

Interagency Grizzly Bear Study Team 2024 Research & Monitoring Update



Photo: J. Davis

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Overview

Research and monitoring update

- Females with cubs
- Occupancy of reproductive females
- Mortalities

Miscellaneous updates

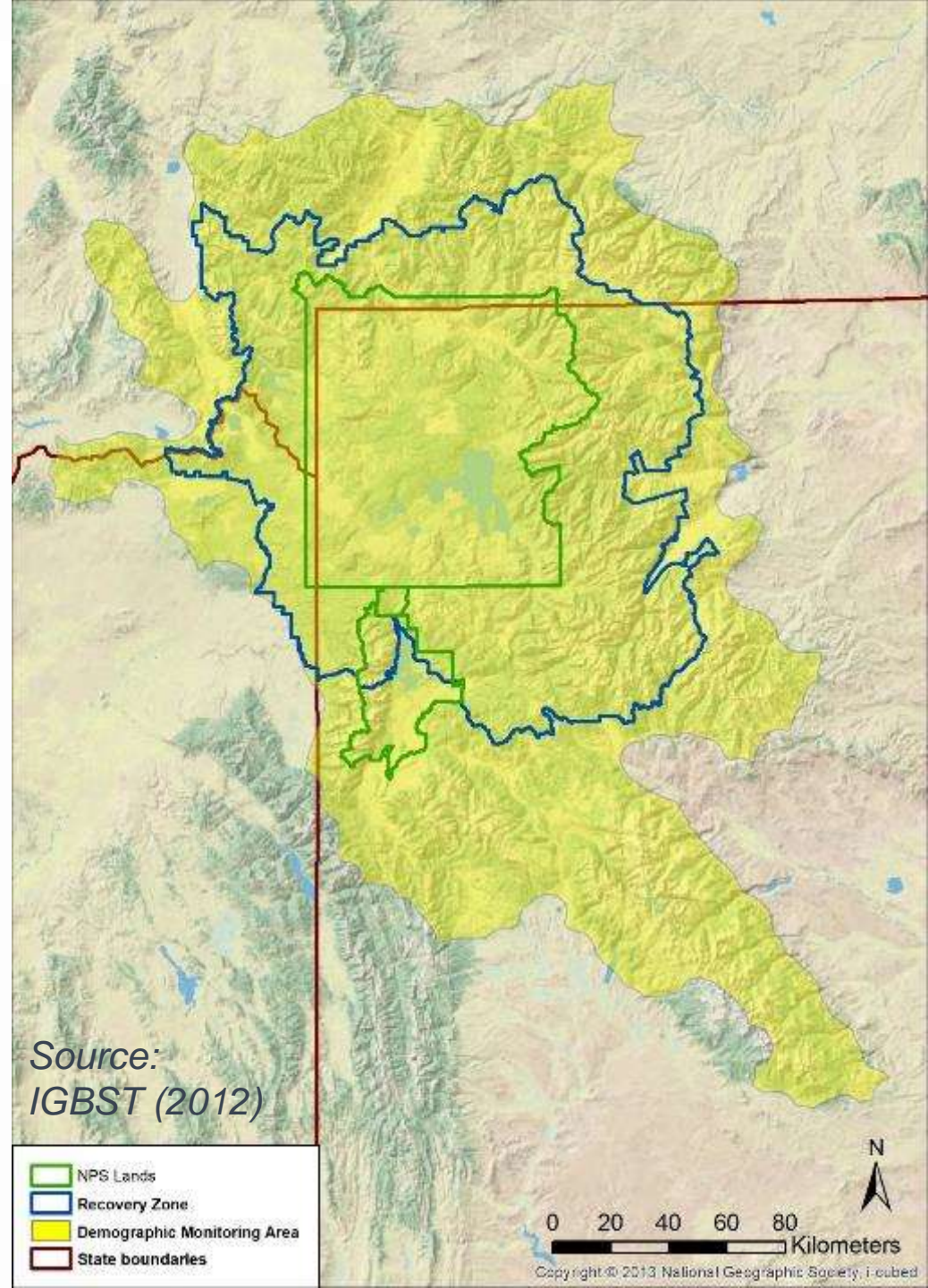
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Greater Yellowstone Ecosystem

National Parks = 10,344 km²

Primary Conservation
Area/Recovery Zone = 23,828
km²

Demographic Monitoring Area
(DMA) = 49,931 km² (19,279
mi²)



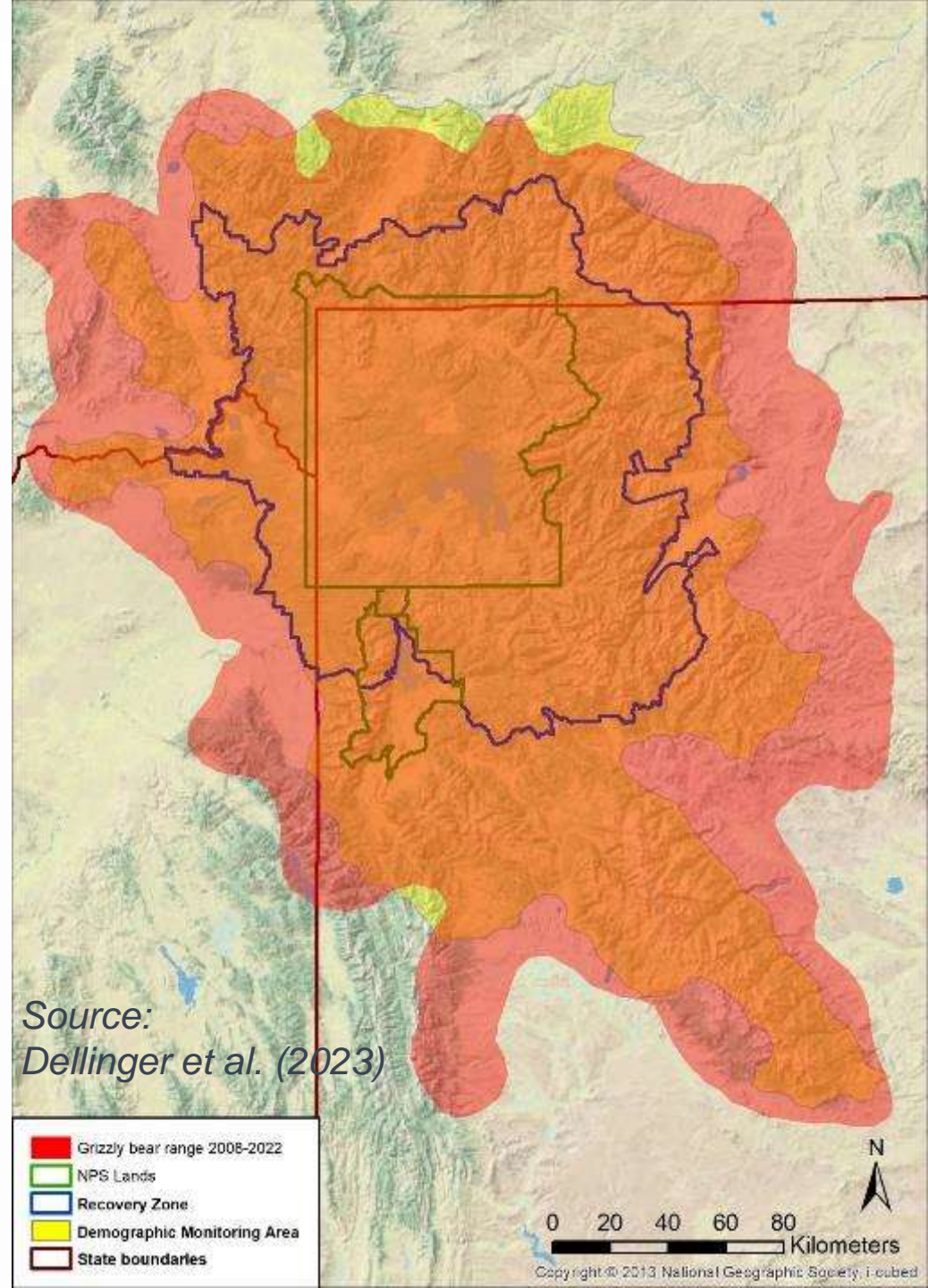
Greater Yellowstone Ecosystem

National Parks = 10,344 km²

Primary Conservation Area/Recovery Zone = 23,828 km²

Demographic Monitoring Area (DMA) = 49,931 km² (19,279 mi²)

Estimated grizzly bear range (2008-2022) = 70,101 km² (27,066 mi²)

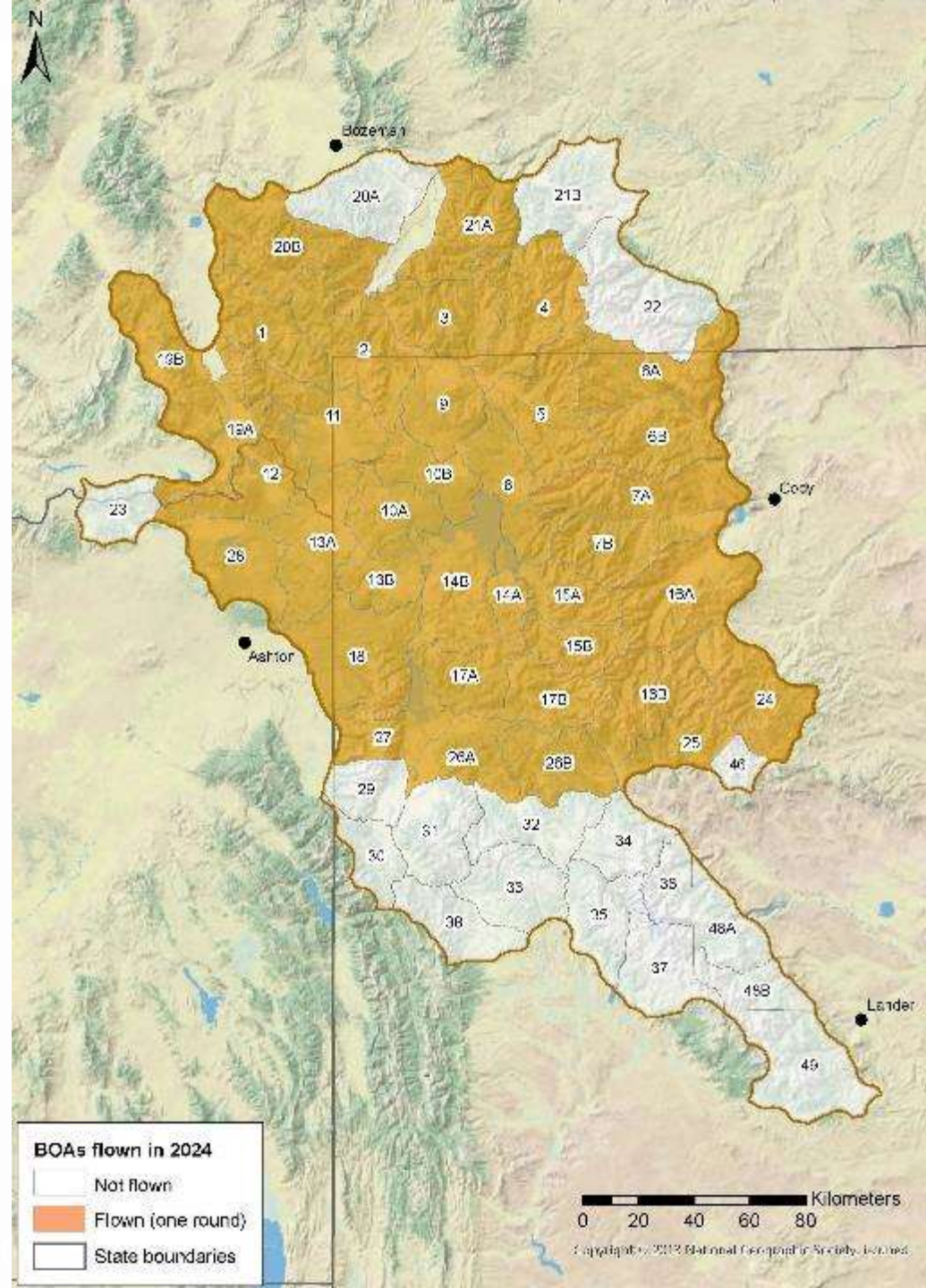


Females with Cubs and Population Size



Observation flights 2024

- 36 units flown
- 18 units not flown
- One flight per unit



Preliminary information-subject to revision. Not for citation or distribution.

Females with cubs 2024

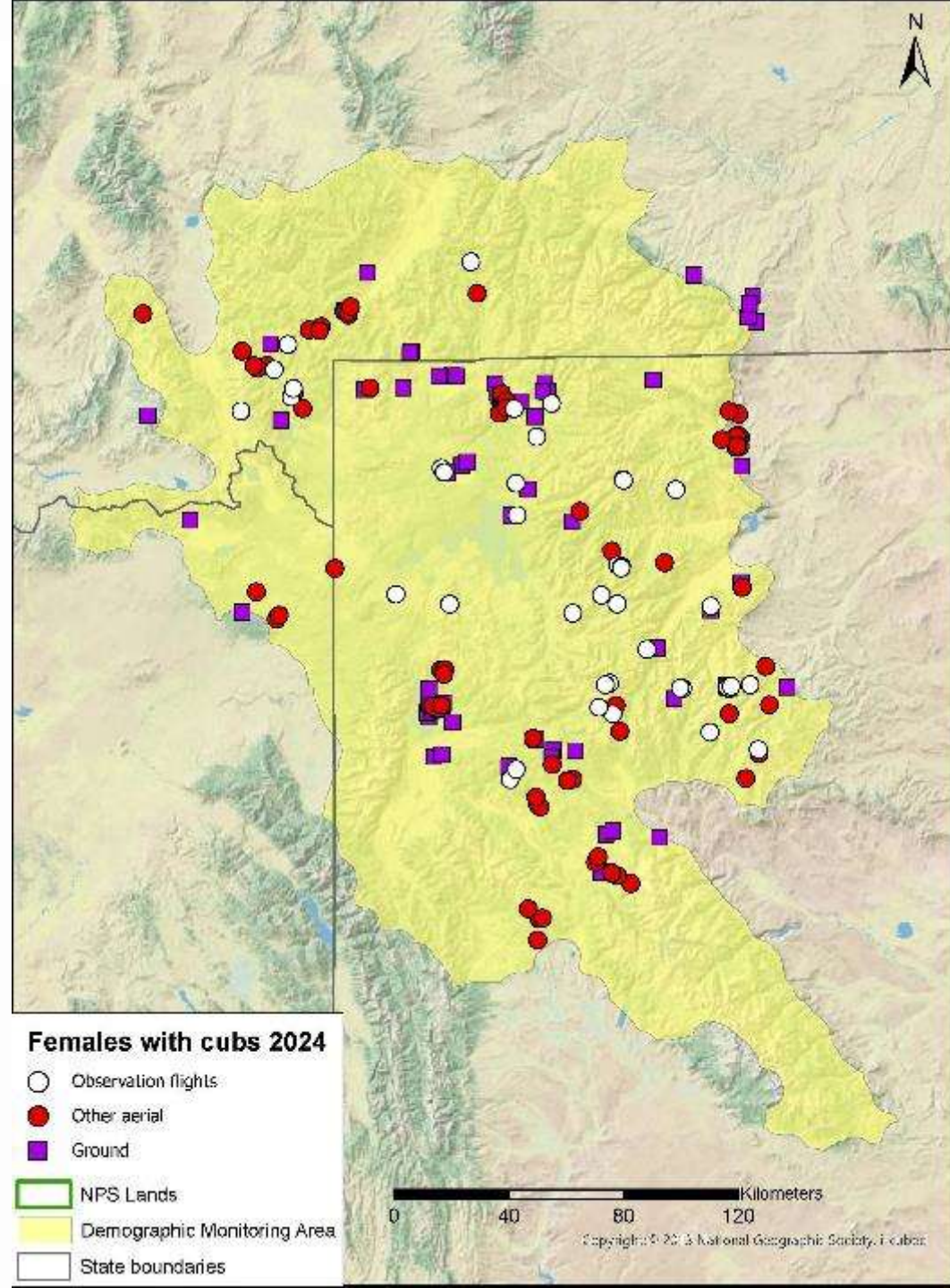
199 observations

42 observation flights (21%)

77 other aerial (39%)

80 ground (40%)

Data as of 11/15/2024



Females with cubs 2024

199 observations

42 observation flights (21%)

77 other aerial (39%)

80 ground (40%)

78 unique females with cubs

Mean litter size = 1.8

21 single (27%)

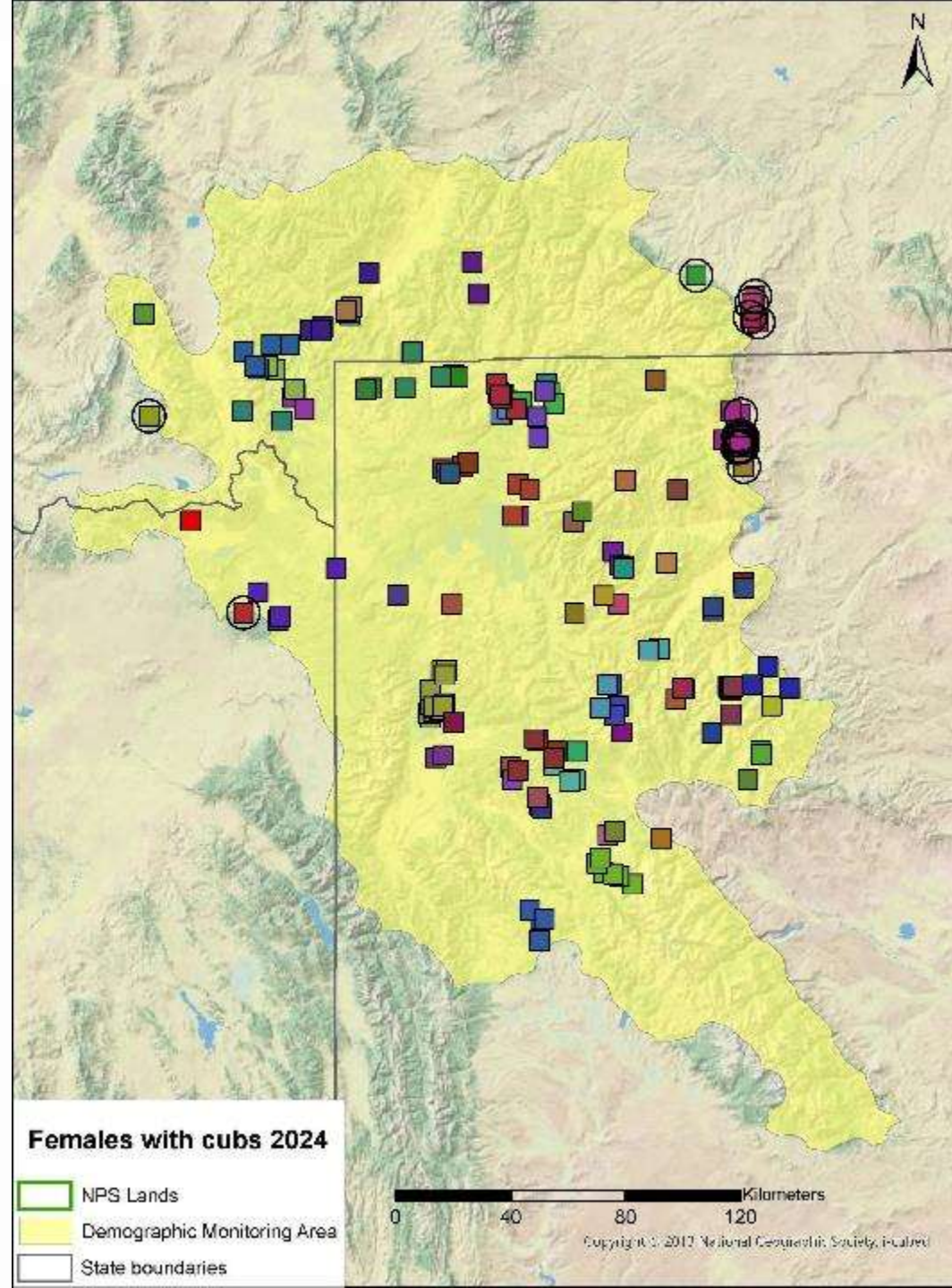
44 twins (56%)

12 triplets (15%)

1 quintuplet (1%)*

Data as of 11/15/2024

Preliminary information-subject to
revision. Not for citation or distribution.



Number of females with cubs 2024

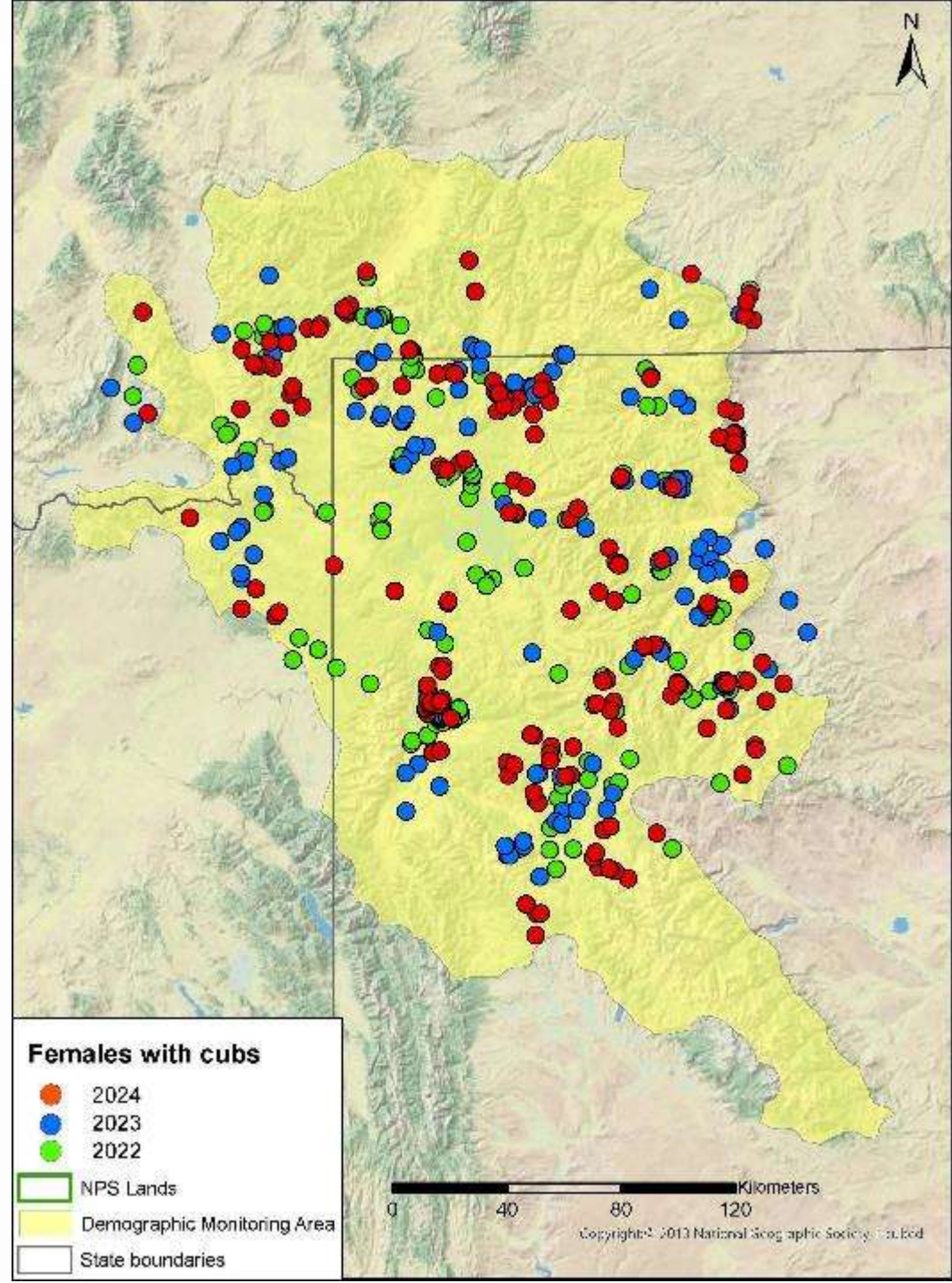
Parameter	Estimate
Unique females with cubs	78
Unique females with cubs (DMA only)	72
Unique females with cubs (DMA only + excluding telemetry sightings)	65
Chao2 estimate (DMA only)	87

Data as of 11/15/2024

Females with cubs 2022-2024

Observations

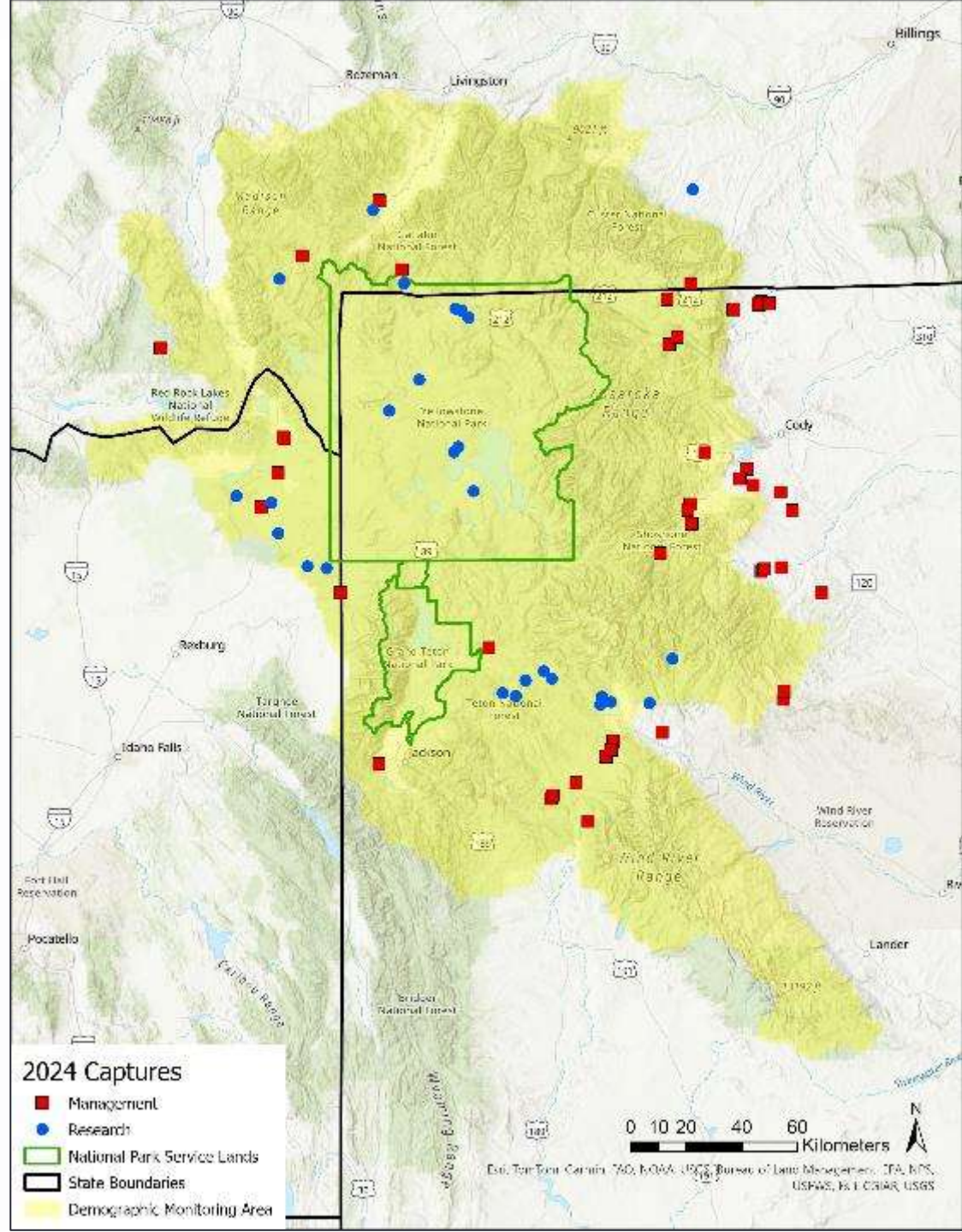
Den emergence through 31 Aug



Grizzly bear captures 2024

- **Total captures = 103**
 - Research = 50
 - Management = 53
- **Individual bears = 95**
 - Females = 28
 - Males = 66
 - Unknown = 1
- **New bears = 69**

Captures as of 11/07/2024



Grizzly bears radio monitored 2024

Total monitored = 92

Adult females = 35

Current = 52

Females = 32

Males = 20

Bears missing = 0

(5 with probable battery failure)

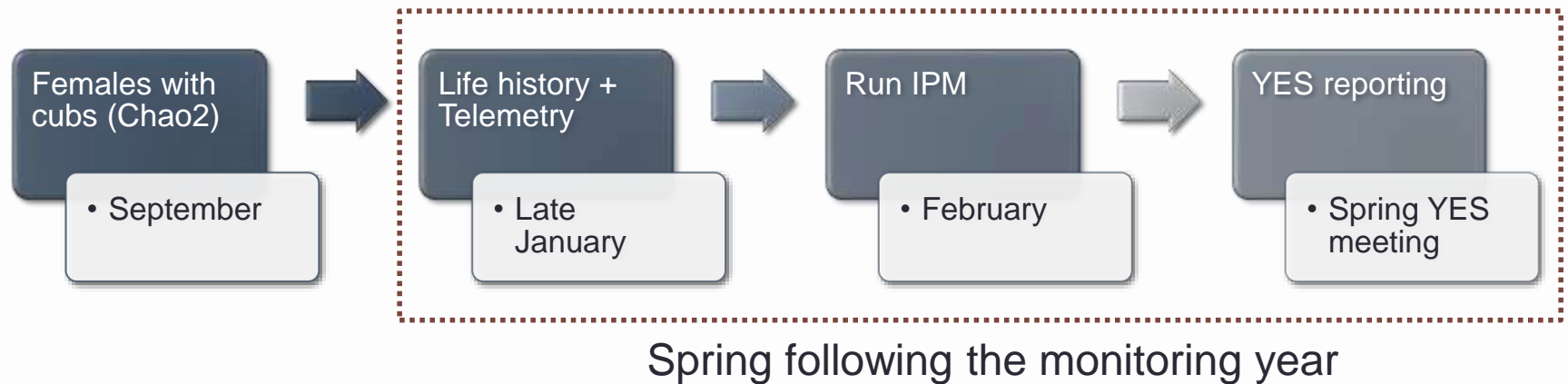


Photo: F.T. van Manen/USGS

Monitored as of 11/07/2024

Integrated Population Model

- Allows for a more unifying and flexible monitoring framework



Gould et al. 2024

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A unified approach to long-term population monitoring of grizzly bears in the Greater Yellowstone Ecosystem

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ABSTRACT

Long-term wildlife research and monitoring programs strive to maintain consistent data collections and analytical methods. Incorporating new techniques is important but can render data sets incongruent and limit their potential to discern trends in demographic parameters. Integrated population models (IPMs) can address these limitations by combining data sources that may span different periods into a unified statistical framework while providing a holistic view of population dynamics. We developed an IPM in a Bayesian framework for grizzly bears (*Ursus arctos*) in the Greater Yellowstone Ecosystem. We coupled demographic data with multiple, independent vital rates over 4 decades

Reminder: population size 2023 (IPM, DMA)

Population segment	Median estimate
Independent females (≥ 2 yrs)	353
Independent males (≥ 2 yrs)	365
Yearlings	101
Cubs born	205
<hr/>	
Total estimate 2023*	1,030 (95% CI = 865–1,230)

*Sum of segment medians slightly different from median of total estimate

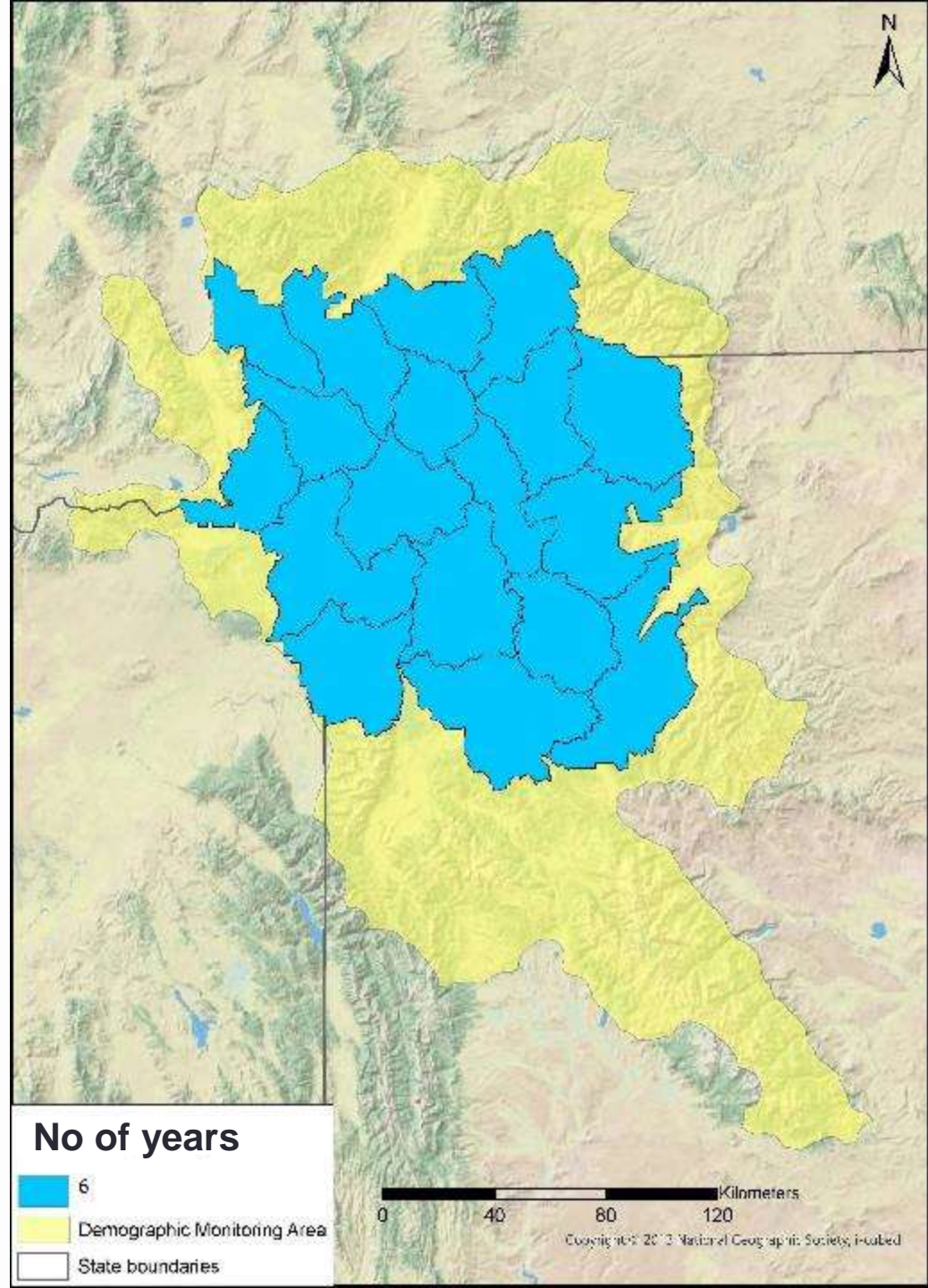
Occupancy by Females with Young



Photo: C. Whitman/USGS

Occupancy by females with young (cubs, yearlings, or 2-year-olds) 2024

- 18 of 18 Bear Management Units (BMUs) occupied during 2024
- 18 of 18 BMUs occupied during last 6 years (2019-2024)



Preliminary information-subject to revision. Not for citation or distribution.

Mortalities



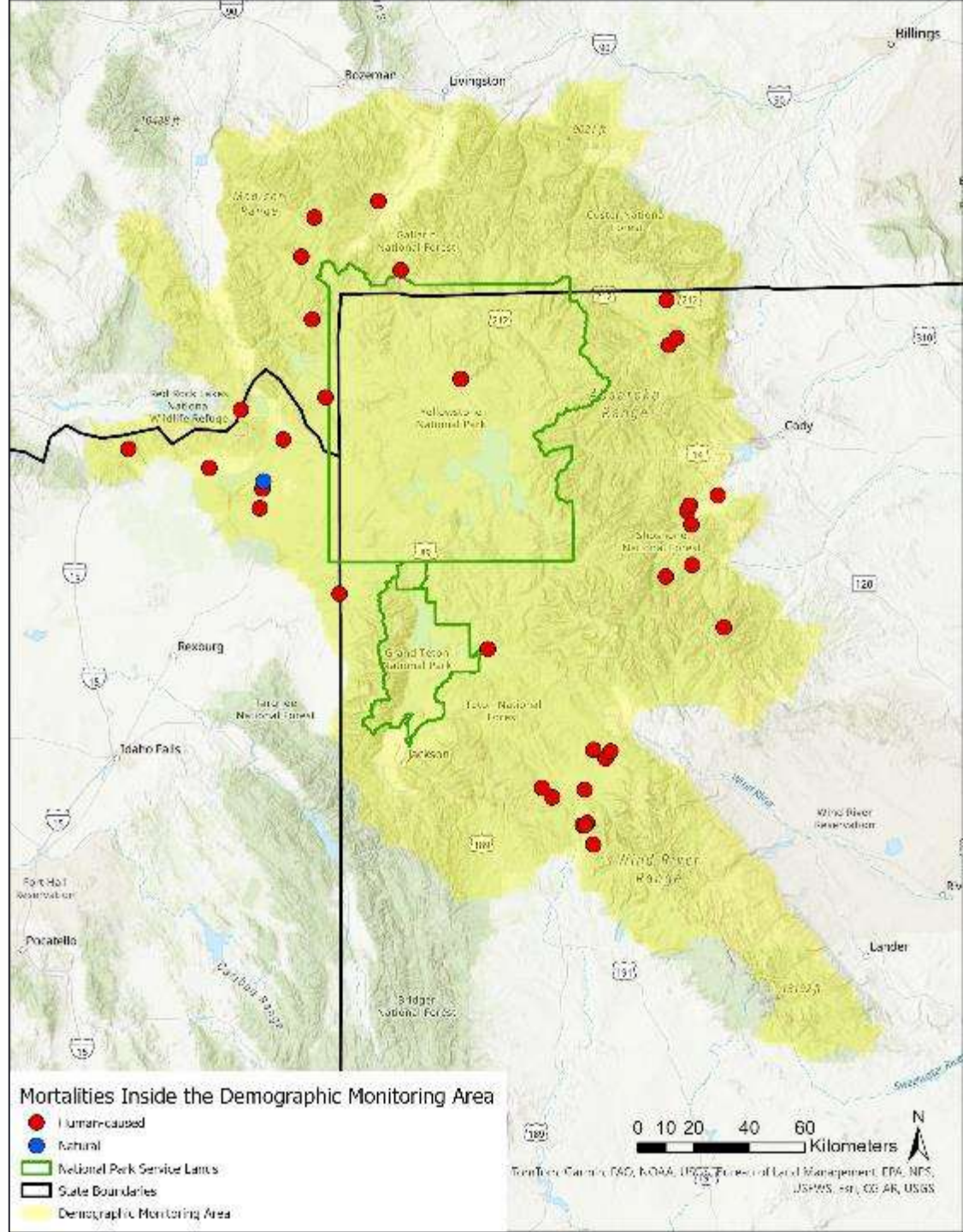
Photo: F.T. van Manen/USGS

Known and probable mortalities 2024

- **43 in DMA**
 - 42 human-caused
 - 1 natural

Mortalities as of 11/07/2024

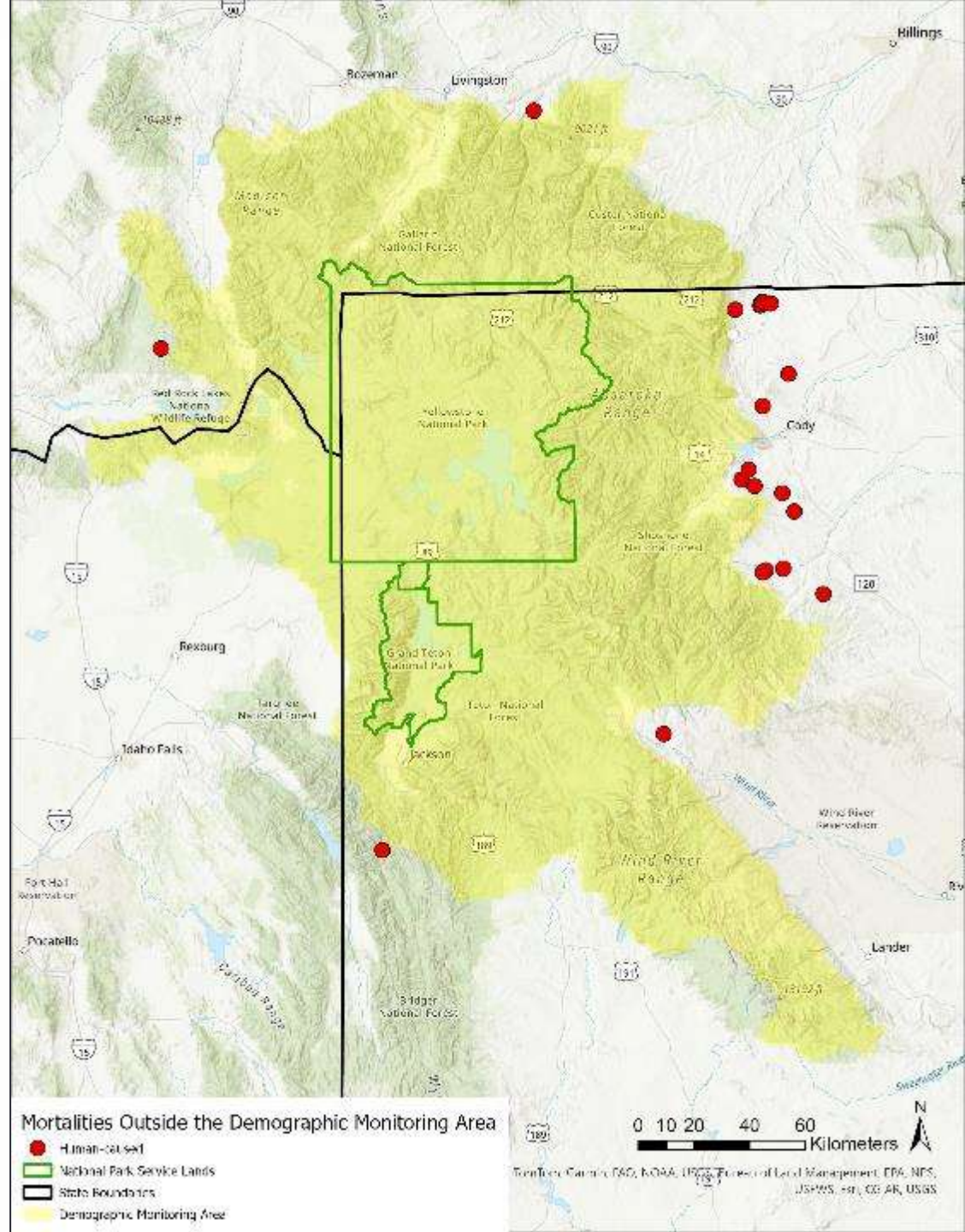
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Known and probable mortalities 2024

- 43 in DMA
 - 42 human-caused
 - 1 natural
- 27 Outside DMA
 - All human-caused

Mortalities as of 11/07/2024



Mortalities Outside the Demographic Monitoring Area

- Human-caused
- ▭ National Park Service Lands
- ▭ State Boundaries
- ▭ Demographic Monitoring Area

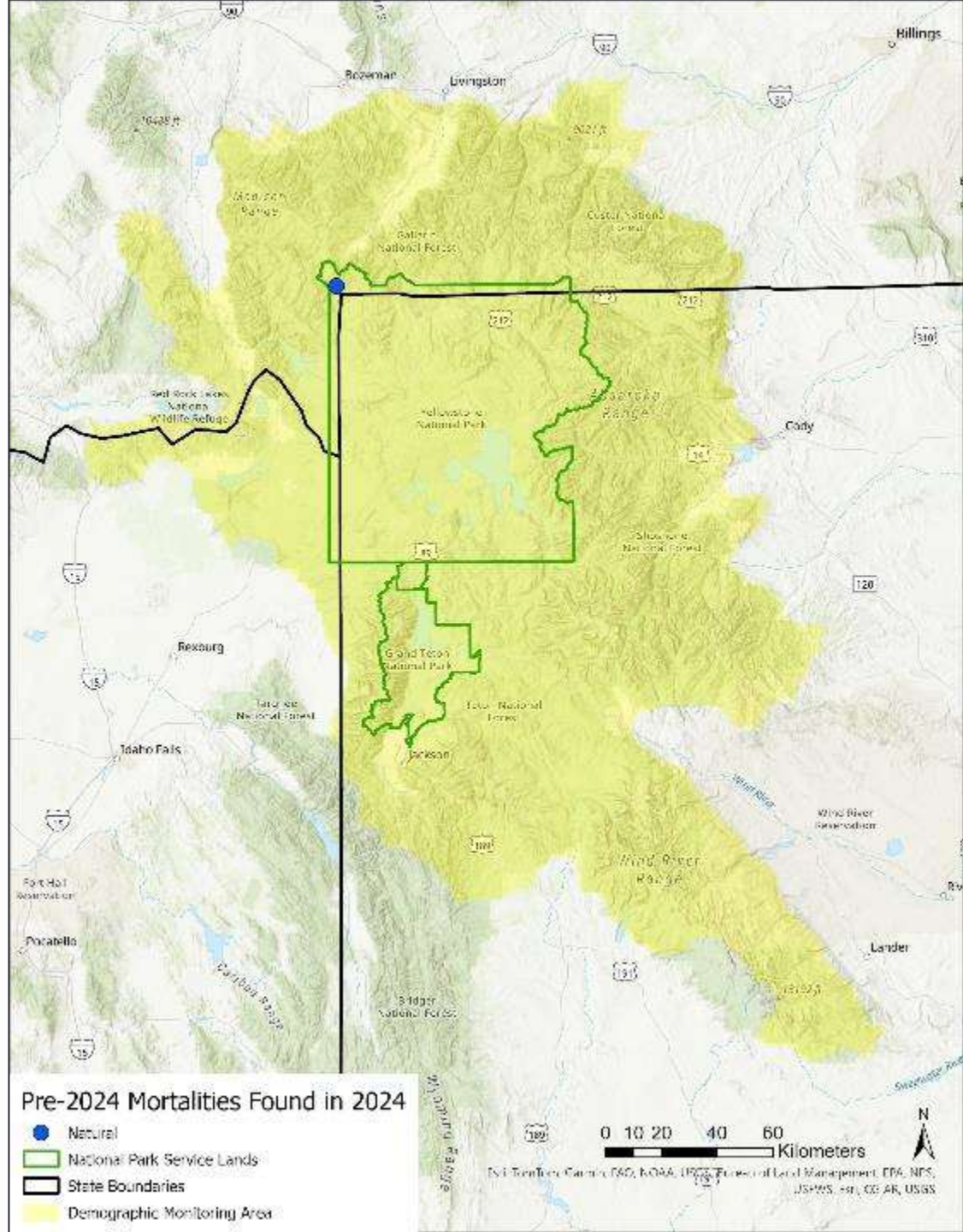
0 10 20 40 60 Kilometers
Topographic Data: GAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, USFWS, etc.; © AR, USGS

Known and probable mortalities 2024

- **43 in DMA**
 - 42 human-caused
 - 1 natural
- **27 Outside DMA**
 - All human-caused
- **Prior years**
 - 1 natural (~2020)

Mortalities as of 11/07/2024

Preliminary information-subject to revision. Not for citation or distribution.



Known and probable mortalities by sex and age class 2024 (inside DMA)

Area	Sex	Age class		Total
		Dependent	Independent	
		(<2 years old)	(≥2 years old)	
Inside DMA	Female	2	10	12
	Male	1	27	28
	Unknown	3	0	3
	Total	6	37	43

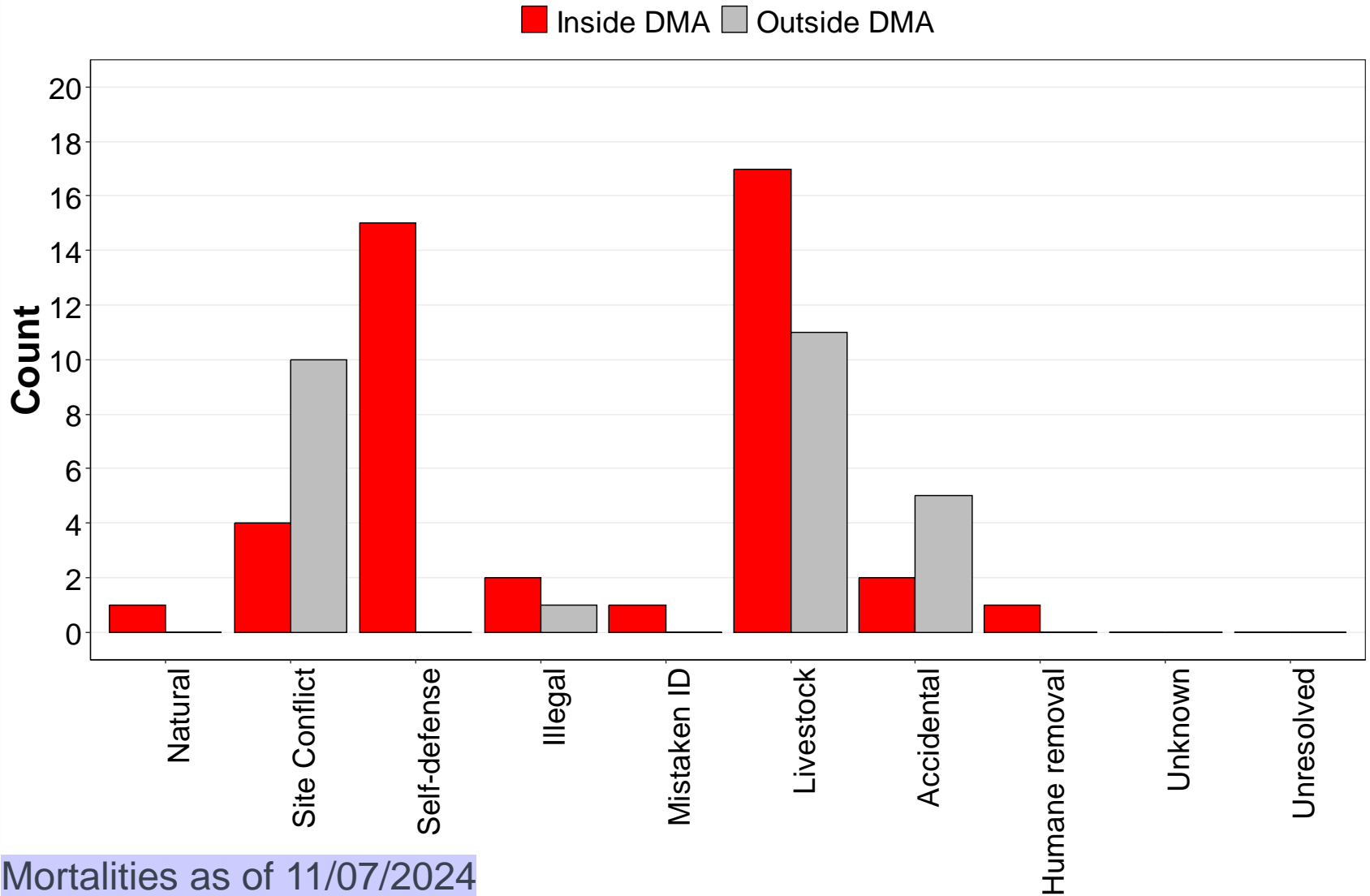
Mortalities as of 11/07/2024

Known and probable mortalities by sex and age class 2024 (outside DMA)

Area	Sex	Age class		Total
		Dependent	Independent	
		(<2 years old)	(≥2 years old)	
Outside DMA	Female	1	10	11
	Male	2	13	15
	Unknown	1	0	1
	Total	4	23	27

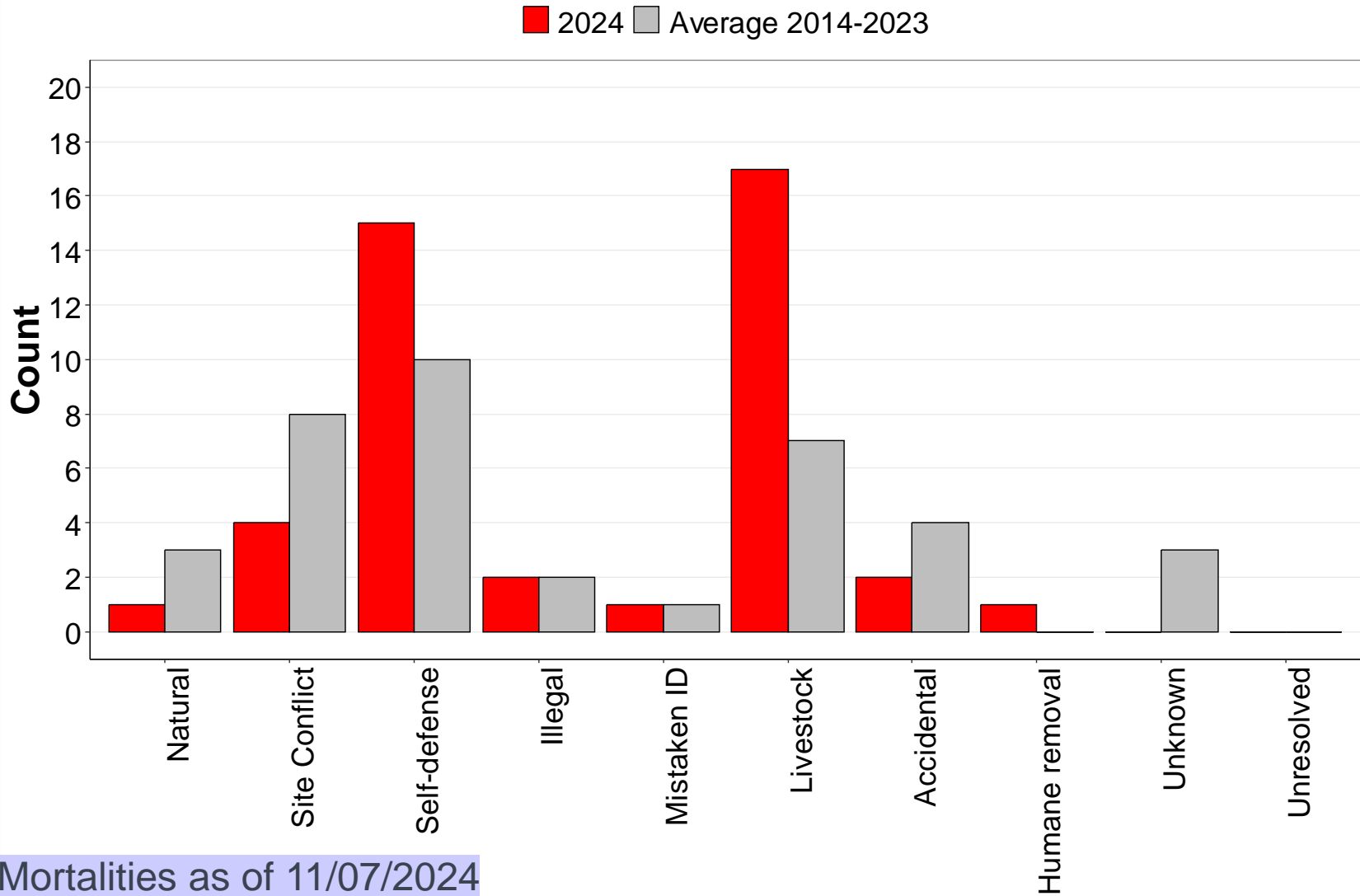
Mortalities as of 11/07/2024

Mortalities inside/outside DMA by cause 2024

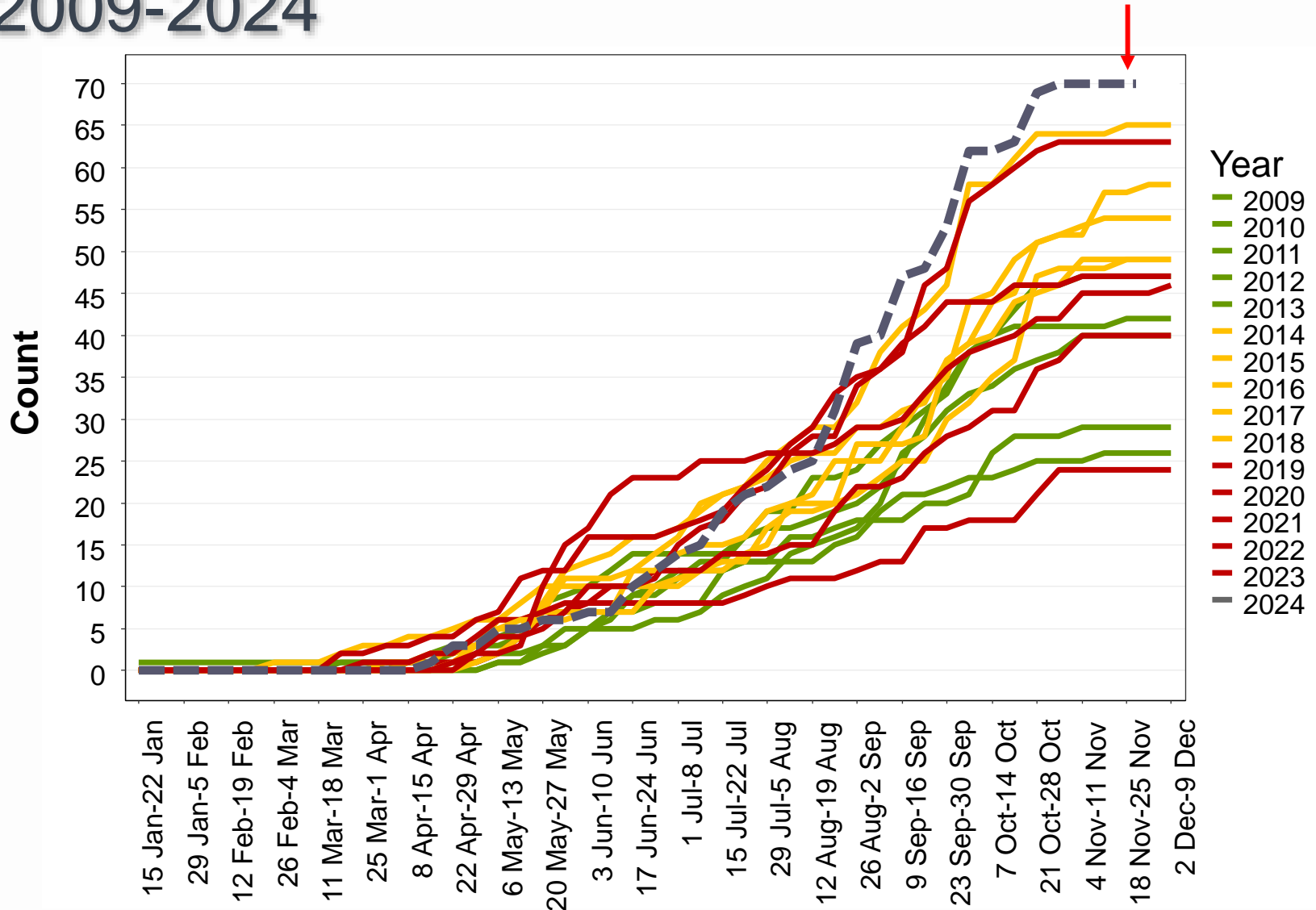


Mortalities as of 11/07/2024

Annual mortalities inside DMA by cause 2014-2023 vs. 2024



Cumulative documented mortalities by week 2009-2024



Mortalities as of 11/07/2024

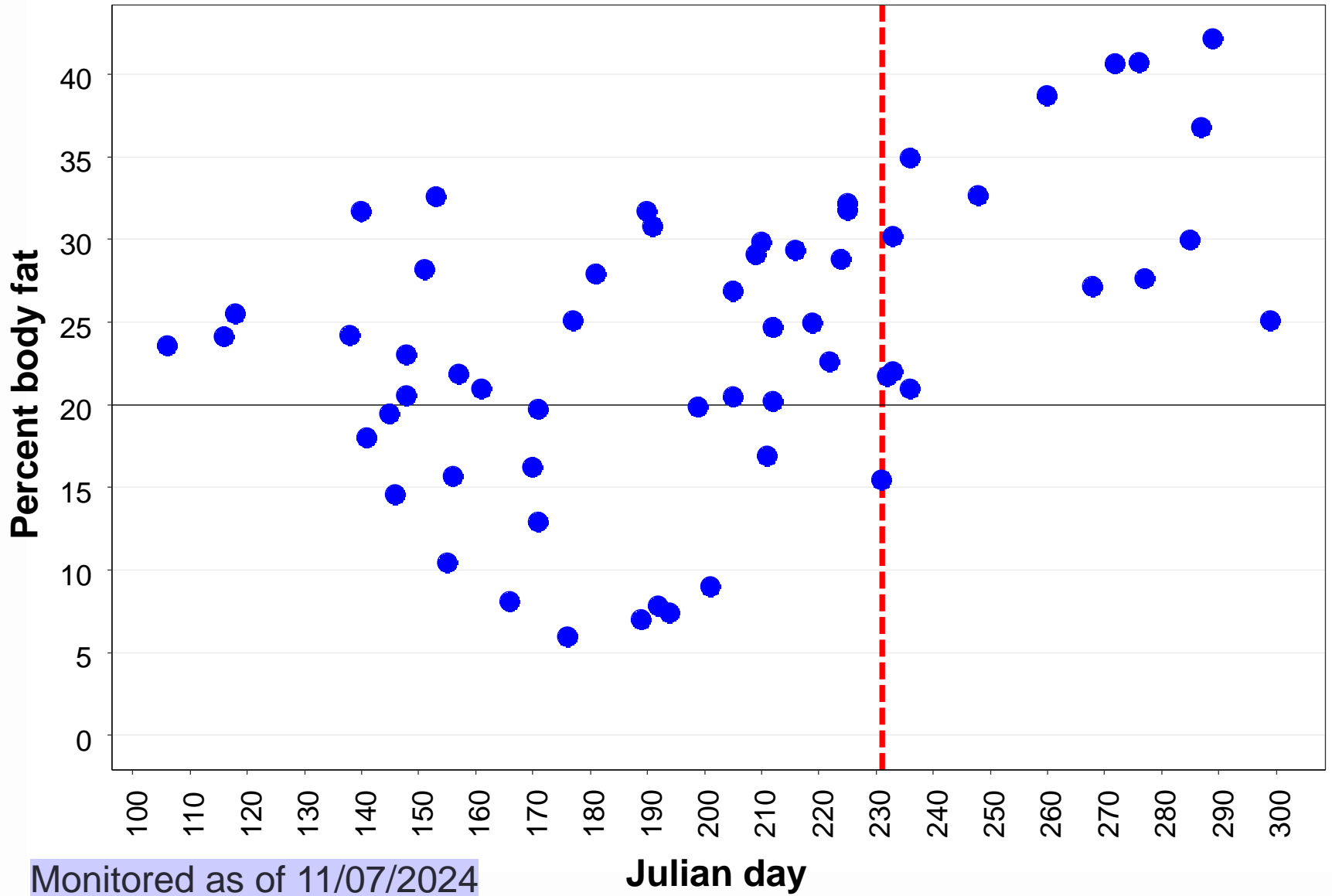
Miscellaneous Updates



REVEALED IN NATURE

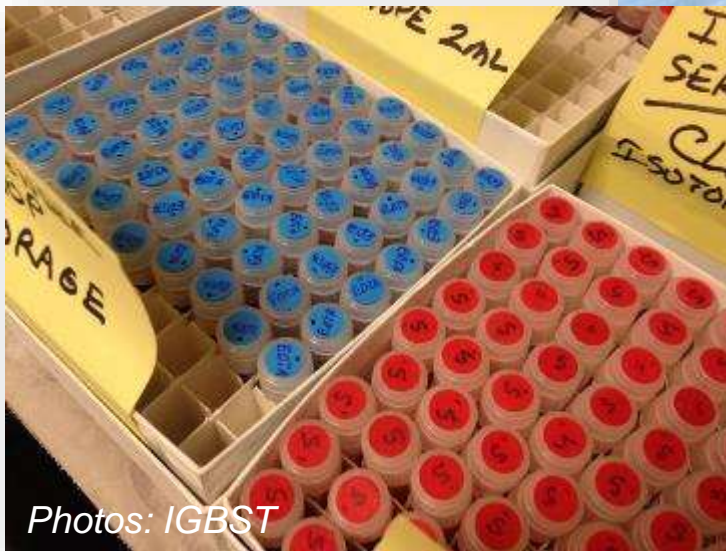
Photo: J. Davis

% Body fat by Julian day



Genetic monitoring

- Results for 1983-2023
- **1,569** individuals genotyped (20 microsatellite markers)
- No evidence of non-GYE ancestry in any of the individuals genotyped to date



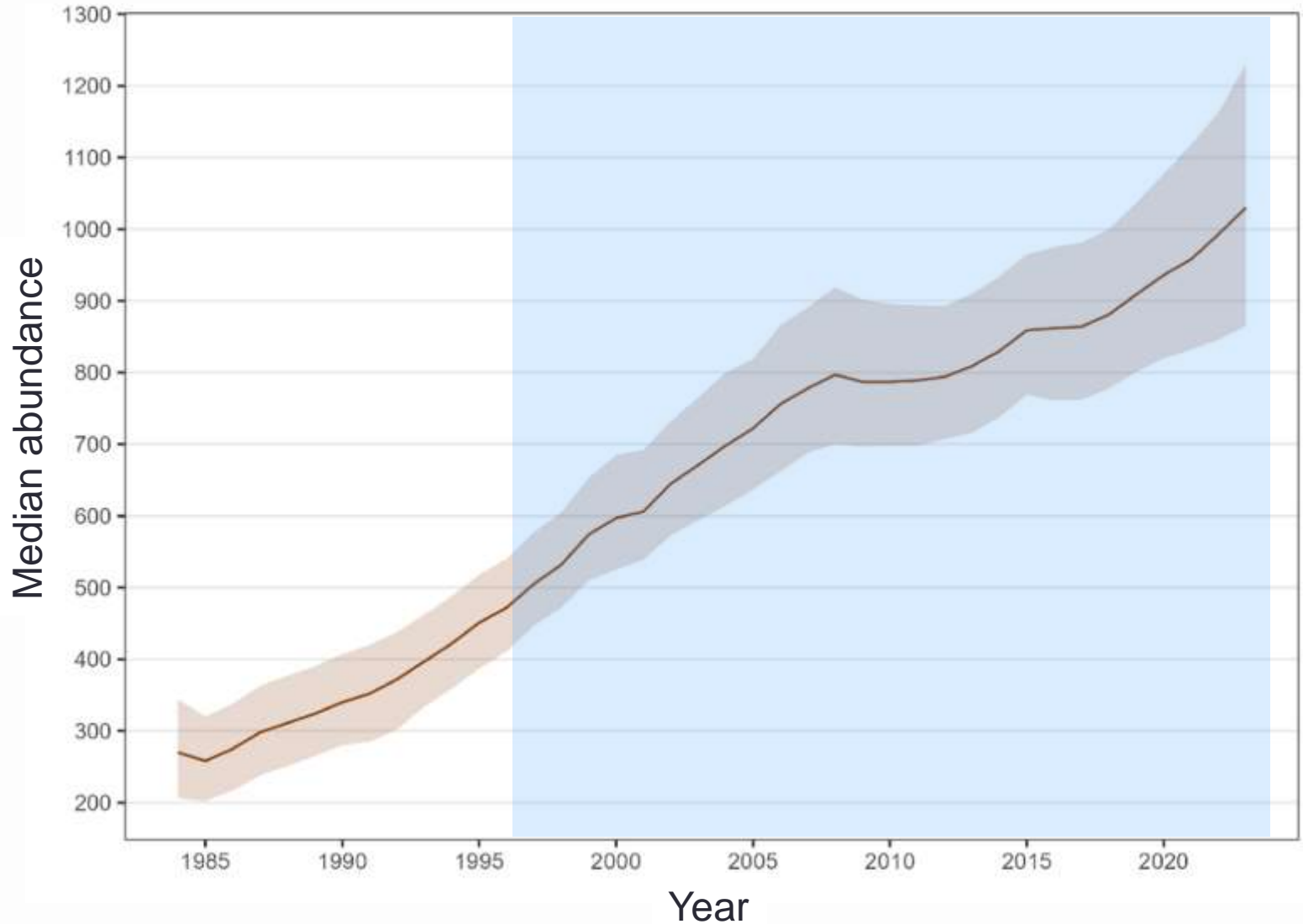
Photos: IGBST





Photo: Interagency Grizzly Bear Study Team

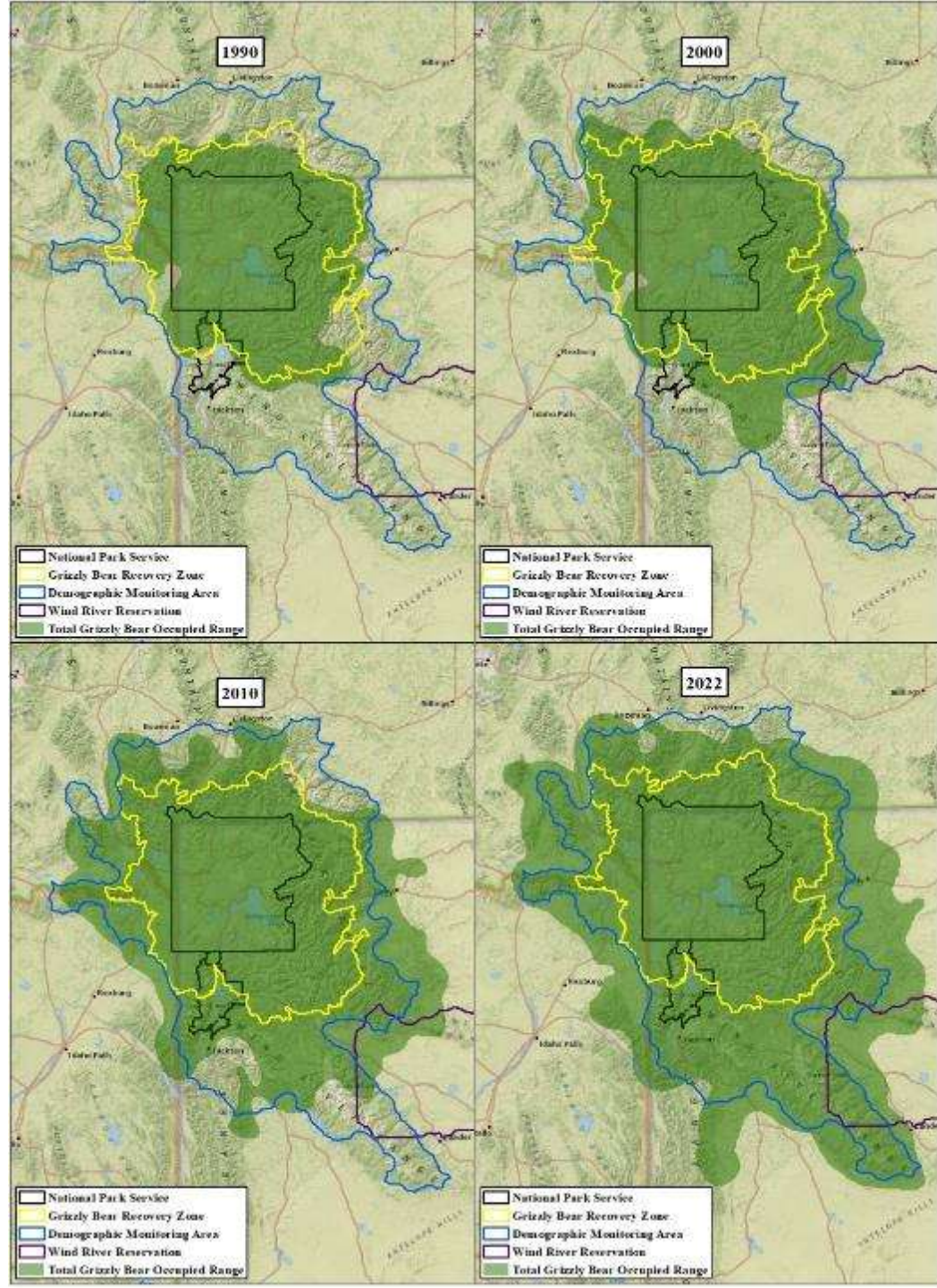
Population perspective



Range expansion 1976-2022

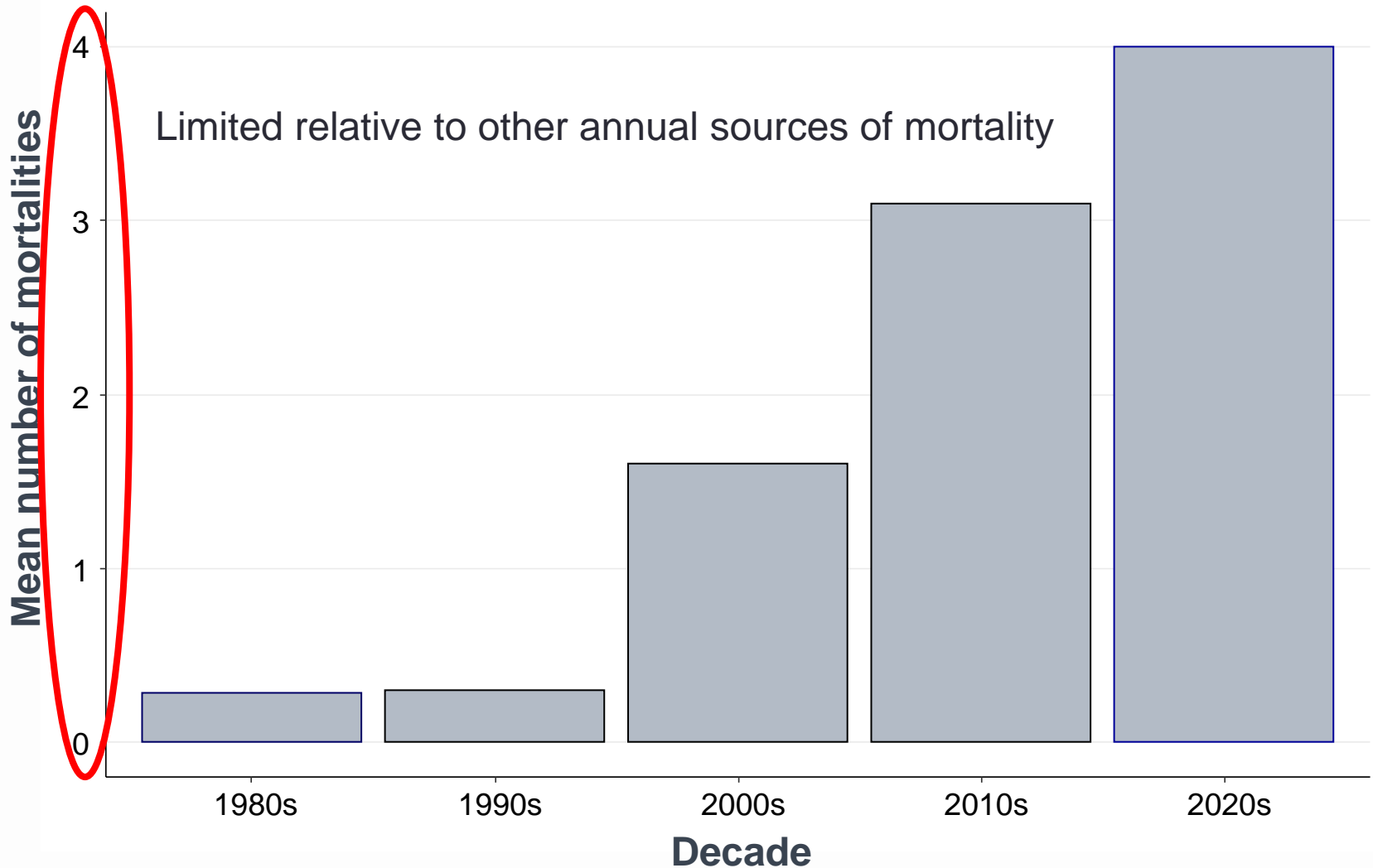
1976-1990:
23,361 km²

2008-2022:
70,101 km²



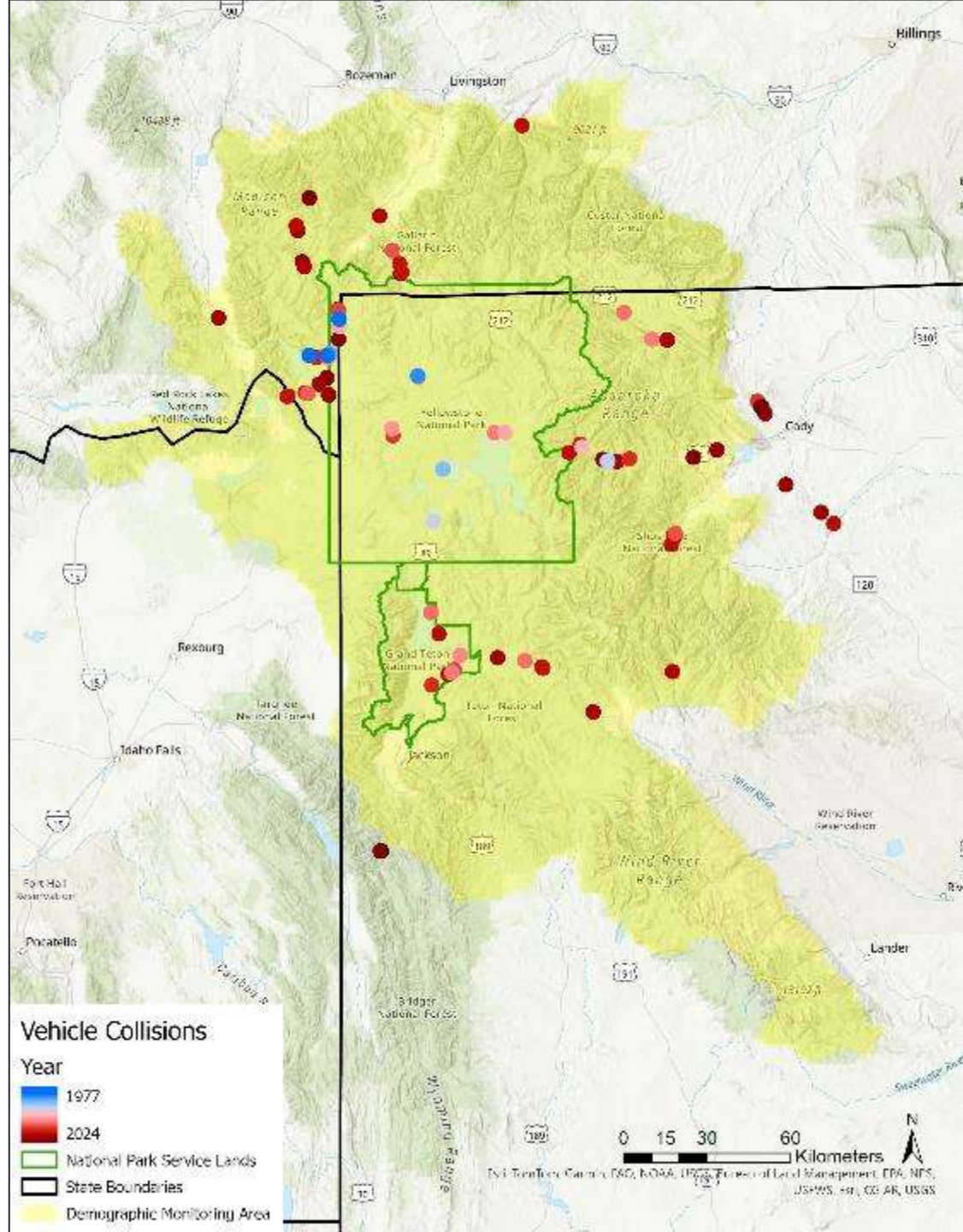
Vehicle collision mortalities

Average frequency by decade



Vehicle collision mortalities

1970s–2020s



**Study Team website:
search "IGBST"**



**Annual/Technical reports:
IGBCOnline.org**

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