

Grizzly Bear Distribution in the Greater Yellowstone Ecosystem: 2014 Update

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Methods to Estimate Distribution

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Tools and Technology

Methods to Estimate Distribution and Range Extent of Grizzly Bears in the Greater Yellowstone Ecosystem

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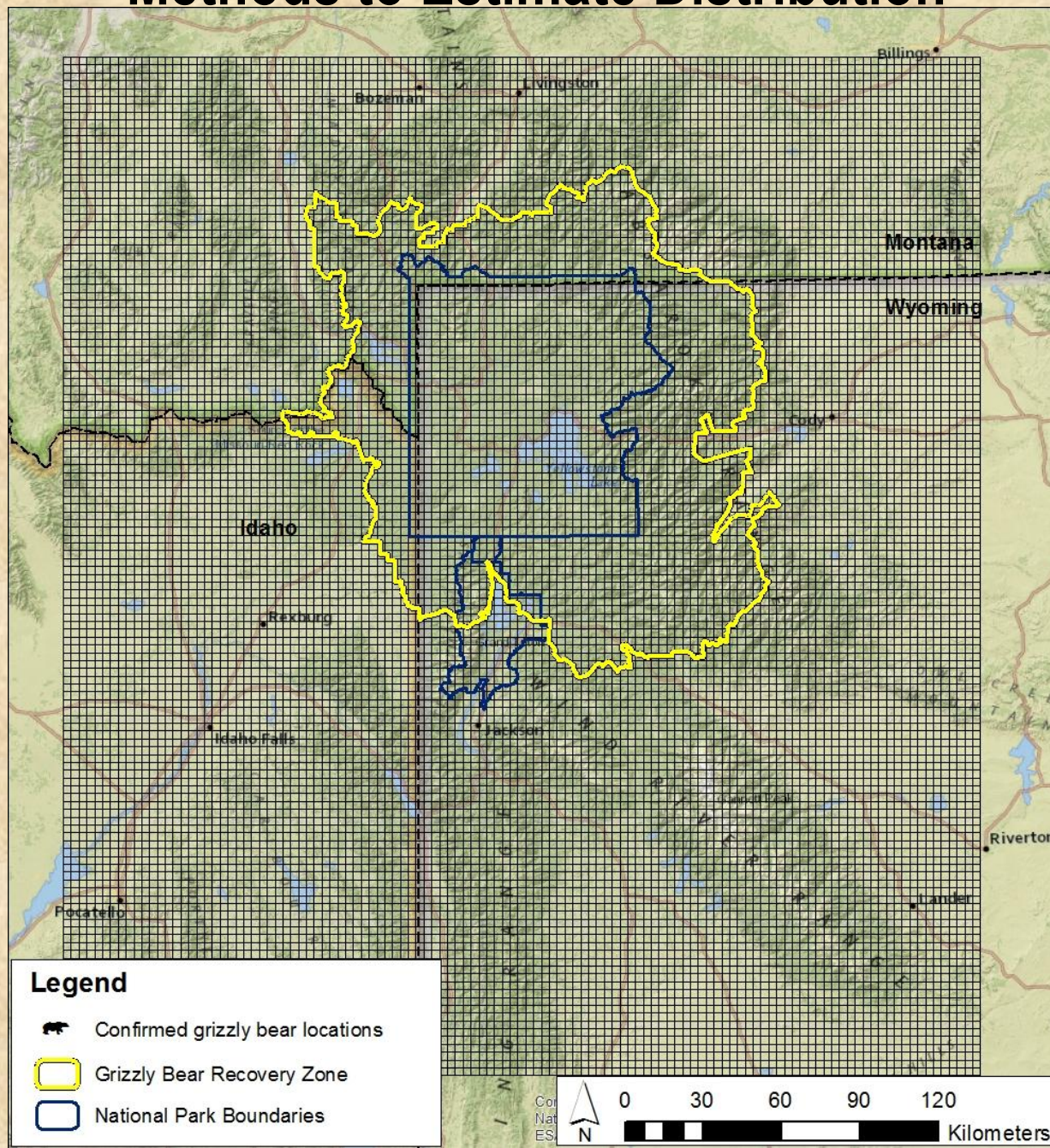
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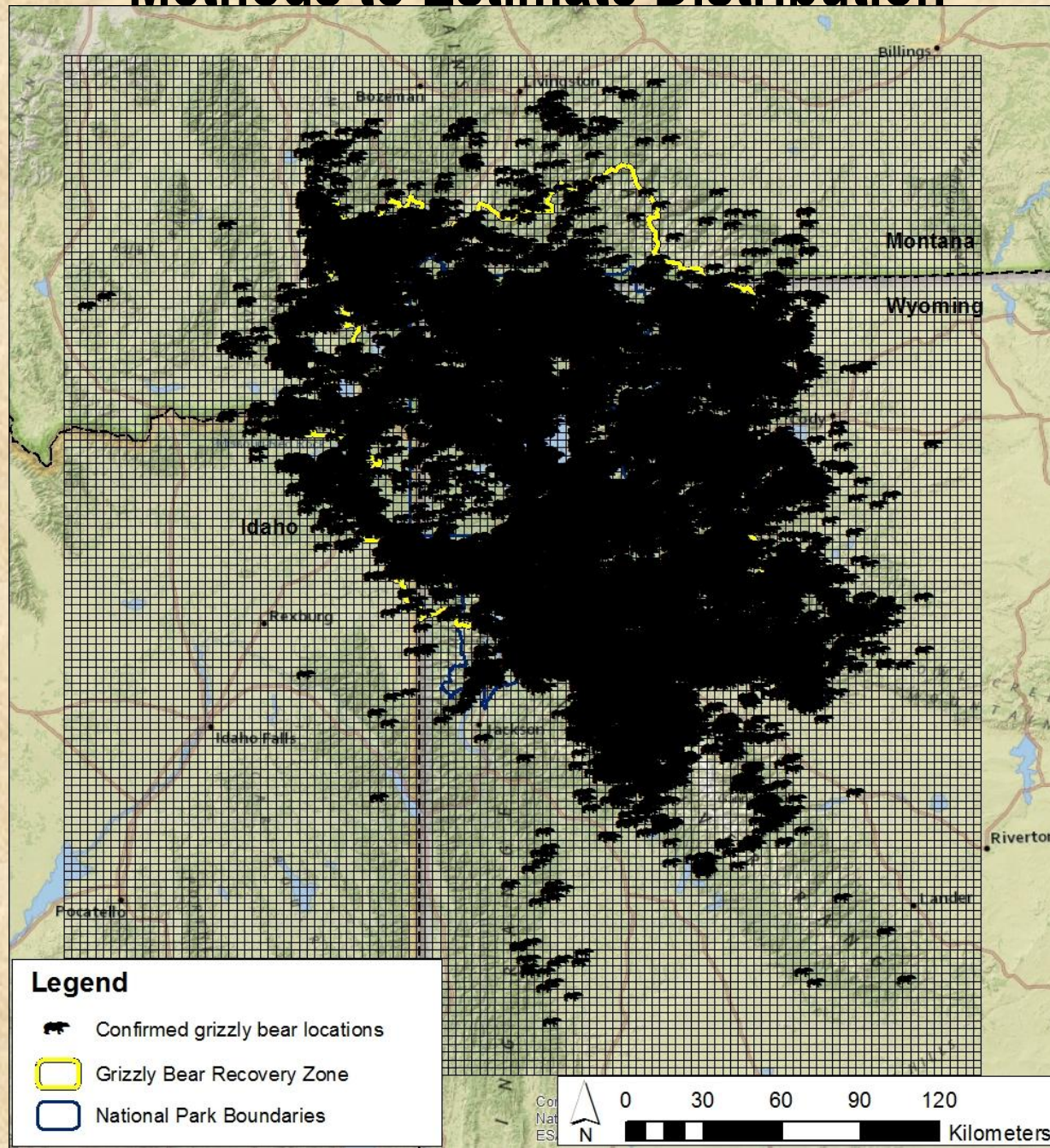
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- **Allows inclusion of all confirmed grizzly bear location data**
 - Tracks, DNA, verified observations, etc...
- **Defines outer perimeter of occupied range without overestimating**

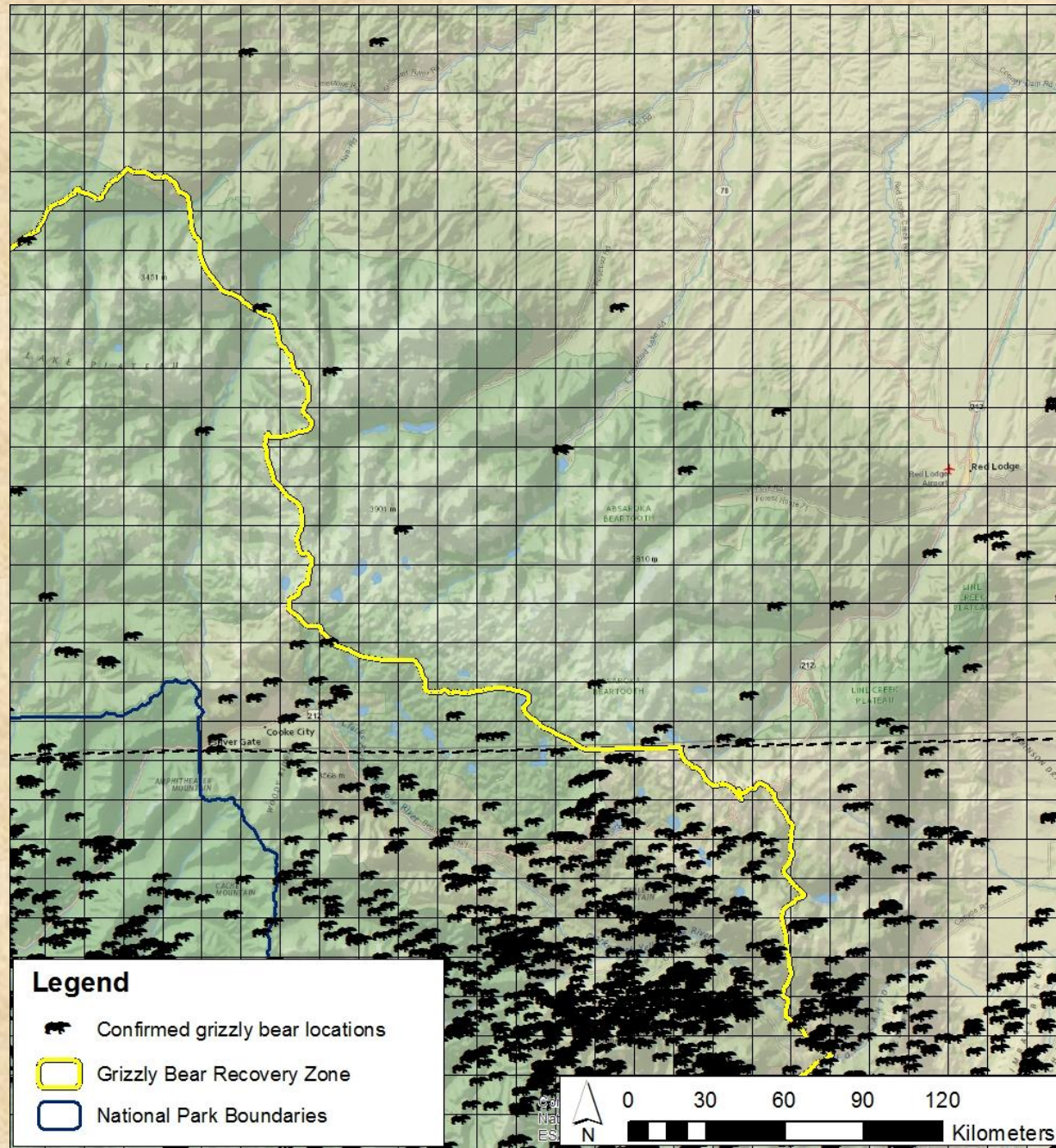
Methods to Estimate Distribution



Methods to Estimate Distribution



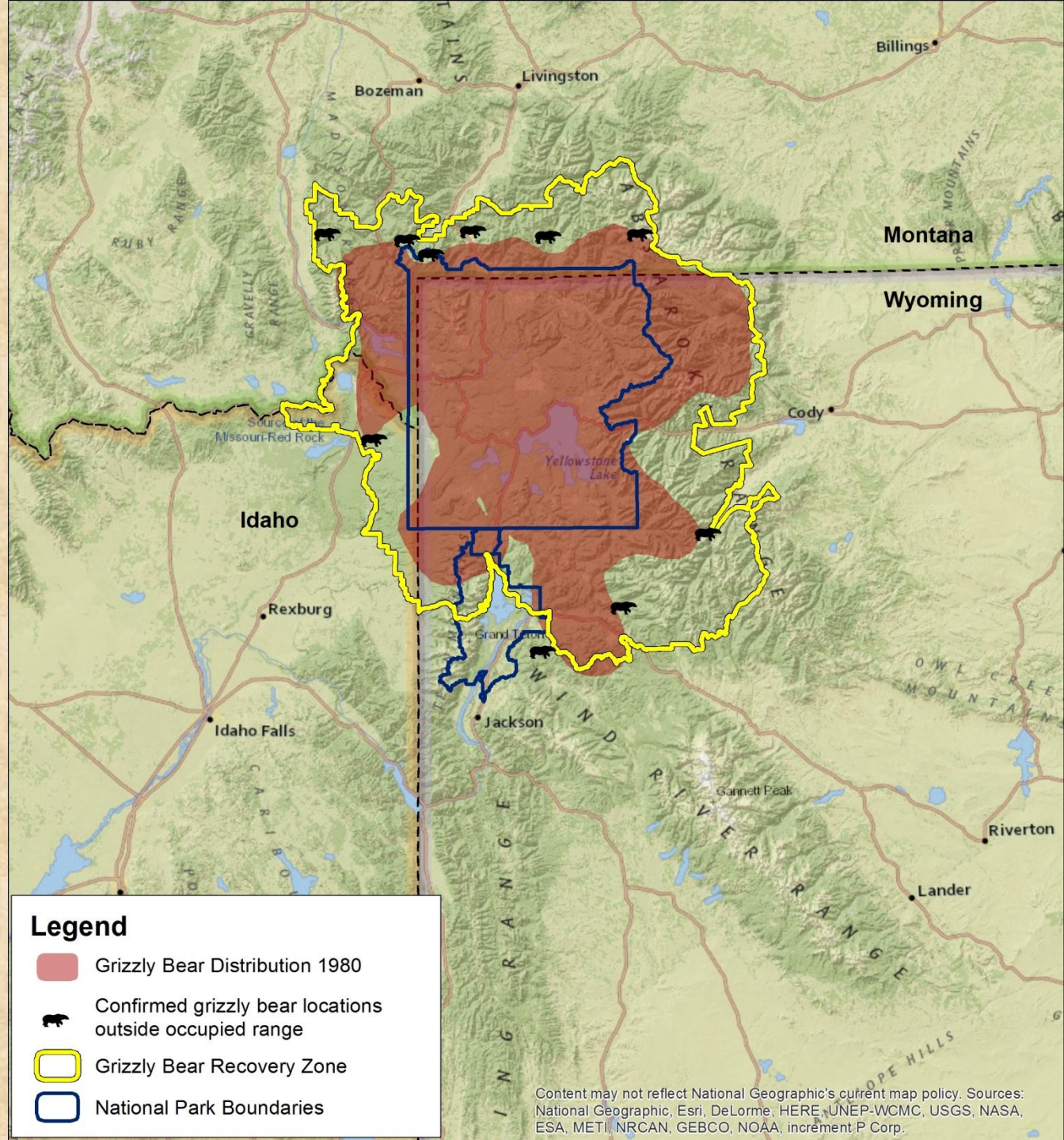
Methods to Estimate Distribution



Historic Distribution 1980

- Ground & aerial reconnaissance
- Time lapse cameras at bait stations
- Opportunistic sightings and sign
- 16,160 km² by 1980

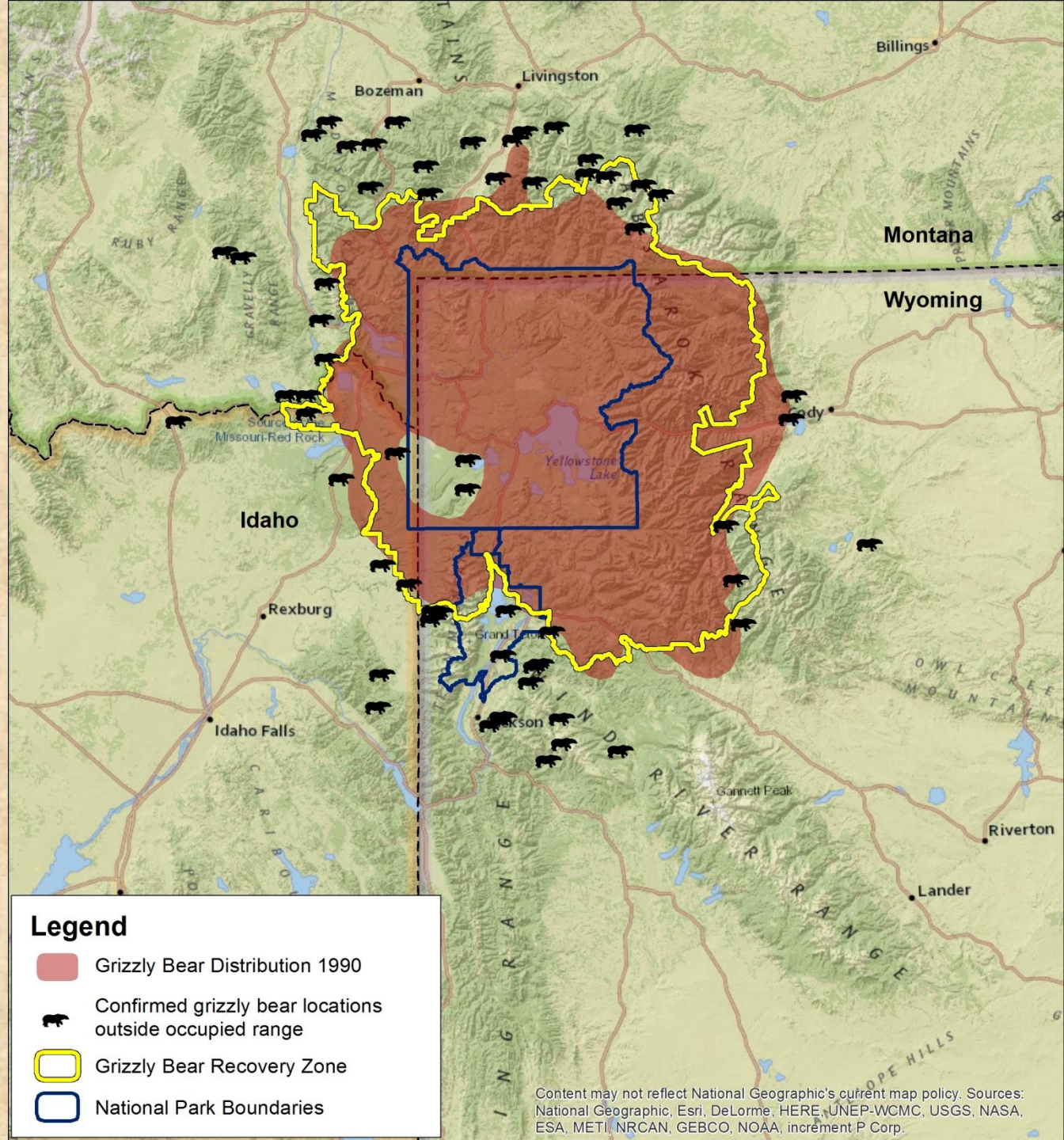
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Historic Distribution 1990

- Verified sightings, mortalities, and captures
- Increase in telemetry data
- Expansion in all directions
- Increase in "outliers"
- 23,971 km² by 1990

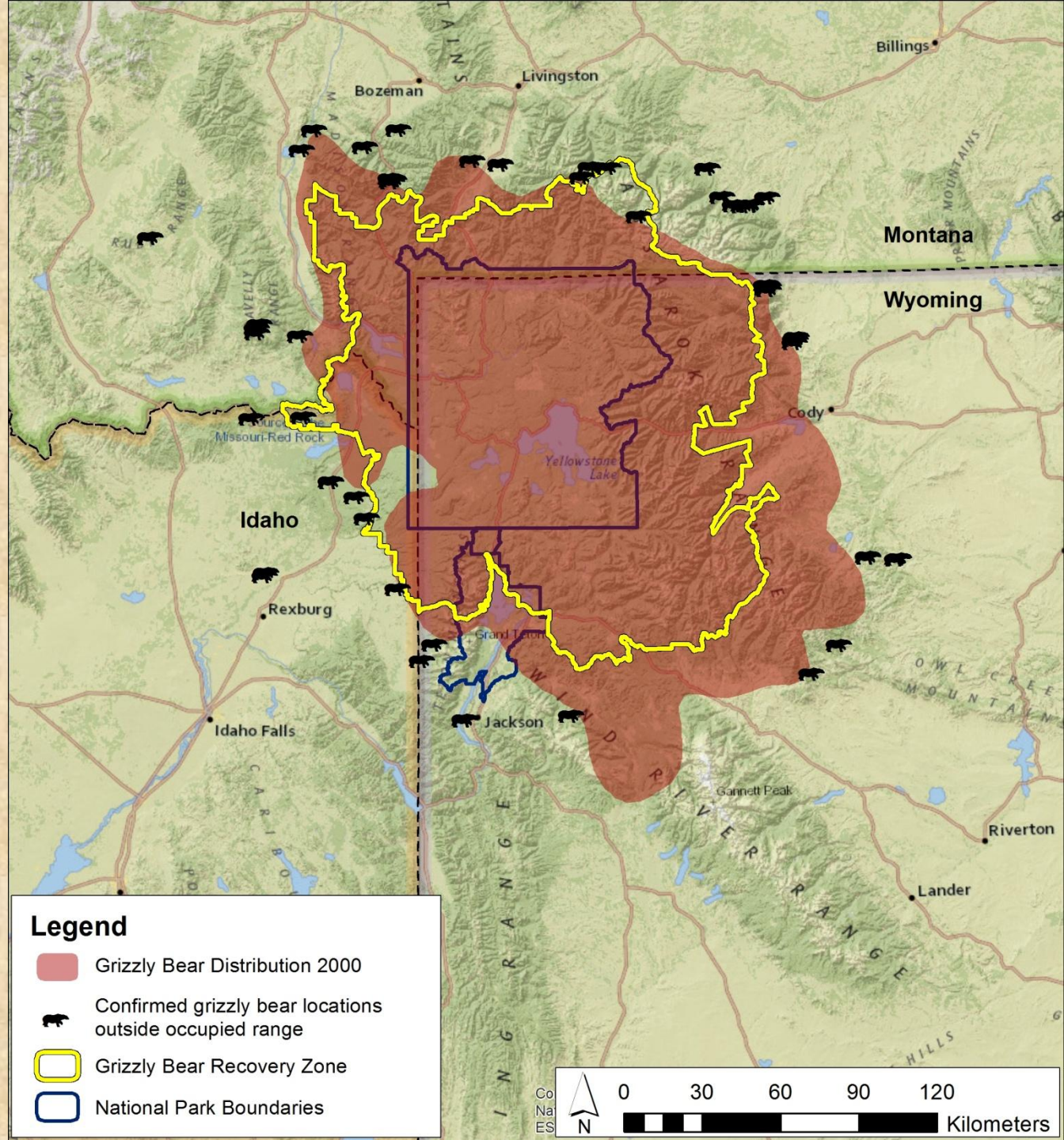
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Historic Distribution 2000

- Traditional VHF telemetry
- Very beginning of GPS data
- More expansion to north and south
- 33,298 km² by 2000

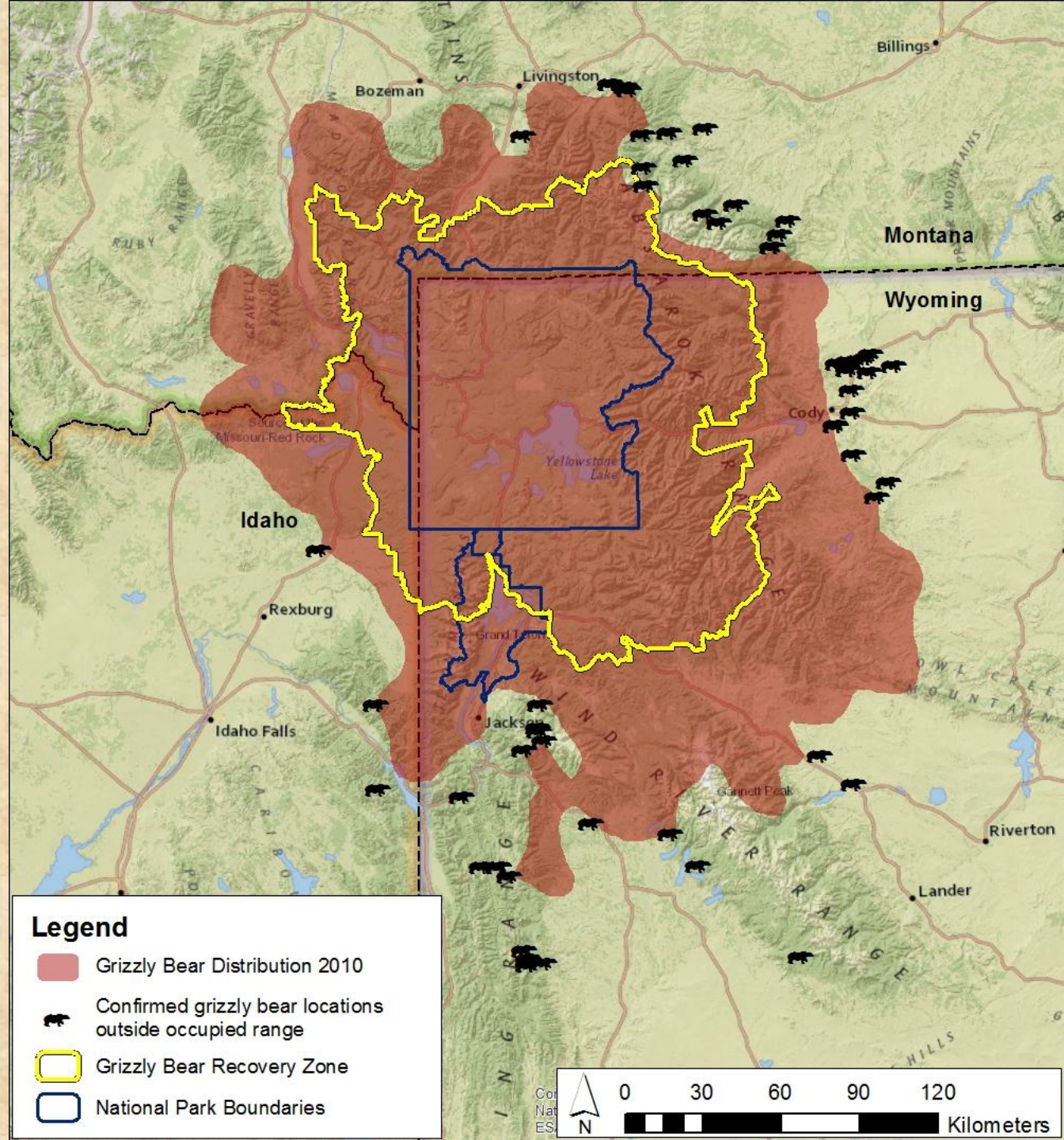
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Historic Distribution 2010

- Major increases in GPS location data
- Continued expansion to northwest and southeast
- 50,280 km² by 2010

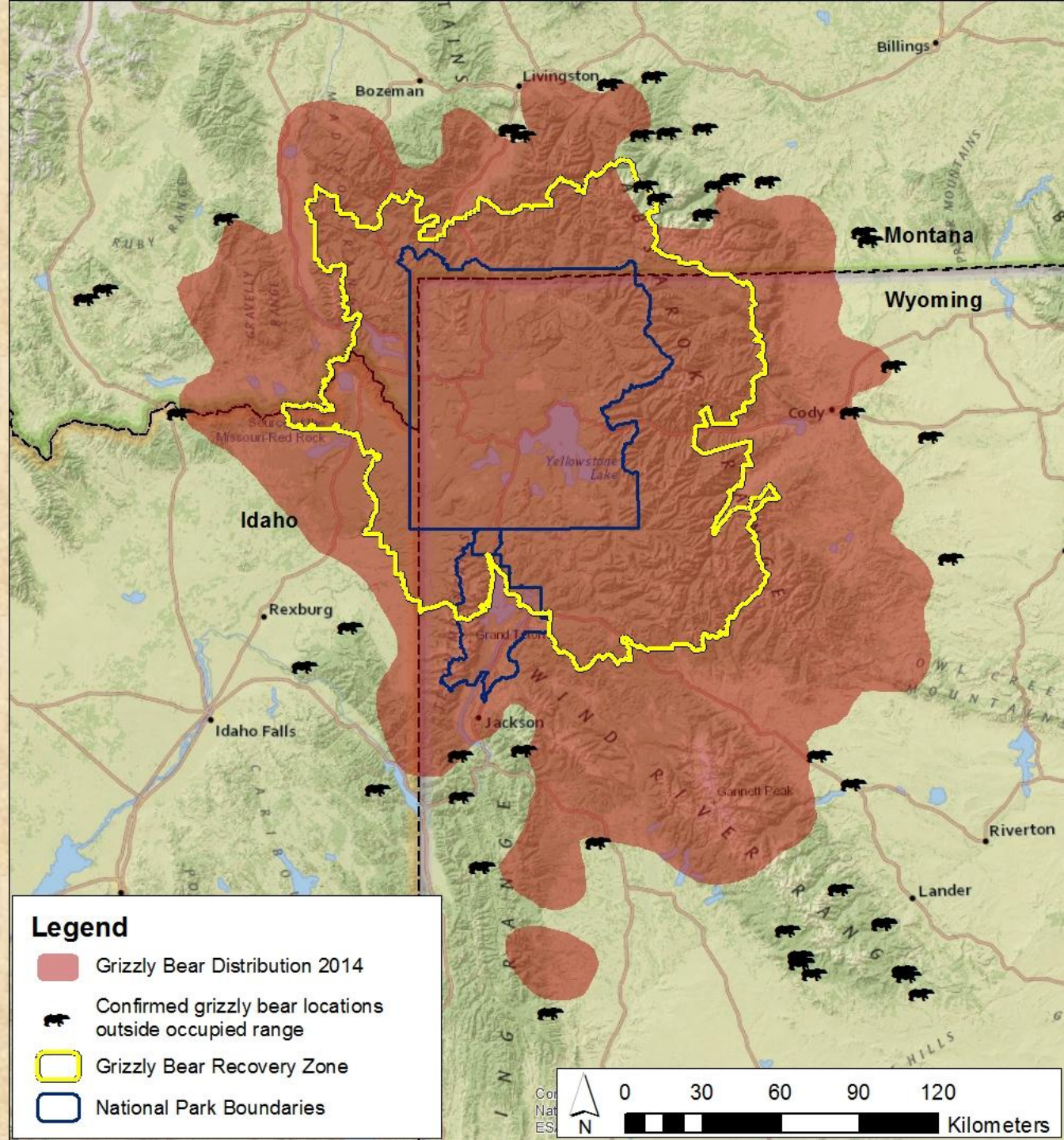
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Current Distribution 2014

- Continued increases in GPS location data
- Outlier areas becoming occupied range
- 58,314 km² by 2014

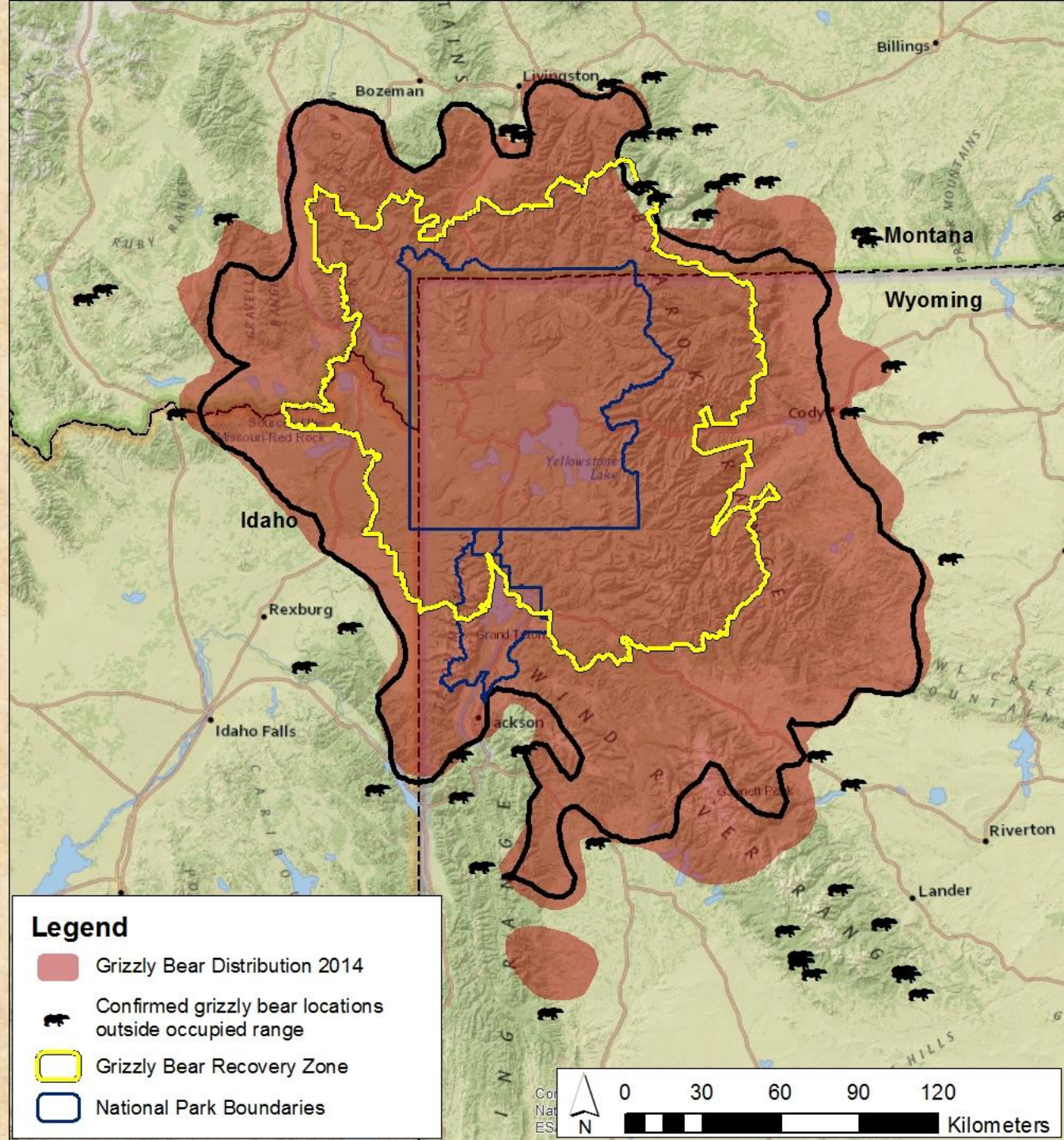
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Current Distribution 2014

- Continued increases in GPS location data
- Continued expansion to northwest and southeast
- Increase in "outliers"
- 58,314 km² by 2014

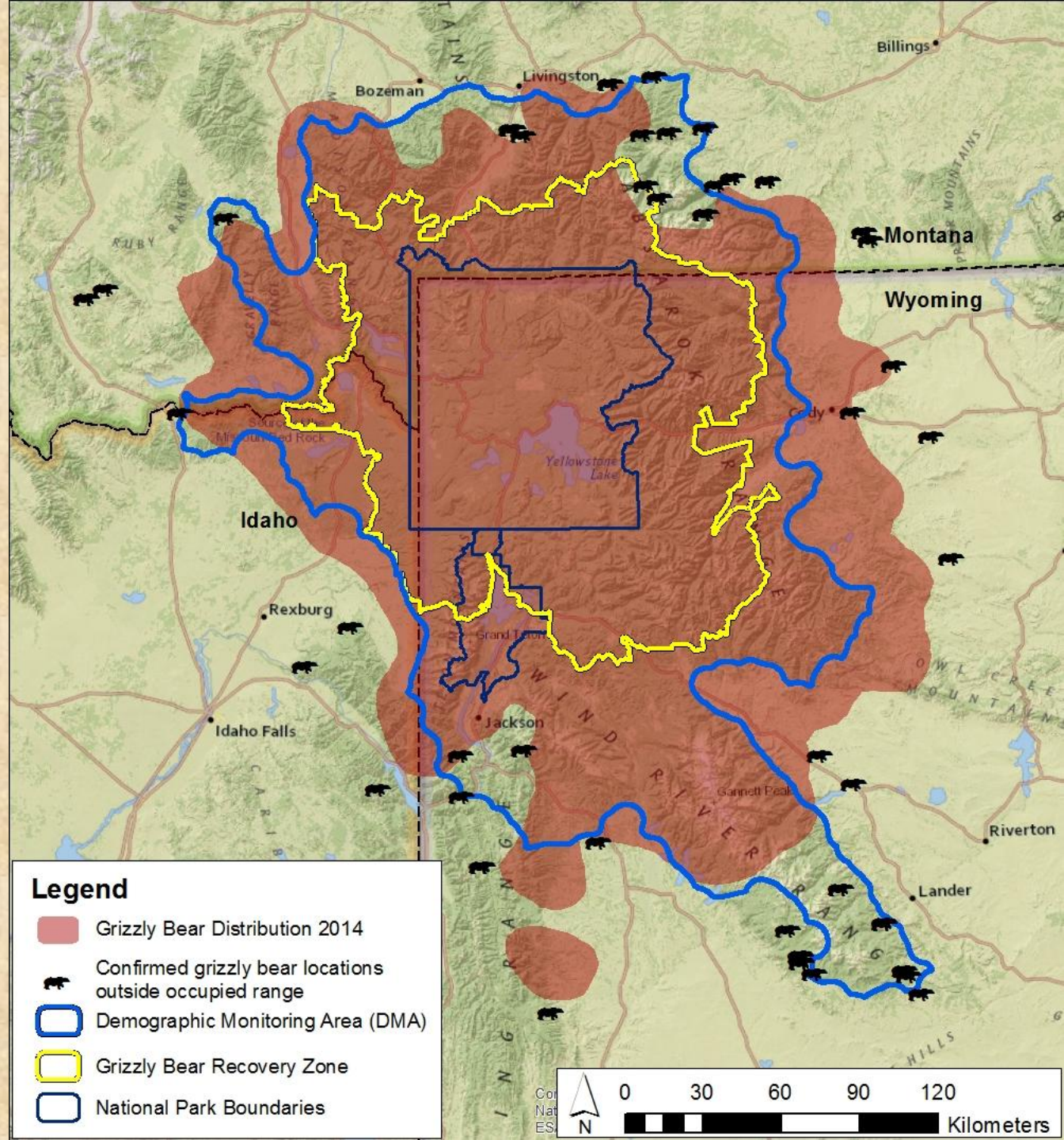
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Current Distribution 2014

- Filling in suitable habitat

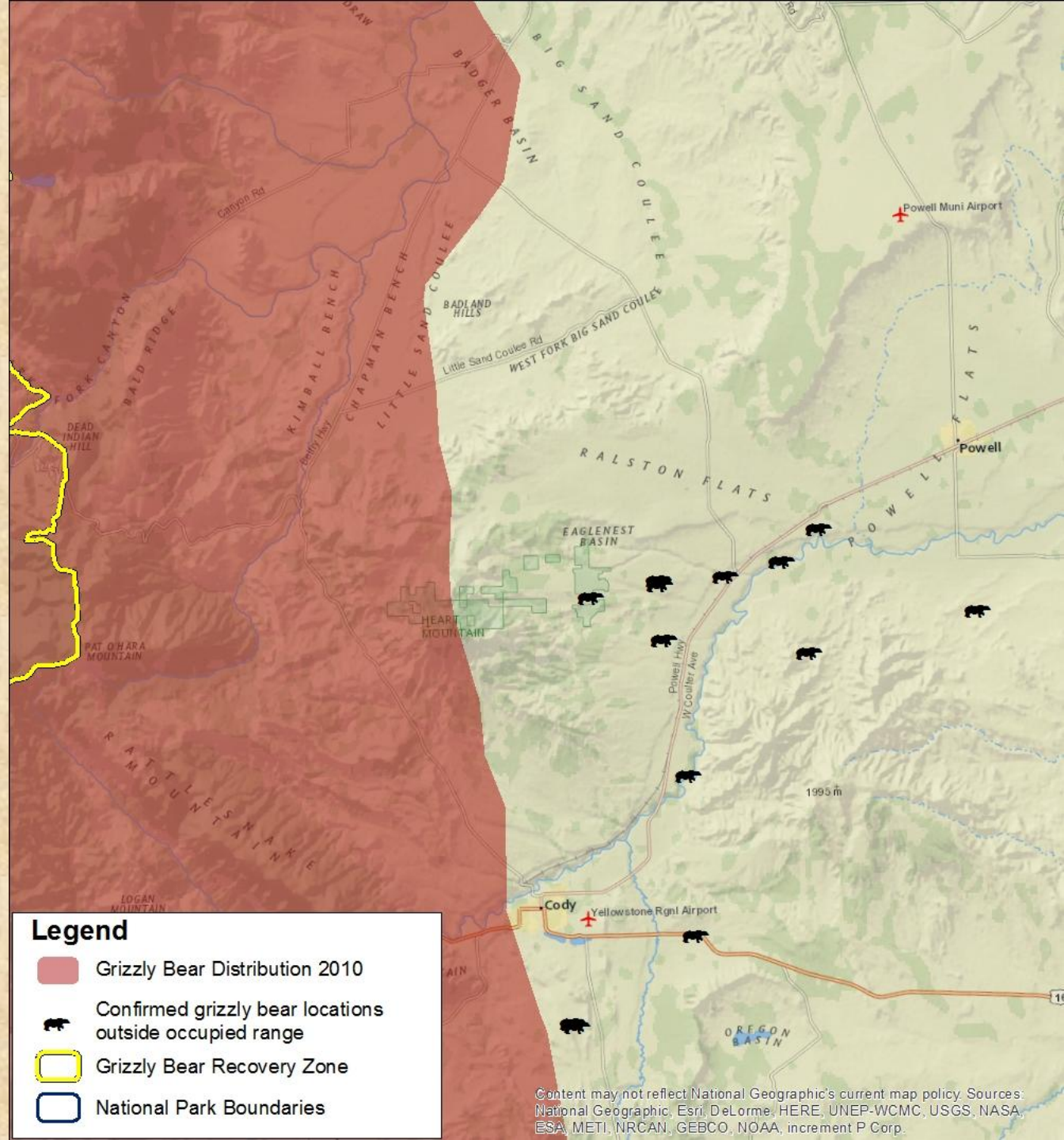
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Areas of expansion

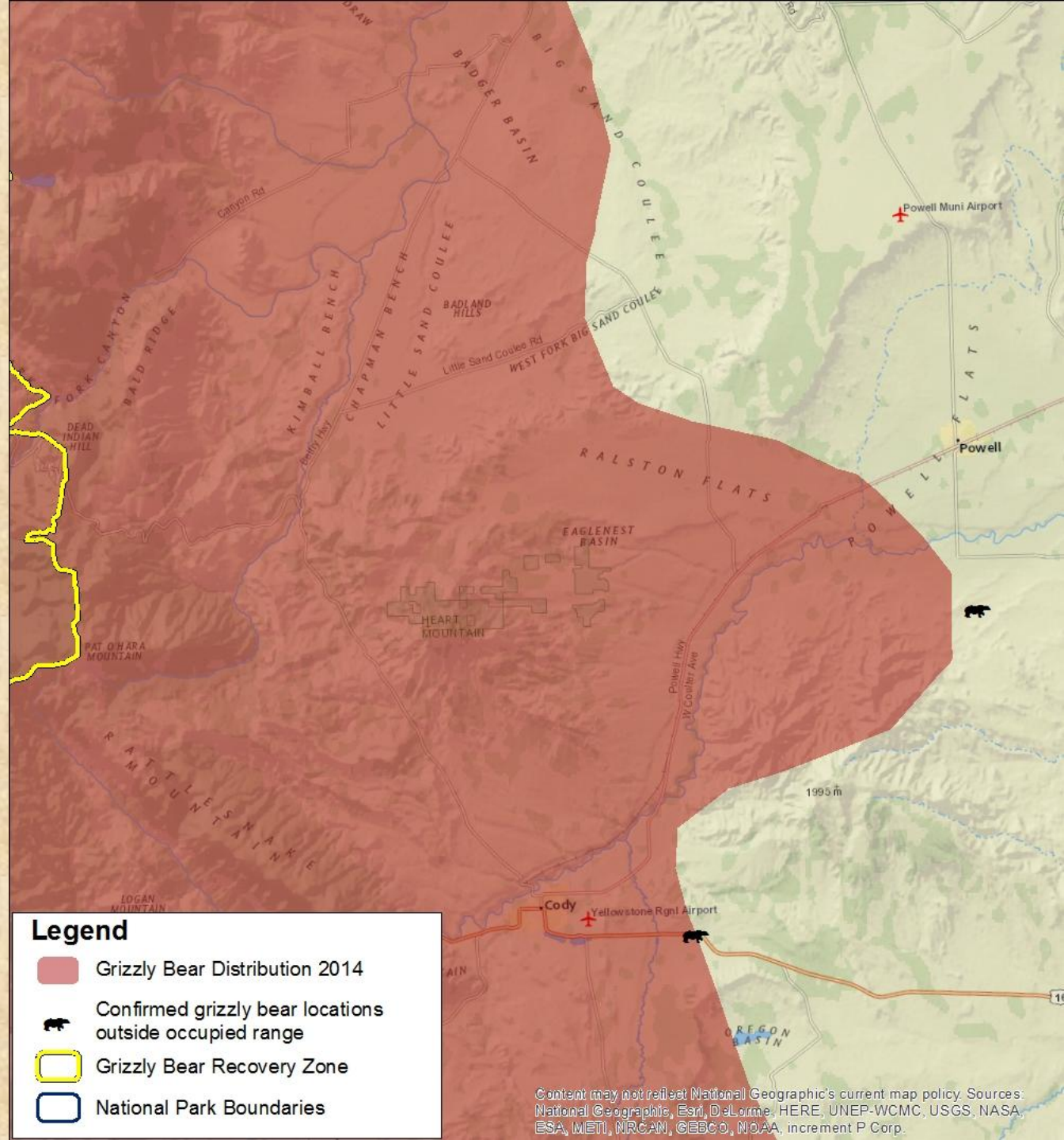
- Heart Mountain
- Increase in grizzly activity in recent years
- Now included in main distribution

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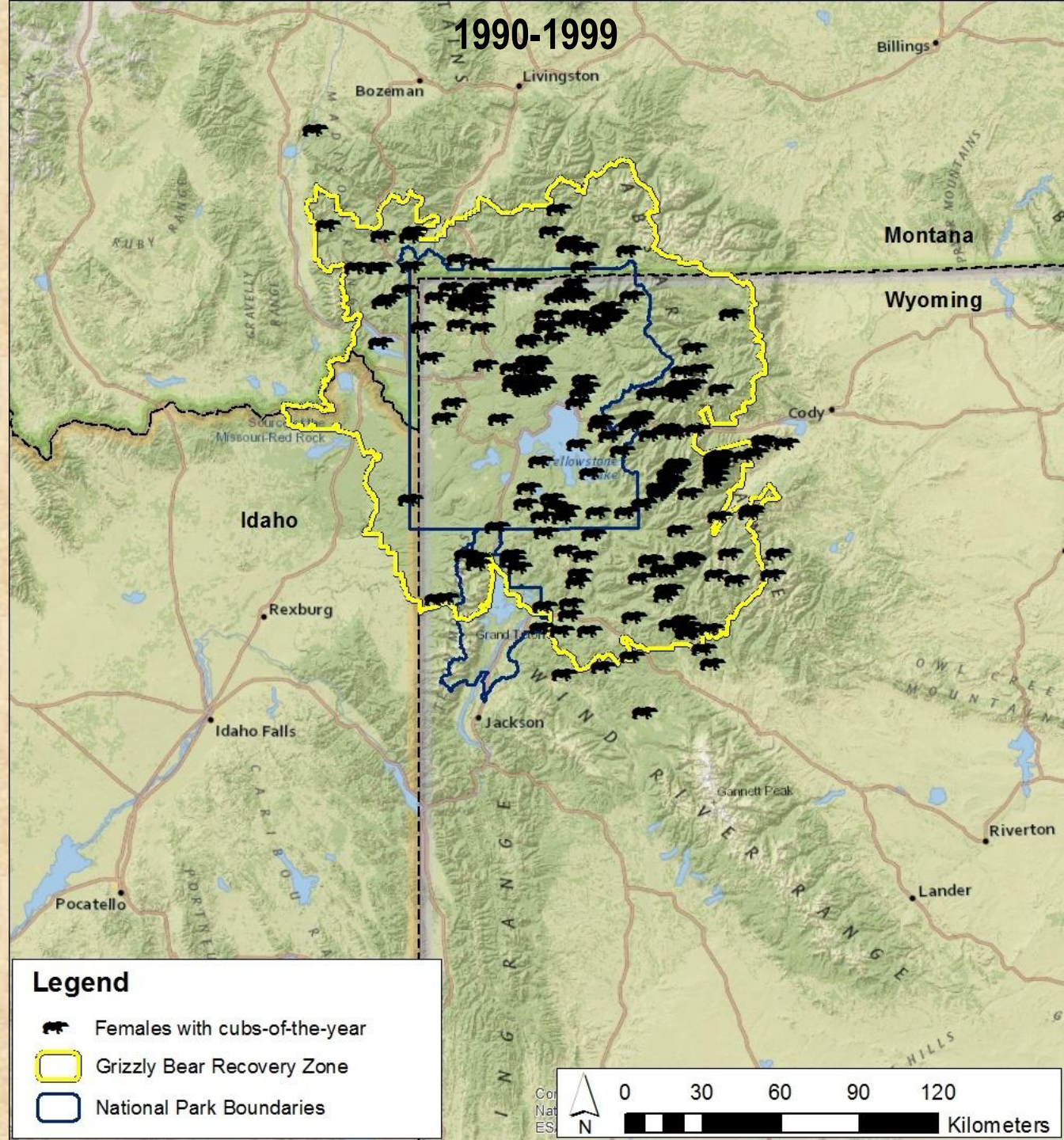
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No "doughnut hole" effect

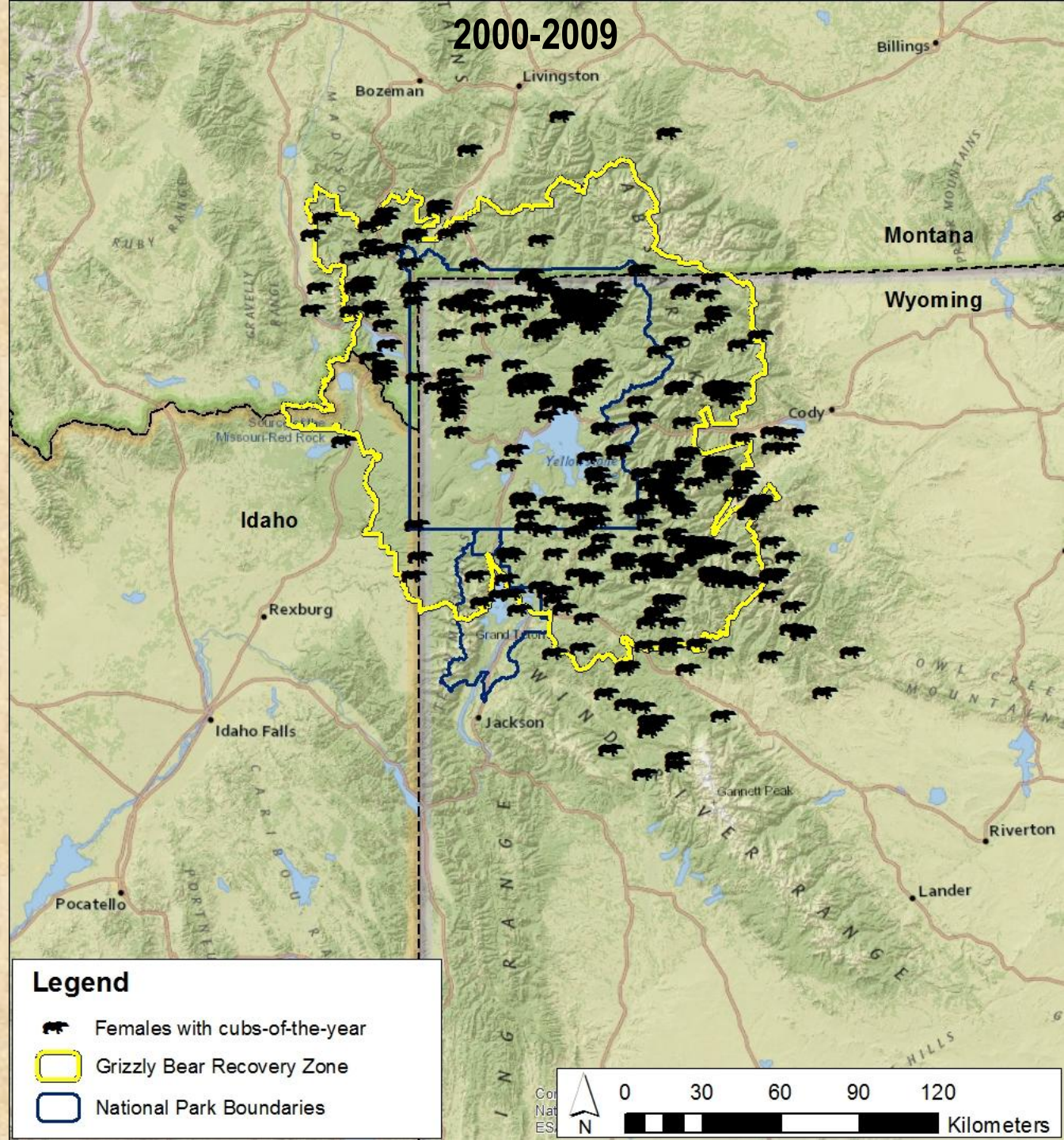
- Population still centered on core based on female with cubs locations



No "doughnut hole" effect

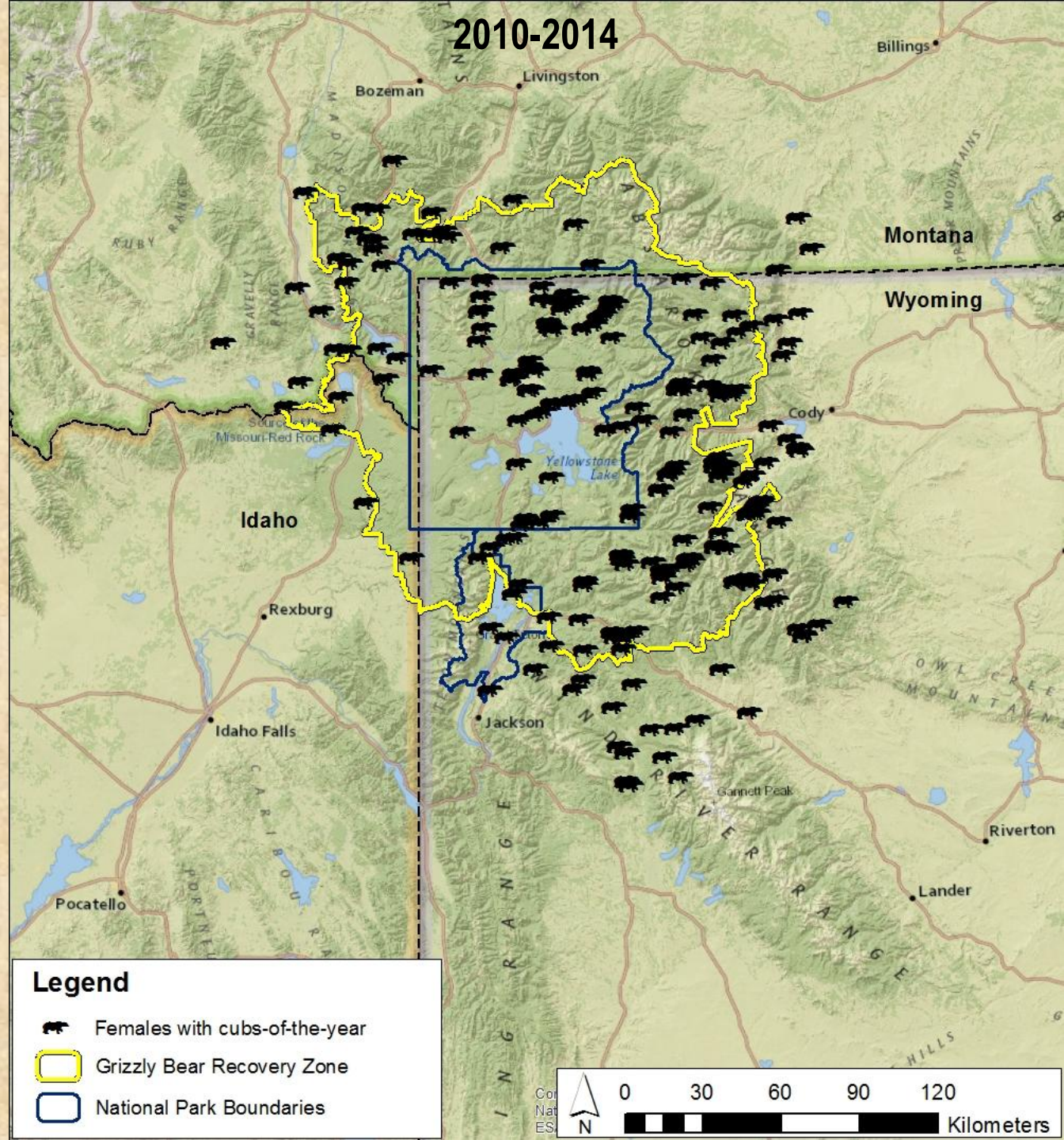
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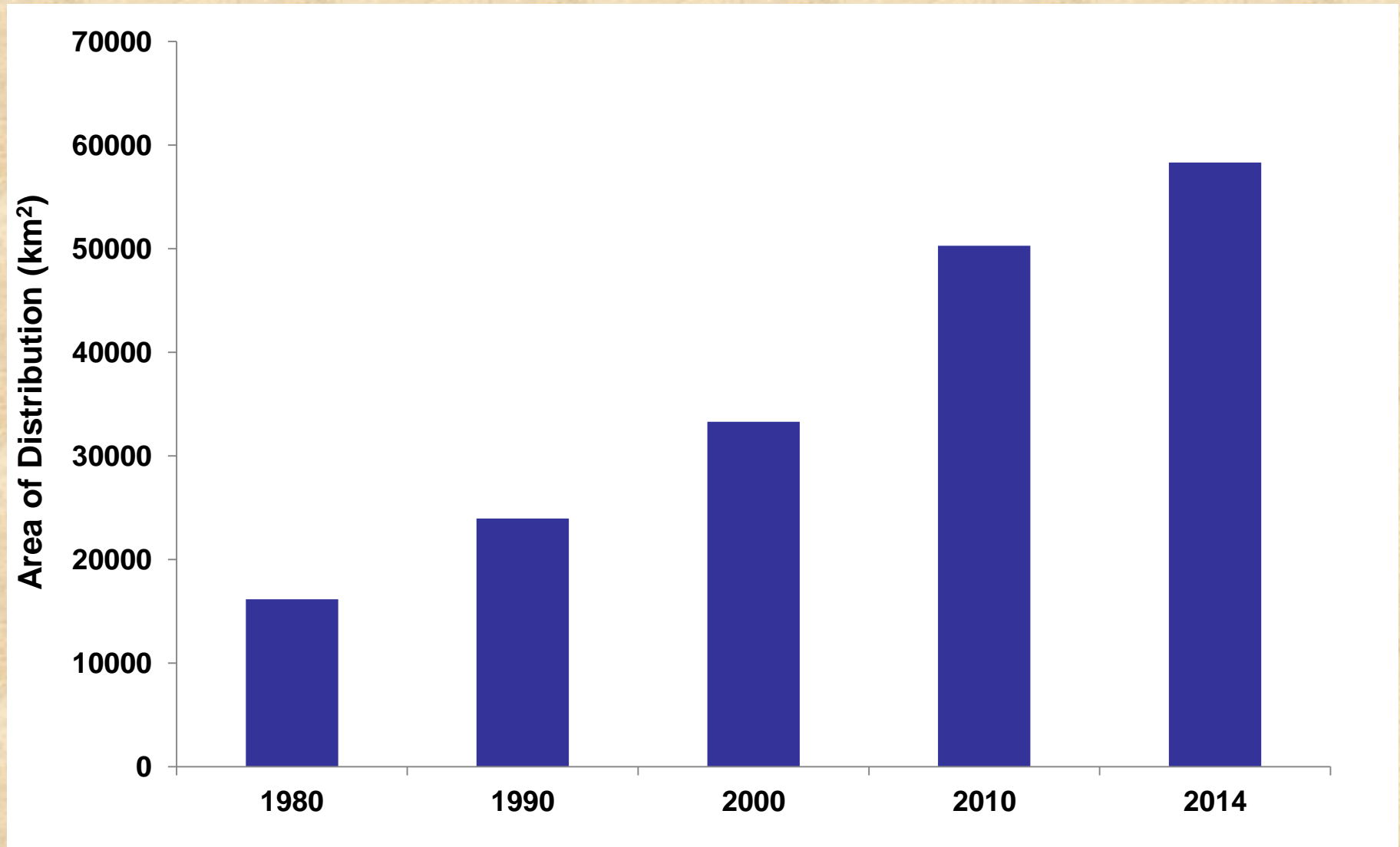


No "doughnut hole" effect

- Population still centered on core based on female with cubs locations



Distribution Area

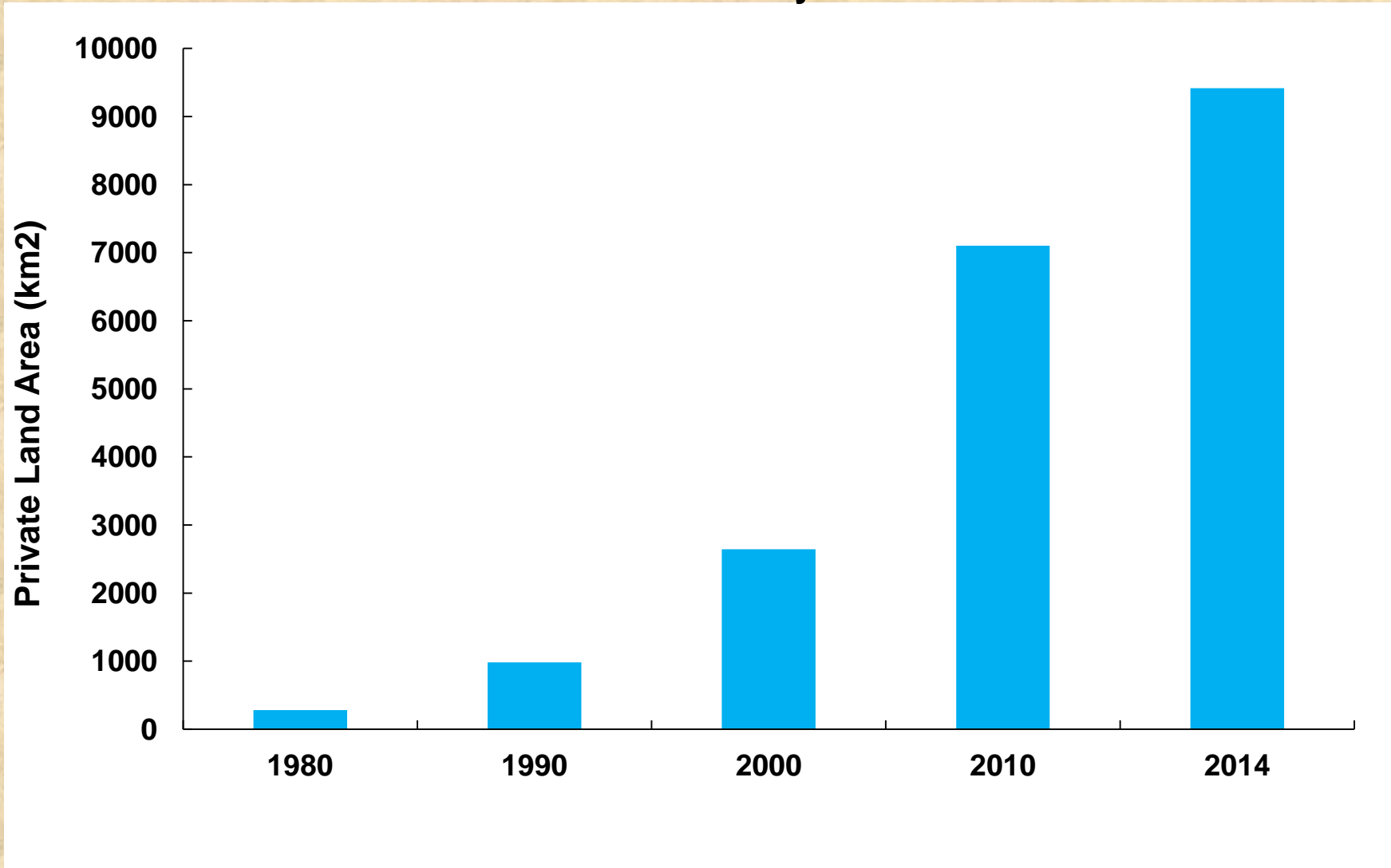


Distribution Area by Jurisdiction

Jurisdiction	2010		2014	
	Area (km ²)	Percent of Total	Area (km ²)	Percent of Total
Idaho	4,508	9.0	4,893	8.4
Montana	11,970	23.8	14,508	24.9
Wyoming	21,843	43.4	26,231	45.0
National Parks	10,237	20.4	10,237	17.6
Wind River Reservation	1,721	3.4	2,445	4.2
Total	50,280		58,314	

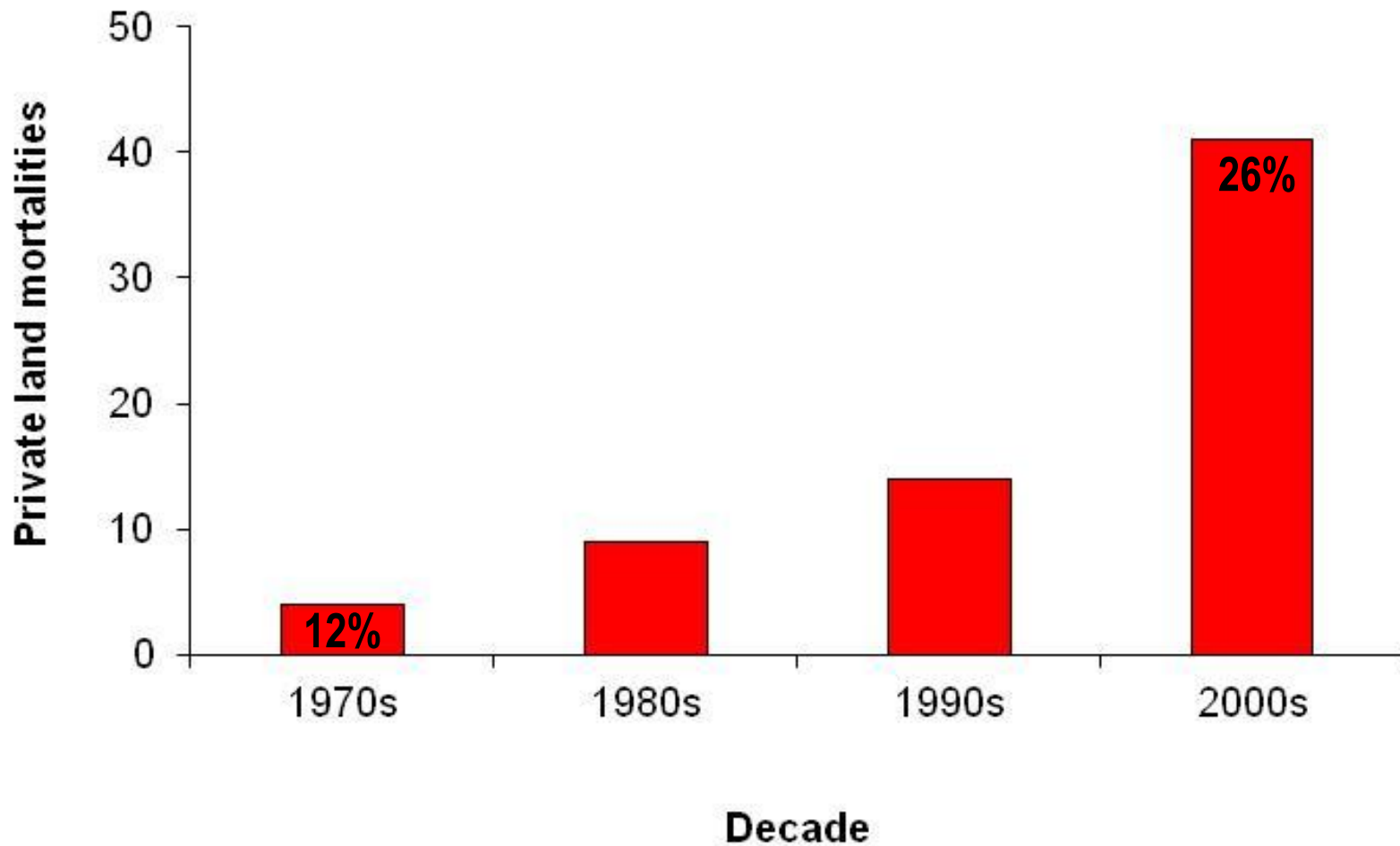
Implications of Increased Distribution

Private Land within Grizzly Distribution



Implications of Increased Distribution

Grizzly Bear Mortalities on Private Lands



Summary

- **Grizzly bear distribution increased from 50,280 km² in 2010 to 58,314 km² in 2014**
 - **Increase of 16%**
- **No "doughnut hole" effect**
- **Largest population growth occurred in 1990s, largest distribution increase occurred in 2000s**
 - **Reflective of increasing densities in core**
- **Increase in private land area and mortalities within grizzly distribution as bears establish in new areas**
 - **Follows trend in overall increase in distribution**