

Yellowstone Ecosystem Subcommittee Fall Meeting Minutes  
October 29, 2014, Bozeman, Montana

Members present:

Joe Alexander, Shoshone National Forest  
Kathryn Conant, Bridger-Teton National Forest  
Mary Erickson, Gallatin and Custer National Forests  
Melany Glossa, Beaverhead-Deerlodge National Forest  
Loren Grosskopf, Wyoming County Commissioners Association - Park Co  
Jim Hart, Montana Association of Counties - Madison County  
Cornie Hudson, BLM – Montana  
Gregg Losinski, Idaho Department of Fish and Game  
Frank van Manen, USGS Interagency Grizzly Bear Study Team  
Ken McDonald, Montana Fish Wildlife and Parks  
Mark Sattelberg, USFWS – Wyoming  
Steve Schmidt, Idaho Department of Fish and Game  
Chris Servheen, USFWS Grizzly Bear Recovery Coordinator  
Garth Smelser, Caribou-Targhee National Forest  
Mike Stewart, BLM - Wyoming  
Dan Thompson, Wyoming Game and Fish Department  
David Vela, Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway  
Leander Watson, Shoshone Bannock tribes  
Dan Wenk, Yellowstone National Park

**October 29, 2014, 1:00 p.m.**

**Welcome and Introductions: Mary Erickson**

- Introductions and roll call

**Spring 2014 Meeting Minutes Approval: Mary Erickson**

- Motion by Joe Alexander to approve spring 2014 minutes as written; seconded by Loren Grosskopf  
**Motion Carried**

**2014 Grizzly Bear Population Status Update: Frank vanManen**

- Overview
  - Population estimation and trend
    - Females with cubs-of-the-year
    - Mark-resight
  - Grizzly bear mortalities
  - Occupancy by females with offspring
  - Known-fate monitoring

- Food monitoring
- Summary
- Greater Yellowstone Ecosystem
  - National Park lands = 10,344 km<sup>2</sup>
  - Recovery Zone = 23,828 km<sup>2</sup>
  - Conservation Management Area = 95,225 km<sup>2</sup>
  - Demographic Monitoring Area = 49,931 km<sup>2</sup> (88 % Federal)

### Counts of Females with Cubs-of-the-Year ( $F_{COY}$ ) Population and Trend Estimation

- Population Estimation and Trend Monitoring
  - Current protocol based on Knight et al. (1995) “rule set”: sightings of unique females with cubs ( $F_{COY}$ )
  - Cherry et al. (2007) applied estimator to correct for sighting heterogeneity (Chao2)
  - Trend assessed using linear and quadratic regression models of  $\ln(F_{COY})$  over time
- Observation Flights 2014
  - 54 aerial observation areas
    - Round 1: 52 units, 104 hours
    - Round 2: 43 units, 89 hours
    - 3 units not flown
  - 193 survey hours
  - 473 groups (679 grizzly bears)
  - 52 observations of  $F_{COY}$
  - 58 observations of females with older young
- Observation Flight Hours 1997-2014
  - Since 1997, total hours flown during observation flights have increased, however total hours flown during observation flights within the recovery zone has been very consistent.
- 2014 Sightings of  $F_{COY}$ 
  - 119 observations
    - 78 aerial (66%), 41 ground (34%)
  - 50 unique  $F_{COY}$ 
    - Mean litter size = 1.92
    - Litter sizes
      - 16 single (32%)
      - 22 twins (44%)
      - 12 triplets (24%)
  - 3 unique  $F_{COY}$  (4 sightings) outside demographic monitoring area (DMA)
- Population Estimates Under Alternative Demographic Criteria
  - Previous
    - Count  $F_{COY}$  within Conservation Management area
    - 1983-2001 vital rates and derived age structure to estimate population segments
  - Updated (Based on updated science from the IGBST (2012) that shows some vital rates during 2002-2011 changed compared with 1983-2001.)
    - Count  $F_{COY}$  within Demographic Monitoring Area
    - 2002-2011 vital rates and derived age structure to estimate population segments

- $F_{COY}$  Estimates Under Alternative Demographic Criteria 2014
  - Unduplicated count: Previous protocol- 50, Updated protocol- 47
  - Chao2: Previous protocol- 64, Updated protocol- 59
  - Modeled averaged Chao2: Previous protocol- 62, Updated protocol- 60
- Model-averaged Estimate of  $F_{COY}$ 
  - Zero to 2% population growth
- Vital Rates 1983-2001 vs. 2002-2011
  - Cub survival decreased (1983-2001= .64, 2002-2011= .55)
  - Yearling survival decreased (1983-2001= .82, 2002-2011= .54)
  - Independent male survival increased (1983-2001=.87, 2002-2011=.95)
- Population Estimate Under Alternative Demographic Criteria 2014
  - Using previous protocol- 655
  - Using updated protocol- 757
- Mark-Resight to Estimate  $F_{COY}$ 
  - Higgs et al. 2013. Journal of Agricultural, Biological, and Environmental Statistics
  - Uses numbers of unmarked and radio-marked  $F_{COY}$  seen during observation flights
  - Moth site considerations: greater sightability, but few radio-marked bears
  - Variation in annual estimates requires smoothing of trend data
  - Small number of sightings of marked  $F_{COY}$  affects precision
- Three-year Running Average, Chao2 vs. Mark-Resight 1998-2013
  - Mark-resight estimate for 2013 = 78  $F_{COY}$ , higher than Chao2
- Bias in  $F_{COY}$  Count Using Knight et al. (1995) “Rule Set” to Distinguish Unique  $F_{COY}$ 
  - As population size and density increase, the population size estimates are increasingly conservatively biased.
- Population Estimates Derived from Mark-Resight Estimate of  $F_{COY}$ 
  - 2013 estimates
    - Mark-resight estimate (3-yr running average) = 78  $F_{COY} \approx 1,000$  total population
    - Excluding moth sites (areas where there is biased in sightability)
- Grizzly Bear Sightings on Moth Aggregation Sites (Moth Site-only Surveys) 2012-2014
  - 2012: 100 bear observed, 10  $F_{COY}$  (flight did not include all sites)
  - 2013: 140 bears observed, 14  $F_{COY}$
  - 2014: 220 bears observed , 19  $F_{COY}$
- Summary – Population Estimates
  - Strive to improve IGBST science
  - Mark-resight ( $\approx 1,000$  bears) unbiased estimator
  - Population has not increased much since early 2000s; change in estimates due to improved techniques
  - Evidence of density-dependent factors contributing to slowing population growth

### Documenting Grizzly Bear Mortalities and Evaluating Annual Mortality Limits

- Known and Probable Mortalities 2014 (10/28/2014)
  - 20 known and probable mortalities during 2014
    - 15 human-caused
    - 5 natural (1 sex unknown)
  - 4 (3 M, 1 F) outside Demographic Monitoring Area
  - 1 additional known mortality from 2013
    - Cub-of-the-year in Grand Teton NP

- Undetermined cause
- Cumulative Count of Known and Probable Mortalities by Week 2009-2014 (10/28/2014)
  - Cumulative count low for 2013 and 2014
- Counts of Known and Probable Mortalities by Cause 2013-2014 (10/28/2014)
  - Fewer livestock related mortalities: 5 in 2014, 9 in 2013
  - Fewer accidental mortalities: 0 in 2014, 4 in 2013
- Mortality Limits Under Alternative Demographic Criteria
  - Previous protocol
    - Count mortalities within Conservation Management Area (CMA)
    - $F_{COY}$  within CMA used for population estimate
    - Mortality limits
      - 9 % independent F
      - 15 % independent M
      - 9 % dependent young (human-caused only)
  - Updated protocol
    - Count mortalities within Demographic Monitoring Area (DMA)
    - $F_{COY}$  sighted within DMA used for population estimate
    - Mortality limits
      - 7.6 % independent F
      - 15 % independent M
      - 7.6 % dependent young (human-caused only)
- Mortality Limits Evaluated Under Alternative Demographic Criteria (10/28/2014)
  - Using previous protocol
    - Estimated total mortality for independent aged females=5
      - Under mortality limit of 25
    - Estimated total mortality for independent aged males=22
      - Under mortality limit of 26
    - Estimated total mortality for dependent young=0
      - Under mortality limit of 18
  - Using updated protocol
    - Estimated total mortality for independent aged females=4
      - Under mortality limit of 20
    - Estimated total mortality for independent aged males=17
      - Under mortality limit of 39
    - Estimated total mortality for dependent young=0
      - Under mortality limit of 18
- Occupancy by Females with Young (cubs, yearlings, or 2-year-olds) 2014
  - 18 of 18 Bear Management Units (BMUs) occupied during 2014
  - 18 of 18 BMUs occupied at least 4 of last 6 years (2009-2014)

#### **Grizzly Bear Captures and Monitoring for Known Fate Estimation of Population Trend**

- Distribution of Grizzly Bear Captures 2014 (10/27/2014)
  - Total captures = 77
    - Research = 49, Management = 28
  - Individuals bears = 68
    - Females = 15 (7 adults), Males = 53 (36 adults)
  - New bears = 39

- Percent of Previously Unmarked Grizzly Bears Captured 1998-2014 (10/27/2014)
  - On average, 62% of captures are new individuals
- Grizzly Bears Radio-Monitored 2014 (10/27/2014)
  - Total monitored = 92
    - Adult females = 27
  - Currently radio-marked = 61
    - Females = 25 (20 adults)
    - Males = 36 (27 adults)
    - Bears missing = 4
- Telemetry Flights 2014
  - 273 flight hours
  - 707 radio locations
  - 132 observations of radio-marked bears
- Satellite GPS locations 2014
  - 29 Satellite GPS collars deployed (22 Iridium)
  - 177,496 locations
- Bioimpedance to Estimate % Body Fat
  - No indication that grizzly bears are showing a substantial change in body fat comparing 2014 to 2000-2013
- Genetic Monitoring 1984-2013
  - 853 individuals genotyped (20 microsatellite markers) through the end of the 2013 field season
  - No evidence of non-GYE ancestry in any of the individuals genotyped to date

### **Foods Monitoring**

- Spring Carcass Surveys on Yellowstone National Park Ungulate Winter Ranges 2014
  - Found .19 carcasses per km of transect
  - Higher than 2012 and 2013, lower than 2011
- Lake Trout Removal on Yellowstone Lake 1998-2014
  - Catch/unit effort has decreased
- Spawning Cutthroat Trout and Grizzly Bear Activity on Front-Country Tributary Streams 1989-2014
  - Spawning cutthroat trout activity is increasing in front country streams
- 53 Army Cutworm Moth Aggregation Sites Used by Grizzly Bears
  - 37 confirmed sites (multiple observations of bears feeding >1 year)
  - 16 possible sites (single observation of bear(s) feeding)
- Confirmed Moth Aggregation Sites and Percent Used by Grizzly Bears, 1986-2014 (Telemetry + Observations)
  - Almost 80 % of sites are used by bears
  - Not every bear in the ecosystem uses this food resource
- Capture Sites and VHF Locations of Grizzly Bears-Non-moth vs. Moth Users 1986-2013
  - Use of this food resource is very dynamic, not all bears use it that have access to it, and some bears reside in areas without moth aggregation sites
- Grizzly Bear Observations at Moth Aggregation Sites 2014
  - 470 grizzly bears on 29 sites (55% of all sites)
  - 519 grizzly bears <1,000 m of 31 sites (58% of all sites)
  - 38% of initial observations of unique F<sub>COY</sub> occurred at moth sites

- Grizzly Bear Sightings on Moth Aggregation Sites during Observation Flights 2004-2014
  - Increased last 3 years
- Whitebark Pine Transects 2014
  - 21 transects
  - 175 trees surveyed
  - Average no. of cones/tree = 20.0
- Whitebark Pine Cone Production 1980-2014
  - 2014 slightly above average
  - 2013 below year
- Whitebark Pine Tree Mortality on Cone Production Transects 2002-2014
  - 75% mortality for 190 individual, cone-producing trees monitored since 2002
    - Older cone producing trees are most venerable to mortality

### Summary

- Greater than expected  $F_{COY}$  count
  - Greatest number of  $F_{COY}$  observed in 2013
  - 2013 count followed good whitebark pine cone production during 2012
- Increasing evidence that  $F_{COY}$  estimates based on Knight et al. rule set are biased low
- Low mortality for second year in a row
  - 2014 mortality limits not exceeded so far
- Increasing number of observations on moth sites during 2012, 2013, and 2014
  - Army cutworm moths are regional resource
- 2013 Annual Report, data, maps, and other products available at IGBST website: <http://www.nrmc.usgs.gov/research/igbst-home.htm>

Question from Joe Alexander: You talked about the high visibility of bears on moth sites and how you can't account for them the same way in the Mark-resight estimate. Were bears on the moth sites not accounted for at all? Was that data utilized at all in the estimate of roughly 1000?

Response by Frank vanManen: You're asking if we account for animals seen at moth sites? Yes, but we have to do it separately by doing moth site only survey flights. For 2013 for example, 14  $F_{COY}$  were observed during moth site only flights and we added that into the estimate of 78  $F_{COY}$  estimated based on the Mark-resight.

Question from audience: You show both mortalities and distribution of bears outside the demographic monitoring area. Could you clarify why you are drawing that line artificially when there are bears being killed and occupying that area?

Response by Frank vanManen: We are not drawing the line artificially. We are monitoring the population in terms of  $F_{COY}$  and mortalities within the line and that line is based on suitable habitat. I would not agree that is an arbitrary line, it is not. We had a choice; we could collect information only within that boundary, or if we get reports outside of that boundary, and we could include that. When we get that information, we still need to consider it because it helps us interpret what is going on. If we see a lot more females with cubs outside of the demographic monitoring area, that tells us something—maybe there is a little bit of suitable habitat out there for females can still hang onto. It provides valuable information that we don't want to dismiss. It becomes problematic when we get a population estimate within an area, yet we apply mortalities that occur well outside that area to a mortality limit.

They are not part of the population we are monitoring, yet we would count them against a mortality threshold, that would make it reach a mortality based on animals that have no business included on the mortality limit.

You can only look at mortality limits for the portion of the population you are monitoring. Mortalities well outside the area we are monitoring should not be included in determining sustainable mortality. We are still tracking them because we want to know that information and be able to look at it both ways. To get the right estimates, we have to collect data on the population and mortalities within the same area. That was our greatest concern about what we are doing previously that we have addressed with these updated criteria.

Follow up question from audience: Bears are going outside of the demographic monitoring area and we are not considering that suitable habitat. So, the overall rationale is that it is a population sink zone?

Response by Frank vanManen: There has to be a population sink somewhere around the edge of any suitable habitat. They are occupying areas where they can make a living. Beyond that, they are not going to make a living in Cody, they are not going to make a living in Bozeman and when they reach Bozeman, it will be a sink, they will be removed or be killed. It's fair to say that for any species, on the periphery of an isolated population, you will see sink effects.

#### **USFWS Status Update: Chris Servheen**

At the spring meeting, I reported that we were working on a threat analysis. The threats analysis is the document that allows decision makers to decide whether to proceed with a rule to delist or not. We have completed the threats analysis and that decision is in the hands of the Director. Once he makes a decision, one way or the other, we will move forward, or not. We have done this based on the best available science with the work of the Study Team and all of our partner agencies. We are waiting on a decision from the Director on whether or to move forward or not. That could happen right away or it could happen months from now.

#### **I&E Subcommittee Update: Gregg Losinski**

- Grizzly bear are in the news, people are interested
  - We need to keep putting information out there
- Idaho worked with Wildlife human attack team in Yukon
- Educational outreach
  - Done in conjunction with opening of Disney's Bears movie
  - Training highway construction workers in Island Park to be Bear Smart
  - Making Peruvian herders at Experimental Sheep Station Bear Aware
  - Idaho National Lab Safety Fair
  - Bear Education Trailers continue to be a big draw and new trailers are being added to the fleet and incorporation of specially trained volunteers to assist staff
  - Grand Targhee Resort, WY
  - Henrys Fork Days

- Use of QR tags at local Beer Fest
  - QR linked to IGBC and IDFG website, not that successful
- Working with partners
  - Worked with GYC and FS to talk to Island Park community
    - Demoed/Used inert bear spray
- Bear Spray
  - Myth about wasp spray being a cheaper alternative to bear spray- need to get proper information to public to counter
  - Counter Assault has good TV commercials on air
- Deliberate Misinformation
  - Must be vigilant in countering
- New IGBC Product Testing Logo
  - More certified product options now available
- Bears are always newsworthy
  - New Grizzly Enclosure – Pocatello Zoo
  - Idaho zoo receives grizzly bear from Wyoming
- Education
  - Attempting to reduce baiting conflicts
  - Signage Use
    - Ongoing challenge to be consistent and not to over sign
  - Bear ID
- IGBC – WMI Agreement Program Components
  - Website
  - Print and visual media
    - Bear spray video
    - Bear safety brochure
    - Photo shoot with Brutus to obtain footage for educational purposes
  - Bear-resistant container outreach
  - Grant program
    - Submit ideas by Nov 7
  - New projects and issue focused I&E
- Additional Funds Raised by WMI 2012-2014- \$9,500.00
- December IGBC meeting
  - Possible cuts to the FY 16 IGBC Budget
  - \$36,000 for all ecosystems is not a lot of money for I&E efforts
- WMI- Continue to work with WMI to fulfill I&E outreach strategy developed in 2012
  - Interviews & Subcommittee Results
    - Most recommendations of the IE&O Strategy remain relevant
    - Additional resources are needed
    - Personal contacts are most effective
    - Budget cuts will reduce conservation effectiveness



- The IGBC-WMI agreement adds capacity and consistency
- Recommendations as a result of the survey
  - Continue to leverage resources
  - Continue to seek suggestions from the subcommittees
  - Improve the public website
- Potential projects & Issue-focused I&E
  - 2015: New grant proposals from the Ecosystems
  - 2015: Create an easily accessible library of bear-human contact footage for all IGBC members
  - 2015: New Bear Safety Coloring Book
  - 2015: Create a Food Storage Order interactive map

**Annual Grizzly Bear Conflict Updates: \*Draft information\***

**Montana Fish Wildlife and Parks: Kevin Frey**

- Management captures: 6
  - 3 livestock depredation captures
    - 2 sub-adult males
    - 1 adult male
  - 1 property damage capture
    - 1 adult male
  - 2 preventative captures
    - 2 sub-adult females
- Relocations: 4
  - 2 sub-adult female, 2 sub-adult males
- Mortalities: 7\*
  - \*1 unconfirmed...to be determined
  - 1 illegal ; adult male
  - 1 livestock management removal; adult male
  - 1 property damage removal; adult male
  - 2 under investigation; adult males
  - 1 DLP; adult female (probable)
  - 1 natural; adult - pending DNA
- Reported/investigated conflicts:
  - 2014 – 38 = 757 pop. est. (New Chao 2)
  - 2013 – 67
  - 2012 – 46
  - 2011 – 57
  - 2010 – 101
  - 2009 - 55

- 2004 – 59 ~ 600 pop. est. (using new rates)
- Reported/investigated conflicts:
  - At / near developed sites: 12
  - Encounters: 7 (6 backcountry)
  - Human injuries: 3 (2\*)
  - Unnatural foods: 6
  - Unnatural foods/property damage: 1
  - Livestock depredations: 12 (cattle) 10 dead, 2 injured
- Bear Smart- Big Sky is reducing conflicts in an area that is growing rapidly
  - 1000 Kodiak bear-resistant garbage containers

### **Idaho Fish and Game: Brian Aber**

- Conflict types
  - Human Injury=0
  - Aggression towards humans=0
  - Livestock- Cattle=3
  - Human-caused mortality=2
  - Anthropogenic foods=6
  - Orchards=0

### **Wyoming Game and Fish Department: Dan Thompson**

#### Greater Yellowstone Ecosystem: Management and Conflict Resolution-The Reality of Recovery

- Conflict: Interactions between humans and large carnivores that result in property damage, agriculture damage, animal or human death or injury (short version)
- Major Trends and Issues
  - Urban/suburban conflicts
  - Expanding grizzly bear population
  - Depredation, agriculture damage, human safety
  - Sociopolitical issues
- Success & Conflict: With successful recovery comes increased opportunity for human/grizzly bear interactions
- Grizzly Bear Conflicts
  - Preliminary Data: 267 verified grizzly bear conflicts in the GYE
- Livestock Damage
  - Total verified losses:  $n = 205$
  - Cattle:  $n = 139$
  - Sheep:  $n = 66$
- Property Damage
  - Total of 11 verified damages to property

- Structural,  $n = 10$
  - Apiary,  $n = 1$
- Food Rewards
  - Total documented food reward conflicts,  $n = 25$
- Human Injury/Death
  - Fourteen (14) encounters
  - Four (4) human injuries due to bear encounter
- Bear Injury/Death
  - DLP/Under Investigation:  $n = 5$
  - Illegal:  $n = 1$
- Other Notables
  - Roadside Bears
  - New areas of conflict
  - Public education
    - Transparency and tolerance
- Management Actions
  - 28 Captures in the GYE
    - Wyoming: Males ( $n = 14$ ); Females ( $n = 3$ ); Dependent Young ( $n = 5$ )
    - Montana: Males ( $n = 4$ ); Females ( $n = 2$ )
  - Relocations and Removal
    - 20 grizzly bears relocated
    - 9 removals
      - 8 management removals (3 outside DMA)
      - 1 subadult female sent to Pocatello Zoo
  - Preemptive Strikes
    - Address situations before they become “issues”
      - Identify areas using data and try to look to the future
    - Communication and dogged persistence
- Bearwise Wyoming: Continue to actively work with communities, land management agencies, hunters, outfitters, schools, and local governments to proactively deal with grizzly bears
  - Recorded radio PSA’s in Cody and Jackson area
  - Made door hangers to put out in neighborhoods that have experienced human-bear conflicts
  - Mailed out “Bearwise” magnets to ~ 2000 people
  - Refurbished a billboard on the North Fork Highway
  - Updated informational kiosks seasonally
  - Gave different levels of bear safety presentations to approximately 3000 people
  - Taught appropriate large carnivore safety for future hunter education classes
  - Purchased 500 cans of inert bear spray to demonstrate the efficacy of bear spray.
  - Purchased 40 “Staying Safe in Bear Country” DVD’s that were given to Hunter Education Instructors and Game and Fish personnel.

- Library display was nomadic throughout northwest Wyoming
- Educational bear booth:
- Lander Winter Fair, Jackson Antler Sale, Powell Valley Health Fair, Pinedale Rendezvous Days, Cody Arbor Day, Kendall Valley Firefighters Open House, and Wyoming Outdoorsmen Banquet.
- Demonstrations and Outreach
  - Grand Teton National Park
    - Minimum 4,923 VIP wildlife brigade hours
      - Bear jams, food storage, education
    - 52 new bear boxes purchased in 2014
      - 278 from GTNP Foundation
  - Yellowstone National Park
    - 1,774 Bear Spray Demonstrations
    - 26,384 attendees (park visitors)
    - Installed 51 bear-proof food storage boxes
- Bear Jams
  - Grand Teton National Park
    - Minimum 282 bear jams, 122 grizzly bear
  - Yellowstone National Park
    - 793 total bear jams, 322 grizzly bear
- Attractant Management Program
  - Bear resistant pet and livestock feed programs
  - Carcass management program
    - 101 carcasses removed thus far 2014
    - 686 carcasses removed since inception of program
  - Electric Fencing
    - Deployed 18 electric fences and provided material to outfitter camps
  - Creativity
    - Acquisition of bear proof dumpsters and food storage boxes
    - Filming of Brutus

### **Yellowstone National Park: Kerry Gunther**

- YCC, Ground Works USA, & Bear Management Office Crews
  - Installed 51 Bear-proof Food Storage Boxes in 2014
- Bear Spray Demonstrations
  - 1,774 Demonstrations
  - Attended By 26,384 park visitors
- Surveyed: 8,281 Recreationalists in 2,908 Groups
  - Percent Carrying Bear Spray
    - Boardwalks: <1% of people, <1% of groups

- Day Hikers: 13% of people, 29% of groups
  - Backpackers: 52% of people, 76% of groups
- Management Hazing: 24 incidents
  - 19 Out of Developments
  - 5 From Roadsides
- Property Damage Without Anthropogenic Food Reward: 2
  - 1: Patrol Cabin
  - 1: Stack of Empty Ice Cream Buckets
- Incidents of Grizzly Bears Obtaining Human Foods: 2
  - Human Food in Madison Campground
  - Horse Grain in Backcountry
- Grizzly Bear Encounters in Backcountry Areas: 44
  - Grizzly Bear Bluff Charges in Backcountry: 2
  - Grizzly Bear Attacks: 0 incidents
  - Grizzly Bears Entering Occupied Backcountry Campsites: 8
    - All ended without injury or property damage
- 793 Total Bear-jams (including black bears)
  - Grizzly Bear-jams: 322 Bear-jams
  - Bear jams peaked in May, high in June
- Management Captures: 0
- Human-Caused Grizzly Bear Mortality: 0
- Vehicle Strike Mortality of Grizzly Bears: 0
- Grizzly Bear Cub Production & Mortality In Yellowstone National Park Last 21 years (1993 – 2014)
  - 571 Cubs Counted in YNP
  - 20 Human-caused Grizzly Bear Mortalities of all age classes (9 management removals 8 vehicle strike, & 3 power-line electrocution)
- Bear Foods, good berry production
  - Elk calves
  - Whitebark pine- good cone production
  - Mushroom and false-truffles- late summer and fall
- YNP Grizzly Bears Appear Fat & Ready for Winter

### **Grand Teton National Park: Katherine Wilmont**

- No Conflicts:
  - Property damage
  - Food rewards
  - Human Injury or Fatality
- No Management Actions
- One grizzly bear mortality discovered in 2014, occurred in 2013
- Minimum 282 bear jams

- 122 Grizzly Bear
- 103 Black Bear
- 57 species not recorded
- Minimum 4,923 VIP Wildlife Brigade hours dedicated to bear jams, food storage, education.
- Bear Boxes
  - 482 bear boxes purchased to date
    - 52 new in 2014
    - 278 from Grand Teton National Park Foundation

Questions:

Question from audience for Wyoming Game and Fish: Do you have a dedicated wildlife education person on staff?

Response by Dan Thompson: Yes, he is stationed in Cody but works statewide.

### **Management Options for offspring of conflict bears: Genetic insights from the GYE: Mark Haroldson**

- What to do with Offspring of Conflict Bears: Genetic Insights from the Greater Yellowstone Ecosystem
  - Mark A. Haroldson, Frank T. van Manen, Micheal R. Ebinger, Pauline L. Kamath, and Craig Whitman, *U.S. Geological Survey, Interagency Grizzly Bear Study Team*
  - Kerry A. Gunther, *Yellowstone National Park*
  - Steve L. Cain, *Grand Teton National Park*
  - Daniel L. Bjornlie and Daniel J. Thompson, *Wyoming Department of Game and Fish*
  - Kevin L. Frey, *Montana Fish, Wildlife, and Parks*
  - Bryan C. Aber, *Idaho Fish and Game*
- Background
  - Late 1970s–early 1980s: negative trajectory for grizzly bear population (Knight and Eberhardt 1985, Eberhardt et al. 1986)
    - Recommended finding ways to reduce loss of females bears and keep them in the population
- Management Challenge
  - Challenge: grizzly bear-human conflicts involving females with dependent young (i.e., cubs and yearlings)
  - Management option: translocate yearling offspring separately from conflict female
  - Rationale: reduce potential learning of conflict behavior and give yearlings a chance to recruit into population
- Alternative View
  - Others advocated removing dependent offspring from the population when their conflict mothers were removed (Meagher and Fowler 1986)
- Objectives
  - Compare outcomes for yearlings translocated with versus without their mothers

- Short- and long-term survival
  - Subsequent management actions
  - Evidence of reproduction (DNA parentage analysis of conflict yearlings)
- Greater Yellowstone Ecosystem
  - National Park Service land
  - USFWS Recovery Zone (RZ)
  - Grizzly bear distribution 1980s
  - Grizzly bear distribution 2000s
- Data from management yearlings 1981–2013
  - Total translocated=53 (27 female, 26 male)
    - Translocated with mother= 28 (15 female, 13 male)
    - Translocated without mother=25 (12 female, 13 male)
- Sample by date of action
  - Translocated with mother- Mean 24 Aug, Range 9 May- 20 Oct
  - Translocated without mother- Mean 22 Aug, Range 13 Apr- 23 Oct
- Sample by mother’s conflict type
  - Translocated with mother:
    - Anthropogenic=18
    - Livestock=10
  - Translocated without mother:
    - Anthropogenic=23
    - Livestock=2
- Translocations 1981–2013
  - $n = 53$  events
  - Average  $n/\text{year} = 1.6$
  - Mean distance = 91 km (22 – 166 km)
- Post-translocation survival (minimum estimates within year of action)
  - No evidence for a difference in survival within year of mgt action between yearling moved with versus without their mother
- Subsequent management within year of translocation
  - None of the yearlings moved with their mother had additional mgt action within the year of the initial action
  - 24% (6 of 25) of yearling moved without mothers had additional mgt actions within the year. Most of the additional mgt involved males.
- Subsequent management >1 year after translocation
  - Seven out of 26 (27%) yearlings moved with mothers had mgt in subsequent years, while 9 out of 21 (43%) of yearlings moved with mothers had mgt in subsequent years
  - There was no difference in the proportion with subsequent management in years after initial action between those moved with versus without mothers
- Survivorship to reproductive age (minimum estimates to 5-years-old)
  - At least 9 of 16 (56%) yearlings moved with mothers reached reproductive age 5

- At least 9 of 22 (41%) of yearlings moved without mothers reached reproductive age 5
- No evidence for difference in survivorship to reproductive age between yearlings moved with versus without their mother
- Reproduction from DNA (minimum estimates)
  - Excluding the 15 individuals that would not have reached reproductive age by 2013, 6 of 16 (38%) of the yearlings translocated with their mothers were known to have produced offspring
  - 6 of 22 (27%) of the yearlings translocated without their mothers were known to have produced offspring
  - There was no evidence for a difference in numbers producing offspring between yearlings moved with versus without their mothers
- Bear #155, transported into YNP September 1989 for sheep conflict at age 3
  - Caught north of Jardine and removed in management action, 28 years old
    - 25 years without subsequent conflict
  - If a bear is involved in a conflict once, it does not mean they are a chronic offender
- Two-year management effect on annual survival
  - If individual bears survive two years past a conflict, their annual survivorship is no different than bears that have never been managed
- Summary and Conclusions
  - Survival
    - Yearling survival to reproductive age in population ( $S_5 | Yrlng = 0.47$ ) similar to that of translocated yearlings in this sample
    - No effect if translocated separately from mother
  - Subsequent management actions
    - In the short-term, subsequent management greater for yearlings translocated without mother (primarily males)
    - In the long-term, no evidence of increased management actions for yearlings translocated without mother
  - Reproduction
    - Translocated yearlings contributed to population
    - Contributions similar between yearlings translocated with vs. without mother

Question from Committee: Question about the nature of the conflict of the bears that were moved. Are we talking about bears that had gotten into trouble once or bears that were in trouble several times?

Response by Mark Haroldson: A lot of them moved without their mothers were conflict yearlings that had been involved in multiple anthropogenic conflicts with their mothers. In those early years, we moved them with their mothers several times as cubs and we were waiting for them to get big enough to separate. Our thought was that cubs of the year have a harder time surviving on their own. Yearling, especially if you get them into the fall, when they are 150-170 pounds, they are almost to their adult size and their mother still takes them to bird feeders, dog food, etc, we thought if you could break the cycle



and get them away from that, it would prove to be worthwhile. And some of those bears have multiple conflicts with their mothers over several years.

Question by audience: Is there a set policy on that? Who makes the decision on whether a yearling gets relocated with their mother or not?

Response by Mark Haroldson: The management agency. They consider the conflict and what was involved.

### **USFS Campground Infrastructure Partnership: Dan Tyers**

- Greater Yellowstone Ecosystem Campground Assessment- Forest Service
  - 164 Campgrounds surveyed
- Intent- Secure best management:
  - Individual campgrounds
  - GYE – wide
- A 40 Year Mission: Reduce bear/human conflicts
  - Especially Campgrounds
- Initiated in response to:
  - 2010 – 2011 grizzly-caused human fatalities
    - *Soda Butte Campground – Cooke City, MT*
  - GYE increase in grizzly bear numbers and distribution
- Catalyst: Tragic events + a new era in bear management
- Board of Review Investigation Team Reports
  - Review Response Focus:
    - Trapping Protocol
    - Public Awareness Message
    - Campground Management
- A new era in GYE grizzly bear management
  - Bear numbers increasing, distribution increasing
- Range Expansion in north and south of ecosystem
  - Wyoming Range
  - Teton Range
  - Wind River Range
  - Lander, WY
- Putting Our House in Order
  - Dealing with chronic conflict to address known problems
  - Enhancing level of agency preparedness within new paradigm
- Purpose of GYE Campground Assessment:
  - Identify potential sources of bear/human conflict
  - Propose corresponding mitigation
  - Prioritize risk and response to form management strategy
  - ADDRESS PROBLEMS – IDENTIFY SOLUTIONS

- GYE Forest Service Campground Assessment
  - Literature Review
  - Infrastructure Summary and Calculations
  - Conflict Risk Model and Calculations
  - Standardized Assessment
  - Implementation
- #1. Literature Review – Bear/human interactions in campgrounds
  - What We Have Learned From Others
- # 2. 164 Campgrounds – Infrastructure Inventory
  - Wapiti Campground – Shoshone National Forest
  - Infrastructure Calculations
    - 3 information boards / 60 campsites
    - 4 trash dumpsters / 60 campsites
    - 25 food storage boxes / 60 campsites
- # 3: Importance of Habitat
  - Differences among campgrounds
    - Where are the bears
    - Where are the risks of bear-human conflicts
  - The Importance of Habitat
    - Site value: *Occupancy model*
    - Human factor: *Survival model*
- # 4: Standardized Assessment – Each FS campground
  - Forest level analysis
  - GYE comprehensive plan
- Management Priority: SNF Campgrounds sorted by GB Risk (largest to smallest) > by Ratio Boxes to Sites (smallest to largest) > then by Campground Name
- GYE Campground Assessment – 2 Mitigation lists:
  - Infrastructure needs – prioritized purchasing
  - Administrative changes and projects – decision making
- Infrastructure Needs
  - Site boxes
  - Dumpsters
  - Kiosks
  - Gates
- Mitigation – administrative changes and projects:
  - Closures:
    - Sites
    - Loops
    - Campground
    - Area
  - Restrictions:

- Seasonal use: July 1- Oct. 30
  - Tent vs. camper
- Campground Management: Holistic Approach
  - Site-factors, Mitigation
- Mitigation Summary
  - 161 campgrounds considered
  - 134 campgrounds with proposed changes
  - 116 campgrounds with new structures proposed
  - 121 other mitigation measures proposed
- Infrastructure Mitigation
  - 1024 boxes
  - 31 trash bins
  - 19 kiosks
  - 24 gates
- Additional Mitigation
  - 6 hard-sided, 2 site closures, 2 seasonal closure
  - 25 vegetation removal, 33 increased FS presence, 12 add host, 4 carcass hoist, 69 add signs, 6 implement FSO, 1 fence site
- Implementation Costs - Infrastructure
  - Purchase plus installation
  - Complete Infrastructure Wishlist= \$1,643,500
    - Beaverhead-Deerlodge \$14,500
    - Bridger-Teton \$426,500
    - Caribou-Targhee \$546,000
    - Custer-Gallatin \$522,500
    - Shoshone \$134,000
- FY14 Prioritized Infrastructure Purchasing
  - Bridger-Teton \$34,496 spent, \$21,555 GYC contribution
  - Caribou-Targhee \$48,800 spent, \$30,335 GYC contribution
  - Custer-Gallatin \$39,630 spent, \$26,555 GYC contribution
  - Shoshone \$70,000 spent, \$46,555 GYC contribution
- Next-step: Prioritization
  - Infrastructure GYE – wide
  - Identified Emphasis
    - Model Outputs
      - Risk Assessment
    - Campground issues:
      - Chronic conflicts
      - Unprepared
- Projected Outcome
  - Total \$900,000- \$318,926 (FY14)= \$581,074 (FY5 & FY16)

- Lessons Learned:
  - Management scale = the species ecology
  - Coordinated approach
  - Standardized assessment
  - Science based
- Developing Partnerships with GYC
  - Common ground

### **Carolyn Byrd: Executive Director of Greater Yellowstone Coalition (GYC)**

- GYC has been working to provide bear-resistant storage containers for a long time, but at a small scale. Challenge was to do this at the ecosystem scale
- GYC contributed \$125,000 this year and committed the same amount for the next two years
  - It is a lot of money for a small, regional organization
- Acknowledge donors and the GYC Board (sometimes the same entity) for providing funding
- The focus of GYC for ongoing work on grizzly bears is conflict reduction, coexistence and building social tolerance while at the same time protecting core habitat and enhancing connectivity.
  - It's about people.
- The future of the bear is in the hands of people. How we work with those people and keep people safe, and keep bears and people happily co existing, and keep bears away from people is the hard work of the future.
  - This project is a great step in the direction
- Bear bins are made locally, manufactured in Cody
  - Another plus that can add to the effect of this effort; it adds to local economy
- GYC has always been committed to bear conservation and remain even more so. GYC is excited about this partnership and looking forward to where it could lead in the future.

### **Grizzly Bear Response to Elk Hunting in Grand Teton National Park: Mike Ebinger**

- Project Collaborators
  - USGS: Frank van Manen, Mark Haroldson, Mike Ebinger, Craig Whitman, Torrey Ritter, Dana Weller
  - National Park Service: Steve Cain, Kate Wilmot, Sarah Dewey, Justin Schwabedissen, Jess Erwin, (too many rangers to list here)
  - WGFD: Dan Thompson, Dan Bjornlie, Tim Fuchs, Doug Brimeyer, Ben Wise, Carl Brown, Jake Ankenbauer
  - Wyoming Wildlife Federation: Steve Kilpatrick
- Research Background & Objectives
  - Funded through the N.R.P.P.
  - A long history of discussion about the research idea. (Ruth et al. 2003; Haroldson et al. 2004)
  - Study findings will be applicable to public lands where hunters and grizzly bears overlap

- Idaho, Montana, Wyoming
- Four Major Objectives
  - 1) Does grizzly bear density in GTNP change over time relative to the hunting season?
    - Mark-recapture design: 5km grids – 3 time periods
    - Scent Lure (no food reward)
  - 2) What are the patterns of elk harvest in space & time?
  - 3) How are grizzly bear movements (space-use) influenced by harvest?
  - 4) How are hunter and grizzly bear movements influenced by each other?
- Research challenges of the first season
  - Outreach to public that study objectives are not about changing hunting regulations (i.e., the study is not pro/anti hunting)
  - Hunter participation:
    - Getting hunters to report accurate kill locations
    - Getting hunters to carry GPS loggers
  - Getting GPS collars on bears
- Hair-Snare Corral DNA Sampling
  - Camera at each site
- Power Pole Rub Sampling
- Elk Harvest Distribution
  - Record how and where elk are harvested with a grid system
    - change from previous methods
  - Gives spatial resolution needed to understand distribution of harvest over time.
- Hunter GPS data loggers
  - ~100 GPS units
  - Batteries - 16hrs/charge
  - Hunter travel paths are not shared
  - Each “trip” of GPS data that gets turned in results in a “raffle entry” held by W.W.F

Question from audience: How long is the study?

Response by Mike Ebinger: It is a two year study.

Question from audience: Is it limited by funding? What is the ideal length of time?

Response by Mike Ebinger: From my perspective, the longer we can go, the better. The more we can counter variation in terms of timing of elk migration and different types of food years, the better off we are. We will push to try to extend this with additional funding.

### **Southwest Montana Bear Aware: Rebecca Skeldon**

- Goals
  - Human Safety and Bear Conservation

- Off-forest Outreach
  - Schools, Fairs, Media, Public presentations
- On-forest outreach – train employees to make visitor contacts
- Infrastructure
  - Bear-resistant campgrounds
  - Loaner Program
- Accomplishments
  - Bear Aware trailer
    - Forest Service, MT Fish, Wildlife and Parks, IGBC, Big Sky Resort Tax, Counter Assault, Republic Services, Wal-Mart, Wildlife Conservation Society, Yellowstone Club
  - Bear spray training: 1800 people
  - Infrastructure
  - Bear spray recycling
  - Support additional Forest Service outreach
  - Partnerships
  - Loaner program
- Accomplishments have grown over time
  - 2006 – Program focused on infrastructure.
  - 2009 – Reevaluated the program to focus on education.
  - 2012 – More days of work in the spring.
  - 2013 – Moved a Bear Aware educator to Philipsburg.
  - 2014 – Custer Gallatin NF added an educator.
  - 16786 people contacted in 2014, 920 people contact 2006
- Contacts by type
  - School: 1939 public contacts
  - Fair: 7313
  - Public: 1800
  - Forest Service: 256
  - Patrol: 5478
- Contacts by area
  - Diversified by area
  - Butte/Jefferson: 2787 contacts,
- Bear Smart Big Sky
  - Bear Smart Model
    - Education
    - Waste Management
    - Regulations and Incentives
    -
  - Bear Smart Big Sky Committee
    - Many partners

- Plans for Outreach
  - Children’s Forest
  - Increase partnerships
  - Expand Bear Smart Big Sky
  - Bear-resistant public lands
- Expanding the Program Year-round
  - Increase efficiency:
    - Training, administrative tasks, purchasing in winter
    - Retain skill and experience
  - Enhance outreach:
    - Increase media coverage
    - Obtain grants for projects
    - Work with schools on ongoing projects
    - User survey
- Challenges
  - Inconsistent funding
  - Some grants won’t fund salary
  - Employee turnover
  - Politics
- Partners
  - Beaverhead-Deerlodge National Forest
  - Custer Gallatin National Forest
  - Montana Fish, Wildlife and Parks
  - Bear Smart Big Sky Committee
  - IGBC
  - People and Carnivores
  - Wildlife Conservation Society

Question from audience: Do you have a loaner program for bear spray?

Response from Rebecca: We do not because of an issue of trying to figure out if it’s been used and the safety issues that go along with that. We have brought a new can to an event and raffled it off. There is no liability there.

Question from audience: What do you think the potential is for this get bigger?

We can do a lot more. We had 16,000 contacts this year but if we added more months especially since only one person was available this spring and one and a half people in the fall. Spring and fall are really important months for the program. We could do more media coverage and come up with a TV commercial with some of the non-profits.

Question from audience: You may be aware, the Custer-Gallatin developed a whole family of signs for bear-proof dumpsters and we would be happy to share the high resolution PDF that Bear Smart Big Sky could modify by putting in their own logo.

#### **Schedule spring meeting:**

The spring YES meeting will be in Cody, Wyoming. Committee was unable to schedule a spring meeting date and will coordinate via email.

#### **Public Comment:**

Comment from Brett French: Is there a possibility that these meeting could be video streamed? For example, MTFWP streams their commission meeting. A video stream of the meeting would be nice and would save on drive time and expenses.

Response by Mary Erickson: This has been mentioned in previous conversations. I wouldn't say yes definitely, but there has been some talk about how to make these more accessible. We should look at some different technologies.

Comment from audience: After hearing all the information from Rebecca and all the excitement around conservation education, and with all the NGOs in the room, I would like to start the conversation on how we can build a collaborative model around conservation education that does involve a commitment to full time employees and that does fund salary and has quality and excitement from a wide range of people. I know it's a lot more salable to tell funders that you purchased 50 bear boxes or improved x number of acres of habitat, but I will plant that seed and hopefully we can have a committee that could really flesh that out.

Response by Mary Erickson: I would echo the point Jody makes. There is no way we can highlight all the partnerships and opportunities in these meetings, but as we look to the era ahead, there is so much fertile ground as to how we partner and work together that meets agency needs, community needs, and meets some of the needs of the NGO partners.

#### **Meeting adjourned**