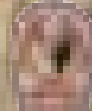


Interagency Grizzly Bear Study Team Research and Monitoring 2016 (update)



Photography by Jake Davis
revealedinnature.com

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Overview

- Update of 2016 research and monitoring
- The “Big picture”

Occupied Range

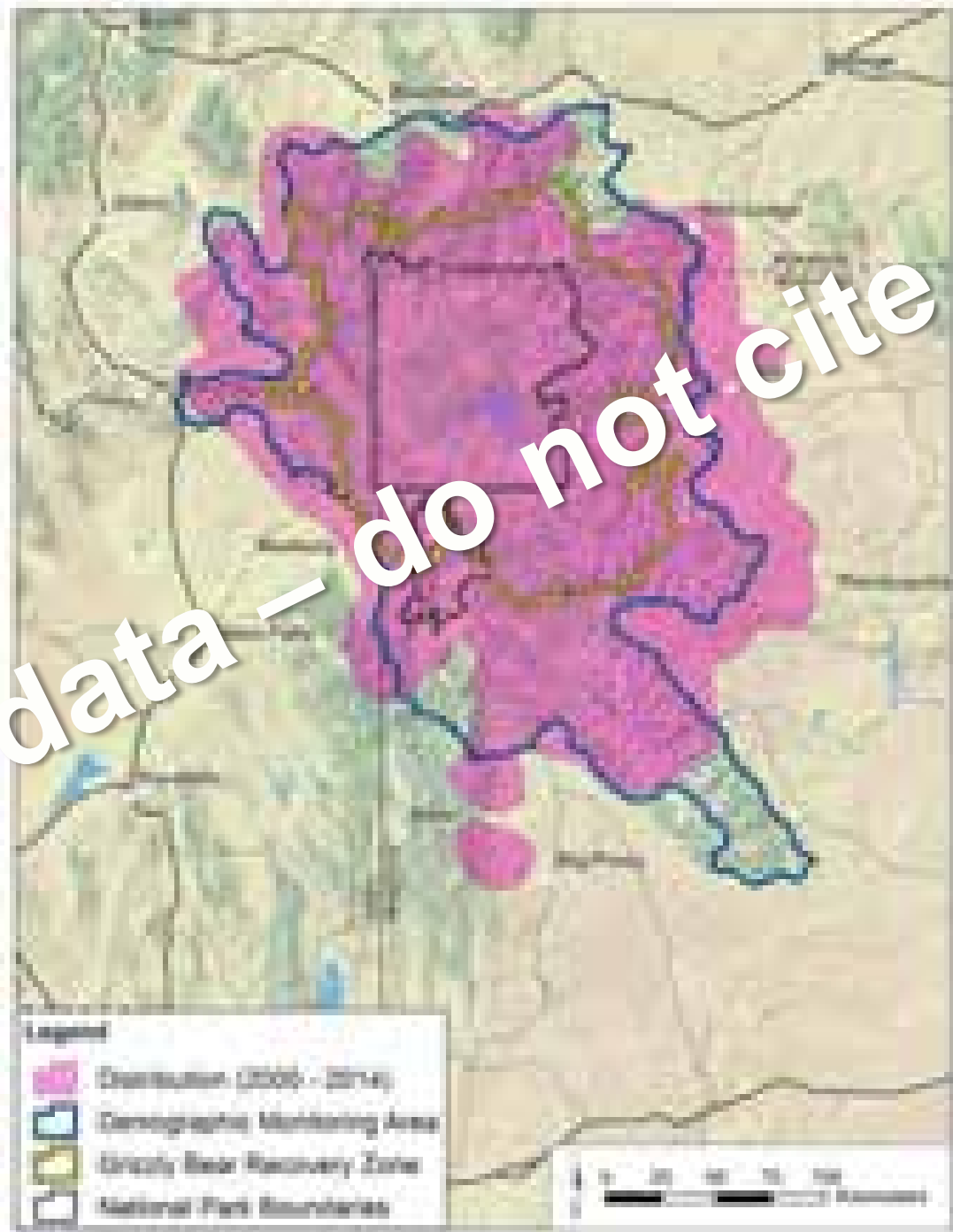
Greater Yellowstone Ecosystem

- National Parks = 10,344 km²
- Recovery Zone = 23,828 km²
- Demographic Monitoring Area (DMA) = 49,931 km²



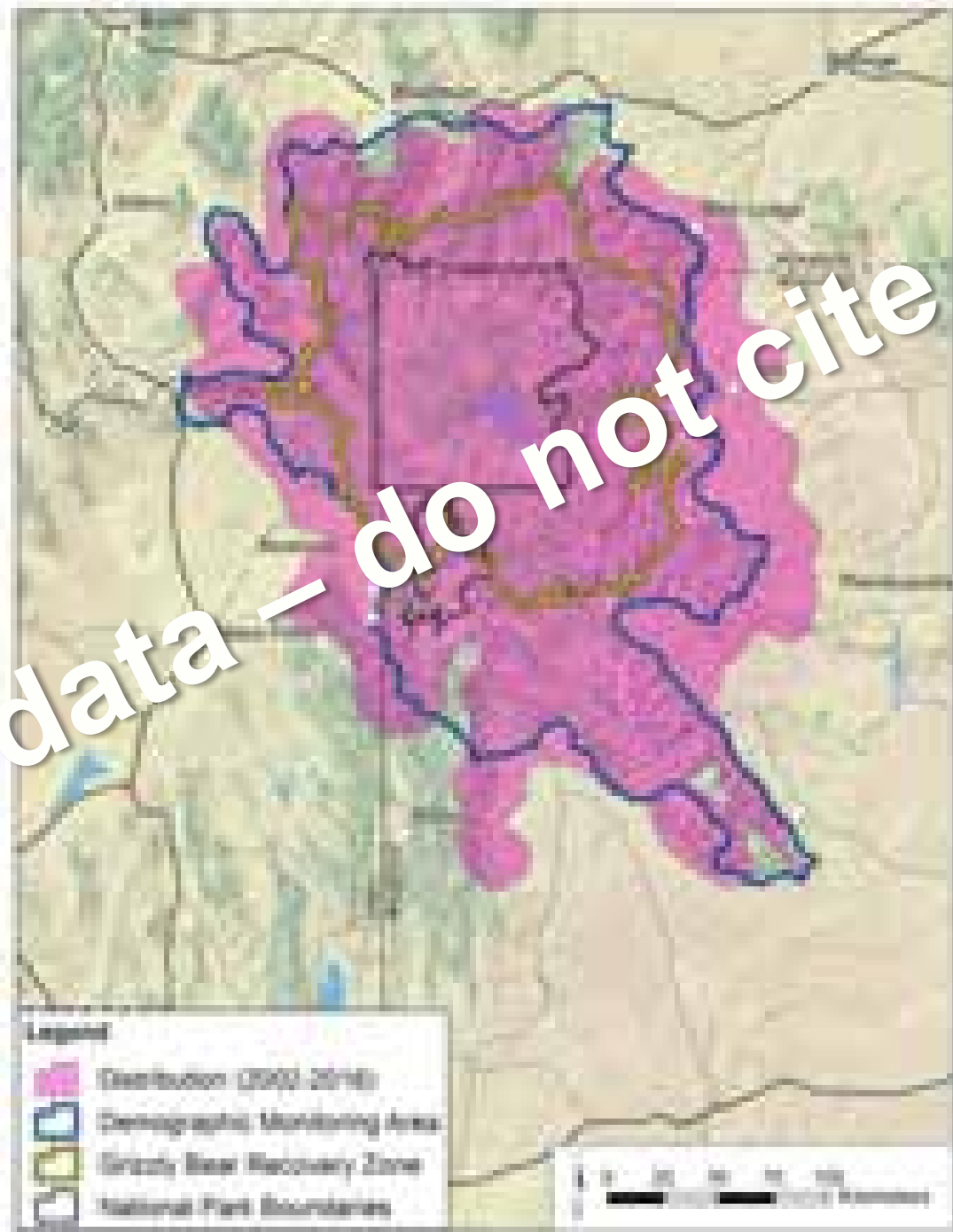
Greater Yellowstone Ecosystem

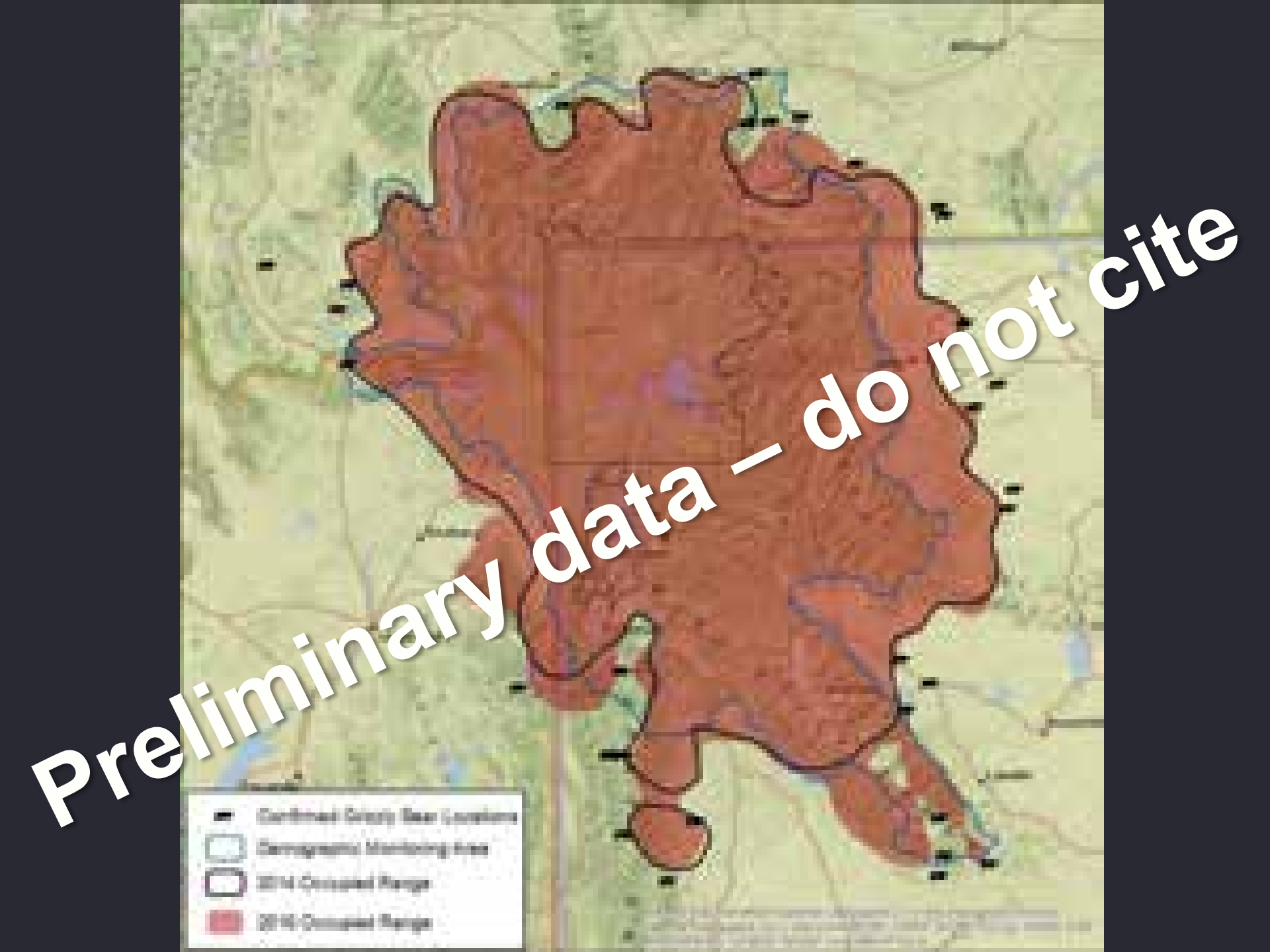
- Grizzly bear distribution
2000-2014 = 58,314 km²



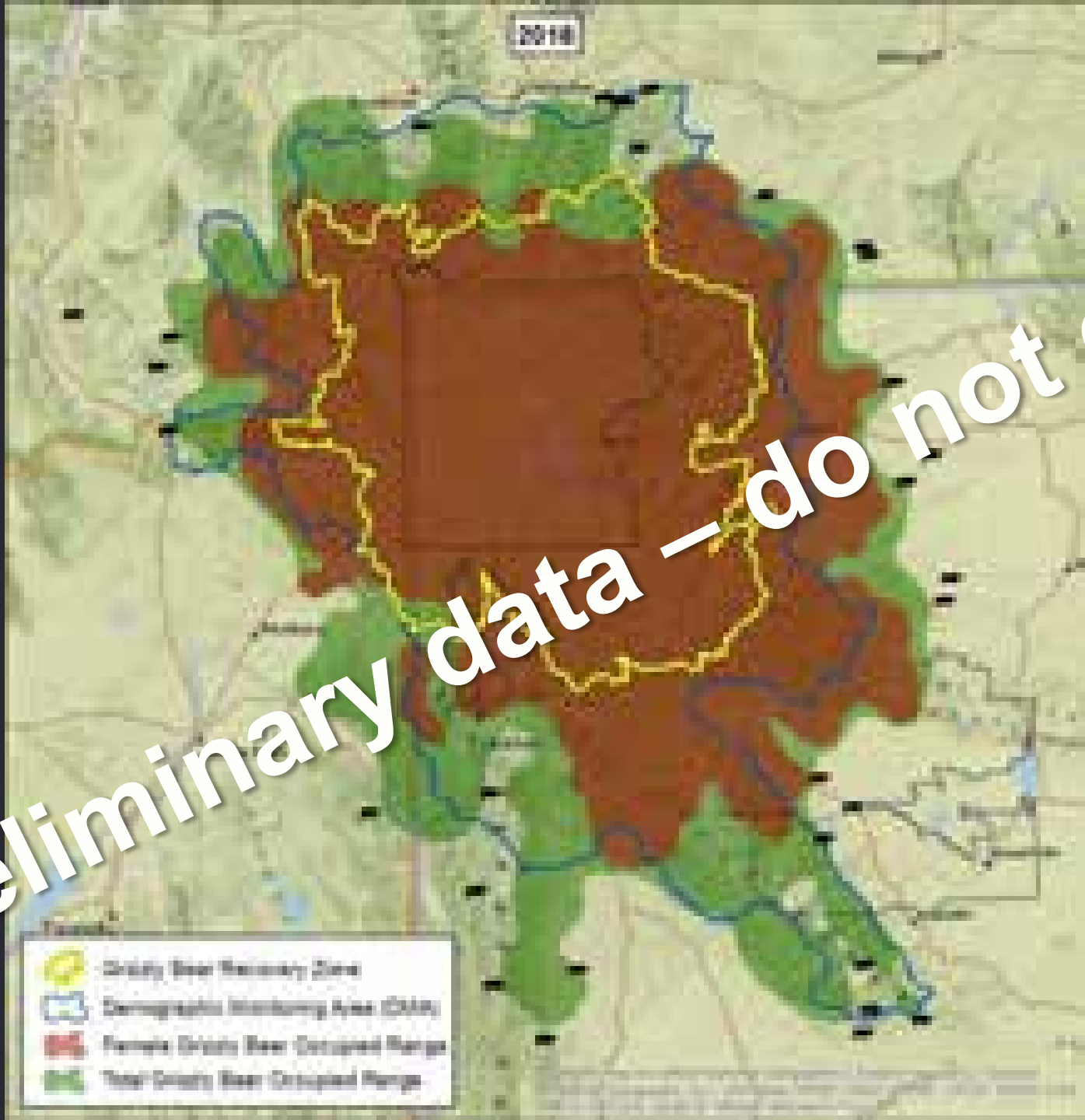
Greater Yellowstone Ecosystem

- Grizzly bear distribution 2002-2016 = 64,849 km²
- 11% increase from 2014
- 94% of DMA occupied
- 27% occupied range outside DMA





Preliminary data — do not cite



Occupied Range by Jurisdiction

Jurisdiction	2004		2010		2016	
	Area (km ²)	Percent of total	Area (km ²)	Percent of total	Area (km ²)	Percent of total
Idaho	2,033	5.6	4,508	9.0	6,260	9.7
Montana	7,673	21.1	11,970	23.8	16,150	24.9
Wyoming	16,533	45.5	21,843	43.4	29,217	45.1
National Park Service	9,566	26.3	10,237	20.4	10,237	15.8
Wind River Reservation	559	1.5	1,721	3.4	2,985	4.6
Total	36,364		50,280		64,849	

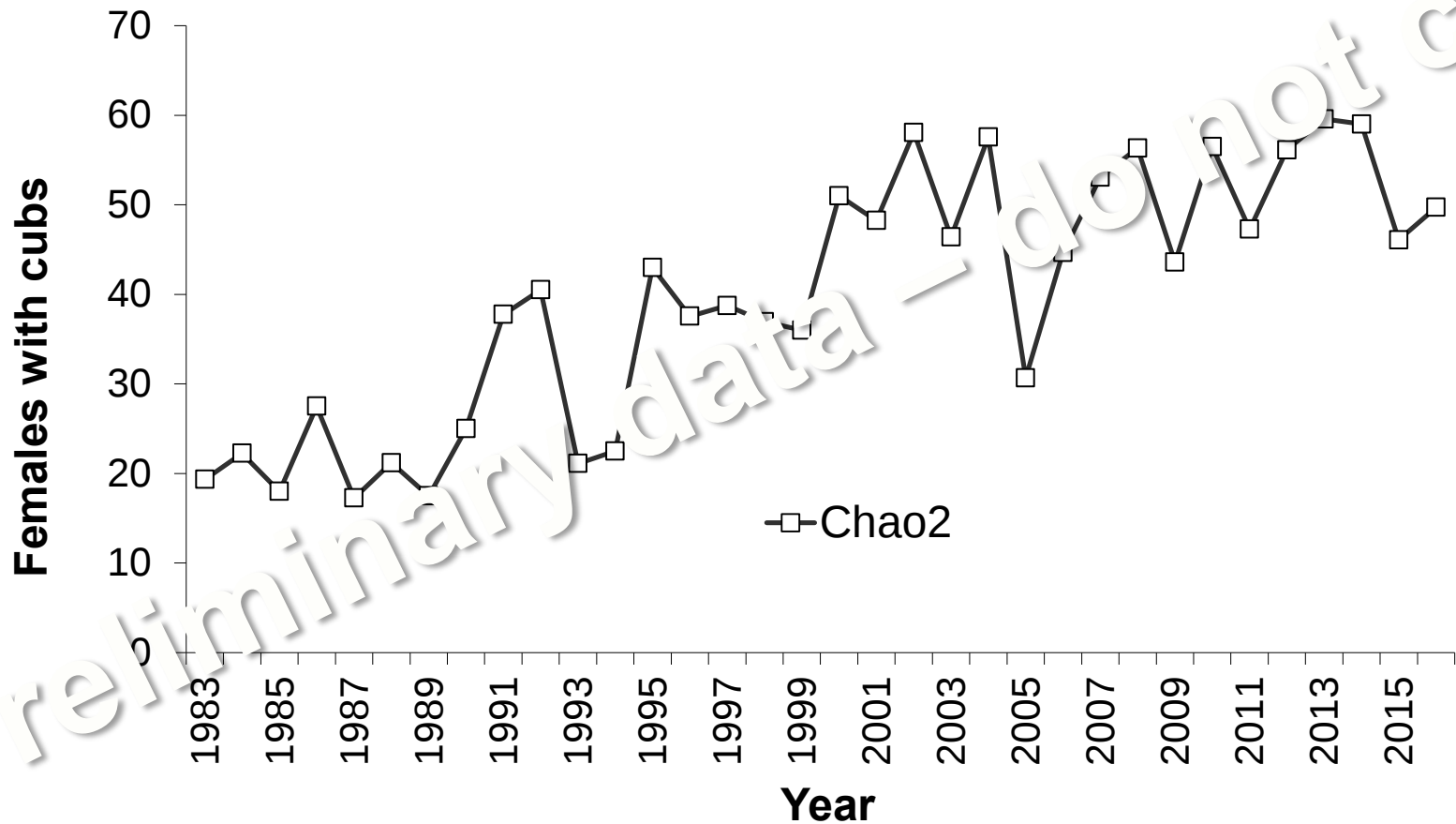
Population and Trend Estimation

Females with cubs 2016

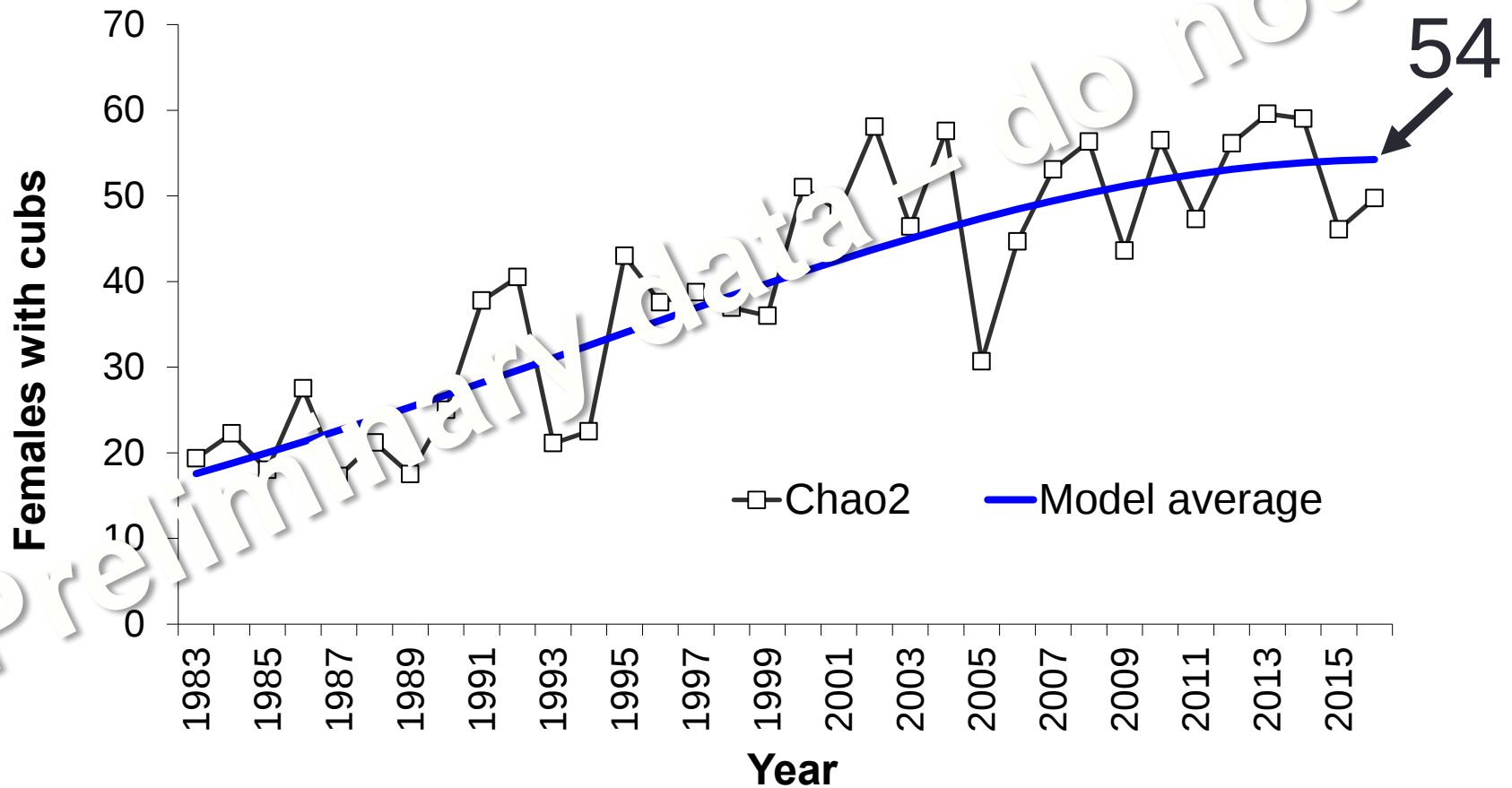
- **144 observations**
47% aerial, 53% ground
- **Unique females with cubs**
50 in entire GYE
45 in DMA
Mean litter size = 1.96



Annual estimates of females with cubs 1983-2016 (DMA only)



Annual estimates of females with cubs 1983-2016 (DMA only)



54

□ Chao2

— Model average

Total population estimate 2016 (derived from Chao2; DMA only)

Population segment	Estimate	95% CI	
		Lower	Upper
Independent females (≥ 2 yrs old)	238	190	287
Independent males (≥ 2 yrs old)	238	186	291
Dependent young females and yearlings)	213	192	234
Total	690	615	764

Mortalities and Mortality Rates

Known and probable mortalities 2016

- 37 known and probable mortalities in DMA
 - 31 human-caused
 - 5 natural
 - 1 undetermined cause
- 20 outside the DMA
 - All 20 human-caused
- 1 additional mortality from 2015 documented, sex unknown



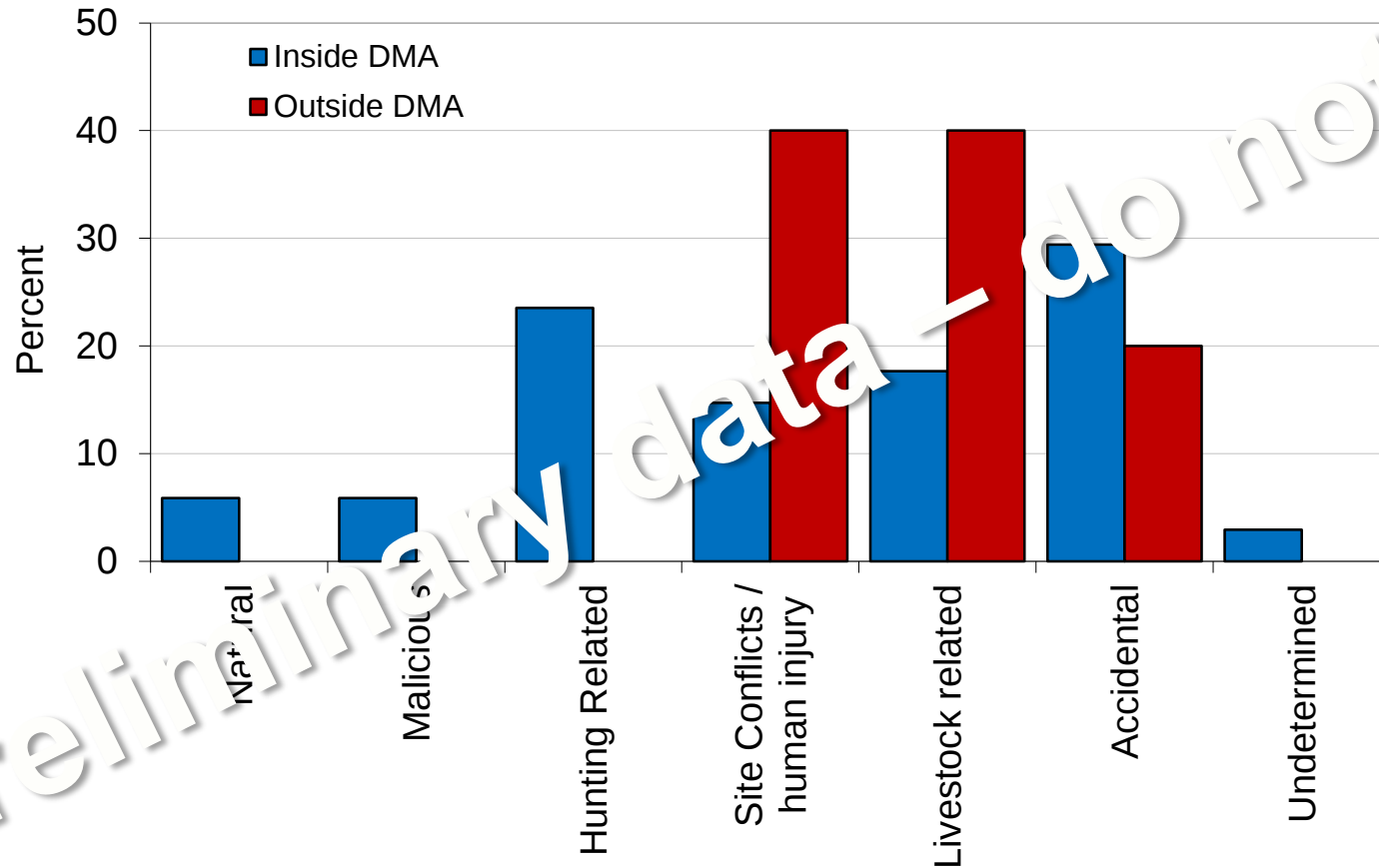
Estimated percent mortality for population segments (DMA only)

Population segment	Estimated total mortality	Documented mortality	Estimated total mortality	Estimated % mortality
Independent females (≥ 2 yrs old)	238	6	12	5.0
Independent males (≥ 2 yrs old)	238	19	37	15.5
Dependent young (< 2 yrs old)	213	9	-- ^a	4.2 ^b

^a Unknown/Unreported estimate is not applied to loss of dependent young

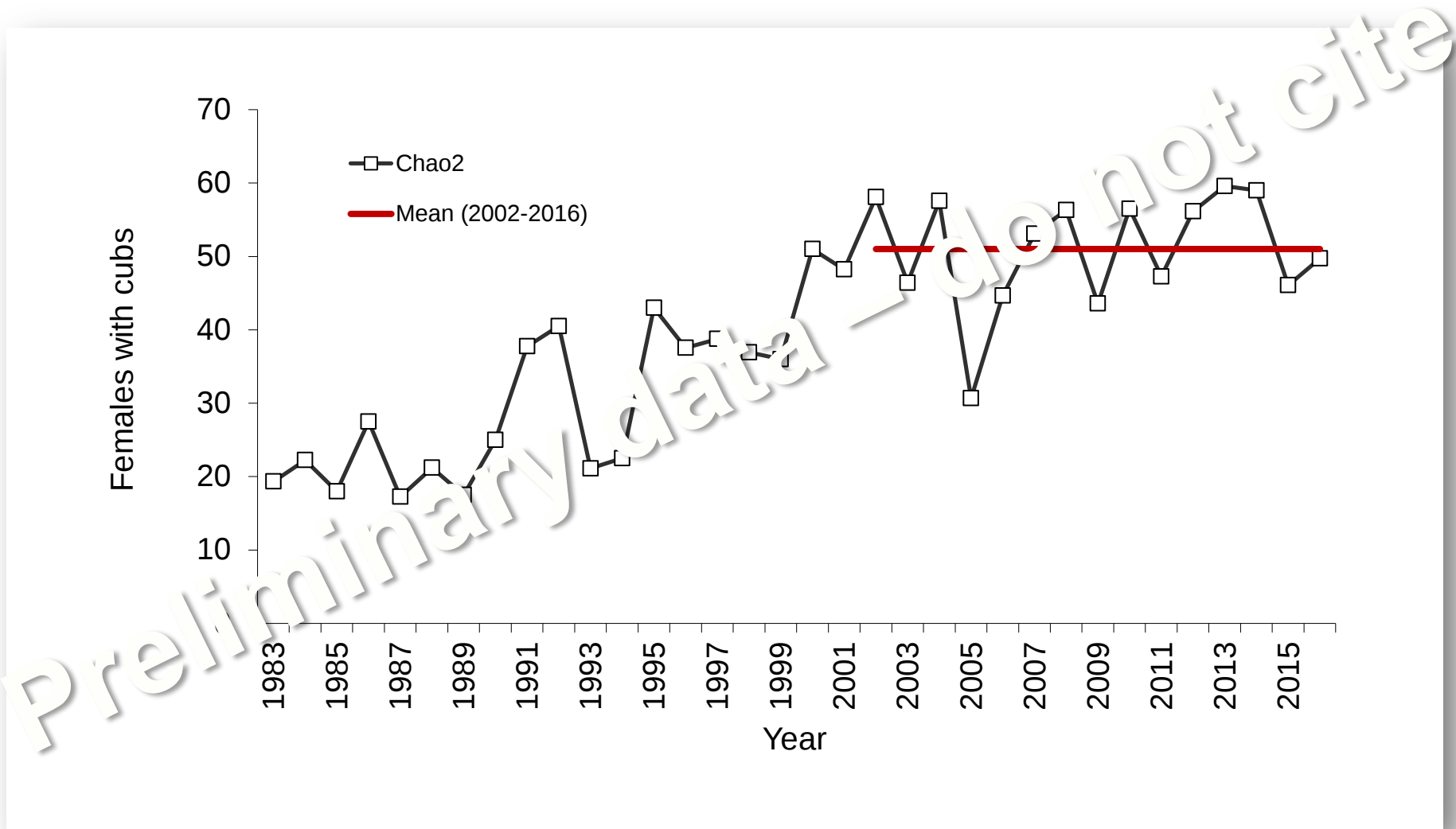
^b Estimated from documented human-caused mortalities only

Mortality causes in and out DMA 2016

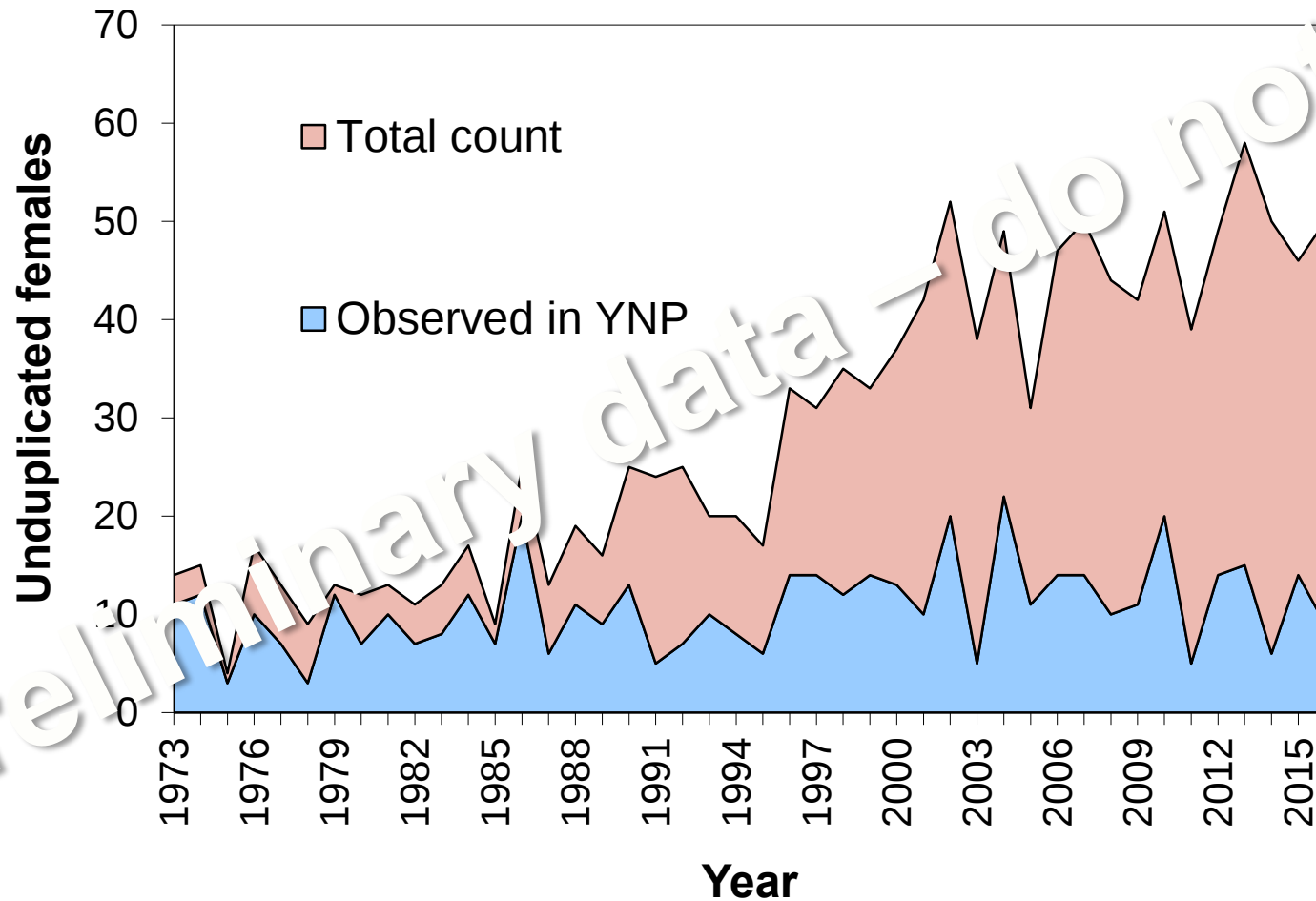


The Big Picture

Trend in annual estimates of females with cubs 2002-2016 (DMA only)

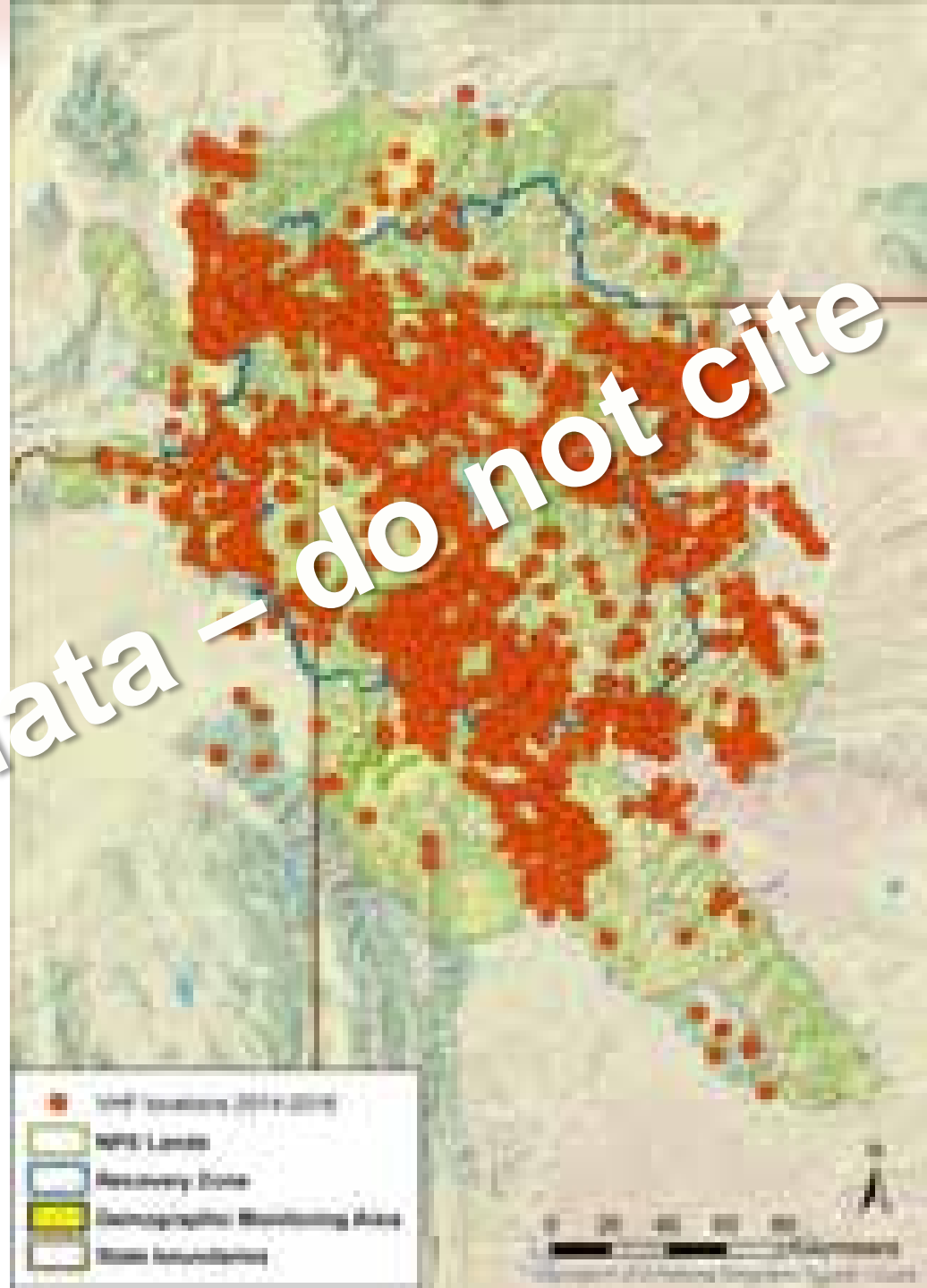


Unique females with cubs in Yellowstone NP vs. GYE, 1973-2016

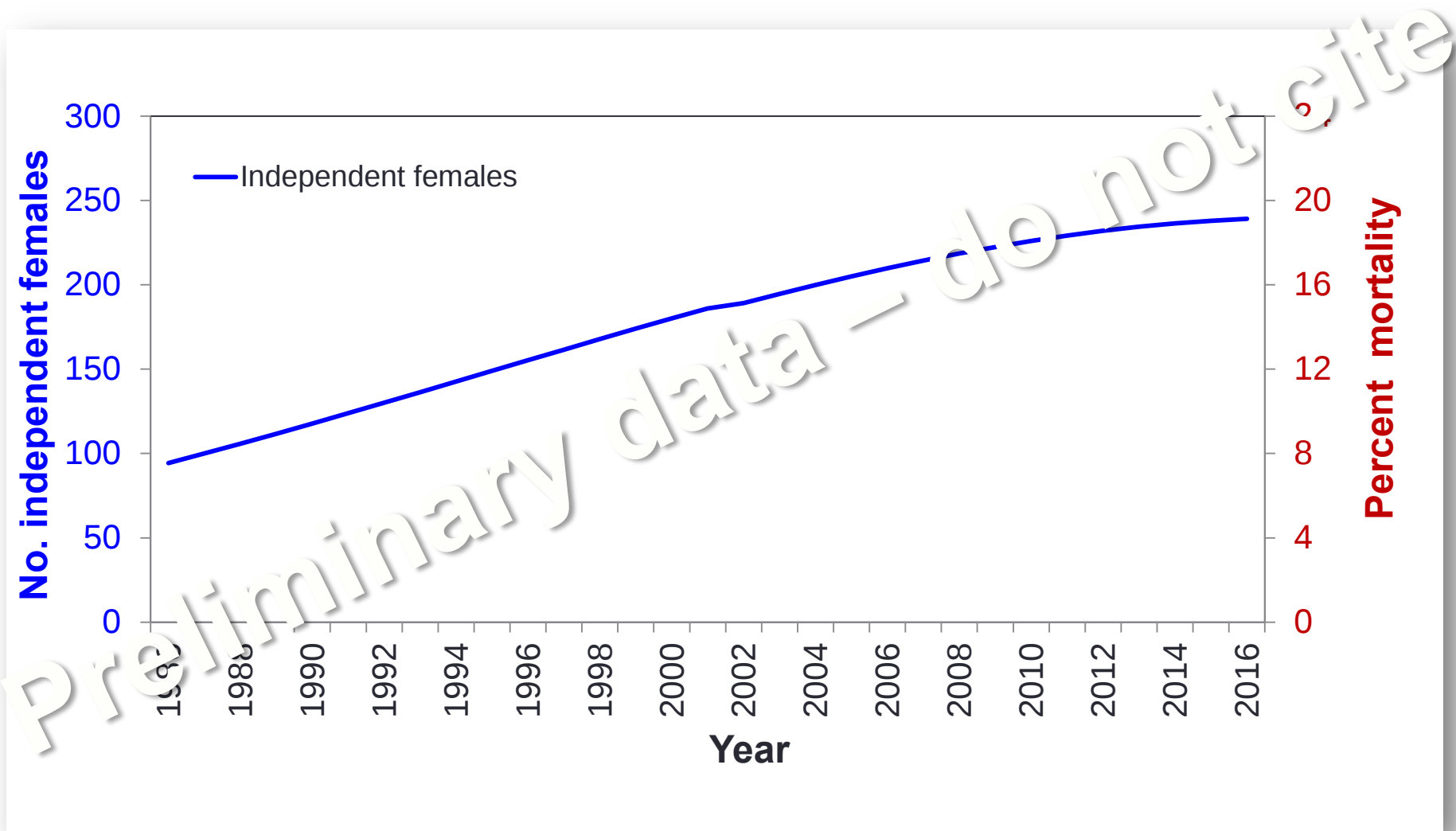


VHF telemetry 2014-2016

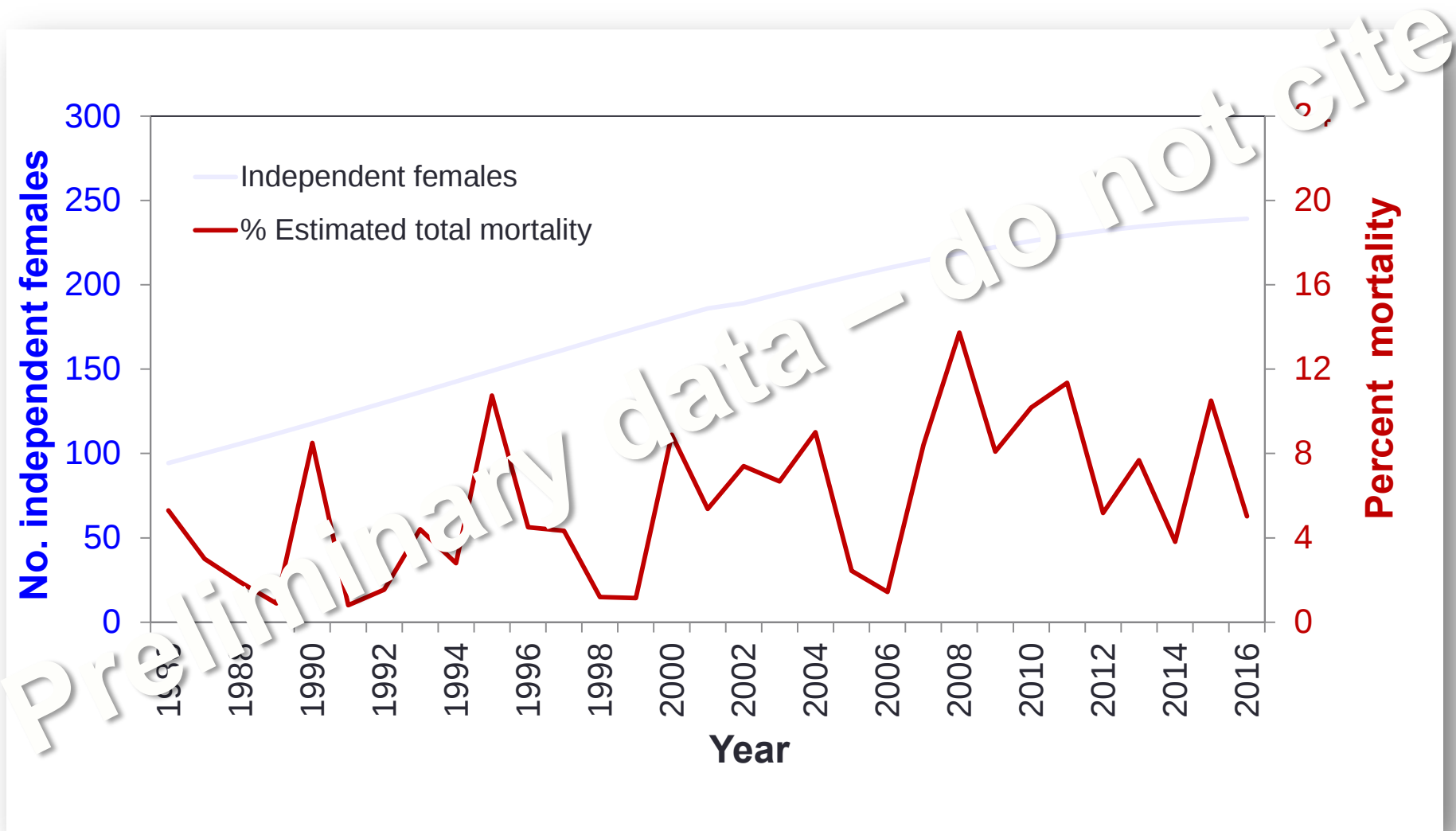
- Flight hours = 820
- Total locations >2300
- Observations of radio-marked bears = 555



Mortality rate of independent females 1998–2016 (DMA only; total mortality)

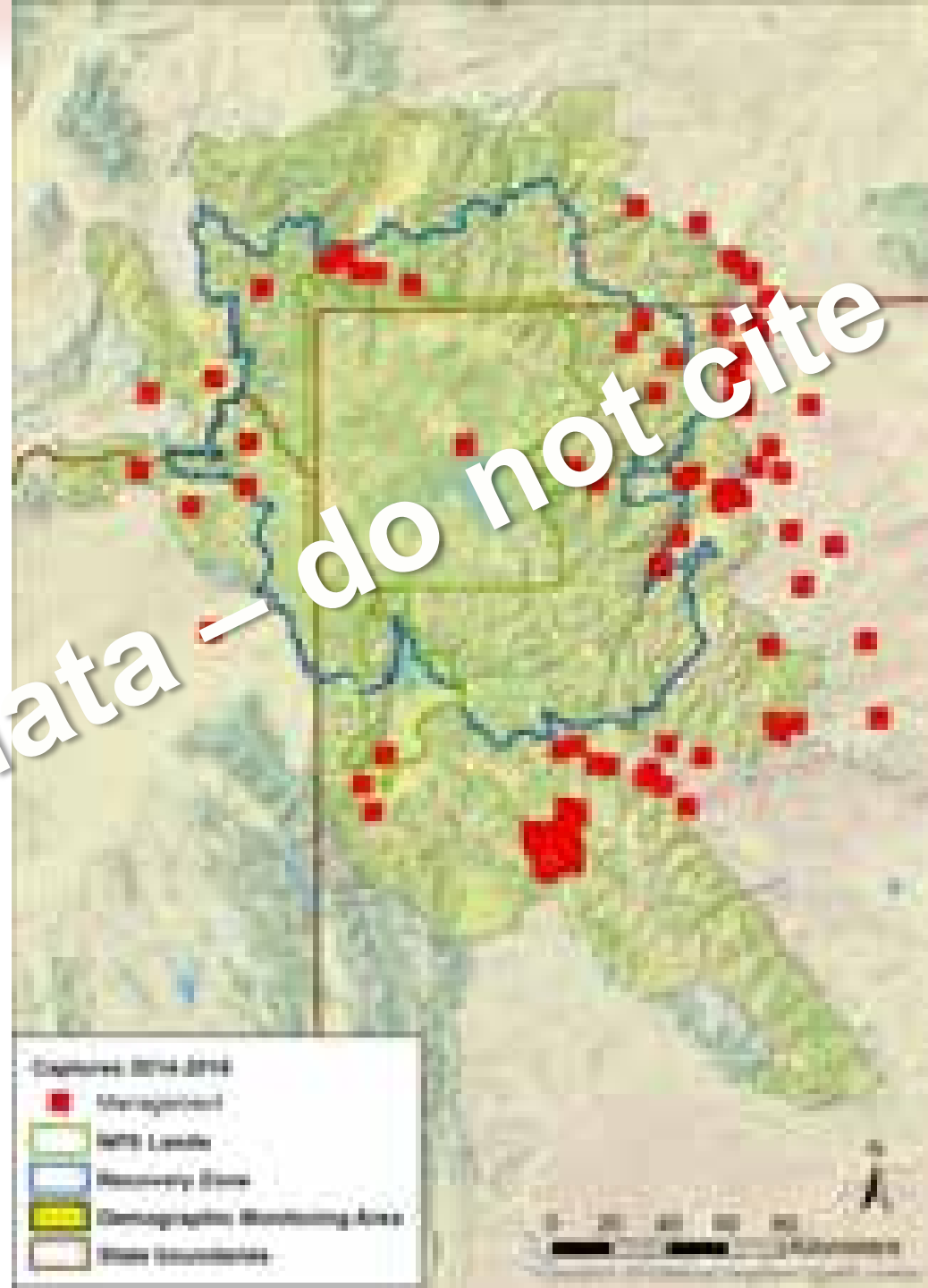


Mortality rate of independent females 1998–2016 (DMA only; total mortality)



Management captures 2014–2016

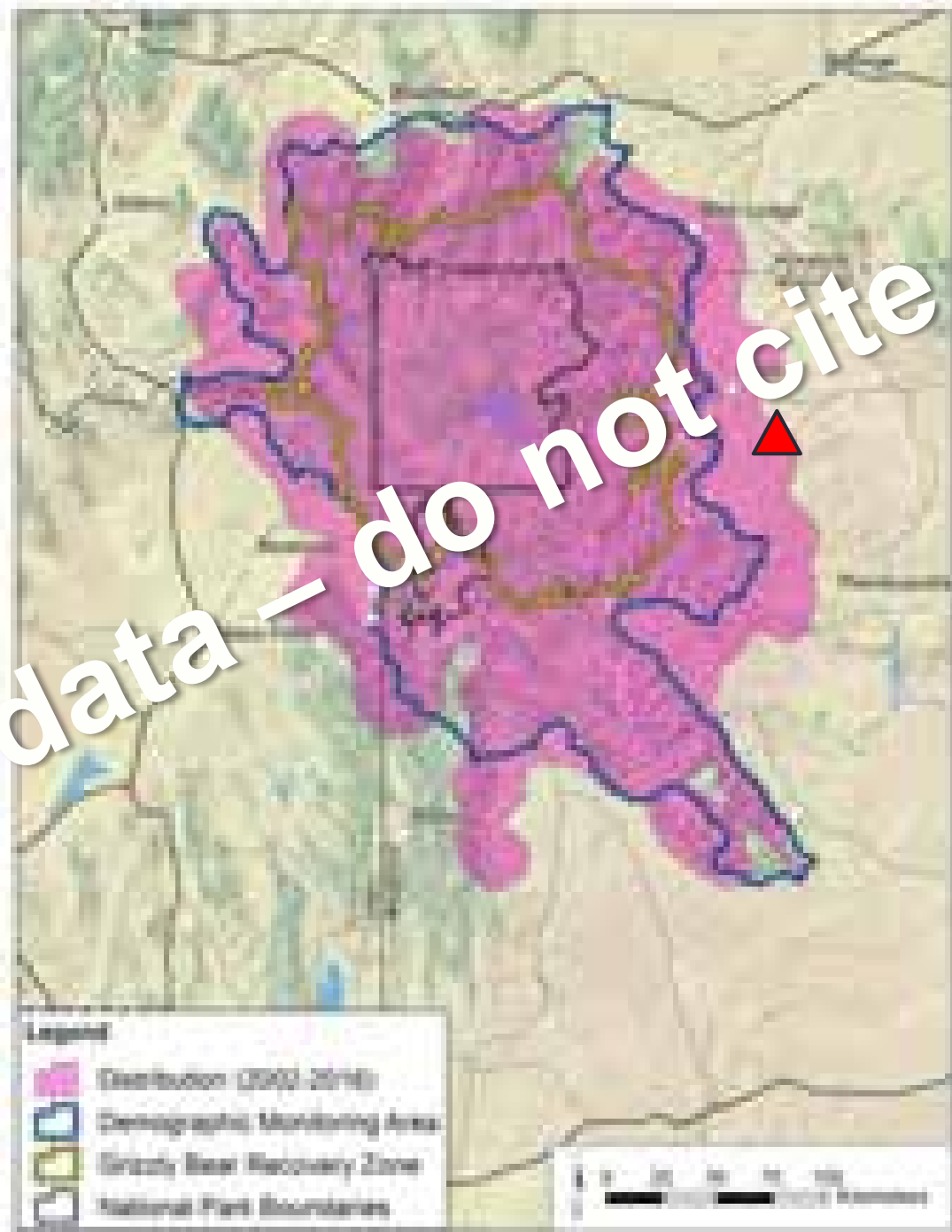
- Total captures = 151
- 37% outside DMA



Mortalities 2017

- Young adult male

Preliminary data — do not cite



Summary

- **Population**

- Population estimate = 690
- No major change in trend since early 2000s
- No evidence of bears leaving core of ecosystem

- **Mortality and Conflicts**

- 35% of all mortalities occurred outside the DMA
- Primary causes: accidental (road kills and drownings), livestock, and site conflicts
- 2016 mortality rates in DMA
 - Within thresholds for all 3 cohorts, given current population size
- Conflicts: primarily males on periphery of occupied range

- **Year of relatively good food supply**

- Low availability of winter-killed carcasses
- Good berry production
- Above average whitebark pine cone production

**Annual Reports, data, maps,
and other products available at
IGBST website**

Google “IGBST”

Acknowledgments 2016



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