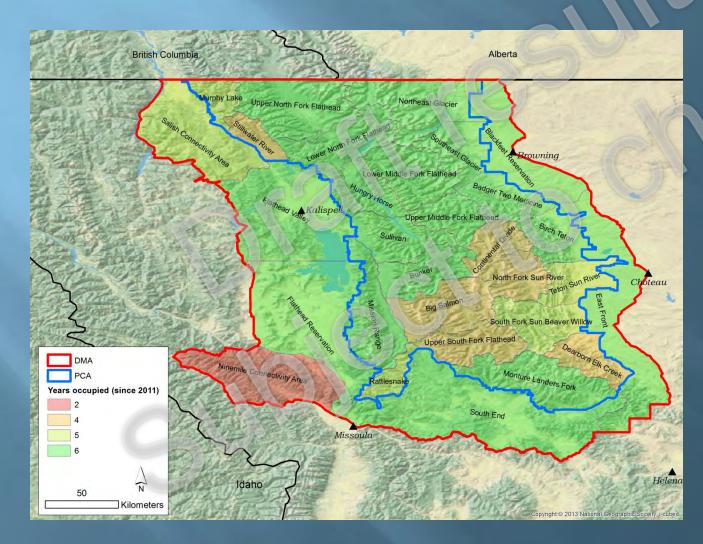# Grizzly Bear Demographics in the NCDE
2016 Update

Cecily Costello, Lori Roberts,
Dan Carney, Stacey Courville, Jamie Jonkel,
Mike Madel, Tim Manley, John Waller, Erik Wenum
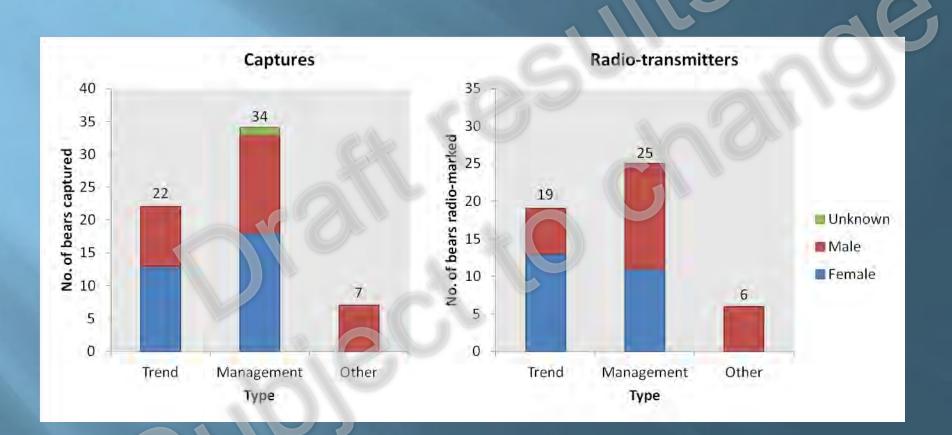
Occupancy & Demographics
2016 Update

Occupancy of females with offspring
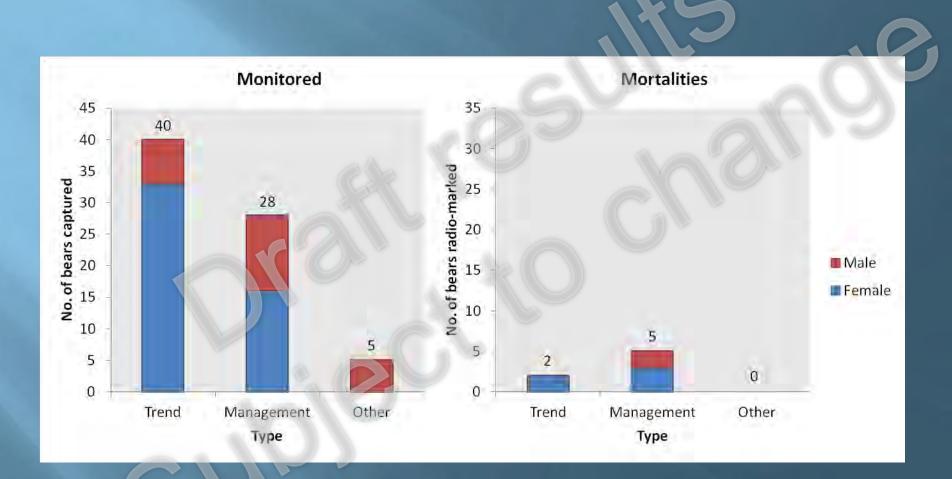
6-year tally (2011–2016)

6 yrs: 18 BMUs (60%)
5 yrs: 5 BMUs (17%)
4 yrs: 6 BMUs (20%)
2 yrs: 1 BMU (3%)
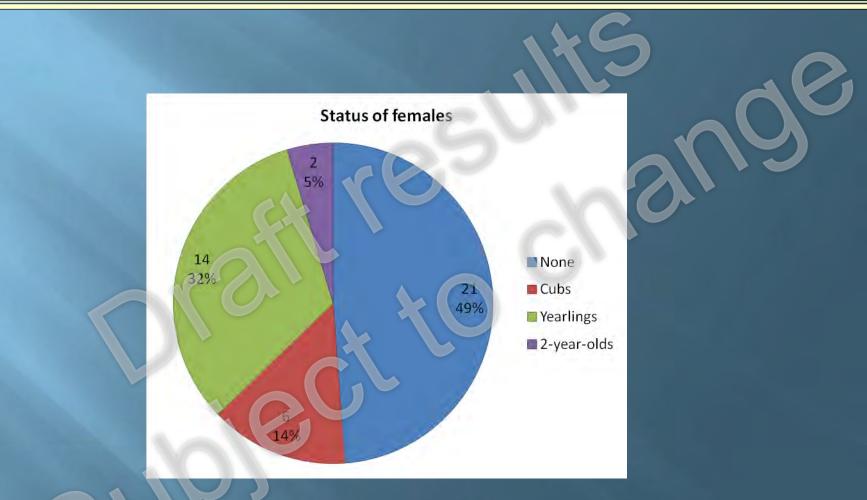
Survival monitoring

63 grizzly bears captured during 2016
50 fitted with radio-transmitters

Survival monitoring
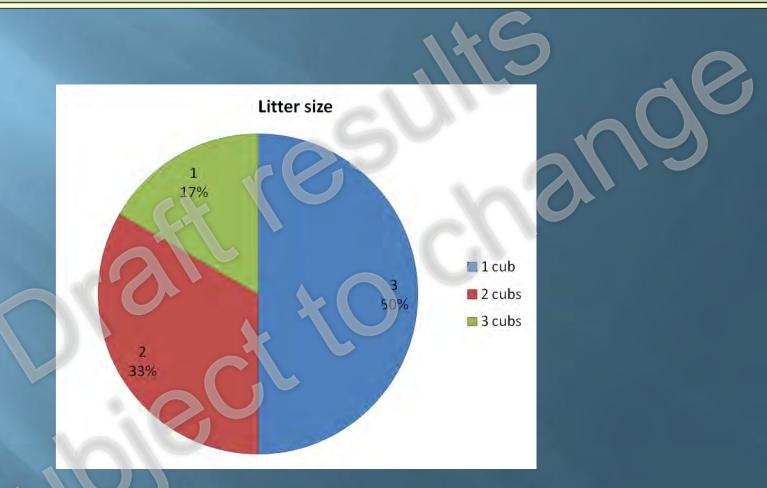

Total of 73 bears monitored and 7 mortalities documented during 2016

Annual survival rate during 2004-2014 was 95% for females and 90% for males

Status of females

- None — 21, 49%
- Cubs — 6, 14%
- Yearlings — 14, 32%
- 2-year-olds — 2, 5%

We documented reproductive status for 43 adult females during 2016

Proportion of females with cubs was 29% during 2004-2014

Reproductive monitoring

Litter size

- 1 cub
- 2 cubs
- 3 cubs
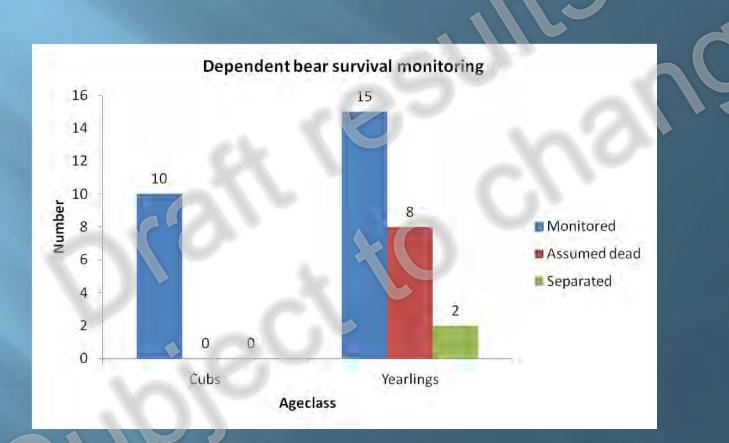
We documented cub litter size for 6 females during 2016
First observation ranged from Apr 11 (den emergence) to Oct 2 (new capture)

Estimated mean litter size was 2.1 during 2004-2014

Reproductive monitoring

We documented dependent bear survival in 6 cub litters and 10 yearling litters during 2016

Estimated survival was 55% for cubs and 64% for yearlings during 2004-2014

Mortality Monitoring
2016 Update

Mortality monitoring

Documented mortality 2016
All age-classes, all locations
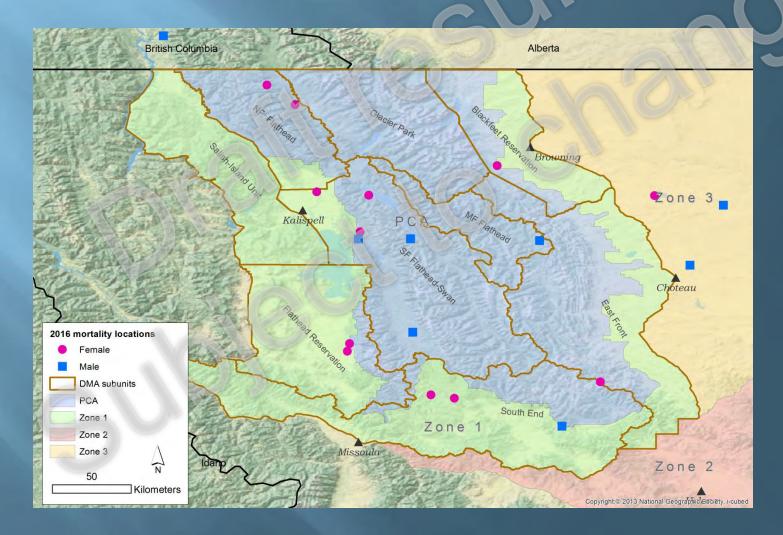
	Ageclass	Female	Male	Total
Inside DMA	Dependent	4	1	4
	Independent	9	4	13
	Total	13	5	18
Outside DMA	Dependent	0	1	1
	Independent	1	2	3
	Total	1	3	4

We documented 22 mortalities during 2016

12 in the PCA
6 in Zone 1   ⎱ 18 in DMA
4 outside of the DMA

Mortality monitoring

Locations of documented mortality 2016
All age-classes, all locations

Causes of mortality 2004-2016
All age-classes, all locations

Sustainable mortality
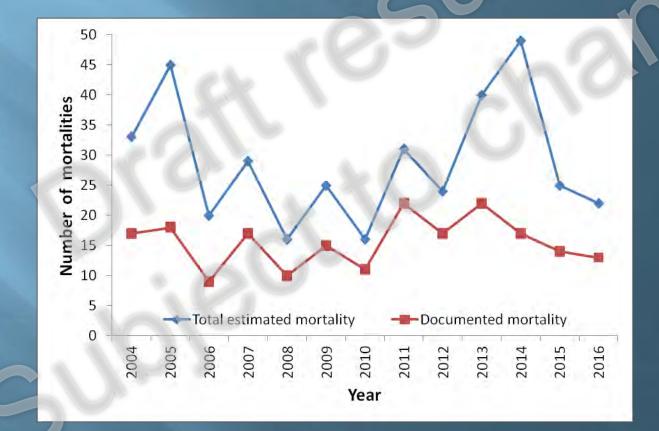
Documented and estimated total mortality 2016
Independent bears inside the DMA

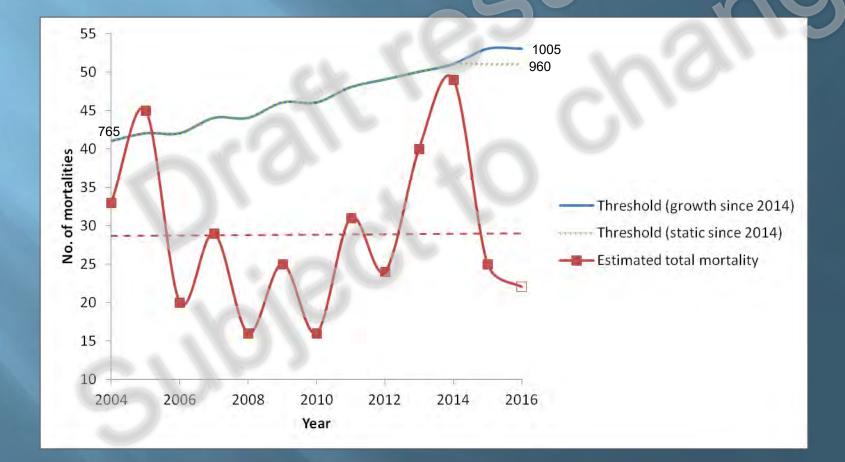| Sex	Agency removal (A)	Telemetry (B)	Reported (high)	Reported (low)	Estimated reported and unreported (C)	Estimated total mortality (A+B+C)
Female	3	3	1	2	11	17
Male	2	0	2	0	3	5
Total	5	3	3	2	14	22

We documented 13 mortalities of independent (>= 2 years old) bears.
We estimated 17 total independent mortalities during 2016

Sustainable mortality

Documented and estimated total mortality 2004-2016
Independent bears inside the DMA
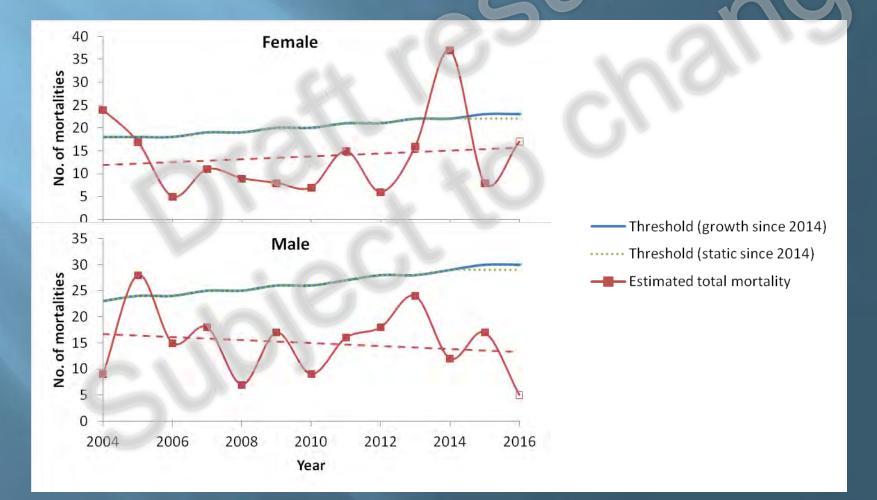
Slight increase in estimated mortalities during 2004-2016

Sustainable mortality

Estimated total mortality versus sustainable mortality thresholds
Independent bears inside the DMA

Sustainable mortality

Estimated total mortality versus sustainable mortality thresholds
Independent bears inside the DMA

Acknowledgements

Scott Waller
Rory Trimbo
Daniel Madel
Rick Mace
Erik Peterson
James Waddell
Kylie Jones
Kim Shields
Bob Wiesner
Shannon Clairmont
Flathead-Spotted Bear Ranger District
  (Deb Mucklow, staff, packers)
Flathead-Hungry Horse Ranger District
  (Rob Davies, staff)
Glacier National Park
  (packers)
Ken Justus
Rob Cherot
Jim Pierce
Red Eagle Aviation
Two Bear Air
Many others…

NCDE Technical Team
April 11, 2017

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NCDE Technical Team
Objectives

(1) Facilitate and conduct research focused on producing information that the wildlife and land managers need to attain, maintain, and measure population recovery

- Prioritize research needs and report to the NCDE Subcommittee
- Respond to information requests made by member agencies, the NCDE Subcommittee, and the IGBC

(2) Based on best available science, evaluate the demographic criteria outlined in the Draft NCDE Conservation Strategy (2013) and provide recommendations for revisions to the NCDE Subcommittee

NCDE Technical Team
Guiding Principles

Prioritize research with direct application to population and habitat management

- ➢ Population dynamics and sustainable mortality
- ➢ Habitat interactions
- ➢ Tools for reducing bear-human conflict
- ➢ Human attitudes

Aim for the highest level of scientific rigor

- ➢ Be explicit about assumptions involved in analyses
- ➢ Detail limitations of the available data
- ➢ Acknowledge alternative interpretations of results

NCDE Technical Team
Current Projects

Potential movement paths for male-mediated gene flow
between the NCDE and GYE grizzly bear populations

Estimation of unreported mortality: evaluation comparing
reporting rates from the NCDE, GYE and CYE

Estimation of sustainable mortality in the NCDE

Spatial and temporal comparisons of body morphometrics
in the NCDE, GYE, and CYE

NCDE Technical Team
New Projects

Kari Eneas, University of Montana, Confederated Salish and Kootenai Tribes

Quantifying the effectiveness of electric fencing in mitigating conflicts between grizzly bears and chicken coops (and potentially small livestock)

George Barce, Wildlife Biologist, Confederated Salish and Kootenai Tribes

Coordinating grizzly bear and forest management

Erik Peterson, Biological Technician, Glacier National Park

Grizzly bear use of army cutworm moth aggregation sites in the Northern Continental Divide Ecosystem, Montana

NCDE Technical Team
Recovery Plan and Conservation Strategy

Recovery Plan

Demographic criteria difficult to document given conditions and current monitoring program. Should we try to address?

Conservation Strategy

New science available to help inform demographic criteria. Discussed possible approaches for revisions.

NCDE Technical Team
New Research Prioritization

- Habitat selection analyses, with focus on roads, fire history, and forest management

- Spatial analyses of human-bear conflicts

- Denning chronology / post-denning behavior (joint analysis with CYE)

- Montana-wide human dimensions public survey