World Application
    - Distribution Analysis
        - Developed technique allowing for annual assessment
        - All verified locations used to develop distribution area
        - 38.3% increase in distribution from 2004 to 2010
            - Additional 6% increase from 2010 to 2012
    - Food Synthesis
- Conflict Resolution
    - Preemptive Strikes
        - Address situations before they become "issues", Identify areas using data and try to look to the future
        - Communication and dogged persistence
- Future
    - Expansion and education, ("Non-securable" attractants)
    - Public mindsets and tolerance
    - Roads and "paparazzi"

Whitebark pine monitoring in the Absaroka Beartooth Wilderness: Dan Tyers

Introduction and Preliminary Findings, 3 Northern GYE Whitebark Pine Projects

- Whitebark Pine, A long-term focus of:
    - Research and monitoring
    - Agency administration and action
    - Litigation
- 3 Northern GYE Whitebark Projects
    - Commissioned by Absaroka – Beartooth Coordinating Committee –1995
        - Managers from 3 Forests and 5 Districts
        - Wilderness Plan (1982) revision - Holistic Approach
    - 3 whitebark pine monitoring projects, sustained with outside funding
        - Regeneration – 1988 fires
        - Landscape level status
        - Condition change over time
    - Retooled for IGBST data synthesis report

1. "Regeneration of WBP in the Northern Portion of the Yellowstone Ecosystem Following the 1988 Yellowstone Fires"

    - Response of WBP to landscape-level fire
    - Natural versus agency seedling establishment (especially in wilderness)
    - Rust infection rates on seedlings
- Methods: 1998 & 2008
    - Sampling 10 and 20 years
    - 85 Burned WBP stands
    - 14.5 km marked transects
    - Conifers by species/size class
- Results
    - % of transects with WBP regeneration:
        - 1998 – 68.23%
        - 2008 – 96.47%
    - Median stems/ha on transects:
        - 1998 – 53.8
        - 2008 – 295.94
    - Total WBP seedlings on transects:
        - 1998 – 717
        - 2008 – 2,083
    - Rust on WB seedlings:
        - 1998 – No rust
        - 2008 – Rust on seedlings, 2 transects
- No relationship between seedling establishment rate and distance to unburned forest

- Found no evidence of the inability of natural vectors to re-establish whitebark pine, even with a fire at the landscape level

2. "Whitebark Pine Status in the Absaroka-Beartooth Wilderness"

- A landscape level "snapshot" of WBP condition: 2000-2005
- Linear Transect Protocol
    - 300 x 10 ft (91.44 x 3.1 m) Parallels contour
    - Size class
    - Damage status
- Methods
    - 300' x 10' belt transects, minimum of 50 trees
    - WBP by size and health status
    - Site characteristics
    - 1,537 transects completed, 147,030 trees represented
- Focused on:
    - Forest Structure
    - Rust infection rates
- (Interpolated) Infection Rates
- Results
    - Rust is ubiquitous
    - A few high infection areas
    - Tree mortality is low and isolated

#3. "Condition Assessment of Marked WBP in the Northern Portion of the Greater Yellowstone Ecosystem, 2008-2012"

- Methods
    - 115 Belt transects (91 x 3.1 m)
        - 4 Clusters
    - 3,385 Marked WBP trees assessed annually by size class
    - All unmarked seedlings
    - Assessed for rust, beetle, and weather damage
- Whitebark Mortality 2008-2012
    - 7 % of 1,444 saplings
    - 20 % of 1,029 poles
    - 39 % of 912 mature
    - 84% of mortality in pole and mature – beetle effects
- Survival rates varied significantly among transect groups
    - Survival rates were greater in high elevation areas
- Seedling density
    - Average densities > 800 (seedlings/ha/transect/year)
- Rust Effects

- Sapling: 17%, Pole: 27%, Mature: 26%
- Limb infections average <5% of tree
- Not important source of mortality
- No correlation between proportion of trees with rust and beetle kill

- Supporting data to IGBST Food Synthesis

Ungulate carcass transect monitoring in the Gardiner Basin, northern Yellowstone winter range: Dan Tyers

- IGBST report emphasis: Changes in WBP and other grizzly bear foods
  - Importance of ungulates to GYE bears including carrion
- GYE Grizzly Bear Conservation Strategy, Chapter 3: Habitat Standards and Monitoring
  - Winter-killed ungulates – spring survey routes:
  - 30 YNP
  - 11 Gallatin Forest
- Project Origin: 1988 Fires and the winter of 1989
  - Committed to Gardiner Basin Carcass Transect
    - Interagency Grizzly Bear Study Team
    - Northern Yellowstone Cooperative Wildlife Working Group
- To Expedite Summary –Montana State University Thesis Project, Brooke Regan
  - 25 year trends, Gardiner Basin
    - Spring carrion availability
    - Scavenging rates
  - Committee: Bok Sowell, Range Science and Frank van Manen, IGBST
- Carcass Availability and Scavenging Rates
  - Methods: 1988-2014
  - Traveled:
    - 11 transects, Every 2 weeks, March 1- June 1
  - Recorded:
    - Carcasses
    - Scavenging
- How effective are optimized routes for carcass surveys? Sidebar
  - Correlation with:
    - Systematic lines
    - Helicopter surveys
- Assess correlation with dynamic factors over 25 years
  - Wolf Reintroduction, 1995
  - Ungulate Demographics
    - Competition with grizzly bears
    - Minimization of “boom” cycles of carcass availability
  - Winter Severity
    - More ungulates die during harsh winters

    - Anthropogenic –
        - How do bears respond to higher road densities, horn hunter activities
        - Gallatin National forest vs. Yellowstone National park
            - Multiple use compared to exclusive jurisdiction
    - Grizzly bear demographics - increased numbers and distribution
        - Grizzly Bear Occupancy (3 km x 3 km cells)
- Preliminary findings
    - Number of carcasses on 11 optimal transects 1989-2012- great disparity
    - Proportion of carcasses scavenged annually by bears and wolves
        - Wolf use only in recent years
        - Few carcasses accessed by bears on that portion of Northern range
        - Surveyed transects every two weeks
    - Carcass appearance by month
        - Greater in March or earlier

Public Comment:

Comment by Brian DeBolt, Wyoming Game and Fish Dept: In reference to Dan Thompson's talk about improvements and efficiencies in grizzly bear monitoring and management; where we came from in the 1970's with grizzly bears (closing garbage dumps, improving monitoring methods, providing for human and bear safety) is just the tip of the iceberg as was evident in Frank's talk yesterday when he spoke about the rebuttal to Doak and Cutler. That was a relatively easy task because this group, everyone on the committee, the Study Team, etc., has evaluated each other and provided scientific review internally throughout this whole process, for almost 40 years now. These questions and concerns brought up by others were probably ones that we have discussed over time anyway. There is a lot of discussion and critique between agencies and partners and that is why we have been successful and are where we are at today.

This is a huge, monumental interagency effort and kudos should go to everyone. Everyone involved is genuinely concerned about the outcome and where we are going with this. We still have a lot of work to do. The cooperation within the agencies, from administration to field level, is working well and everyone should be proud of what has been accomplished. I encourage everyone to keep involved and keep the communication going. Also, the non-agency groups have been a big part of this as well. The system is working well.

Comment from audience: I respect all the agencies have done to get us to where we are today. I am concerned that there are some areas we need to explore before we make conclusions that are based on science and ecology on delisting. I don't see a study on the subalpine flower, with that ecosystem and how it is reacting to climate change. Certainly we have all be admonished by the federal government that we are now embracing that climate change is real and letting go of old policies and beliefs that we were right in terms of what may worked in the past and embracing what we value presently and how to go forward with that.

In terms of Dan Tyers, that was a moving talk about what is happening with the ungulates. What we all know for a fact is that, biologically a sow can mate and an egg fertilized, but it will not implant and grow into a fetus if she does not have enough fat reserves. In terms of the Synthesis report, there are four means of caloric intake for the bear, the one still remaining is the ungulate. So, we see the bears are eating meat; they have to be or they wouldn't be producing twins and triplets. So, what does that mean? What happens to the bears eating ungulates when, according to Dan, there were 20,000 elk, now there are 4000, at least in Region 3 in Montana. What's happening here when we have an old policy from 2007 that we are going to reduce our elk herd on the refuge to 5000 and magically believe that the other 6000 are going to live somewhere when we were 17,000 ten years ago. What is happening with elk production and what are the bears going to eat and specifically, what are they going to eat in Grand Teton National Park?

I think these studies are great but they are still ongoing and I have a few concerns that these decisions might be made in a rash way. It is a victory (where we are now) and let's be mindful of that. The earth is rolling. We are in a wave of change and we can't deny it. So do we make rash decisions fast based on the fact that they are opportunists and they eat a lot of meat? From 2007 to now, we have a huge increase in the number of bear mortalities at livestock sites because, that's right, they eat meat. So, let us be mindful of where we are.

Comment from Debbie McPherson: I just want to say thank you. I have lived here for five years, I volunteer for the Park and I will be a new volunteer for the US Fish and Wildlife Service. I love wildlife so much. I am so grateful for all of you and your hard work and the fact that I am allowed to be here and participate.

Meeting adjourned.

Meeting minutes prepared by Tara Hodges, Wyoming Game and Fish Department