

Spring 2013 YES Meeting Minutes - DRAFT
April 17 – 18, 2013
The Wort Hotel, Jackson, WY

Attendees:

Mary Gibson Scott, Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway
Steve Cain, Grand Teton National Park
Dave Hallac, Yellowstone National Park
Cheryl Probert, Bridger-Teton National Forest
Dave Myers, Beaverhead-Deerlodge National Forest
Brent Larson, Caribou-Targhee National Forest
Joe Alexander, Shoshone National Forest
Dan Tyers, U.S. Forest Service
Chris Iverson, U.S. Forest Service
Jane Cottrell, U.S. Forest Service
Pat Flowers, Montana Fish Wildlife and Parks
Steve Schmidt, Idaho Department of Fish and Game
Tom Ryder, Wyoming Game and Fish Department
Maureen Davey, Montana County Commission – Stillwater County
Leander Watson, Shoshone Bannock Tribes
Frank van Manen, USGS Interagency Grizzly Bear Study Team
Ann Bellman, USFWS – Wyoming
Nisa Marks, USFWS – Idaho
Chris Servheen, USFWS Grizzly Bear Recovery Coordinator
Cornie Hudson, BLM – Montana
Mike Stewart, BLM - Wyoming
Kate Wilmot, Grand Teton National Park

WELCOME – Mary Gibson Scott – Yes Chair

- We will be electing a new vice chair today from a federal agency.
- Introductions
- Motion to approve fall 2012 meeting minutes by Maureen Davey, seconded by Pat Flowers. *Motion carried*
- Motion to accept 2013 work plan by Tom Ryder, seconded by Cornie Hudson.
Motion carried

POPULATION STATUS UPDATE – Mark Haroldson (USGS IGBST)

The numbers we reported at the fall meeting were preliminary and more sightings of F_{COY} came in after the deadline and we had more mortalities reported.

- Recognized the partner agencies involved (NPS, USFWS, FS, WYG&F, MTFW&P, IDF&G, Wind River Fish and Game).

- I would like to remind the committee that we are currently under a protocol where we count F_{COY} within an area described as the Conservation Management Area (CMA) and we are currently using vital rates and population segment ratios that were derived from data obtained from 1983 – 2001.
- We are considering alternatives where we use sightings of F_{COY} within a modified version of the USFWS Suitable Habitat line and update the vital rates and population segments according to data obtained from 2002 – 2011.
- The area where we monitor population size (F_{COY}) and mortalities will be the same area.

2012 F_{COY} Observations

- 124 observations
 - o 78 Aerial (63%)
 - o 46 Ground (37%)
- 49 unduplicated F_{COY} (using Knight Rule Set)
 - o Mean litter size = 1.92
 - o Litter sizes
 - 14 single (29%)
 - 25 twins (51%)
 - 10 triplets (20%)
- 2 sightings of 2 unique female were observed outside the USFWS Suitable Habitat boundary line. (This will change the population size estimate slightly if we include them or exclude them).
- We are currently using the model average Chao2 estimate to generate a total population size. Under the current protocol, the population estimate for 2012 within the CMA was 610 animals.
- When we use the proposed protocol and count bears in a smaller area and use new vital rates that were derived from data obtained 2002-2011, we get an increase in the population estimate – 718 bears.
- The population estimate increases because the survivorship in the male segment of the population has gone up when using the most recent data set. This changes the age structure - there are a lot more males in the standing population than what we previously estimated.
 - o We have about 100 more males in the estimated population.

Mortality Limits

Under Current Protocol we:

- F_{COY} within CMA used for population estimate

- Count mortalities within CMA
 - o Mortality limits
 - 9 % for independent females
 - 15 % for independent males
 - 9 % for dependent young (human-caused only)

Under Proposed Protocol we:

- F_{COY} sighted within USFWS Habitat Line (2012) used for population estimate
- Count mortalities occurring within USFWS Suitable Habitat Line (2012)
 - o Mortality limits
 - 7.6 % for independent females
 - 15 % for independent males
 - 7.6 % for dependent young (human-caused only)

Known and probable mortalities 2012

- 54 known and probable mortalities during 2012
 - o 34 human-caused
 - o 19 natural
 - o 1 undetermined cause
- 2 (both M) outside current count line (CMA)
- 9 (4 F, 5 M) outside proposed count line (USFWS Suitable Habitat Line 2012)
- 1 additional known mortality from 2011
 - o Undetermined cause
 - o Sex determination pending DNA results
- When we evaluate mortality thresholds, we were under mortality limits for independent aged females both in the current protocol and the proposed protocol.
- We exceeded male mortalities under the current protocol but were under the mortality limits using the proposed protocol.
 - o Reason we are under for proposed protocol is that we are not penalizing ourselves by counting male mortalities that occur outside the USFWS Suitable Habitat Line.
 - These males have left suitable habitat and are expanding into areas where they maybe can't make a living.

Questions:

Dave Myers: In terms of the Beaverhead-Deerlodge NF and the Gravelly Mountain Range where female grizzly bears with cubs have established themselves, how are you going to count bears that are clearly established but out of the USFWS Suitable Habitat

Line? And how will you look at that in consideration of the trend in population even though it is outside?

Mark Haroldson: Bears have been expanding for 3 decades now and we keep chasing our tail on that expansion and we know that bears are going to continue to expand. We are primarily concerned with what we consider an adequate area for a source, or a core, population. We feel that the USFWS Suitable Habitat Line meets this need. If we can monitor the population in the core area and stay within sustainable limits within that area, then bears can continue to expand outside of this area and [if they die] they won't be counted against our thresholds for the source, core population. We are not sampling the entire CMA area for F_{COY} . We get incidental observations and we use them but don't have systematic search efforts through that whole area. We are not counting F_{COY} if they occur out there but we are counting mortalities. We are trying to fix that.

Dan Muscatel: Of the 34 bears killed by humans - do you separate the causes?

Mark Haroldson: I don't have that breakdown in my head. The three biggest sources of human-caused bear mortality last year were conflicts with ungulate hunters, livestock conflicts, and site conflicts. There was a lot of natural mortality documented in 2012 – more than normal. Specific mortality causes can be found on our website.

Tom Mangelsen: Can you say that this new way of counting and estimating the population was purely a scientific one, or one that was related more to increasing the population knowing that when you went into it?

Mark Haroldson: We used the same estimator and same methodology; we have updated our vital rates because they have changed. Data from 1983-2001 suggested strongly that the population was growing at 4-7% a year. From 2001 to present, our data suggest that the population is stable to slightly increasing (0-2% increase a year). Biggest change in those rates was male survivorship, between 1983-2001 male survivorship was about 85% a year, now it is the same as female survivorship, and it has gone up to 94% per year. This has resulted in a change in the standing age structure. We have more males in the population and this is the biggest change. The methodology we are using is exactly the same, the rates have changed that we plug into that methodology. As far as the area we are counting, we are trying to count bears for a population estimate and count mortality against that population estimate in the same area, and this is the big reason for a change in the count line. A lot of the places where we are counting mortalities are in areas that are not suitable for occupancy – bears would not be able to make a living in a lot of that country.

Public: In the area that you are talking about, is there a maximum amount of bears? Do you feel that we have too many?

Mark Haroldson: We have a fairly strong indication that in the core area we are probably at the maximum, that we have reached carrying capacity.

Tom Ryder: This is probably intuitive to everyone, as this proposal to move the count line to the USFWS Suitable Habitat Line goes through the process, mortality outside this line will not count and neither will sightings of live bears.

Louisa Willcox: Of the males that exceeded the threshold using the old method, how many bears were you over?

Mark Haroldson: We were 10 over.

UPDATE: MARK-RESIGHT POPULATION SIZE ESTIMATOR – Frank van Manen
(USGS IGBST)

Acknowledged the agencies that have participated in this effort.

Why do we need a new estimator? Why are we looking at this question?

- We know our current estimator is biased low.
 - o The Chao2 estimator is a statistical term and it based on a protocol that D. Knight developed with his team. It was to separate unique females with cubs of the year from one and another. A lot of the rules that were built into this were based on distances.
 - o At a certain point you can't fit many more females in the ecosystem because the distance rules don't allow you to identify additional ones even though there are some out there.
 - o Not every female with cubs has the same probability of being observed.
 - We applied the Chao2 estimator to adjust for this
 - o We assess the trend over time.
 - o The problem with this approach is that it is underestimating and this bias of underestimating gets amplified as the population becomes more dense.

After three workshops, the technique that we came up with as an alternative to the current estimation was based on the Mark-Resight.

- This would allow us to take advantage of data that we started to collect in 1997 (2 aerial observation flights throughout the ecosystem every year) and because we also have a sample of marked animals (females with a radio collar).
- We know how many marks are out there and by observing the number of animals that have marks vs. the number that don't have a radio collar we can apply pretty standard capture-recapture techniques that we typically use in wildlife management to arrive at a population estimate that doesn't have that bias.
- We are doing 2 surveys per Bear Management Unit per year

- o We look at the proportion of marked F_{CUBS} seen 0, 1, or 2 times.
- o Then we determine the sightability by combining all the years and we then determine what the probability is of sighting marked animals.
 - If you have this information then you can start estimating what the unmarked portion of the population is.
- o Approximately unbiased estimate.

Dr. Megan Higgs, Gary White, Bill Link, Mark Haroldson, and Dan Bjornlie worked on this method.

- Technical article submitted to *Journal of Agricultural, Biological, and Environmental Statistics* - revised manuscript in review.

Mark-Resight Assumptions

We feel very confident in the first 3 assumptions:

1. Probability marked F_{CUBS} seen 0, 1, 2 times is similar across years.
2. Closed population (no deaths of F_{CUBS} between 2 observation flights).
3. Probability of sighting marked F_{CUBS} same as unmarked F_{CUBS} .

This last assumption is where we have some concerns.

4. Geographic distribution of marked bears representative of population.
 - o We have a very good distribution of marked bears throughout the ecosystem, except in some of the more remote areas, especially around the moth feeding sites.
 - o Females with cubs are observed at the moth sites but we cannot get in there to capture them.
 - o If we apply the estimator to the population without addressing this issue we would actually be overestimating the population.
 - o The solution we came up with is to exclude the moth sites from the aerial surveys and instead do an actual census because they are very observable in these areas.
 - o So we have excluded these areas around the moth sites from the Mark-Resight estimate.
 - o We then add the number of F_{COY} that we actually observed from our aerial counts to the Mark-Resight Estimator.
 - o This has been ground tested and the estimates were right on.

Is this resulting in an unbiased estimate?

- Based on simulations that Megan Higgs did with a known population of 50 animals we have an estimate that is now unbiased.
- If we project this estimate over time, and after some smoothing, we see some variation from year to year, which we also saw in our previous method.

Mark-Resight Considerations

- Small number of sightings of marked F_{CUBS} affects precision.
 - May include females with yearlings to increase our sample size.
- Smoothing of trend line effective.
- Radio-marked sample of adult females must be maintained.
- Annual observation flights must be continued and moth site only surveys must be added.

This is just another tool in our toolbox, a much less biased estimator that will help us determine population status. We will be using the other monitoring techniques that we have been using and we will use this as another tool.

Questions

Maureen Davey: Is there competition with others for the moths?

Frank van Manen: No competition.

Bonnie Rice: When is the Megan Higgs et al. paper going to be available to the general public? Do you expect it will be available outside of the public comment period for the proposed change?

Fran van Manen: Revised manuscript was submitted 3-4 weeks ago, I would imagine in the next 2-3 months. It is hard to predict.

Steve Cain: Using this technique is not part of the proposed change undergoing public comment right now.

Louisa Willcox: Will there be an opportunity for public comment on this new method as was done for the Schwartz method adopting Chao2?

Frank van Manen: We are using the best available science and there may be other techniques we want to use in the future. My assessment is that we use the best available science and if this gives us a better, less biased estimate, we should move forward with it.

Dan Muscatel: Are the moths cyclical?

Frank van Manen: Doesn't seem to be. There is certainly some variation in terms of the number that are available from year to year. This is something that we would be interested in monitoring in the future. We have seen more use of this resource in the last few years.

UPDATE: GYE GRIZZLY BEAR FOODS SYNTHESIS – Frank van Manen (USGS IGBST)

Acknowledged and thanked individuals and agencies that have participated in this effort.

Background: We are looking at a changing food dynamic, the changing availability of different food types (e.g. whitebark pine (WBP) and cutthroat trout), and are dealing with a very complex landscape. We couldn't just look at WBP as everything is inter-related.

What we are curious about is where are we moving when talking about grizzly bears in this ecosystem?

- Are we moving from a system where we have a high density of food and it's getting less and there is no impact on grizzly bears or are we at a point where the calorie intake is affecting grizzly bears?

We tried to take a holistic approach and look at all the factors that might influence how grizzly bears respond to the dynamic situation of food resources in the ecosystem.

- The best way to measure this is the population trajectory – what is happening to the population overtime as the ecosystem changes.
- One way to measure what is happening with the population trajectory is to look at vital rates (e.g. survival of cubs, yearlings, and independent aged animals and reproductive parameters) and these parameters contribute to annual population growth (λ) and that is the population trajectory.
- Food resources obviously affect these vital rates but anthropogenic factors also interrelate with them.
- As certain food resources disappear bears may become more or less vulnerable to mortality from anthropogenic reasons.
- There may also be a component of density dependence; we know this population has been expanding (growing) for a number of decades.
- As for any population of any species, at some point some sort of density dependence effect might be occurring. We felt that it was important to look at that as part of this holistic approach.

Food Resources

WBP Status and Trend

(Kristin Legg, Kathi Irvine, Mary Mahalovich, Dan Tyers)

Primary interest:

- Overview of WBP ecology.

- Trends in tree mortality.
- Impact of mountain pine beetle (MBP) and blister rust on tree mortality.
 - o For trees that didn't show any evidence of MPB there was a low probability of mortality due to blister rust.
 - o For trees that did have evidence of MBP and blister rust in the bole then there was added mortality.
 - o Larger age classes are mostly affected by MBP. If there is blister rust in the bole there is additive mortality, especially in the younger age classes.

Grizzly Bear Diet Breadth

(Kerry Gunther, Rebecca Shoemaker, Kevin Frey, Mark Haroldson, Steven Cain, Frank van Manen)

Literature search 1891-2012

- 234 species consumed
 - o 75 frequently
 - o 153 opportunistically
 - o 6 incidental
- Manuscript submitted to *Ursus*

Trend in Carcass Use

(Mike Ebinger, Mark Haroldson, Frank van Manen, Jennifer Fortin, Shannon Podruzny, Justin Teisberg, Kerry Gunther, Steven Cain, Paul Cross).

- We have seen some evidence of an increase in ungulate consumption from a recent study around Yellowstone Lake by Jennifer Fortin.
- Grizzly bear consumption of cutthroat trout declined as fish populations declined due to introduction of Lake Trout; bears compensated by increasing consumption of neonatal elk calves.
- It makes sense for us to look at what the rate of carcass use is over time. Has it changed?

We have developed some new algorithms to identify carcasses from grizzly bear GPS data.

- 2004-2011 data
- Spatial clustering algorithm of GPS data
- Identified 174 clusters with known activity resting, multi-use, 3 classes of carcass size
- 88% correct classification of large carcasses
- Further analysis to examine changes in rate of carcass use in relation to WBP seed production

Selection of WBP Habitat

(Cecily Costello, Frank van Manen, Mark Haroldson, Mike Ebinger, Steven Cain, Kerry Gunther, Daniel Bjornlie).

Are there changes in the selection for WBP over time? Are there changes in a poor vs. a good WBP year? Do we see differences in selectivity? If there is an effect from the decline of WBP over time and are we seeing an impact in terms of reducing selectivity for that forest type as it becomes less important to bears?

- 2000-2011 data
- 52,332 GPS locations
- 89 bear-years
- WBP foraging season (15 Aug-30 Sep)

Trends in Body Condition

(Charles Schwartz, Jennifer Fortin, Mark Haroldson, Christopher Servheen, Charles Robbins, Frank van Manen).

- 2000-2010 data
- Body mass
- % body fat
- Assimilated diet (using stable isotope analysis)
 - o We can determine how much of the assimilated diet is animal matter and has that increased over time, stayed the same, or decreased over time?
- Manuscript submitted to *Journal of Wildlife Management*.

Density Dependence

(Daniel Bjornlie, Daniel Thompson, Frank van Manen, Mark Haroldson, Michael Ebinger, Cecily Costello)

- We chose to focus on trends in home ranges because this shows a strong relationship with density dependence and it therefore a good measure for us to investigate this aspect.
- Changes in resources vs. density dependence – how might this effect home range size of grizzly bears?
 - o Pre-impact (1989-1999) and WBP impact (2007-2012) periods.
 - o Compare home ranges between these periods.

Anthropogenic Factors

(Mark Haroldson, Frank van Manen, Mike Ebinger, Megan Higgs, Daniel Bjornlie, Kerry Gunther, Kevin Frey, Steve Cain, Bryan Aber)

- Primarily looking at mortality.

- We are seeing some changes in mortality.
 - o More mortalities outside the recovery zone.
 - 1975-1982: 9% outside RZ
 - 1993-2002: 32% outside RZ
 - 2003-2012: 46% outside RZ
 - o 85% of female mortality and 61% of male mortality occurs during the fall.
- We wanted to see if vulnerability to mortality changes as a function of changing resources.

Vital Rates

(Frank T. van Manen, Mark Haroldson, Mike Ebinger, Daniel Bjornlie, Daniel Thompson, Cecily Costello, Gary White)

- Finally, we wanted to see if we could specifically link effects of density dependence vs. changes in resources to measures like survival of cubs/yearlings for example.
- This would give us the best evidence whether something is changing in the ecosystem that ultimately might affect the population trajectory.
- Doing this by looking at parameters such as survival, reproduction, and annual population growth.
- Developing 2 new covariates:
 - o Index to measure changing bear density in the ecosystem.
 - o Index to measure changes of WBP on the landscape over time.
 - Best information available is 2009 “snapshot” (MacFarlane et al. 2010).
 - Classified into WBP impact classes (Landscape Assessment Scores (LAS scores)).
 - Useful for certain analyses.
 - Realized that we needed an **annual, spatially-explicit** measure.

So we spent quite a bit of time developing this.

- We decided to use MODIS SENSOR data.
 - o NASA satellite data that covers the time series that we were interested in: 2000 (beginning of the WBP decline) through 2012.
 - o 250 m x 250 m pixels.
 - o 16 DAY composite images give 23 scenes / year.
 - o NDVI: measure of vegetation health.

Synthesis Report

- Synthesis of:
 - o Spatiotemporal dynamics of grizzly bear foods.

- o Ecological plasticity of grizzly bears in the GYE.
- Report write-up while submitted journal articles are undergoing peer review.
- Completion date: October 2013.
- Follow USGS peer review policy.

Questions

Louisa Willcox: Can you explain what you think is going on with the WBP graph you showed using the MODIS method?

Frank van Manen: That is a good question and I should probably clarify that. This graph belongs to this pixel. There are thousands probably millions of pixels in the ecosystem. Each pixel represents one area within the ecosystem. Each would have its own graph. 2007, 2008, 2009 is when the decline started in this pixel - it may be a different year in a different pixel.

Louisa Willcox: Can you say anything about what you think is going on ecosystem wide at this point?

Frank van Manen: Unfortunately not. We are still testing this so we have not applied it yet to the entire ecosystem. We really want to do this.

- We were able to do a lot of analyses, sometimes on very different research topics, and the reason we were able to do this in a relatively short time is because we have the long term databases. The people that started all this decades ago had incredibly good foresight to do this. I can't think of another ecosystem where we have this much good information that we can tap into and do these types of analyses almost on the spot.

Louisa Willcox: So is the major way you are looking at density dependence view this change in population? (1hr14min – can't quite figure out what she said)

Frank van Manen: That is one way and the other powerful way would be to look directly at survival estimates, reproduction, and ultimately population growth as well.

DISTRIBUTION OF GRIZZLY BEARS IN THE GYE – Dan Bjornlie (WYG&F)

Methods to Estimate Grizzly Bear Distribution in the Greater Yellowstone Ecosystem

- Past Efforts to Estimate Distribution 1973-1979 (Basile 1982)
 - o Composites of locations on 10km x 10km grid
 - o Ground & aerial reconnaissance
 - o Time lapse cameras at bait stations
 - o Opportunistic sightings and sign
 - o Biased toward observable sites and high human use

- Past Efforts to Estimate Distribution 1980-1989 (Blanchard et al. 1992)
 - o Locations of females with young on 10km x 10km grid
 - o Divided ecosystem into 5 subunits
 - o Verified sightings, mortalities, and captures
 - o Increases to east and south of core
 - o Biased toward high density areas
- Past Efforts to Estimate Distribution 1990-2000 (Schwartz et al. 2002)
 - o Used Kernel Density Estimator
 - o “Home ranges” of radio-collared individuals
 - o Composite kernels of locations of conflicts, mortalities, and F_{COY}
 - o Increases in distribution to the south and southeast
 - o Excluded observations of unmarked bears other than F_{COY}
 - o Time-consuming analysis
- Past Efforts to Estimate Distribution 1990-2004 (Schwartz et al. 2006)
 - o Same technique updated to 2004

New Methods to Estimate Distribution

Objective: Develop a simple technique to document distribution that used all verified grizzly bear location data, to be updated regularly as the grizzly bear population in the GYE expands.

- Created a 3km x 3km grid based on movement radius of male grizzly bears (based on paper by C. Schwartz where he found the average daily movement radius of male grizzly bears was 1.5km).
- Overlaid grizzly bear locations onto grid
 - o Used 1990-2004 data from Schwartz to compare to new technique ($n=45,629$)
 - o Used all verified location data from 1990-2010 for new distribution ($n=293,660$)
- Any cell with ≥ 1 location for years in question was given a value of 1, all other cells were given a value of 0
- To account for unoccupied cells within “known” distribution, summed values of center cell and all 8 neighbor cells
 - o Each cell had possible value of 0 to 9

Occupancy Modeling

- First tried occupancy modeling to get probability of occupancy for each grid cell
 - o Based on neighborhood sum
- Difficulties with occupancy modeling

- o What is cutoff value?
- o Probabilities change with sample size
- o False occupancy due to outliers

Kriging

- Kriging to interpolate distribution based on center point of cell
 - o Also based on neighborhood sum
- Predicts a surface between points with values ranging from 0 to 9.
- Can display only values ≥ 1

New Methods to Estimate Distribution 1990 – 2004

- Krig area = 36,364 km²
 - o Kriging actually follows data points much more closely and is overall is a better technique for not overestimating the distribution.
- Schwartz kernel = 37,258 km²

New Methods to Estimate Distribution 1990 – 2010

- 2010 Krig area = 50,280 km²
- Increase of 38% from 2004 kriging estimate
- Most expansion since 2004 to north and south
- Moving into Wyoming Range
- Down Teton Range south of Teton Pass
- Farther down Wind River Range
- Filling in suitable habitat

Conclusions

- Simple enough to be done regularly – land management applications.
- Able to use all verified data – tracks, verified sightings, DNA, telemetry, mortalities, conflicts.
- More objective and 'faithful' to the data.
- Use past 15 years of location data.
 - o Enough data for adequate coverage.
 - o Not too much to create areas of false distribution.
- 2012 update after publication of technique.

Questions

Lousia Willcox: Just wondering about follow up steps using this data? Is there discussion of evaluating where food storage orders are or are not based on this new distribution data and secondly the level of habitat security or protections afforded to bears?

Dan Bjornlie: The Forest Service can do what they want with this data so these questions are better suited for someone with the Forest Service.

UPDATE: DELISTING AND NEW DEMOGRAPHIC MEASURING CRITERIA – Chris Servheen (USFWS)

We are proposing to update the demographic criteria in the Recovery Plan based on the information presented by Frank and Mark that came out of several workshops that were done by the IGBST – these are demographic updates in the demographic section.

- In order to update the Recovery Plan we put it out for public comment (March 21 – May 21). The details of those proposed changes are what Frank and Mark talked about here.
- If you are interested in this and are not aware of this you can Google “FWS Grizzly Bear Recovery Yellowstone.” This will take you to a page where the Federal Register notice is as well as the proposed changes and the scientific basis for those changes.
- This is also undergoing peer review simultaneous with public comment.
- When the public comment period is closed, we will take peer reviewer comments plus the public comments and try to update and change the proposed changes as necessary based on the information submitted by the peer reviewers and public.
- Then we will finalize these changes sometime this summer.

Delisting Issue

As was explained at the fall meeting of the subcommittee, we agreed to evaluate this issue of whether declines in WBP are going to affect the survival of grizzly bears in the Yellowstone system. We agreed that the best way to do this was for the IGBST to proceed on this synthesis of what we know about changes in food supply and what we know about vital rates for grizzly bears in the system. Frank went through all the details of that.

- That synthesis process is underway and it will provide a series of chapters on all the detailed examples that Frank talked about as well as weaving all those together - What does it all mean?
- This will be finished by Oct of 2013.
- At this point, we will all sit down and look at that and make a decision as to whether that information will allow us to better explain to the courts that declines in WBP do not affect the future of the grizzly bear.
 - o We can either make a decision that we can explain it, or the results may lead us to determine that we can't explain it for the suitability of the court.

Grizzly bears were delisted in 2007, overturned in 2009, and it was appealed to the 9th circuit. The 9th circuit sustained the USFWS on all the issues except the issue of declines in WBP. The 9th circuit said the USFWS hadn't adequately explained how declines in WBP wouldn't threaten the future of grizzly bears in the Yellowstone system.

- The food synthesis will allow us to make an informed decision regarding WBP. If the food synthesis supports it, we will proceed on a new rule in 2014.
- If we propose a new rule it will go out for public comment and peer review prior to a final decision on delisting.

Questions

Pat Flowers: So are you thinking spring 2014?

Chris Servheen: If we did propose a new rule it would be sometime in 2014 but I can't say exactly when. We would use the existing rule we have and add and enhance any necessary parts and certainly enhance the WBP part. The next decision point is whether we proceed and develop a new rule, or not, and that will be determined this fall.

UPDATE: GYE FOREST SERVICE CAMPGROUND ASSESSMENT – Dan Tyers (USFS)

In response to the 2010 grizzly-caused human fatality in *Soda Butte Campground – Cooke City, MT* and an ecosystem-wide trend of increased grizzly bear numbers and distribution.

- 164 Campgrounds Surveyed
- Literature Review
 - o Factors that affect bear/human interactions at campgrounds
 - o Management/Mitigation options in response to above factors
- Infrastructure Summary and Calculations
 - o For example: 924 bear boxes in 2970 campsites in Forest Service Campgrounds (GYE – Wide)
- Conflict Potential Model and Calculations
 - o Campground Habitat Assessment Model
 - Occupancy x Conflict Risk = Campground Assessment Model
 - Bear presence (avg. over 21 years) x Human Activities (avg. over daily activity radius of female grizzly) = Conflict Potential
 - o Prioritized campground project list

What's Next?

- Line officer review of management/mitigation options for priority campgrounds
 - o None

- o Closures- all, loops, sites
- o Restrictions- seasonal, area, type of camping
- o Increase agency presence
- o Fencing
- o Remove hiding cover
- o Lighting
- o Campground design
- o Prompt response to bear activity
- o Attractant storage
- o Information and education
- Address shortfalls in infrastructure GYE – wide

Questions

Louisa Willcox: Were there any areas that popped out? The reason I ask is that there are several NGOs that are interested in working on conflict reduction. It would be nice to know where the needs are.

Dan Tyers: There are disparities across the ecosystem in where infrastructure is placed in the campgrounds and there is good reason for this. There are locations on the edge of the ecosystem where we haven't made investments and these data highlight those campgrounds. Yes, there will be potential for partnerships with NGO's.

Lousia Willcox: How will this report be released?

Dan Tyers: I will aggregate everything that has been collected to this point and put it in the hands of the Forest Supervisors for a last review and then they will determine the timing and mechanism of dissemination.

Brent Larson: We now have a database with all the information and an updated distribution map and we will now take that list and each unit will develop a list of their priorities. We are not going to get infrastructure in every campground overnight and we realize this. We need to start working through the list over time. This is the first time we have had a comprehensive snapshot of what our infrastructure is at every campground across the Greater Yellowstone Area.

Dave Meyers: For example, on the Tobacco Roots, not occupied by grizzly bears that we know of, but is just a stone's throw away from occupied grizzly bear territory. We do have 3-4 campgrounds there. This is going to be an area that I can look at and use this information and I want to have the public prepared and put some boxes in place so I don't automatically end up with a conflict.

Joe Alexander: Another thing about this – there is a lot of data within what Dan collected. We want to make sure we understand it fully and we present it right because it is easy to misinterpret. The campground may have all the mitigations in place but it still scores high in terms of potential for interaction between bears and humans.

Cheryl Probert: This allows us to work together to maybe leverage resources with partners and other sources of funding that we may have.

Pat Flowers: It would be helpful for this committee in a year from now to hear from the individual forests on how you are using the data.

Kerry Gunther: The two National Parks have the same issues and both parks have donation programs through our foundations where you can donate money that we use to purchase bear boxes to install in our campgrounds.

INTERAGENCY GYE GRIZZLY BEAR CONSERVATION TRAINING – Dan Tyers (USFS)

Commissioned by the GYE Forest Supervisors with support from the Yellowstone Ecosystem Subcommittee Executive Group.

- Capture the corporate knowledge of the “old guard.”
- Train and inspire the “next generation.”
- Provide clarification and guidance at an historic point.
- Affirm the interagency construct of YES.
- Followed by a companion desk reference with additional chapters Summer 2013.

Schedule

- May 13, Monday – Travel to Idaho Falls
- May 14, Tuesday- Idaho Falls, Forest Service SO conference room, Idaho representative present
- May 15, Wednesday- Jackson, GTNP headquarters conference room, WY representative present
- May 16, Thursday- Travel to Bozeman
- May 17, Friday- Bozeman, MTFWP R3 conference room, MT representative present
- May 20, Monday-Travel to Cody
- May 21, Tuesday- Cody, Public Library, WY representative present

Agenda:

9:00- 9:40 (40 minutes) History of grizzly bear management (Jim Claar)

9:40-10:20 (40 minutes) Grizzly bear ecology and behavior (Chuck Schwartz)

10:20-10:35 (15 minutes)-BREAK

10:35-11:15 (40 minutes) Major food types and ecosystem changes (Frank van Manen)

11:15-11:45 (30 minutes) Bear identification and reporting (Chuck Schwartz)

11:45-12:30 (45 minutes)-LUNCH

12:30-1:10 (40 minutes) Methods of estimating grizzly bear population and distribution (Frank van Manen)

1:10-1:50 (40 minutes) Effects of human activities on grizzly bears (Dan Tyers)

1:50-2:05 (15 minutes) BREAK

2:05-2:35 (30 minutes) State roles and conflict management (Kevin Frey, Mark Bruscano or Bryan Aber)
2:35-3:05 (30 minutes) National Park Service conflict and habitat management (Kerry Gunther, Kate Wilmot)
3:05-3:20 (15 minutes) Federal agency roles and responsibilities (Dan Tyers)
3:20-4:00 (40 minutes) Conservation Strategy-standards and monitoring protocol (Lisa Landenburger)
4:00-4:15 (15 minutes) Summary (Dan Tyers)

UPDATE: INFORMATION AND EDUCATION – Kate Wilmot (GRTE)

IGBC 2013 I & E Funding (Including Supplemental Funding via Wildlife Management Institute)

- IGBC received 20 proposals requesting about \$72,000
 - o \$17,500 Off-the-top Funding to 3 projects
 - o \$9,000 to the Yellowstone Ecosystem Subcommittee

New IGBC Logo selected



Review of Dr. Austin's key findings from her 2012 research in GRTE/YELL:

Dr. Austin presented at the fall YES meeting in Bozeman. Her final report was submitted in February of 2013 and what follows are her key findings:

- "The messages throughout the ecosystem should *not* be identical - branding is most effective when it is context-specific and salient for the intended audience. Thus, various stakeholders in the GYE (federal and state agencies) can maintain autonomy regarding bear safety messaging in their jurisdictions, while promoting an effective (i.e., cohesive and persuasive) message for outdoor enthusiasts...."
- Provide data-driven warning signs for visitors.
- Only post "Bear Attack" and other danger-level signage in areas where actual bear encounters have been reported - do not use locations like gift shops, gas stations, etc.

- Create different levels of signs according to threat level in order to slow habituation and attract attention.
- In non-threatening locations use informational, proactive messaging instead of fear messaging.
- Have trailhead signs posted with actionable behaviors that can be performed at that point.
- Utilize graphic design best practices when choosing specific symbols, wording, coloring, channel, and context for signs and posters.
- Make sure all signage is durable and weather resistant.
- Encourage independent agencies and their employees to strive to be 100% consistent in delivering, modeling, and enforcing bear-safe behavior.
- Design the environment and behavioral systems to make it easy for people to comply with regulations.
- A consistent ecosystem-wide safety message and logo - a "Be Bear Aware" brand is an excellent idea.

Future Research

- Find out what visitors think/feel about the probability of bear attacks? The severity of possible bear attacks? Their perception of their own safety while in the GYE?
- Find out where people get bear-related info, and how/when are their attitudes regarding bear safety formed?
- Do better testing regarding the signage that's currently in the park. Longitudinal observational research would be great, as would experimental conditions (testing different designs, language, location, etc. of educational & warning materials).

Update on Gregg Losinski's International Exchange

As part of an exchange grant funded by the International Bear Association for Research, Gregg Losinski is in the Carpathian Ecosystem in Slovakia meeting with university students, community members, NGO's, and government officials to help promote the advantages of a proactive education and outreach program.

- Hoping to create support for utilizing the retrofit design for existing trash containers to reduce human-bear conflicts (Slovak Wildlife Society, Alertis, Grizzly Bear and Wolf Discovery Center, Haul-All, YES member agencies).

FIELD USE OF ELECTRIC FENCE FOR FOOD STORAGE – John Gookin (National Outdoor Leadership School (NOLS))

Working on electric fences since 2001 and acknowledged all those that have helped with this research.

- NOLS has spent about \$100,000 on this so far.
- Talking about a mesh person-packable food fence (6-7lbs for the kit), not a camp fence.

Human Safety

- The amount of current we are using with these energizers is not a human safety problem – there are some human safety concerns with much hotter electric fences.

Fire hazard

- Powerful electric fences create a **possible but improbable** mechanism to start a fire. This is just not an issue with energizers in the 0.1-0.2 joule range.

Convenience of electric fences for backcountry food storage

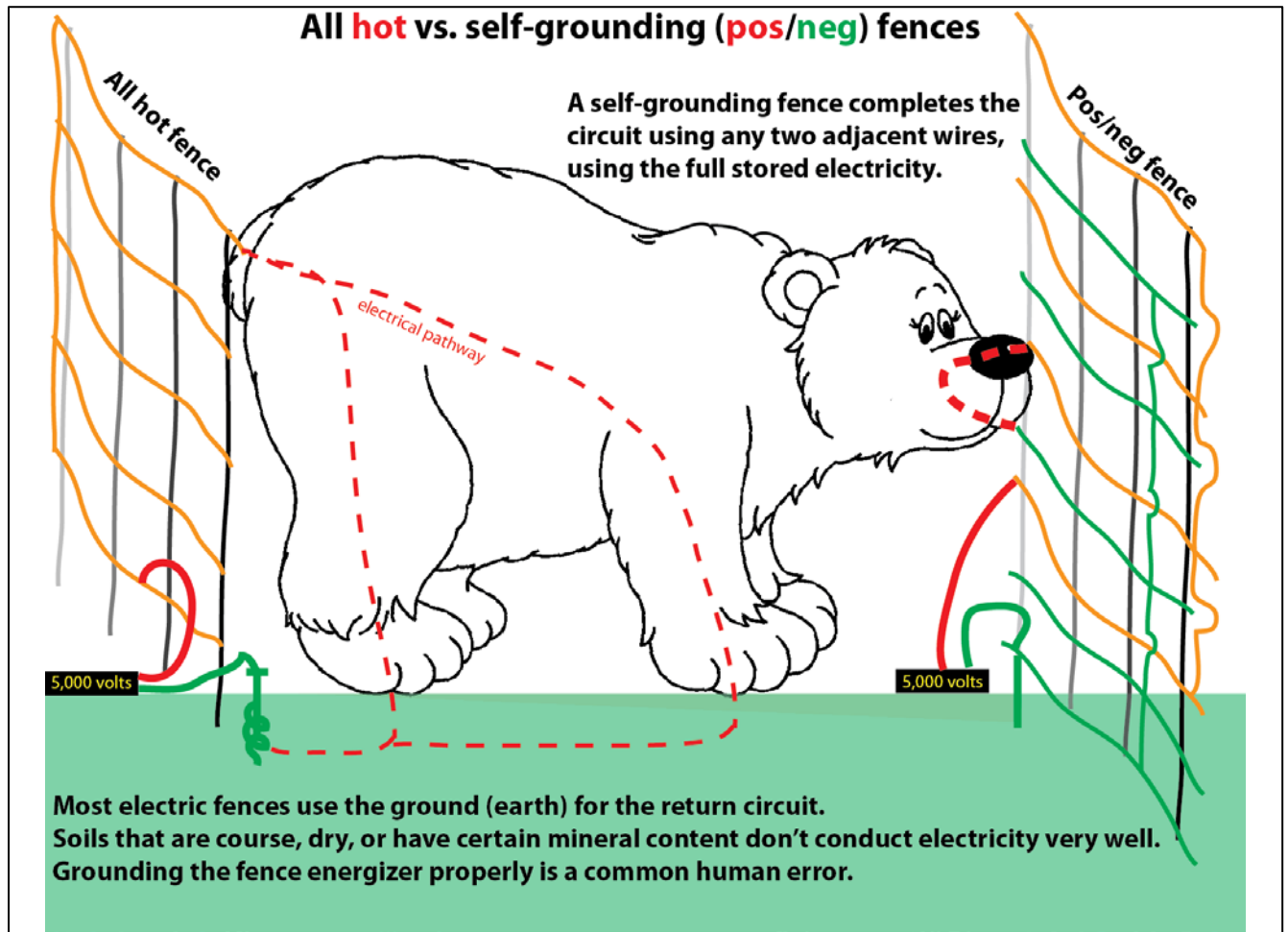
- A typical NOLS course has 12 students & 3 instructors on a 30 day expedition, getting re-rationed twice. Each 10 day food ration weighs 300 pounds.
- A bear hang in wilderness for 300 pounds of food takes an hour or two to build and involves human risk.
- Bear resistant food containers (BRFCs) can't hold this much food. It is unrealistic to backpack with 2-3 BRFCs each.
- The electric fence weighs 6 pounds and sets up in a minute or two in almost any flat location. One person in each group carries the fence.
- Bonus: Electric fences provide a negative stimulus to bears who have decided to approach humans' food.
- NOLS still teaches bear hangs as part of the bear camping curriculum, but the fences save dozens of hours we used to spend doing routine bear hangs.

2001-2003 Fence Development

- WYGFD (Brian DeBolt & Mark Bruscano) tested early prototypes and reported great success with problem bears. These were just smaller versions of portable fencing they were already using for managing bears.
- Fences were extremely light but required 15 minutes of construction and breakdown at each site.
- Energizers tended to break but were rebuilt and ruggedized.
- IGBC requested testing with captive bears that were habituated to electric-fences. These bears generally tried to go under fences. They appeared to feel the electric field with the skin on their noses.
- Bears learn more if they sense the fence before getting the negative stimulus. Stu Ellins (Animal Behaviorist) recommended we use a scent, but due to bear baiting controversy we decided to use marker lights.
- Marker lights cost a couple bucks each and they put 3 on a fence.

- Prior to adding marker lights in 2004, we had approximately 5,000 fence nights and 5 fence knockdowns. Once we added marker lights we have had 20,000 nights with no fence knockdowns with 2 exceptions where people turned the marker lights off.
- Five fence knockdowns in >5,000 fence nights.
 - o Caused by 2 bears, one deer, one elk, one unknown
 - o No food lost to bears related to knockdowns
- Bears got our food twice:
 - o A known problem bear took 5 food bags from within a fence on bare sand on the Salmon River, ID. The hot wire was incorrectly clipped to a ground wire. The campers recovered all five bags of food from the bear. (9/03)
 - o A young male black bear took a horsepacker's lunch bag near Trail Lake, WY- the energizer had a broken solder joint. (8/03.SK)

We eventually went from an "All Hot" fence to a self-grounding (pos/neg) fence.



Soil conductivity barrier for “All Hot” fences

Calibration: the joule meter showed that joules were roughly KV^2

- **Fine soils** worked fine whether wet or dry.
- **Sandy soils** needed to be damp or have any vegetation to meet 5KV threshold.
- **Gravel and cobbles** never worked.
- **Snow** worked fine unless cold enough to be crunchy (~-20F).

In 2003 WY Animal Damage Management Board (ADMB) funded a complete replacement of equipment, shifting from stranded fences to mesh fences. This is also when we got custom energizers made in Australia.

2004 – Montana Technology and Development Center did testing in Choteau, MT

- All hot fences around cow/horse carcasses
- Left unattended a week at a time
- 18” wet snow accumulation shorted fences
- Video of how bears treated fences

There is no electric fence that we could make that could keep a spring bear out of a cow carcass with 18” of snow if you aren’t there keeping the snow off of the fence. A key part of these fences:

- They have to be attended.
- You can’t have a long term cache (we check ours every 8 hours or so).

From 2001-2012 NOLS has had over 20,000 fence nights in the GYE.

- Two fence knockdowns and no food rewards to bears since 2004 when we shifted to mesh fences with marker lights
- Both knockdowns were on dark nights with lights turned off
- Documented deterrence is rare

In 2012 NOLS did some testing in Pacific North West region to try to keep rodents out.

- Can’t make a fence that can keep bears out and keep rodents out!
- Vegetation on the Olympic peninsula generally conducts electricity much better than similar Rocky Mountain plants.
- Tighter spacing of lower wires is problematic unless used on bare ground.
- Recommend a switch on bottom conductor so fences are bear proof, but rodent wire can be switched on in designated campsites.
- 2.5” spacing is a lower threshold due to sagging concerns and should not become the new norm.

Failure modes

- Any system has failure modes.
- Animals can get trained in small steps to eventually defeat our food storage systems.

Summary

- Existing fence system has worked very reliably for ~25,000 fence nights with 7 incidents.
- NOLS spent \$100,000 developing a system that is working well and allows us to spend more time on education, less on logistics.
- Systems can fail when people cut corners. We should keep using fences as we have been, realizing that if we start cutting corners we may eventually train animals to defeat fences. These shortcuts include **not using the marker lights, leaving fences unattended, not minimizing odors, not maintaining optimal voltage, and not switching to an alternate food storage system when needed.**
- PS: Watch our **NOLS bear fence** video on Youtube to see bears getting deterred by these fences.

Questions

Steve Cain: Did bears get food rewards in any of the 7 failures?

John Gookin: Yes, one food reward. When we had the stranded fences we had a broken energizer and a bear got a sandwich. We now use mesh fences.

Mary Gibson Scott: I think it is really important to underscore that if electric fences are not properly maintained, used, deployed, monitored it will create more problems.

Mark Bruscano: If they are set up right you have as close to 100% deterrence as you can get.

Unknown: How long does the battery last?

John Gookin: Our energizer uses two D batteries and lasts 14 days.

Tom Ryder: Could I, as a private person, go in on a backpacking trip and use one of these and not be in violation of bear food storage regulations?

John Gookin: At the office in Lander you can check one out. Is there anyone that can answer this from the Forest Service?

Forest Service Representative: Currently, you can rent them at our Lander and Dubois districts and it comes with a letter that Joe [Alexander] has to sign and I have to train the person. It is not a blanket authorization.

Chris Servheen: How much do these cost?

John Gookin: The fence part you can get for \$50 - \$100 bucks – they make this stuff as sheep fence. A kit ready to go through UDAP or Counter Assault will cost \$200-\$300. And it has a different, cheaper energizer than the one used by NOLS.

- The energizers used would break after being carried in backpacks. They don't glue the big parts to the circuit board and then in a backpack or on a horse it gets shaken and the solder joints come undone.
- Take the thing apart and glue the big parts to the circuit boards and take some wire dryer and spray it down.

Unknown: Can we get the custom energizers that NOLS uses?

John Gookin: Supposedly you can get them in Alaska. I have to buy them in batches of 20. Go to the Sureguard website (they sell it solar powered but get the one that runs off regular D batteries).

SET FALL 2013 YES MEETING DATE

November 6 - 7, 2013 for the fall YES Sub-committee meeting in Bozeman, MT at the Hilton Garden Inn.

SELECTION OF A NEW VICE CHAIR

The vice chair will serve a two year term with the new Chair, Tom Ryder. We need to select someone from a Federal agency.

Tom Ryder: I would like to nominate Mary Erickson (Supervisor of Gallatin and Custer National Forests) to replace me as vice chair on YES beginning in the fall.

Joe Alexander: I second the motion.

Motion carried

PUBLIC COMMENT

Louisa Willcox: I would like to take this moment to give a shout out to a couple of people. First to John Gookin for work on electric fences but also because he was on the ground floor of our work assessing WBP damage in the Greater Yellowstone. NOLS does a lot of service work for the Forest Service.

Secondly, I would like to thank Dan Tyers on his work on the CG assessment and for the training efforts which I think is really important. There really has been a loss of knowledge through turnover of staff and the bear basics really aren't known unless

there is a deliberate, concentrated effort to teach people about roads and bears, human impacts, and all kinds of things a manager needs to know.

In terms of the study team, I am happy to know that the work we did that was published in 2010 and then in 2013 about mountain pine beetle damage (MPB) in WBP is being used which is what we hoped for. This was a collaborative effort between NRDC and the Forest Service, particularly the B-T. It kicked in a lot of money together to do the first ever ecosystem wide comprehensive assessment of MPB damage in the ecosystem. It was a team effort and it was very important.

Tom Mangelsen: Over my 35 years of living in Jackson Hole I have attended many bear meetings, many of them in this room. There always seems to be so much energy and research and it always seems to be focused on generating data and delisting the grizzly bear. When grizzly bear numbers haven't climbed quickly enough for some, new ways of estimating populations and distribution were proposed. New methods to show increases in the reproductive segment of the population and by decreasing the mortality by shrinking those areas that have high mortality mostly due to hunter bear conflicts. For one who has spent much of his adult life observing and photographing bears, these amazing creatures, I can't help but be disturbed and disgusted by this headlong desire, come hell or high water, to delist the bears and turn the management over to the states, outfitters, and hunters who can't wait to kill the bears. Those in this room have spent their lives and made their livings on the backs of bears, and their legacies studying bears owe more to them than turning their management over to the states where they will be killed. These grizzlies' legacies and their blood be on your hands and your hearts and your souls.

ADJOURN

April 18, 2013

ISLAND PARK BEAR PROJECT – NEW RESEARCH – Dan Tyers (USFS)

This project is still in development. We asked Chuck before he retired and then Frank when he arrived, if you were to link research and management in any dimension across the Greater Yellowstone Ecosystem where and how would you do that? What came to the surface were two priority items:

- Grizzly bear use of the Island Park timber management area – Caribou-Targhee Forest
- Moth site management – Shoshone and Bridger Teton Forest

We have expanded the first priority item into a collaborative effort between Montana State University, IGBST, IDF&G, and the Caribou-Targhee National Forest - **Grizzly Bear Use of Forest Successional Stages in Island Park, Idaho.**

Timber Harvest in the GYE is a controversial issue.

- What are the long-term effects of disturbance, especially timber harvest, on grizzly bears?
- The Island Park Area – an opportunity to investigate the effects of harvesting > 25 years post disturbance.
- Project will focus in the Island Park region, an area that has been intensely managed.
 - o Extensive harvesting in accordance with a 1985 Forest Plan.
 - o Effort to harvest lodgepole pine affected by the pine beetle.

Linking Research to Management

- The 1997 CTNF Plan includes grizzly bear management standards. We would like to demonstrate the efficacy of those standards.
- For forest plan revisions – refine grizzly bear habitat and timber harvest guidelines.

Objectives

- Assess use of successional cover types by the bears.
- Determine characteristics of focus areas.
- Contrast diets between Island Park and GYE bears.

Methods – Macroscale

- Wealth of data available from GPS collar locations 2000-2010.
- Additional 8 collar deployments in 2012.
 - o GPS location every 105 minutes.

Methods – Microscale

- Site investigations at areas of concentrated activity.
- Food habits from collected scats.
- Forest structure and site determinants at focused activity and random sites.
- Hopefully, test this back to the Forest Plan Standards.

Timeline

- Projected completion – May 2015

Special acknowledgments: Alison Reck and Nichole Walker

Questions

Joe Alexander: You talk about how it is going to be focused on the C-T standards and guidelines. Do you see that data being extrapolated to other plans?

Dan Tyers: I think the information will be directly applicable to other forest plans. There are some peculiarities in the C-T plan and standards and guidelines and we can address those intentionally. The information will have applicability to other forest plans. It will address the issues of timber harvesting and the effects of disturbance with timber removal to grizzly bears across the ecosystem.

Christine Wilcox: Question about the post 25 year effect – is that opportunistic time frame or is there some reason scientifically that would be a good post number?

Dan Tyers: I am referring to the fact that the timber was cut 25 years ago. It is simply time post disturbance.

UPDATE: WYOMING BEAR WISE COMMUNITY PROJECT – Dusty Lasseter (WYG&F)

Background

- In 2004 the WGFD identified the Wapiti Valley as a conflict hot spot.
- In 2005 the Bear Wise program was created.
- Funding comes from:
 - o Hunter's license dollars
 - o Grants and donations
- Pilot project was North Fork and Wapiti Valley community.
- Created the citizens working group.
- It's expanded to all of Park County and Jackson Area, then eventually to Pinedale and Dubois areas.

Program Structure

- Work directly with **conflict managers**.
- Focus on those conflicts to eliminate or reduce problems.
- The program was designed to focus on black bears and grizzly bears.

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

Strategy

- Education and Outreach
- Infrastructure and Resources
- Community and Local Government Support

Educational Efforts

- In 2012, Dusty personally contacted ~3000 people.
 - o Schools: Elementary, Middle, High, College
 - o Clubs, Ranches, Professional Organizations
 - o Hunter Education Classes, County Commissions
 - o Bear Booths: Health Fairs, Outdoor Expo, Arbor Day, Jackson Antler Auction
 - o Hunter Expo: 1,700 people went through the bear trail

Educational Outreach

- Public Service Announcements
- Traveling Library Display
- Mailings
- Kiosks
- Jackson Hole Restrooms
- Traveling Bear Trailer
- Inert Bear Spray
- Interactive website
- Billboards and Signs

Infrastructure and Resources

- Bear Resistant Dumpsters
- Garbage Trailers
- Enclosed Buildings
- Carcass Management Program
 - o Carcasses go to the Cody Landfill where they are buried
- Electric Fences
 - o Temporary
 - o Permanent

Community Support

- The North Fork Bear Wise Group
- Working with County Commissioners, and City Councils
- Planning and Zoning Meetings

- Sanitation Companies
- Rancher Support
- HOA's

Accomplishments

- Electric fence around Clark Landfill
- Two Tough Guys Sanitation donated a horse trailer to the Grass creek 4H camp to haul garbage
- Proposed bear resistant dumpsters to the town of Star Valley Ranch
- Gave away bear resistant barrels
- The North Fork Bear Wise Group received a Commissioner license worth ~ \$8,000
- Raised \$14,700 for Carcass Management Program
 - o Alan Simpson, TNC, ADMB, Park County, PMB

Future

- Informing ever changing publics about conservation and conflict management issues
- Expanding conflict prevention efforts statewide
- Social Media

Challenges

- Outreach programs are difficult to fiscally sustain
- How do we measure success or effectiveness?
- Frustrated public
 - o "We ARE doing our part, but it makes no difference!"

Tom Ryder recognized Mark Bruscano for his dedication to the WYG&F department, his work ethic, but most importantly, for his undying passion for large carnivores in the state, in particular grizzly bears. He set a standard for our agency that will be difficult to match in the future.

YELLOWSTONE GRIZZLY BEARS: A SUCCESS STORY - FILM BY WYG&F – Tara Teaschner (WYG&F)

Several years ago, the Information & Education Subcommittee of YES looked at projects that we needed to have on the ground. We determined that we needed to do more to produce positive and proactive messages related to grizzly bear conservation and management within the Yellowstone Ecosystem. As part of this effort, the WYG&F

produced this short 9 minute video that focuses on the recovery of the Yellowstone area grizzly bear and the multi-agency collaborative approach that has helped get us here. This is an educational tool that we can all use across the ecosystem.

Video presentation

Questions

Mary Gibson Scott: How did you fund this?

Tara Teaschner: The funding came out of the WYG&F budget. We had a lot of help from neighboring agencies who provided photographs and other footage for us to use.

Tom Ryder: What is the availability of this video?

Tara Teaschner: We do plan to make this video available to YES members via a web-link and a DVD. I hope we can use this to help better access a younger audience through the internet and social media. The final DVD will have the license plates blurred out.

WYOMING'S GRIZZLY BEAR MANAGEMENT PROGRAM – Brian DeBolt (WYG&F)

Brief History

- Mid 1970's Dick Knight and Larry Roop
- Frosty Hammond, Collin (Gator) Gillin
- WY Large Predator Section
- 1984 WY becomes member of IGBC
- 1986 Interagency Grizzly Bear Guidelines
- 1988 Grizzly bear population expansion begins
- 1991 Kirk Inberg, Kevin Roy and pilot Ray Austin die in plane crash-found in 1995
- 1991 Mark Bruscano replaces Kirk (1 summer tech.)
- Current program manages all Large Carnivore conflicts

What is a conflict?

- Interactions between humans and grizzly bears that result in property damage, agriculture damage, animal or human death or injury.
- Why should the management of conflicts matter?
 - o Promotes conservation through tolerance
 - o Human safety

Types of Human-Grizzly Bear Conflicts

- Property Damage
 - o Camps, structures, vehicles, pets, or other property
- Agriculture Damage
 - o Livestock depredation
 - o Stored or standing crop damage
 - o Bees, honey, hives
- Public Safety
 - o Human injury or death
 - o Aggression towards humans

What Influences Conflicts?

- Biological Factors
 - o Habitat quality and quantity
 - o Behavior
 - o Population
- Social Tolerance/Intolerance

Current Large Carnivore Program

Mark Bruscano - Supervisor

Brian DeBolt - Conflict Coordinator

Zach Turnbull

Mike Boyce

Luke Ellsbury

Dusty Lasseter

Kyle Bales

Zach Gregory

Jason Wilmot

Dan Thompson

Bob Trebelcock

Dan Bjornlie

Tara Teaschner

Ken Mills

Clint Atkinson

Colby Clark

Major Trends and Issues

- Urban/suburban conflicts
- Restored or expanding carnivore populations (Agriculture damage, human safety)
- Sociopolitical issues
- Conflicts continue to rise
 - o E.g. 3 Day Conflict Update July 30-Aug 1, 2012
 - Grizzly bear damaged 2 bee hives
 - Grizzly bear damaged ornamental chokecherries in yard
 - Grizzly bear in garbage at house
 - Grizzly bear injured a calf
 - Grizzly bear injured a heifer
 - Grizzly bear killed a ewe

- Grizzly bear damaged bee hives
- Grizzly bear killed an adult cow
- Grizzly bear killed a calf
- Grizzly bear killed a calf
- Grizzly bear damaged an apiary
- Grizzly bear damaged apple trees at residence
- Grizzly bear got into trash at a ranch
- Grizzly bear killed a calf

Conflict Management Program

- Data collection and analysis
- Field response component
- Information and education programs
- Research and development
- Habitat conservation programs/land use planning
- Compensation \$\$
- Prevention programs
- Population level management

Urban Grizzly Conflicts

- Feeding of ungulates
- Attracting predators
- Urbanization
- Fragmentation of habitat
- Limited control options

Field Response Program

- Conflict Management Assistance
 - o Information and Education
 - o Securing Attractants
- Management of Individual Animals
 - o Aversive Conditioning
 - o Deterrence and Protection
 - o Relocation
 - o Removal
- Compensation Programs

Research and Development

- Information and Education Programs

- o Press releases and PSA's
- o Public presentations (workshops, lectures)
- o Printed material (pamphlets, articles)
- o School presentations
- o Signage (kiosks, posters)
- o Informal contacts
- o Social media

Coexistence

- Increased awareness/knowledge of carnivores
 - o Depends on RELIABLE information

Grizzly Bear Conflicts

- Threats to humans
- Property damage
- Livestock damage
- Crop damage
- Pets

Aggression, Injury, and Death

- Control of potentially dangerous animals
- Education
- Techniques (fencing)
- Response Team

Agricultural Conflicts

- On the rise

Damage to Crops and Other “new” Conflicts

- Function of increasing bear distribution

Livestock/Beehive Damage Compensation Program

- Compensation fund to reimburse livestock owners
 - o Payment made at market value
 - o Payment for injuries
 - o Payments for missing under some conditions
 - o Payments for guard dogs
 - o Trend is increasing over time

Hunting as a Conflict Management Tool

- Public hunting can control numbers, densities, and distributions of wildlife
 - Overall population management
 - Targeted sub-population management, conflict “hot-spots”
 - Targeted individual animals
 - May or may not be timed to the damage period
 - Depredation hunts and landowner permits

Deterrence

- We work really hard with all options
- Scare Devices
- Dogs

Habitat Conservation Programs/Land Use Planning

- Conserving key habitats through land use planning, easements and acquisitions will reduce the potential for conflicts.
- Work with local governments and developers to mitigate concerns when possible.

Population Monitoring

Successful Recovery

- We all know this population has recovered

Data Collection and Analysis

- Records and data are kept for all conflicts and population monitoring
- Data analysis can help focus management actions and resources
- Data can be a persuasive tool to affect change in agencies and individuals

Future Challenges

- Roadside bears
- Relocation sites
 - Running out of places to put bears
- Public perception
 - Either skewed one way or the other
- Impacts to Ungulates
- Funding
 - Wyoming’s program is funded primarily by hunting and fishing dollars
 - Folks out there on the ground hunting and fishing haven’t seen much of a reward and they are frustrated

Questions

Christine Wilcox: Expansion of bears was mentioned several times. An alternative idea is that bears are having to move out of the core areas to the periphery to find food because of food loss.

Brian DeBolt: Mark Haroldson is the best person to answer this question.

Mark Haroldson: We have not seen a reduction in the number of females with cubs that we see on average in the park, the core. The year before last we had an all-time high of females with cubs seen in the park.

Kerry Gunther: No indication of fewer bears in the park but a lot of indication of more bears well outside the park.

Christine Wilcox: The ones on the carcass, do you know the split of females and males?

Mark Haroldson: You can count them up in the picture. The males dominate on the carcass, probably 6-7 big adult looking bears, probably males, right on the carcass. On the periphery you can see the subordinate classes of bears, females with cubs and females with yearlings kind of in a circle around it.

Lisa Robertson: You talked about the grizzly being handled for the hunting community which is about 5% of the population. It leaves me out because I am a non-consumptive user. How can we have a voice at the table on this? Your job is to handle for hunters but the bears belong to all of us so what can you recommend that we do to be a part of the decision making?

Brian DeBolt: With WYG&F we involve everybody in that decision making process when it comes to how all populations are handled. Hunters have a strong voice because they are the ones that foot the bill for everything. But every season setting, public information gathering meeting, solicitation in the mail, we incorporate all publics. We have working groups for different species within the state. In Wyoming, even though you are a non-consumptive user if you don't have a voice at the table that is your fault. The opportunity is there, it is fantastic, for anyone to get involved. That is why everything is so successful in many regards because we find that happy medium and everyone's has had their chance to voice their opinion.

John Gookin: I understand why a carcass on a ranch has to go to a landfill, but when you have to put a horse down in the backcountry why don't we just drag it away from the trail and basically compost that thing and make it part of the ecosystem and support large carnivores.

Brian DeBolt: We really do for the most part. Whatever is the most logical and feasible to do at the time to remove that attractant that may cause a conflict between people.

Joe Alexander: It is really a safety issue when that happens. We don't have an alternative.

PUBLIC COMMENT

Sam Coutts: Our goal is delisting and hunting as part of a management tool. First, I want to comment that after 7-8 years with 600 bears we finally came up with 700 bears so I feel like we are making progress as far as numbers. If there is anyone in here that says there is a shortage of bears, or not recovered, WBP is the tool used to relist them. I think that film – take it to the judge and I don't see how he could do anything but delist them. That is one hell of a tool and it was well done. In our paper yesterday, we had 800-1000 bears. Tom Mangelsen's two bears that he made famous, if I use them as an example our bear population has tripled so we should have 1500 bears just on the simplicity of those bears and what they have raised. Our failure in this organization as far as what we see is not having an accurate count. It is absolutely imperative that if you go before a judge and pass out that information on the way you count bears – his decision at the end, well he is going to say that you don't know how many bears you have. We need to get an accurate count of these bears. WBP is a food source but it is not that critical.

Tom Mangelsen: I spoke a little bit yesterday about the new way to estimate bears to raise the population numbers. On Lisa's question, Brian seemed real honest about his answer that the public has a lot of input in this process. Being in this process for a long time in this community I think there is a huge perception among a lot of the public that there is not a fair and equitable seat at the table for us [non-consumptive users]. Ever since I grew up duck hunting my dad said "well we pay for the ducks, the geese, we buy the duck stamps, the licenses, we pay for wildlife." I used to believe that and I know a lot of dollars come through that. WYG&F is dependent on selling licenses and that is what they are supported through. The more licenses sold the better the WYG&F will do and the same is for the US Fish and Wildlife Service. But there is a huge number of people in this community, the state, the country, the world, that appreciates what we have in bears and wolves and cougars and the large carnivores. I get really frustrated with forging ahead to delist the bears just like we delisted the wolves. Look what happened to the wolves now, they are being slaughtered, trapped, poisoned, smoked out, snared, shot on site, and that is what is going to happen to the bears. What is going to be the difference between managing the bears with WYG&F agencies and what has happened with wolves, and how cougars are managed by the Game and Fish agency. Cougar cubs are left orphaned because the management will not stop hunting cougars and leave kittens to die in the den. That is the kind of large carnivore management we have in the state and a lot of other states. And that is sad. It is a sad

state that we have to go kill these large carnivores because some people make a lot of money off of it. It is sad.

Christine Wilcox: We didn't go over a lot of the proposed changes, and I know it is on the Registry but I do have one quick question. Because it is kind-of left open to using whatever counting method is proposed by the best available science is there a sense of how we are going to follow trend data because as most of us know since bears are so slow to reproduce, how are we going to follow that trend data? Is it going to continue to be Chao2 or is there some other proposed way to do that?

Chris Servheen: Trend is estimated by survival and reproductive rates. It can also be tracked through Chao2. So, either one will be available. Survival data and reproductive rate data can be used to calculate trend over time. By having marked bears and marked females over time you know their probability of survival and how many young they produce and you can estimate trend that way. That is still being done and will still be done.

Lisa Robertson: I wanted to let everyone know that there is a group here in Jackson that is working very hard with all the agencies and with the public to try to work on those non-consumptive ways that we can change the way wildlife management is being done in our state and all states. It is actually a national movement and we can actually thank the wolf delisting for that because we now understand that hunting and trapping go together and we have learned about trapping and the horrors that we have in WY in trapping it is practically unregulated. We are working on better ideas and how we can change it to not only have animals killed because we have reached a certain quota, but possibly not manage for minimum numbers but manage for maximum numbers.

Louisa Willcox: I wanted to make a comment about public process involved in realizing this recovery plan. Public process should be open, transparent, fair, democratic and inclusive. There was discussion yesterday about public input into new methods for counting bears (this new Mark-Resight method). While Chris said that the proposed recovery plan revision was rooted on results of the workshops for Mark-Resight – that simply isn't true. Frank made that clear in his comments when he said the recovery plan revision doesn't tie USFWS to any counting method, including Mark-Resight, because it will use whatever it believes is the best available data. In any read of the proposed recovery rule is consistent with what Frank said yesterday. So the new counting methods are divorced from the recovery plan revision and what is important is that the public doesn't have an opportunity, for the first time in the history of this group, to comment on the counting methods. No matter what perspective you have on grizzly bears it is important to understand how we fully developed them and have a clear understanding of counting methods and the conclusions that they are arriving at. It is

important that all public have a meaningful opportunity to comment and they don't now. What the comment period is limited to is a peer review process on a publication that is currently underway and the public is faced with commenting on this proposed revised rule that has no material, no details on Mark-Resight. So essentially, the public has no ability to comment on what is a critically important issue no matter what your perspective of grizzly bears is. This sets the upcoming debate of delisting off on the wrong foot and I know every agency here knows what it means to have democratic and open public processes and I think you should consider this issue and try to get public process set off in the right direction.

ADJOURN