

Interagency Grizzly Bear Study Team Research and Monitoring Summary 2018



Photo: Jake Davis

Study Team Members

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Overview

- Females with cubs and population size
- Occupancy by females with young
- Mortalities and mortality rates
- Additional data

Some results are preliminary

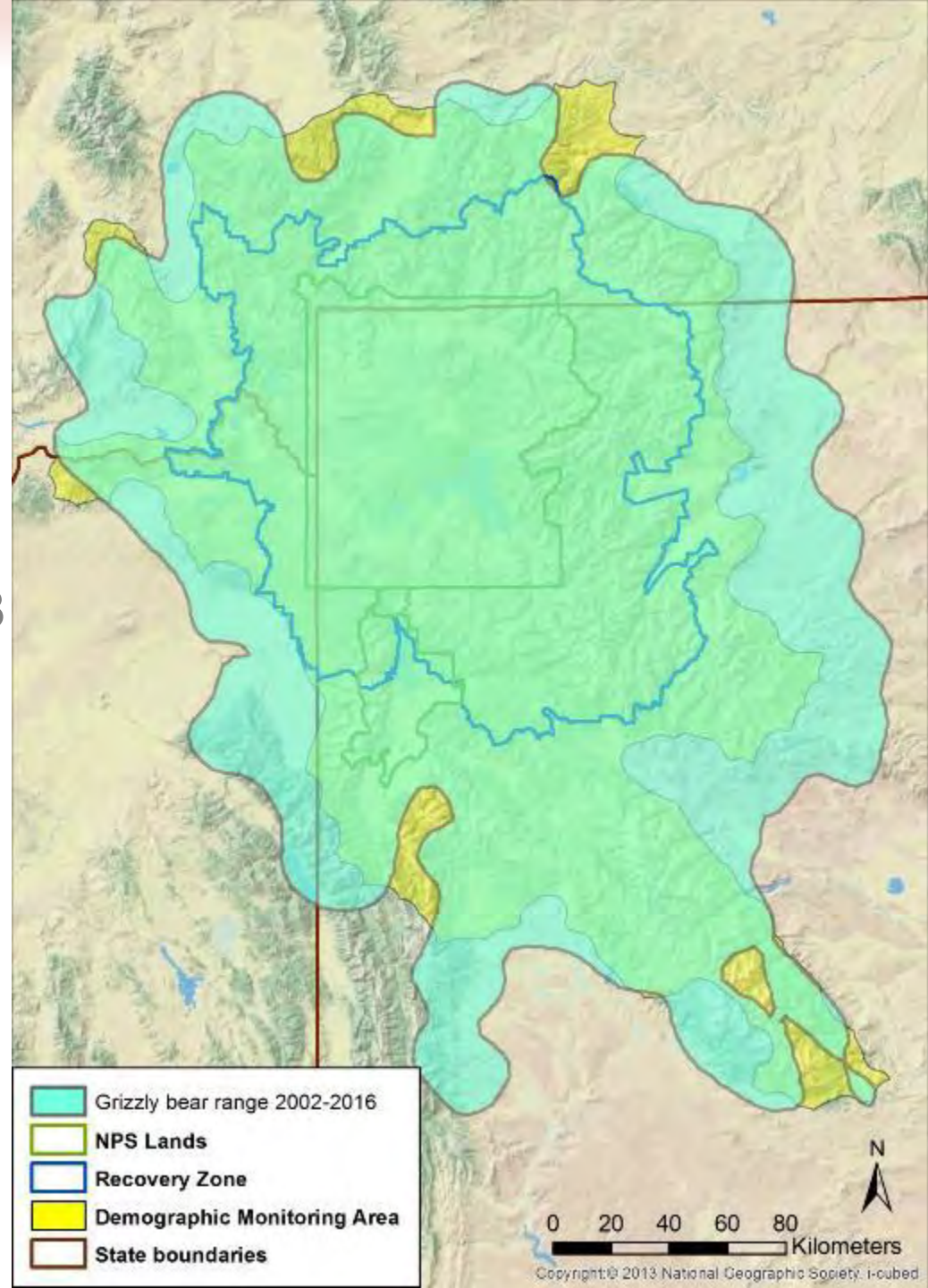
Greater Yellowstone Ecosystem

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



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- Occupied range (2002-2016) = 64,849 km²



Demographic Recovery Criterion #1: Females with Cubs and Population Size



Photo: Jake Davis

Observation flights 2018



GYE Snow Cover 6/3/2018

Observation flights 2018

- **54 aerial observation areas**

Round 1: 54 units

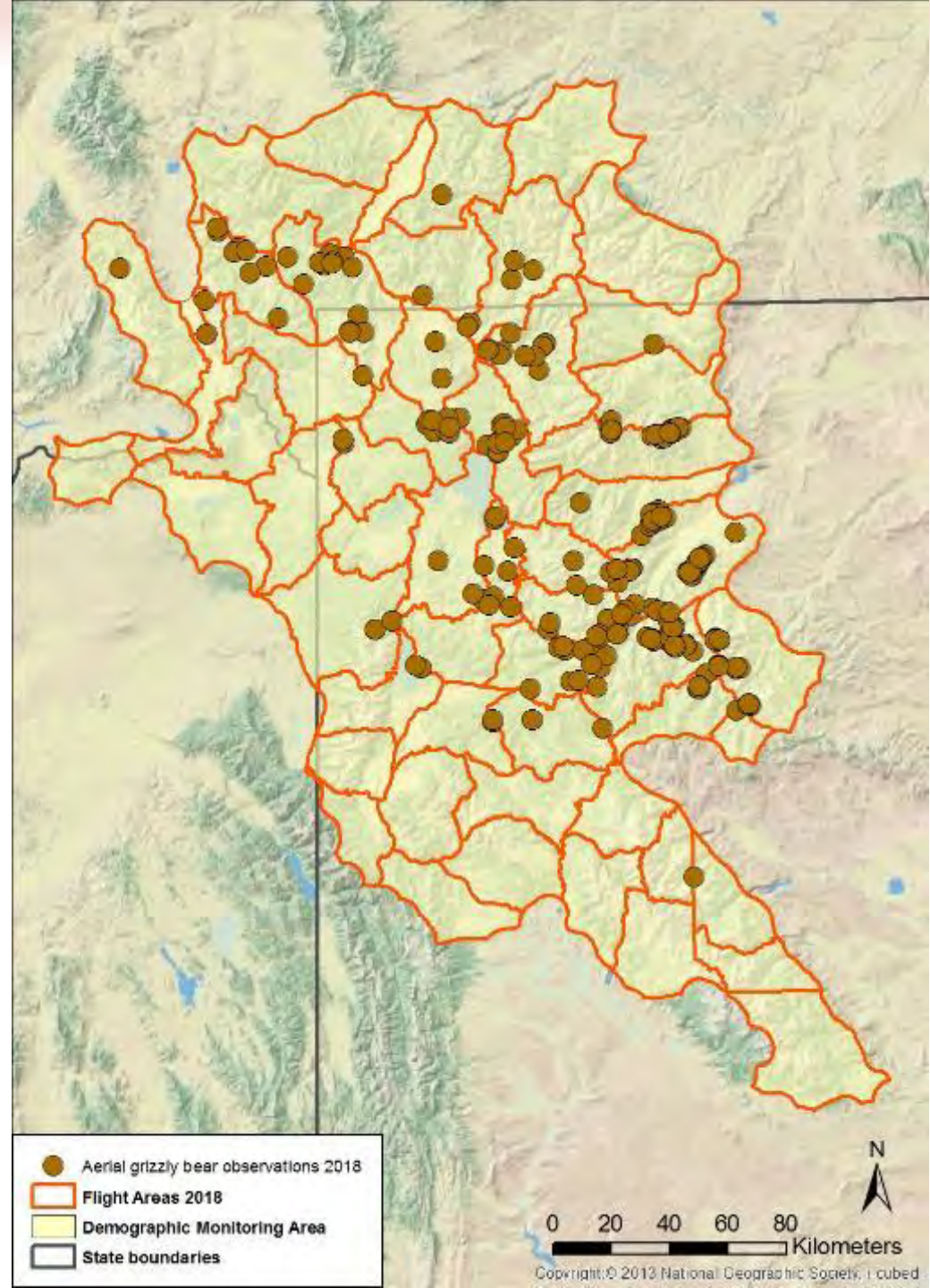
Round 2: 40 units

- **179 survey hours**

- **394 groups**

581 grizzly bears

Preliminary data - Do not cite



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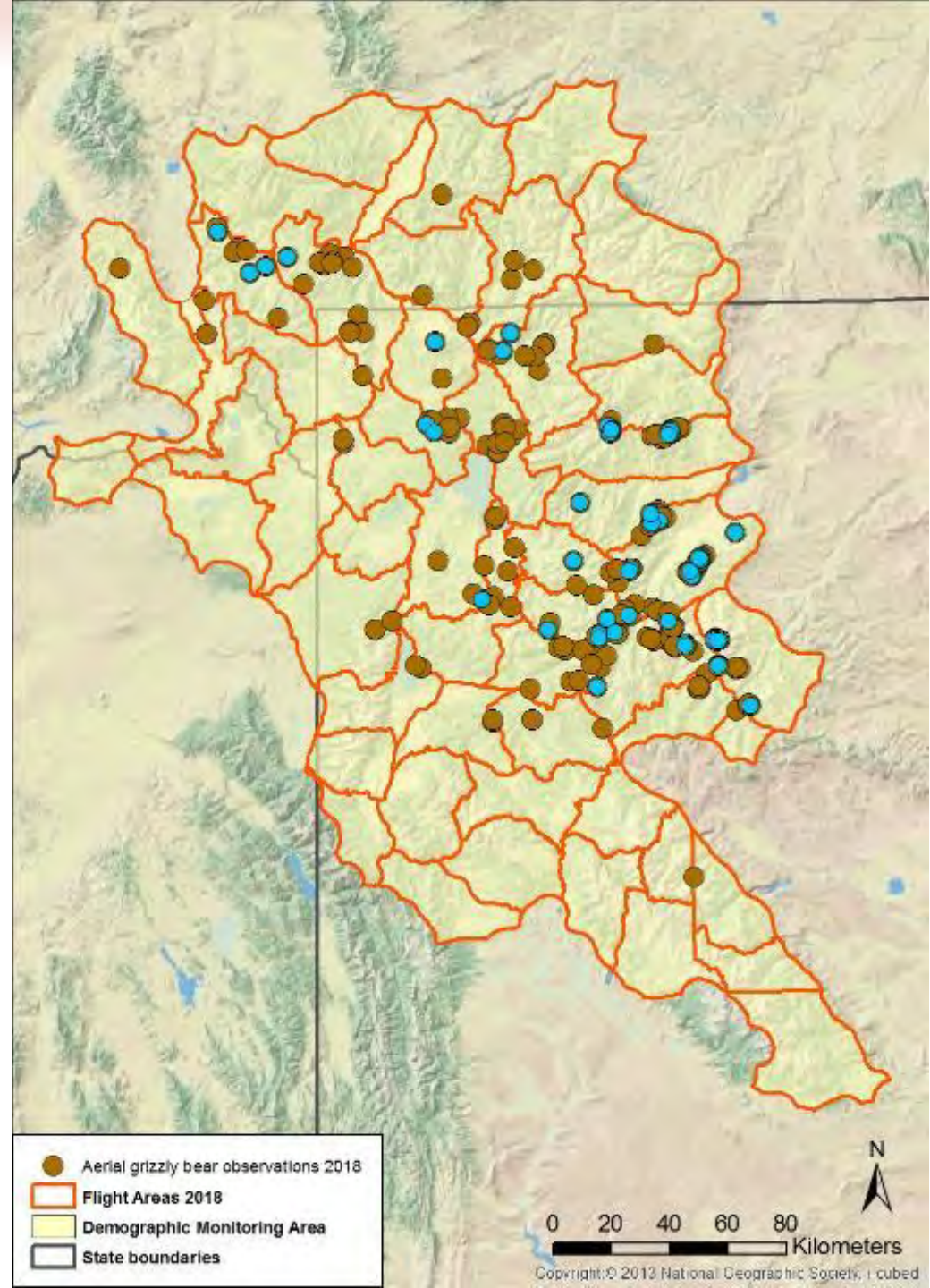
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- **58 females with cubs**

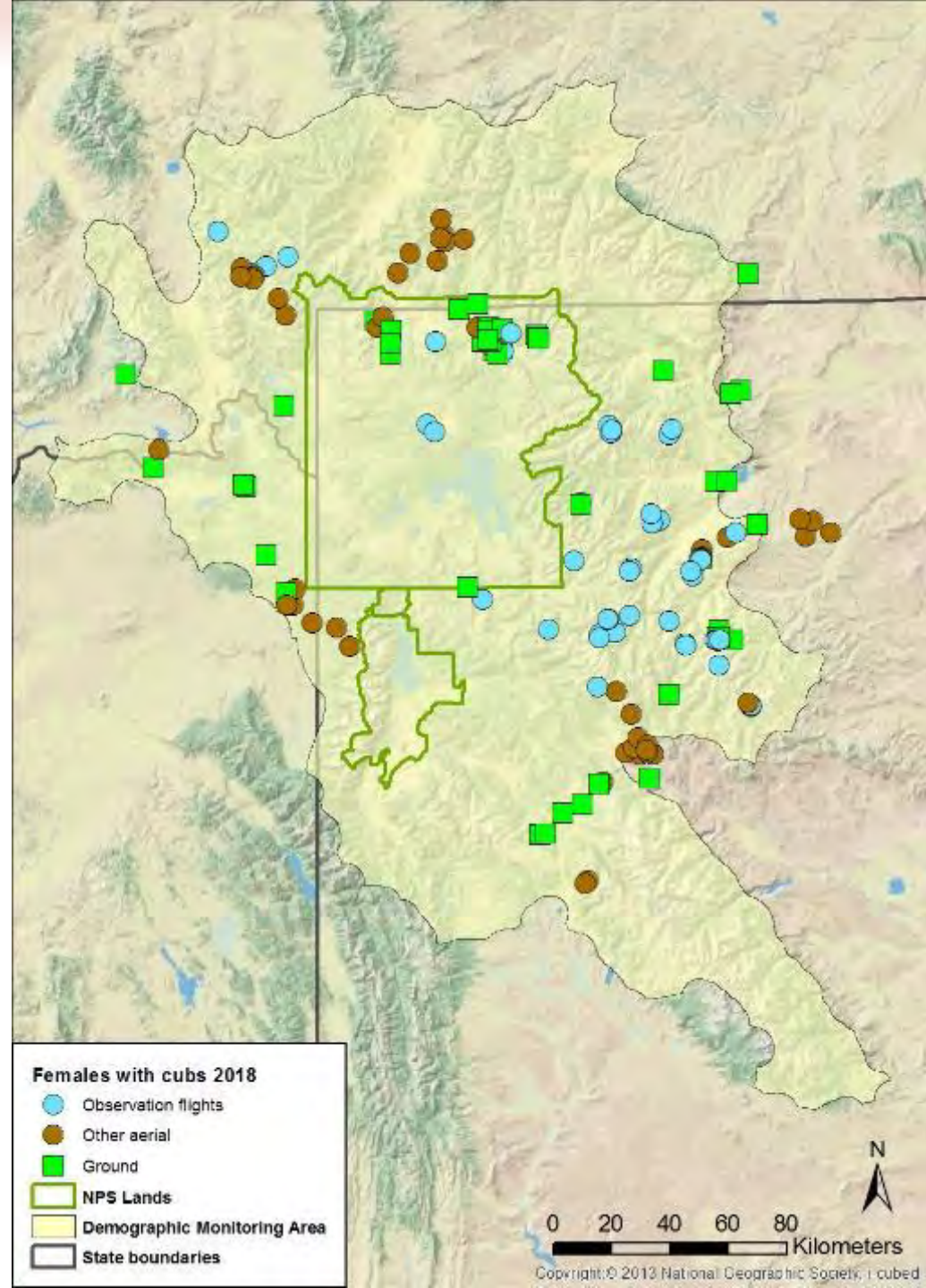
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Females with cubs 2018

- **169 Observations**
 - 58 Observation flights (34%)
 - 56 Other aerial (33%)
 - 55 Ground (33%)

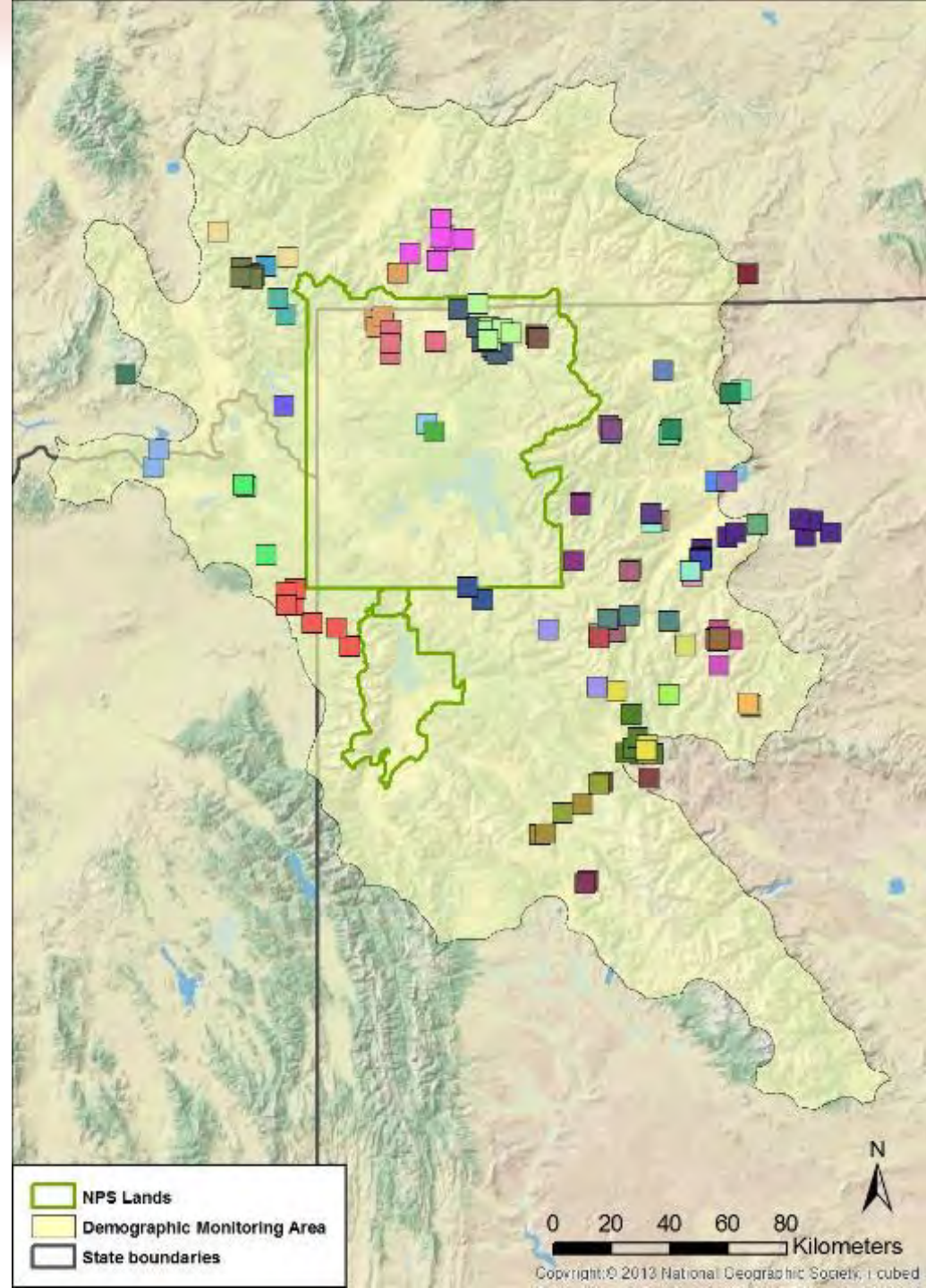
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Females with cubs 2018

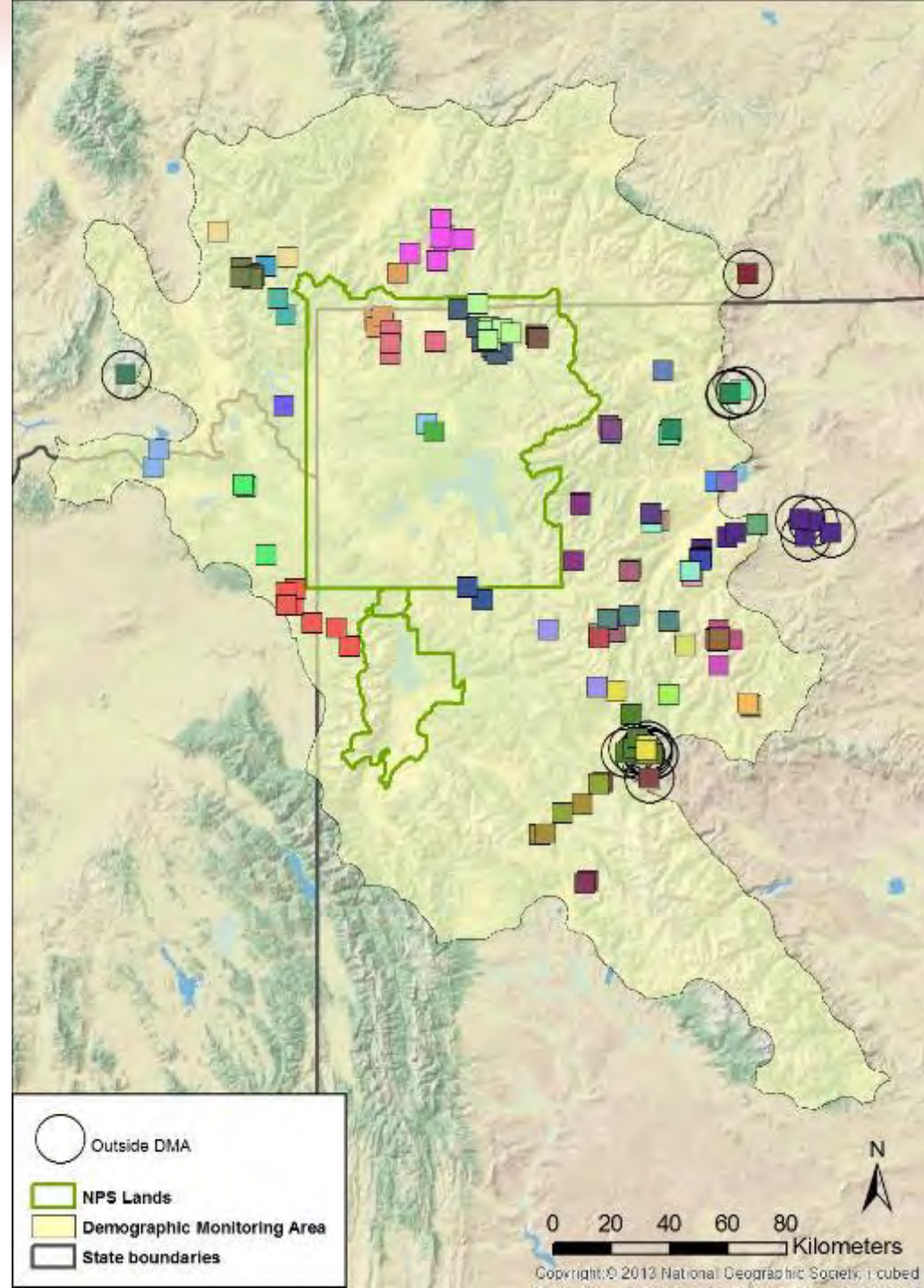
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 - 55 Ground (33%)
- **57 unique females with cubs**
 - Mean litter size = 1.90
 - 10 single (17.5%)
 - 33 twins (57.9%)
 - 14 triplets (24.6%)

Preliminary data - Do not cite



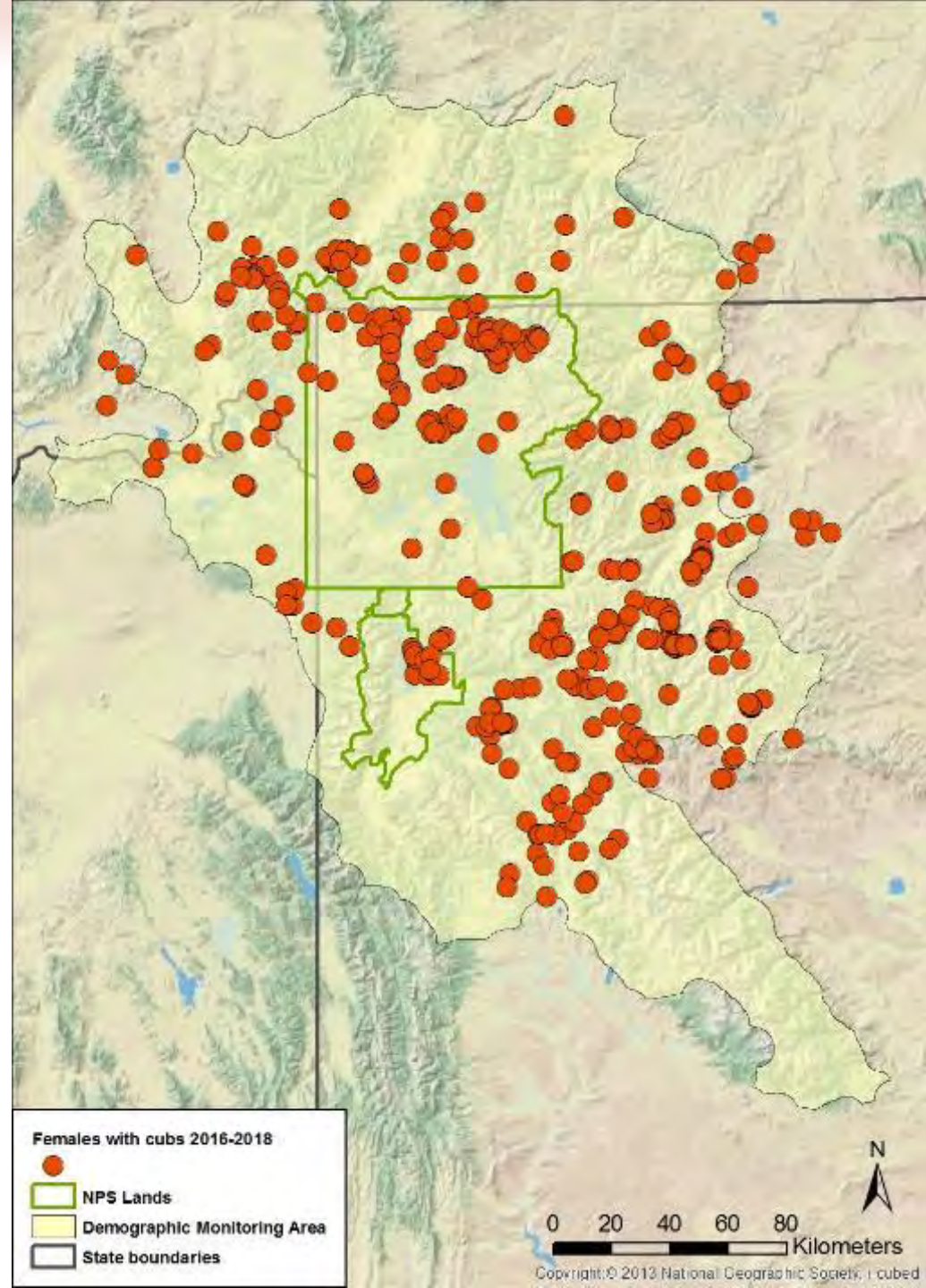
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 - **55 in DMA**
- Preliminary data - Do not cite



Females with cubs 2016-2018

Preliminary data - Do not cite

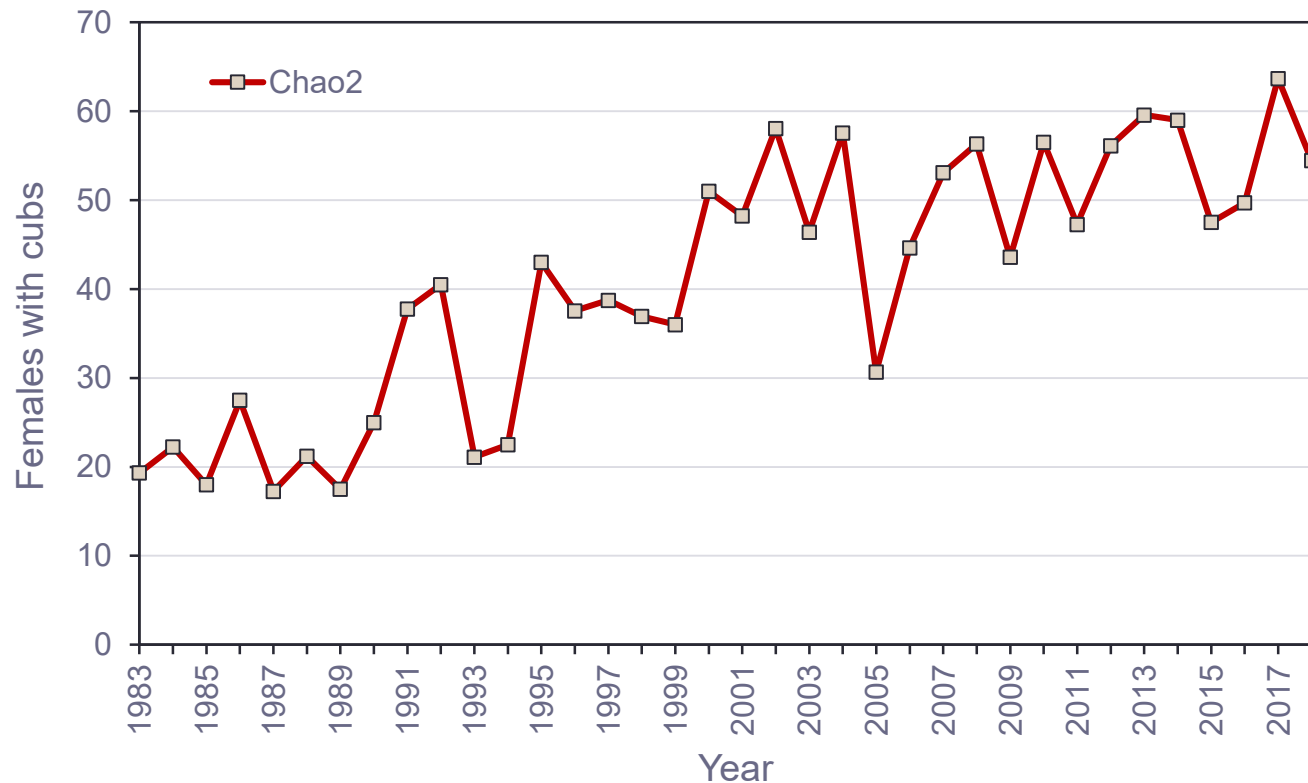


Number of females with cubs 2018 (DMA)

Parameter	Estimate
Unique females with cubs	55
Chao2	54
Model-averaged Chao2	56

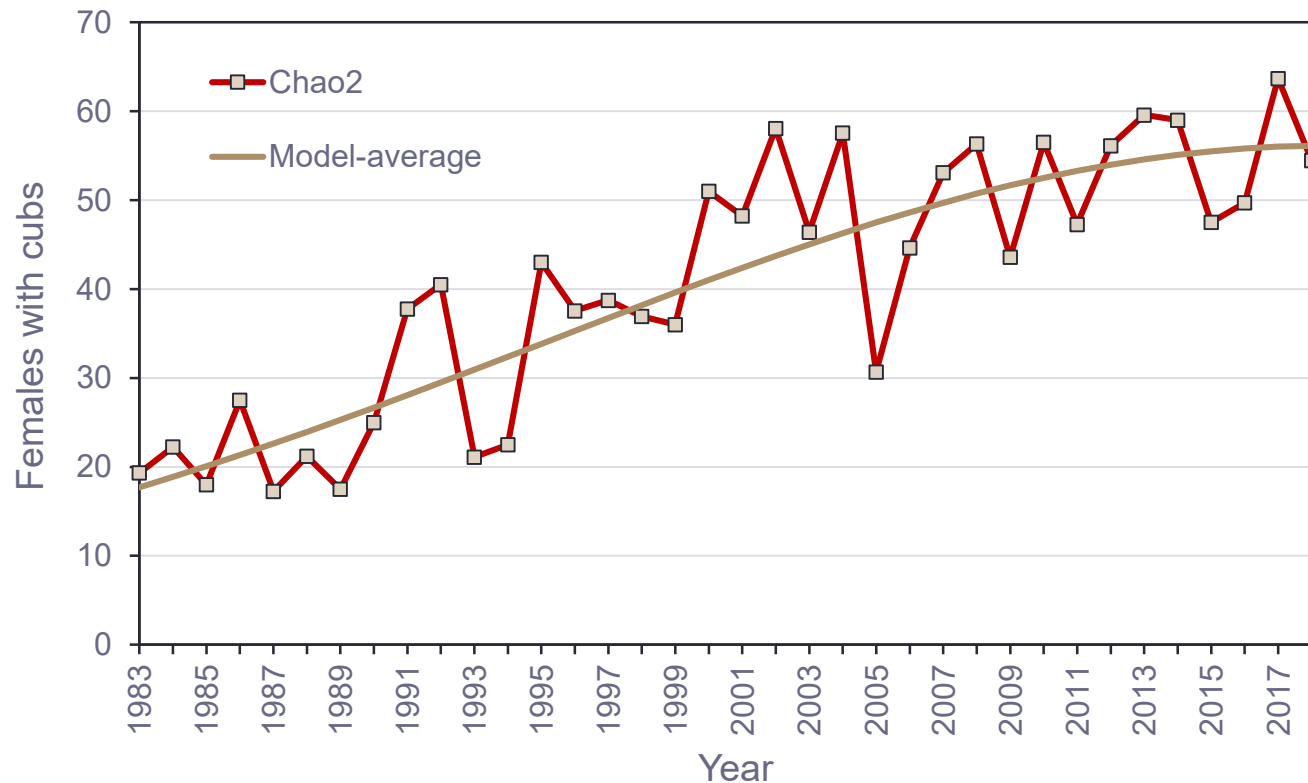
Preliminary data - Do not cite

Trend in annual estimates of females with cubs 1983-2018 (DMA)



Preliminary data - Do not cite

Trend in annual estimates of females with cubs 1983-2018 (DMA)



Preliminary data - Do not cite

Total population estimate 2018 (Chao2 estimator; DMA)

Population segment	Estimate	95% confidence interval	
		Lower	Upper
Independent females (≥ 2 yrs old)	247	197	297
Independent males (≥ 2 yrs old)	247	192	301
Dependent young (cubs and yearlings)	218	197	240
Total	712	635	789

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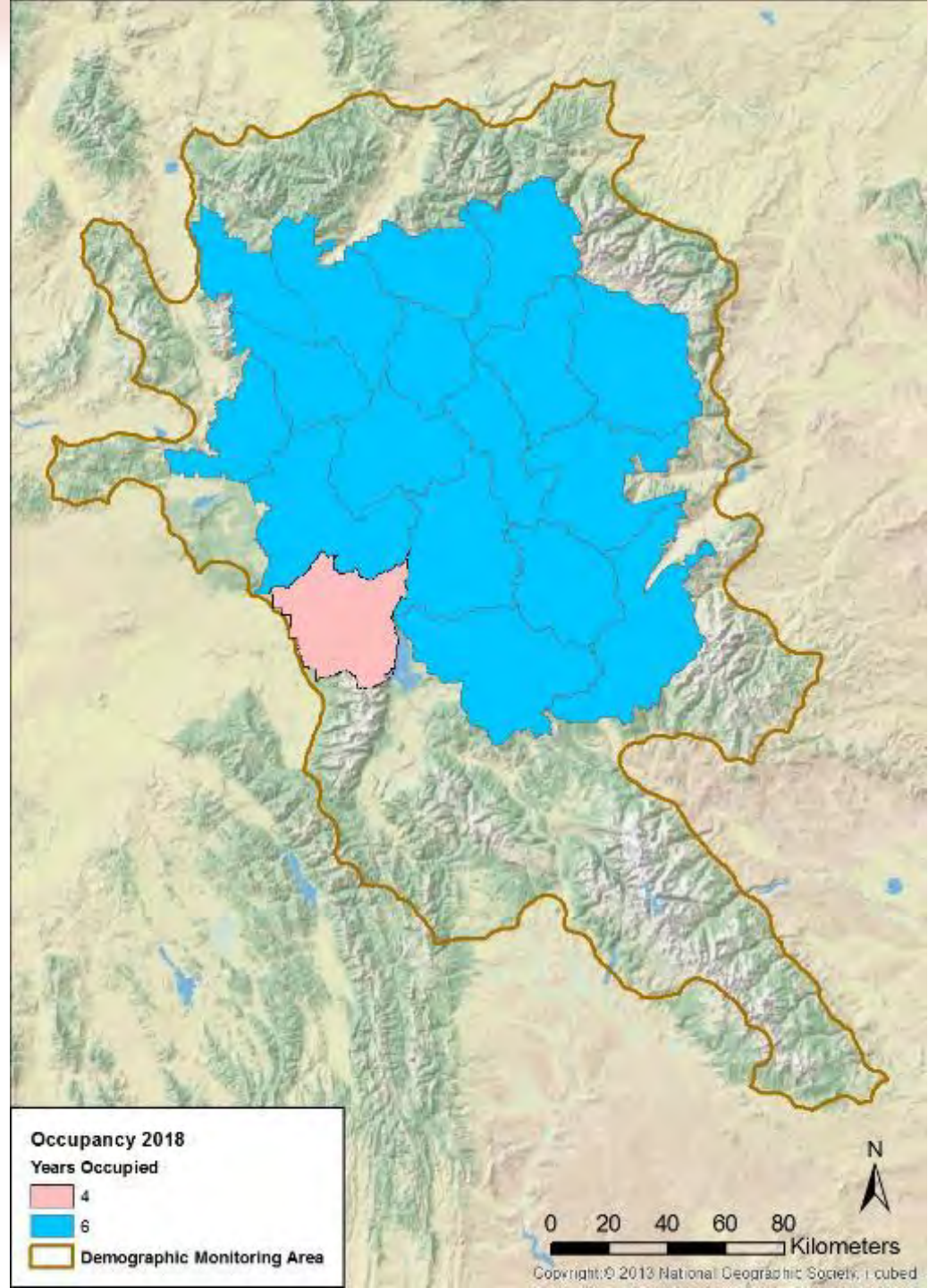
Demographic Recovery Criterion #2: Occupancy by Females with Young



Occupancy by females with young (cubs, yearlings, or 2-year-olds) 2018

- 18 of 18 Bear Management Units (BMUs) occupied during 2018)
- 18 of 18 BMUs occupied at least 4 of last 6 years (2013-2018)

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Demographic Recovery Criterion #3: Mortalities and Mortality Rates



Photo: WGFD

Known and probable mortalities 2018

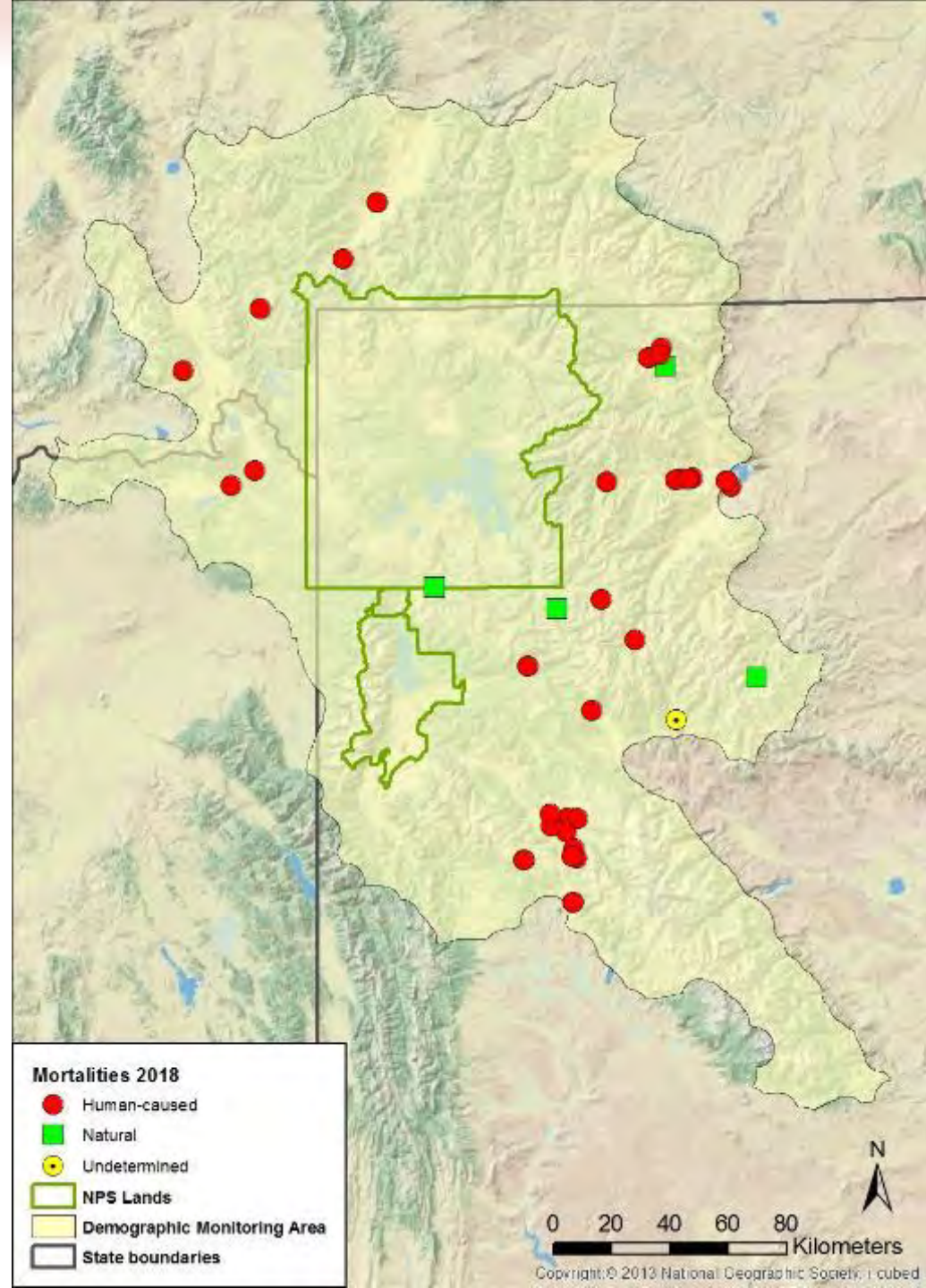
- **46 in DMA**

41 human-caused

4 natural

1 undetermined cause

Preliminary data - Do not cite



Known and probable mortalities by area, sex, and age class 2018 (DMA)

Area	Sex	Age class		Total
		Dependent (<2 years old)	Independent (≥2 years old)	
Inside DMA	Female	0	11	11
	Male	5	21	26
	Unknown	6	3	9
	Total	11	35	46

Preliminary data - Do not cite

Mortality rate thresholds

	Total Grizzly Bear Population Estimate*		
	≤674	675–747	>747
Total mortality rate for independent <u>FEMALES</u> .	<7.6%	9%	10%
Total mortality rate for independent <u>MALES</u> .	15%	20%	22%
Total mortality rate for dependent young.	<7.6%	9%	10%

Estimated percent mortality for population segments (DMA)

Population segment	Estimated N	Documented mortality	Estimated total mortality ^a	Estimate % mortality
Independent aged females (≥ 2 yrs old)	247	12	15	6.1
Independent aged males (≥ 2 yrs old)	247	23	36	14.6
Dependent young (< 2 yrs old)	218	11		5.0 ^b

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

^b Estimated from documented human-caused mortalities only

^c Sex unknown for 3 bears; sex assigned through random generator

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Other Monitoring Data

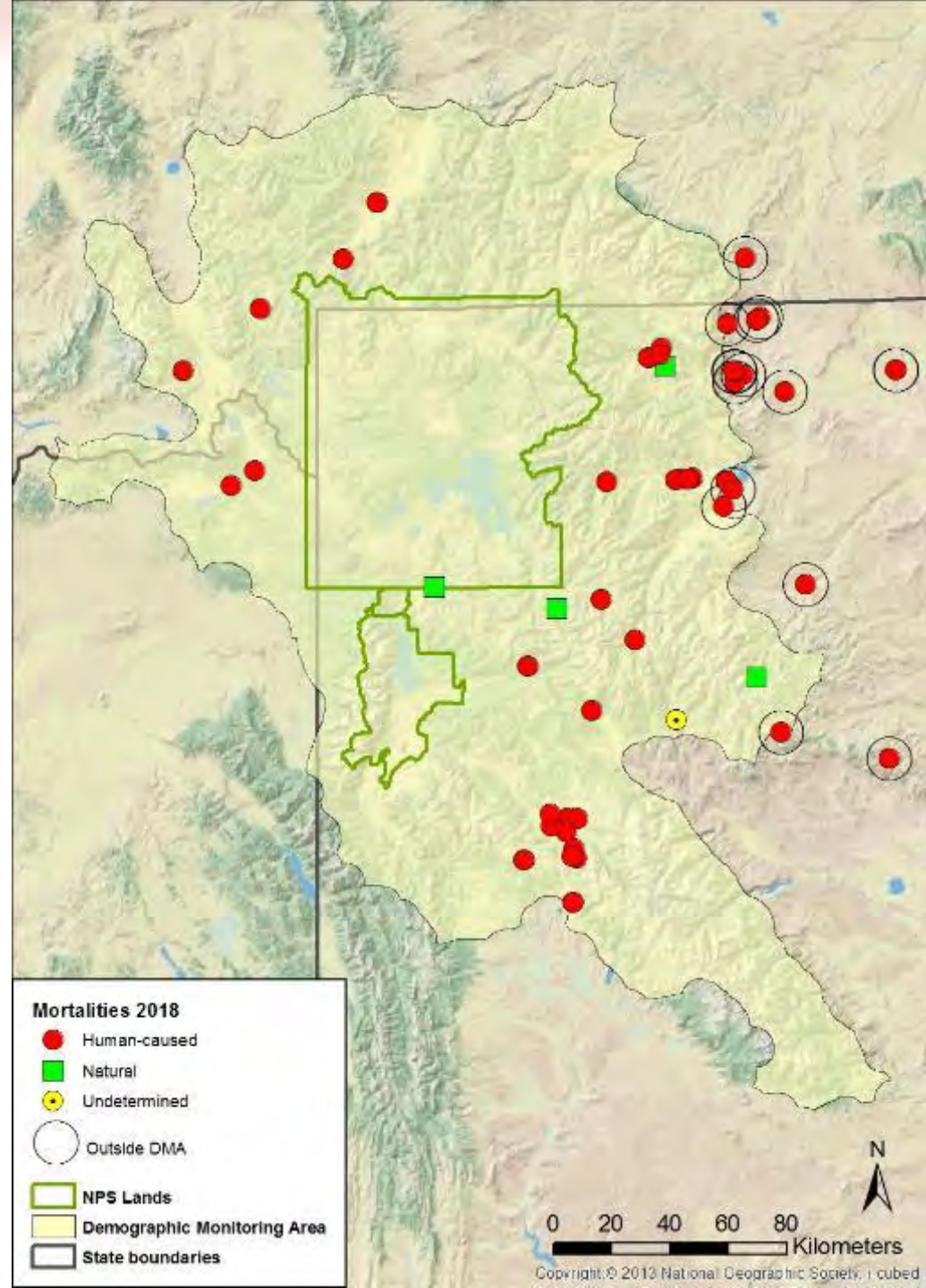


Photo: Jake Davis

Known and probable mortalities 2018

- 46 in DMA
 - 41 human-caused
 - 4 natural
 - 1 undetermined cause
- 18 outside DMA
 - all human-caused

Preliminary data - Do not cite



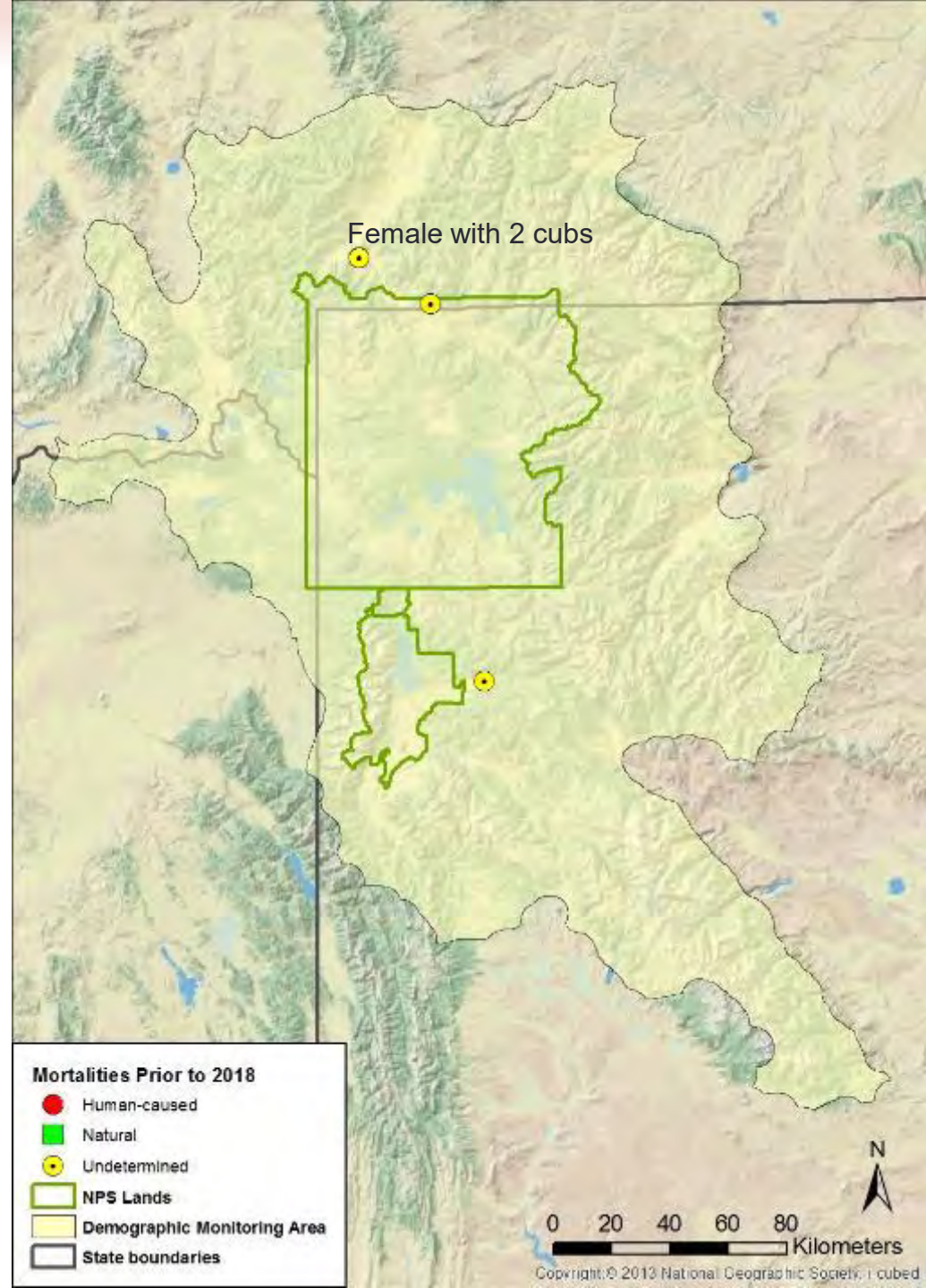
Known and probable mortalities 2018

- 5 additional mortality from prior years

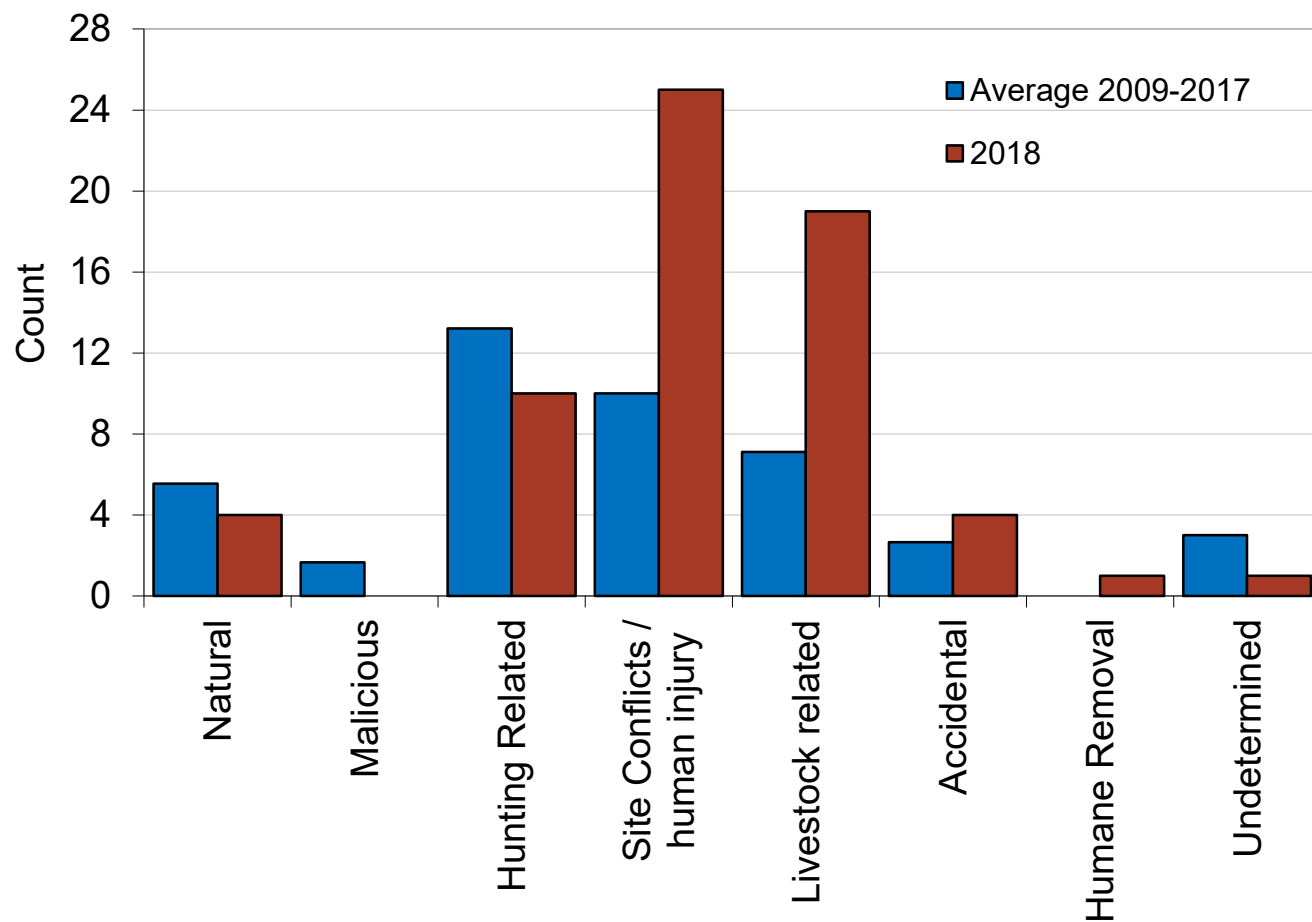
4 from 2017

1 likely from 2016

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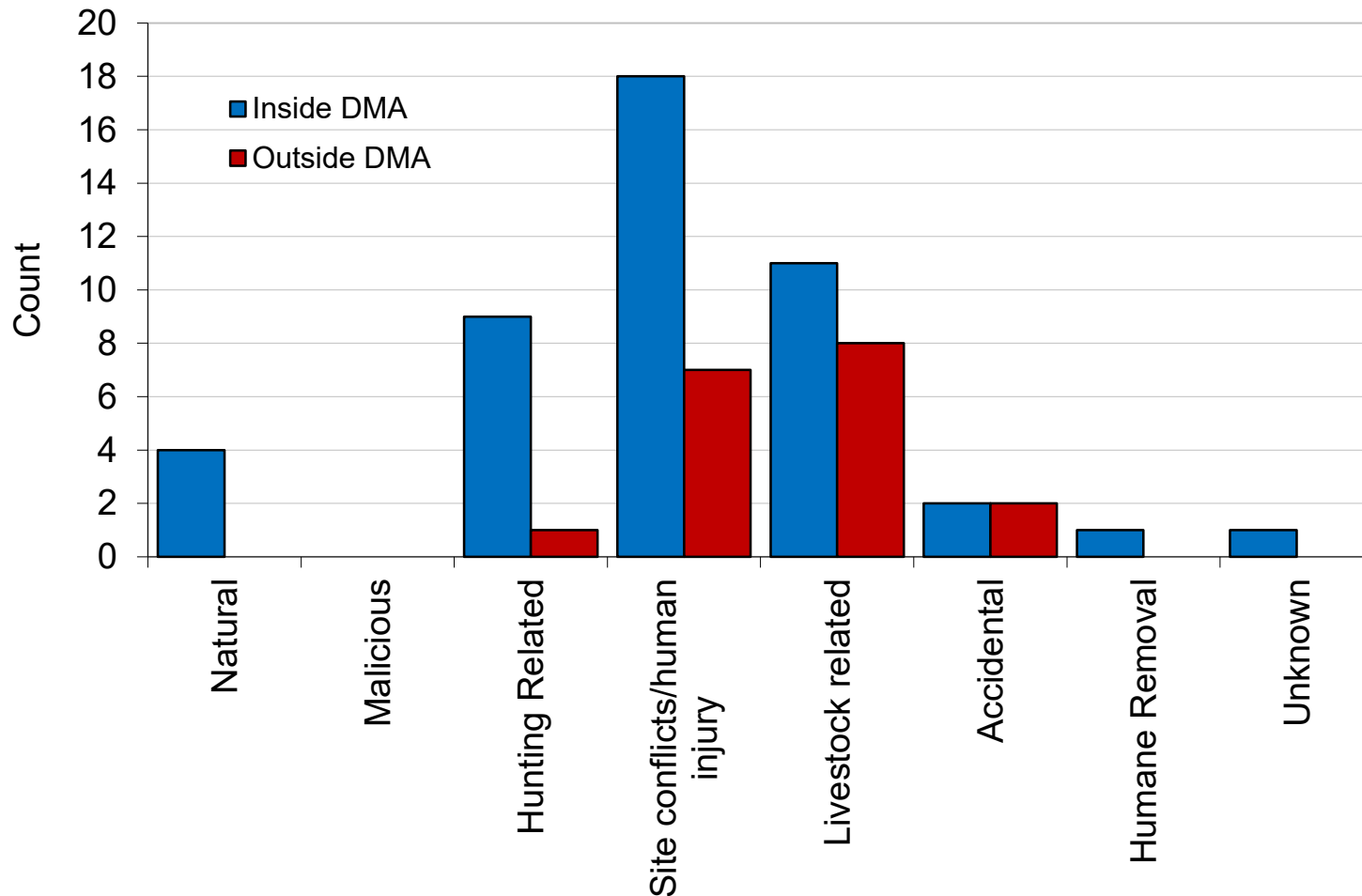


Number of mortalities by cause for 2009-2017 (average) and 2018



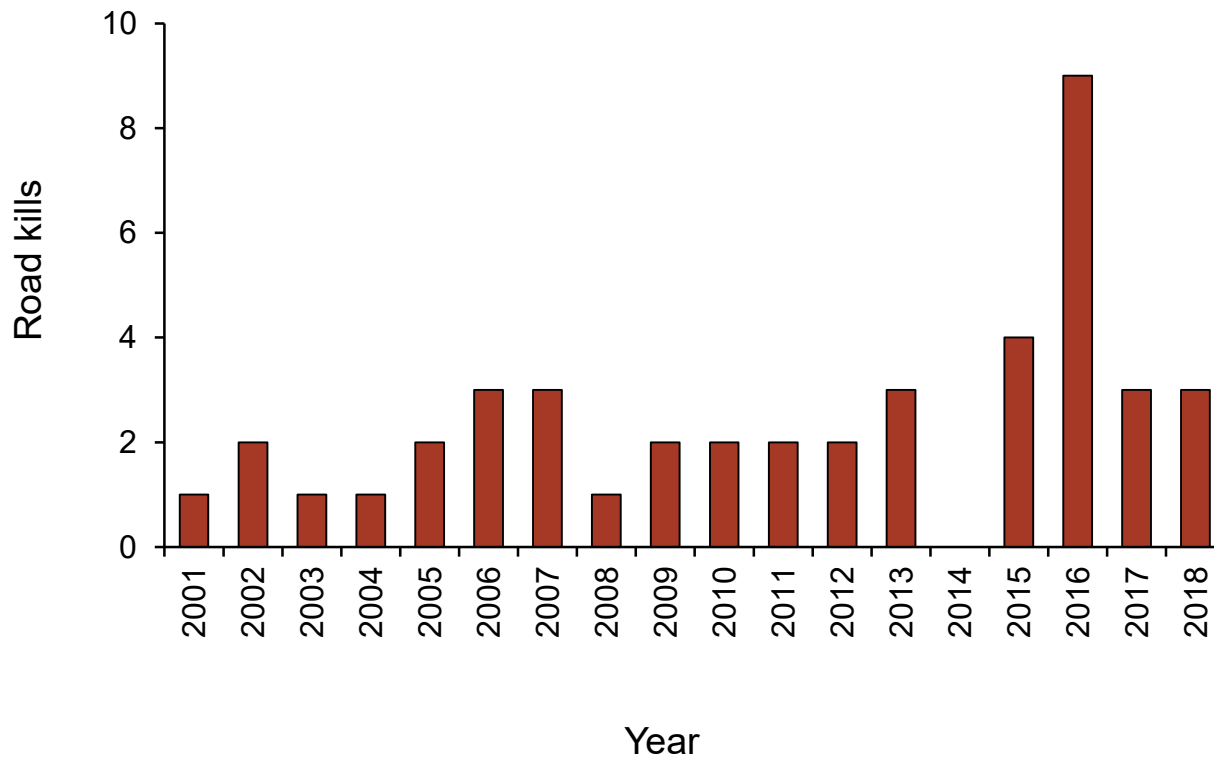
Preliminary data - Do not cite

Mortality causes in and out DMA 2018



Preliminary data - Do not cite

Known and probable mortality from vehicle strikes 2001–2018



Preliminary data - Do not cite

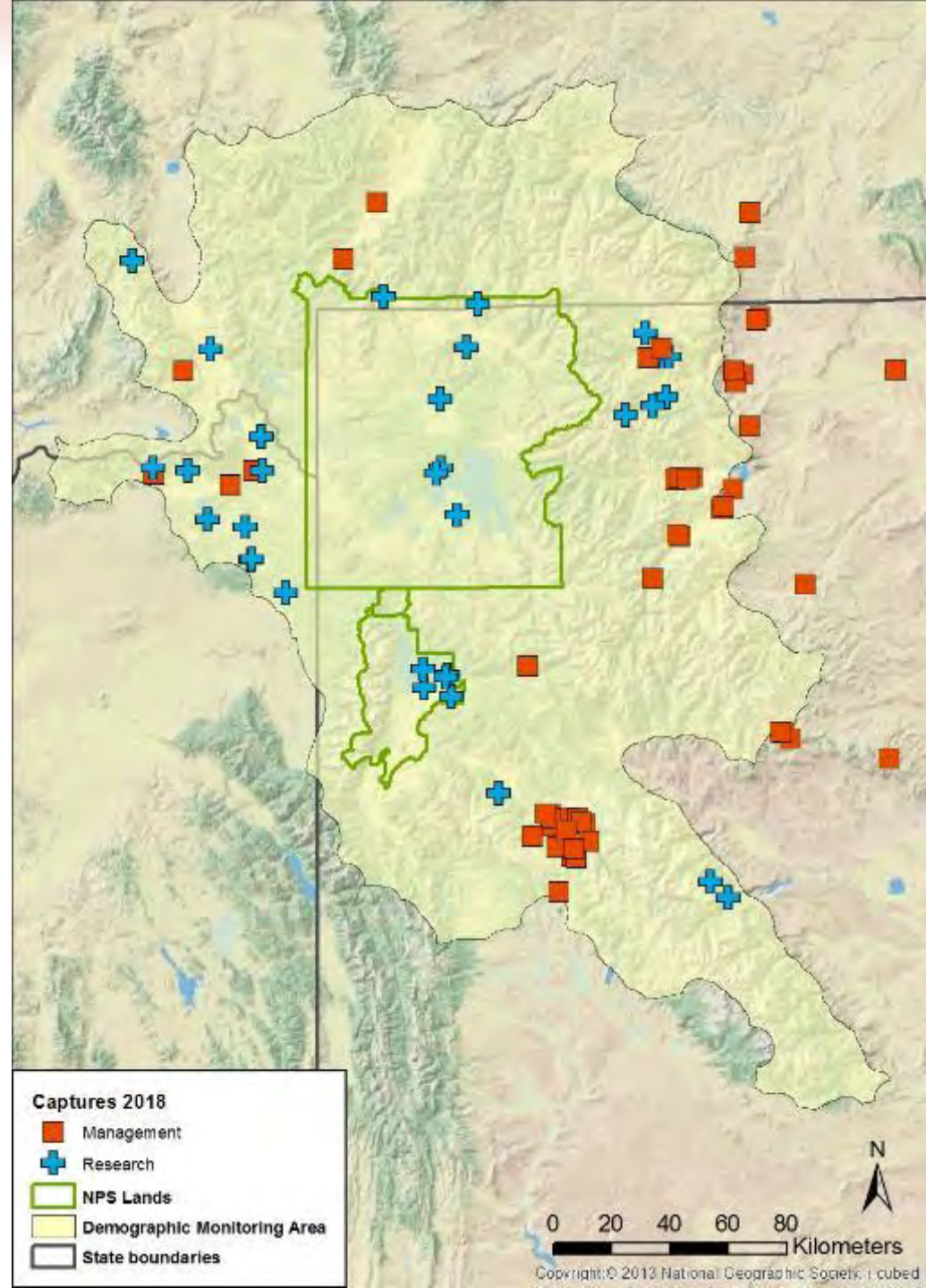
Captures and Known-Fate Monitoring



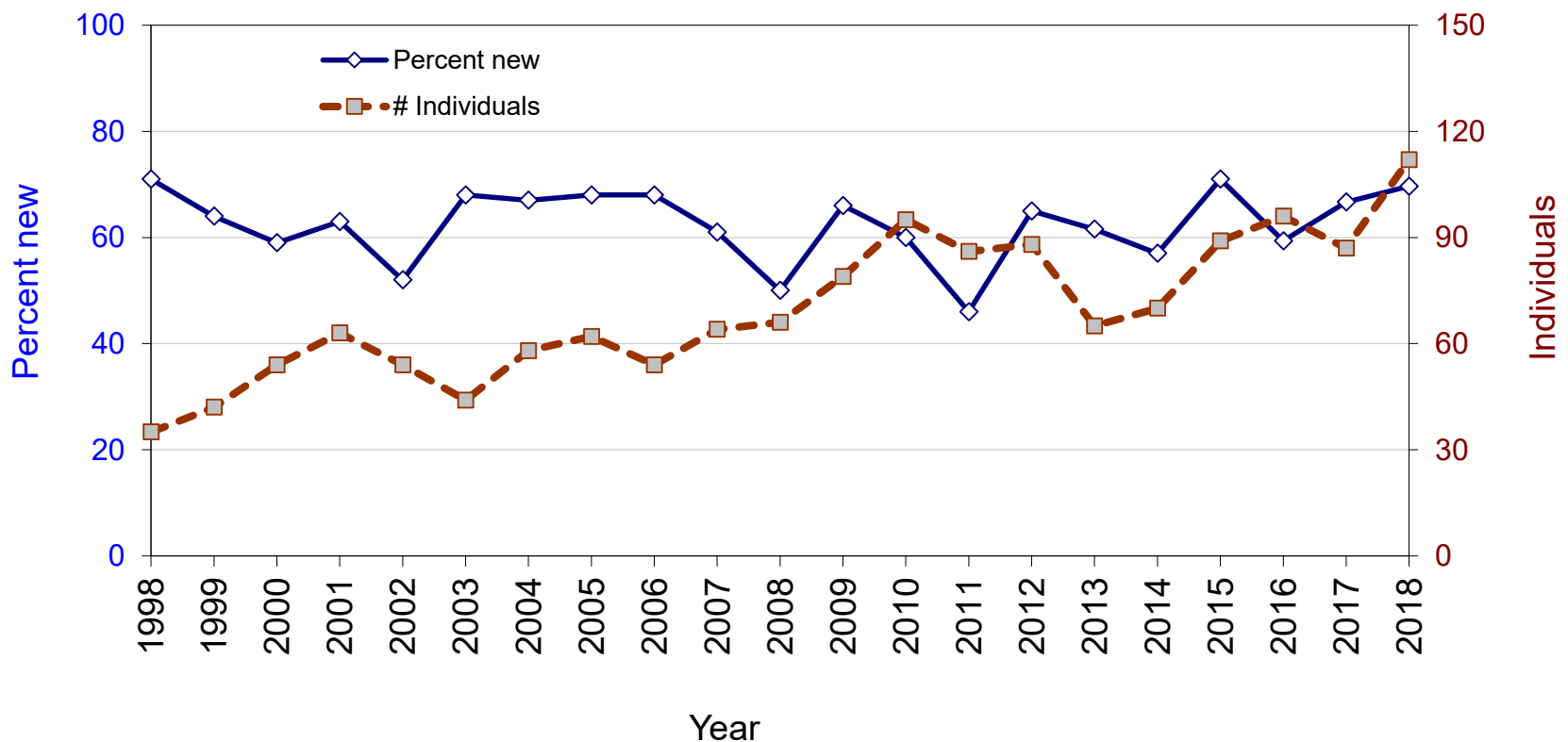
Grizzly bear captures 2018

- **Total captures = 129**
 - Research = 57
 - Management = 72
- **Individuals bears = 112**
 - Females = 36
 - Males = 73
 - Unknown = 3
- **New bears = 78**

Preliminary data - Do not cite



Number of individuals and percent new captures 1998–2018



Preliminary data - Do not cite

Grizzly bears radio-monitored 2018

Total monitored = 105

Adult females = 43

Current = 63

Females = 37

Males = 26

Bears missing = 1



Photo: Jessica Hadley/NPS

Preliminary data - Do not cite

**Study Team website:
search “IGBST”**

