B-D Working Group Meeting

March 6, 2019

Ecosystem Research Group
Missoula, Montana

Objectives

- Provide a brief history of collaborative work on the BDNF
- Share information with the intent to:
  - Assist the working group in reprioritizing target landscape(s)
  - Identify the concerns and needs
    - Do objectives, goals and priority areas need to be updated?
    - What treatments will move the landscape towards management objectives?
    - What are the effects of those treatments on the landscape?
  - Eventually develop a strategic plan (priority areas, units, roads, treatments)

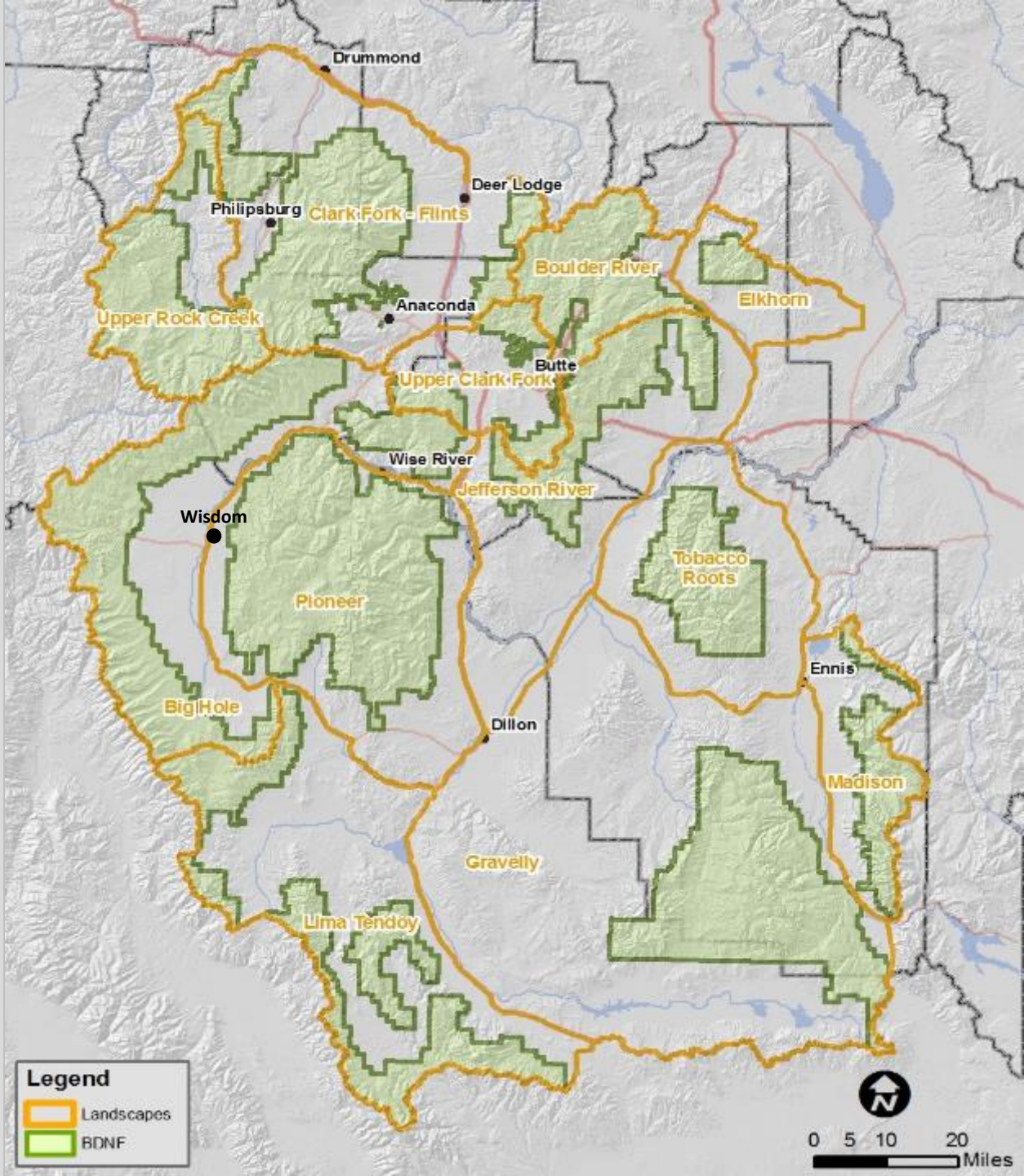
History of Collaborative Work on the BDNF

- 2009 BDNF Forest Plan
- 2010 BDNF Rapid Assessment
- 2014 B-D Working Group Farm Bill Application and Priority Landscape Designation
- 2019 Reassessment
  - changes from MPB/WSBW
  - BDNF actions underway
  - Strategic changes?

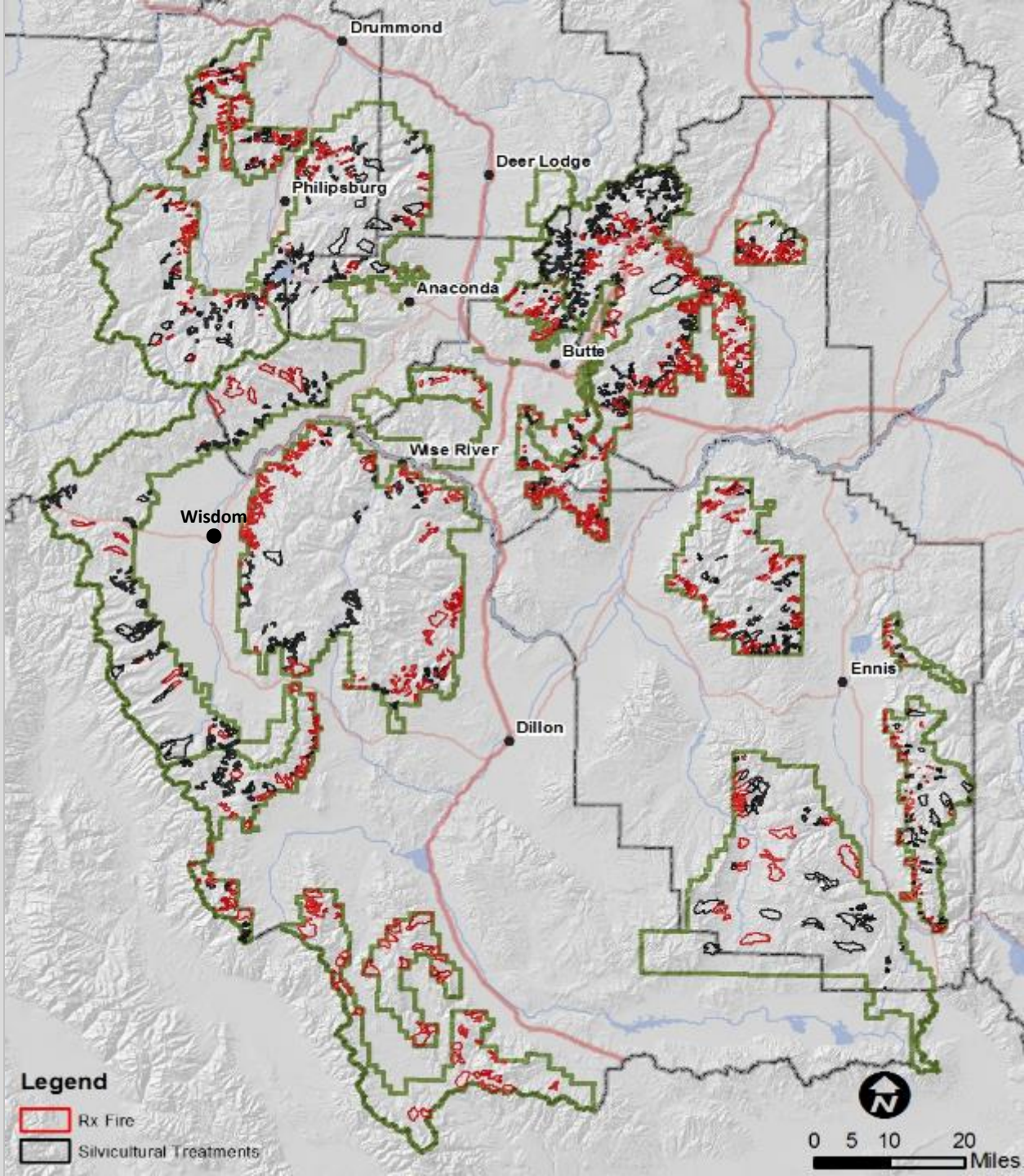
Inventory Data

- R1 V-Map
  - Spatially explicit
  - Has some error
- Forest Inventory & Analysis
  - Plot-based data
  - Very accurate at large scales (HUC5)
- Digital Elevation Models
  - Elevation, aspect, slope
- Aerial Detection Surveys
- Aerial photography
- Fine scale data

Twelve Landscapes Identified in the 2009 Forest Plan



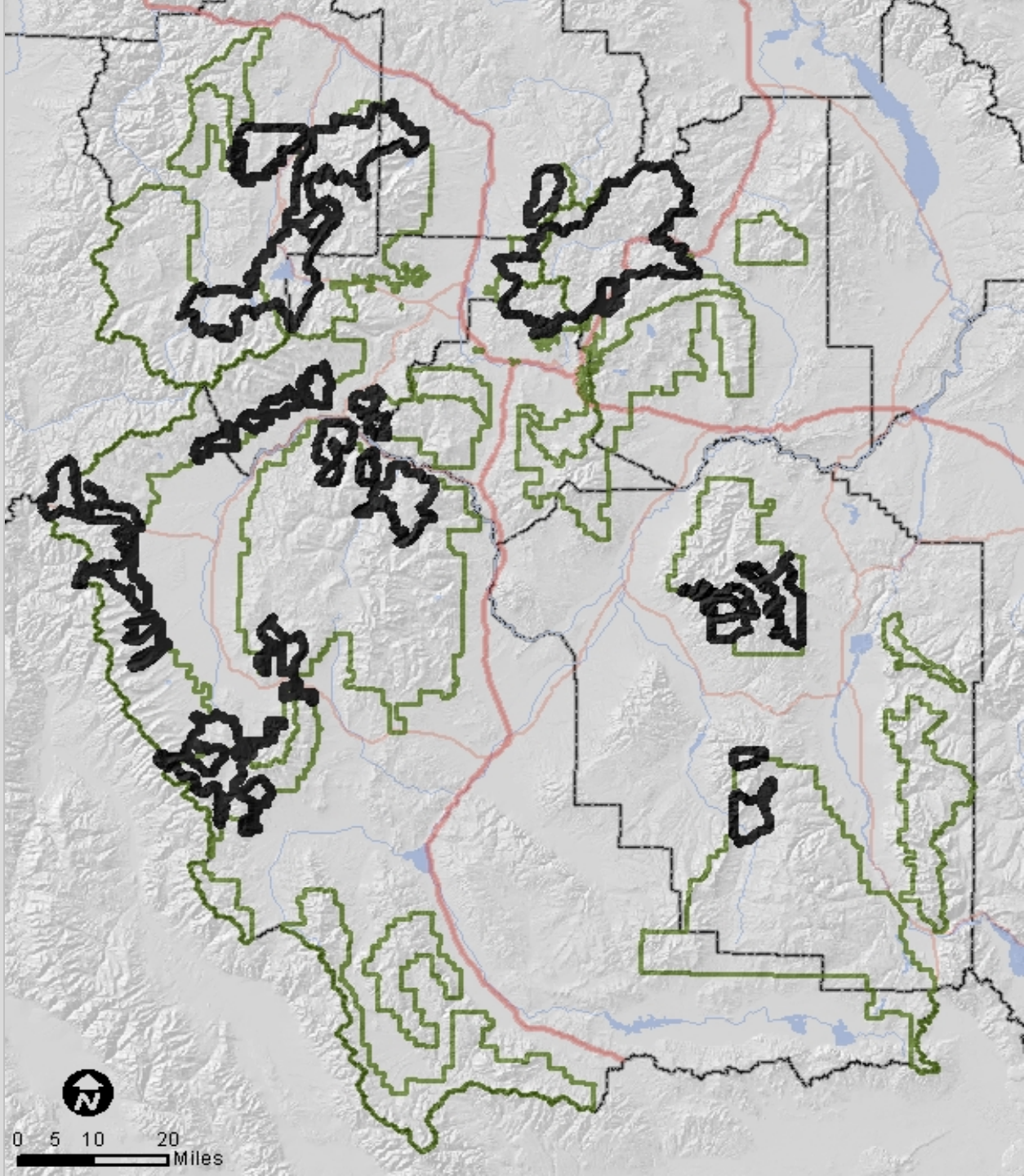
Treatment units proposed in the USFS Rapid Assessment of the BDNF 2010



USFS Rapid Assessment Treatment Prescriptions

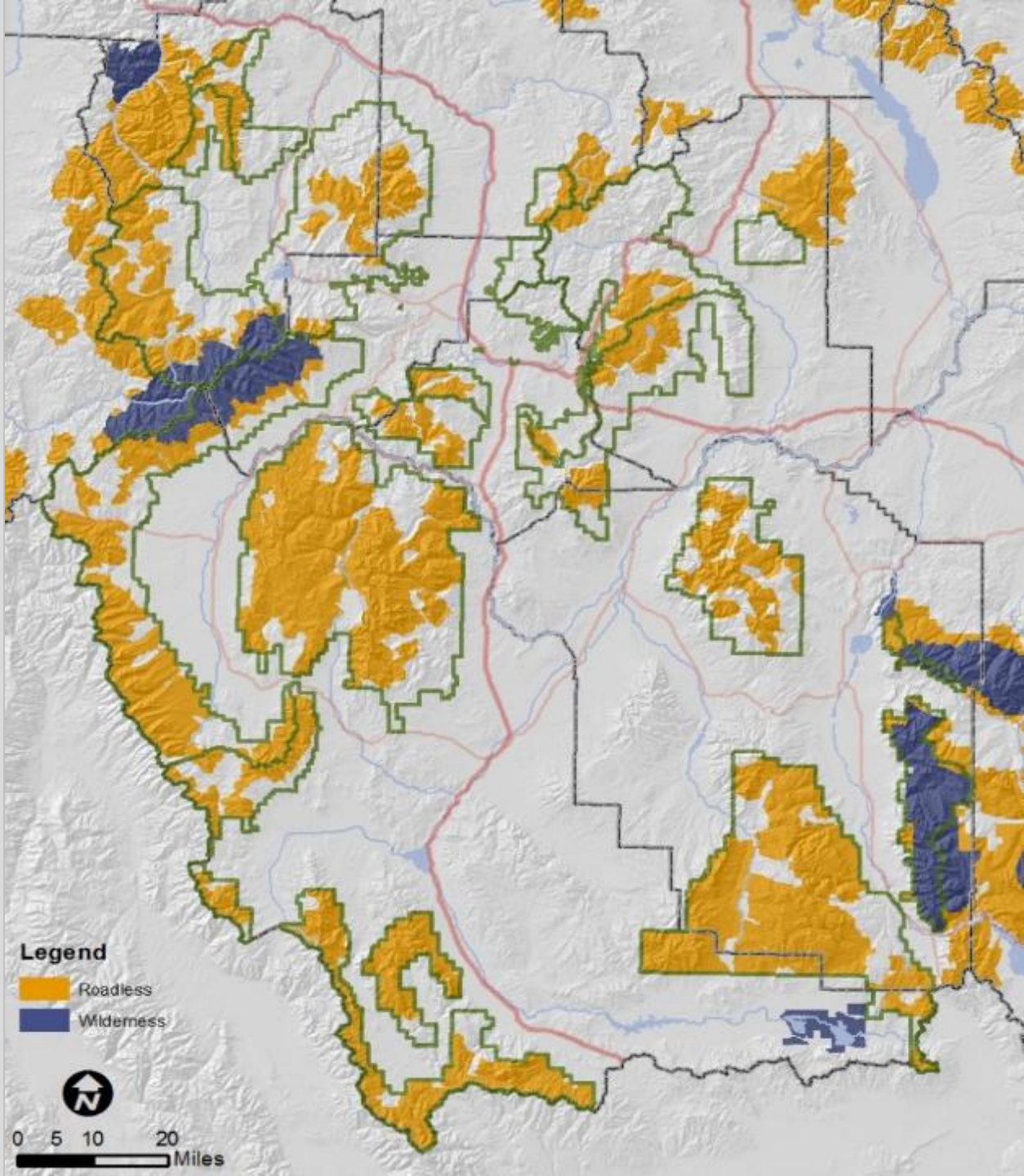
Acres of Timber Units Silviculture Prescriptions	Big Hole Landscape	Boulder River Landscape	Clark Fork-Flints Landscape	Elkhorn Landscape	Gravelly Landscape	Jefferson River Landscape	Lima Tendoy Landscape	Madison Landscape	Pioneer Landscape	Tobacco Root Landscape	Upper Clark Fork Landscape	Upper Rock Creek	Total
CT	98	777	1,397	206	810	215	76		518	972	18	126	5,213
CT-meadow restoration		646								179	34	125	983
CT-salvage	117	929	992	846	28	1,507	1,089		1,554	1,232	356	209	8,858
CT-salvage-green	164		540		20				427			112	1,264
LP-salvage		15,239	1,906		958	3,133			795	1,480	1,922	125	25,559
LP-salvage-green	13,964		7,485		463	88	5,672		4,736	124		3,428	35,961
LP-salvage-thin	1,567	3,790	234		607	214				482			6,894
LP-salvage-thin-green					199				495			684	1,377
LP-thin		142											142
LP-thin-salvage		405											405
LP-thin-salvage-green												176	176
Meadow restoration			39							14			53
Prescribed Fire	12,847	8,667	4,992	2,968	18,891	6,379		875	8,540	3,159	2,409	3,331	73,057
Salvage-CT	81	779	353	331		391	166		820	587	624	271	4,402
Salvage-CT-green			1,318		116				3,142			1,118	5,694
Slash /Prescribed Fire		5,004	5,275	1,916	56	18,018	46,694	5,739	14,598	6,184	3,483	4,266	111,234
TSI-BioMass			339	20									359
TSI-UB						4,308							4,308
WBP-restoration-BB	7,799	9,028	12,251	1,497	16,843			7,432	1,673	1,922		2,563	61,009
WBP- restoration -CT		8	364							195			566
WBP- restoration -HP										173		827	1,000
WBP- restoration -salvage				156									156
WBP- restoration -TSI										641			641
Total	36,638	45,413	37,485	7,939	38,990	34,254	53,695	14,047	37,299	17,343	8,847	17,361	349,311

Priority Landscape Designations 2014



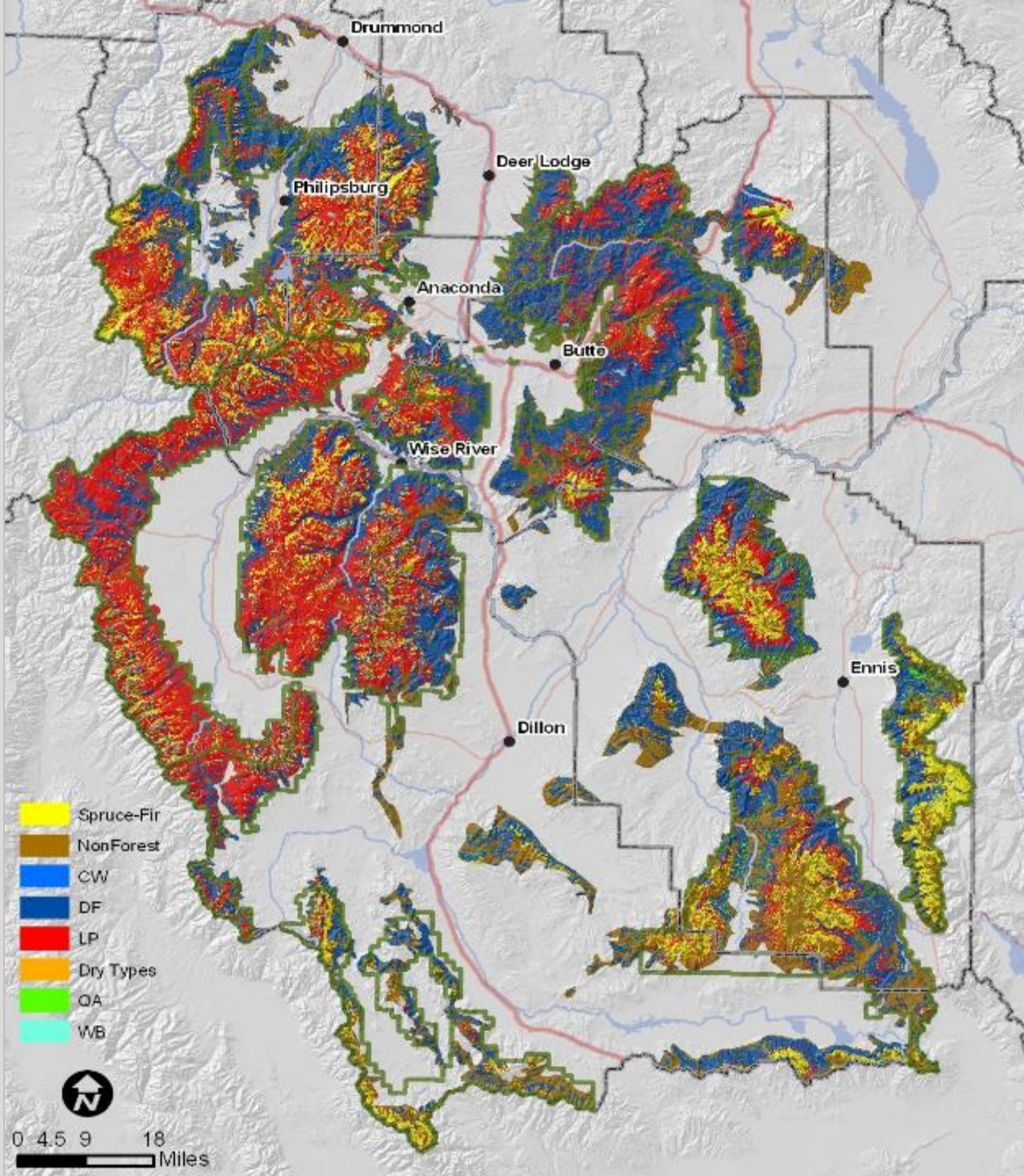
Current Forest Conditions

Designated Wilderness and Inventoried Roadless Areas



Vegetation Cover Types

USFS Region 1 VMap base-level database (version 11)
April, 2011



Vegetation Size Classes

USFS Region 1 VMap base-level database (version 11)
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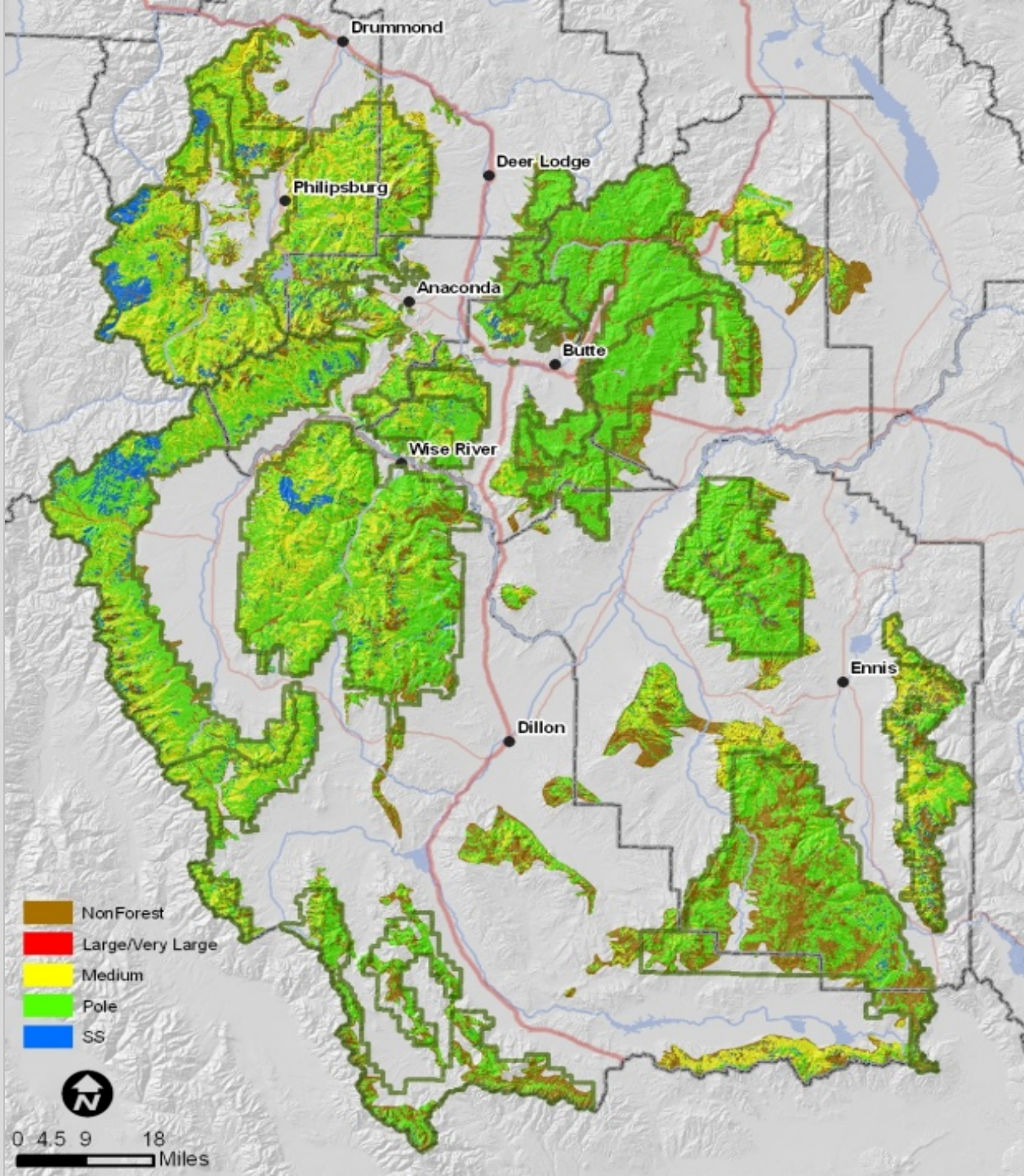

Canopy Crown Closure

USFS Region 1 VMap base-level database (version 11)
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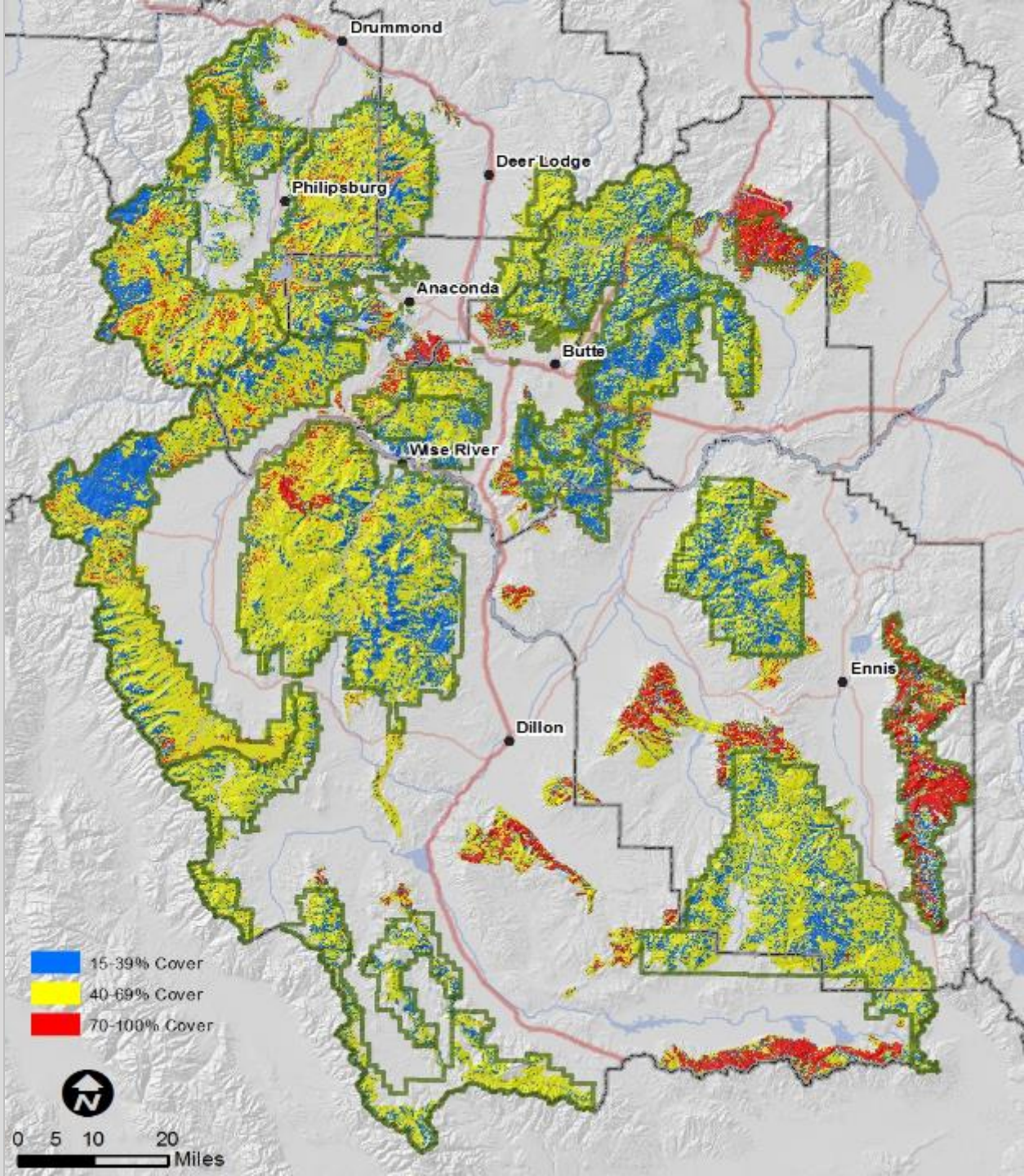
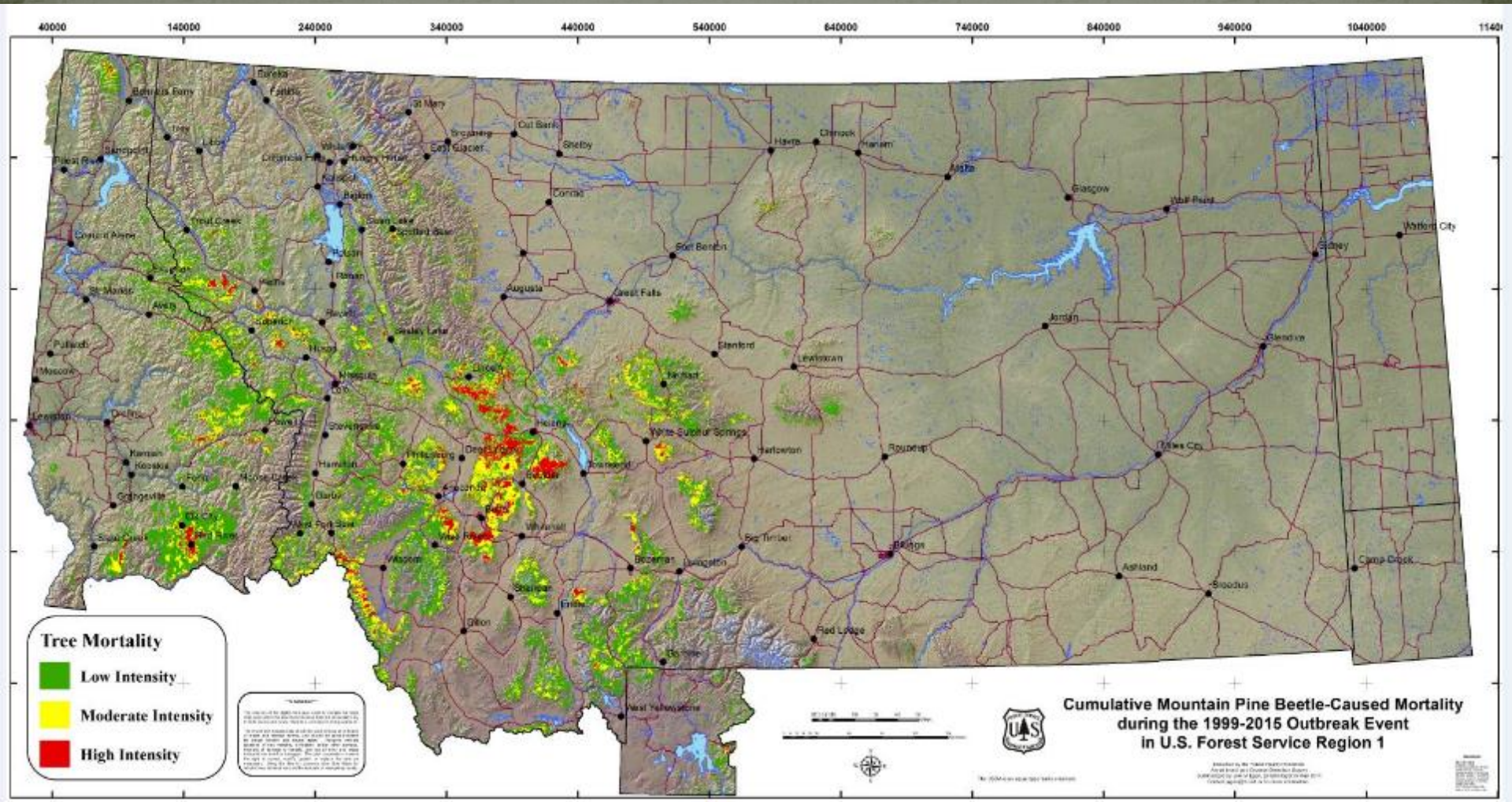
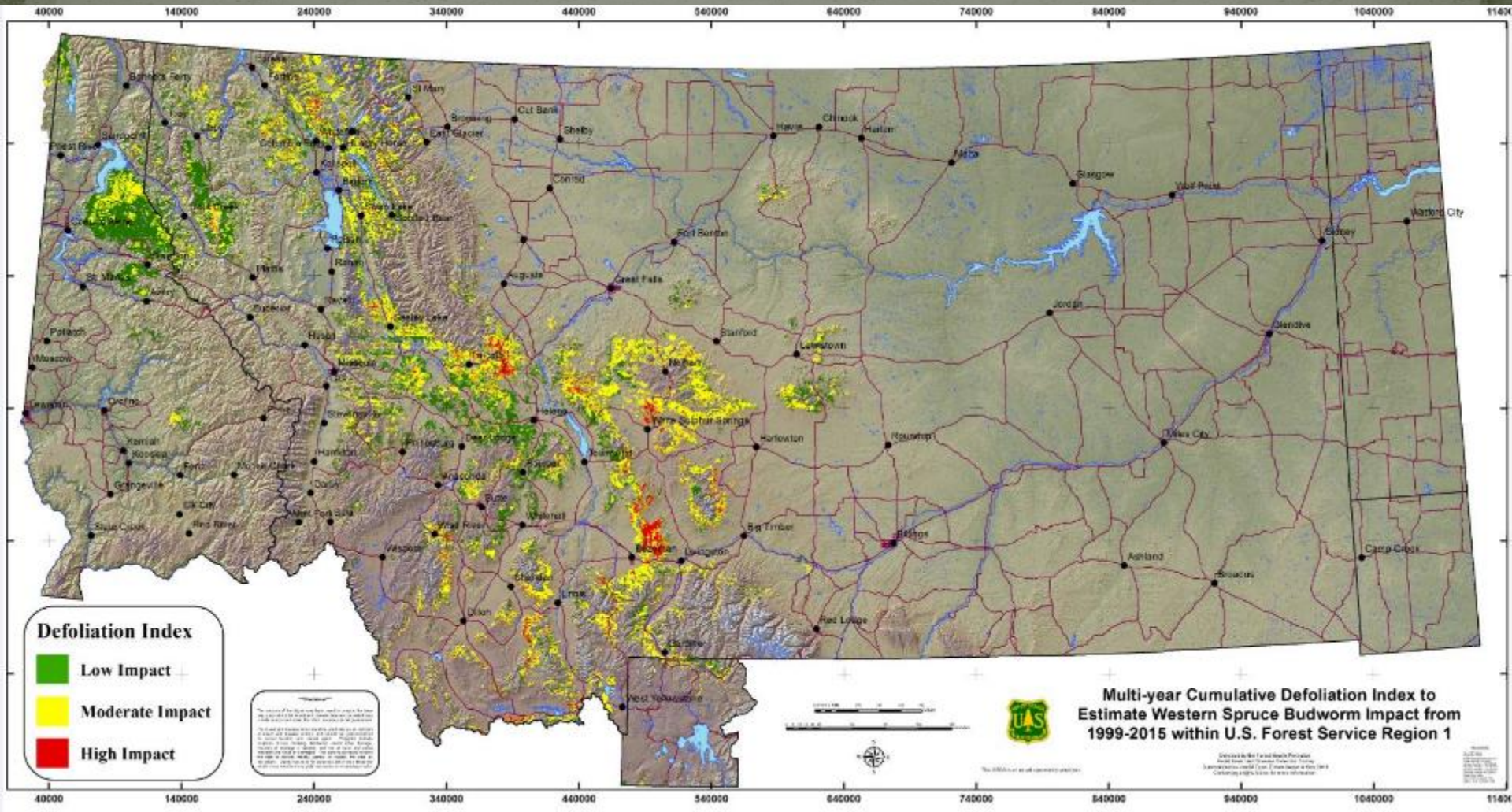


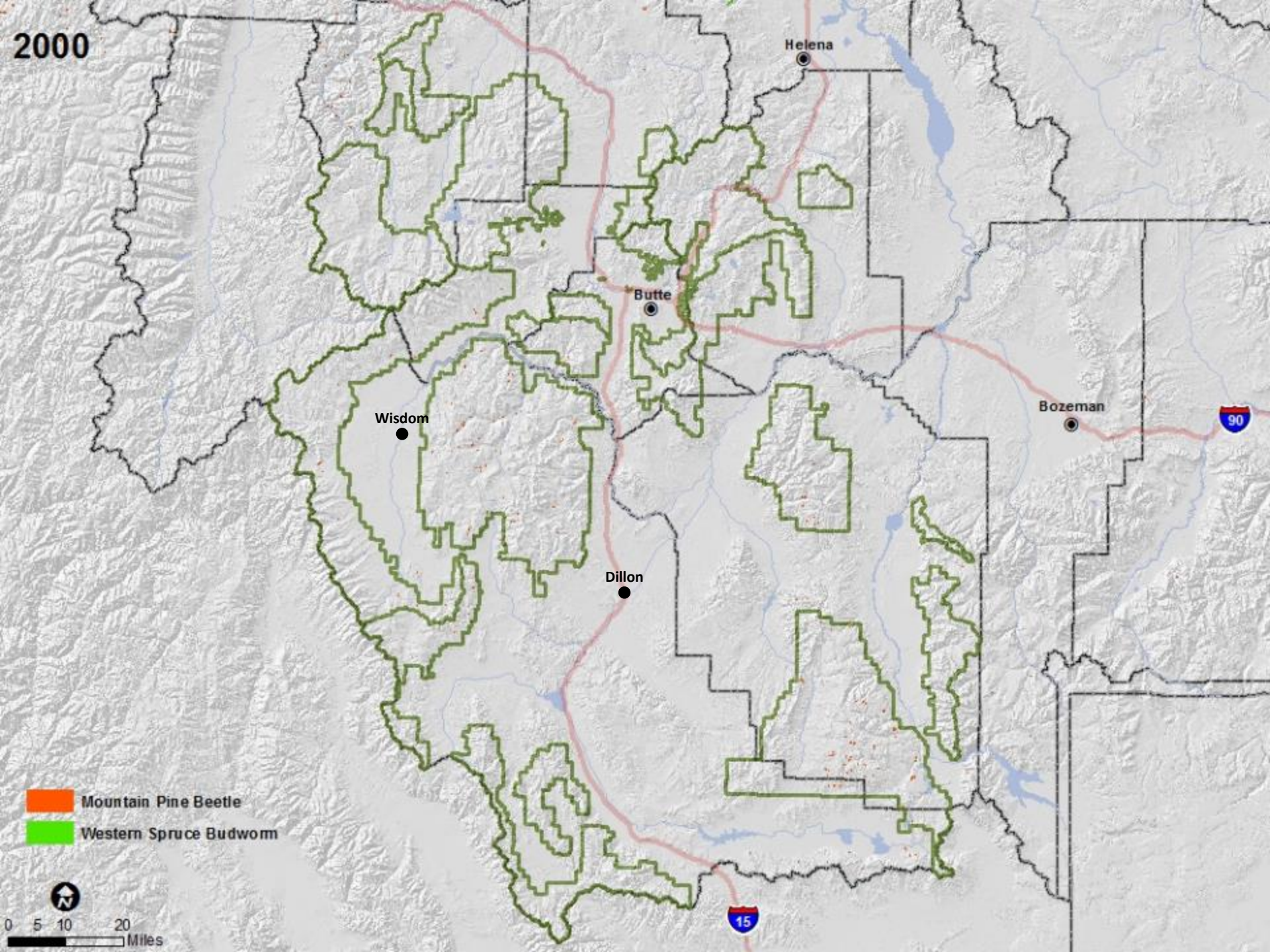
USFS Region 1
Mountain Pine Beetle Mortality Intensity
1999-2015

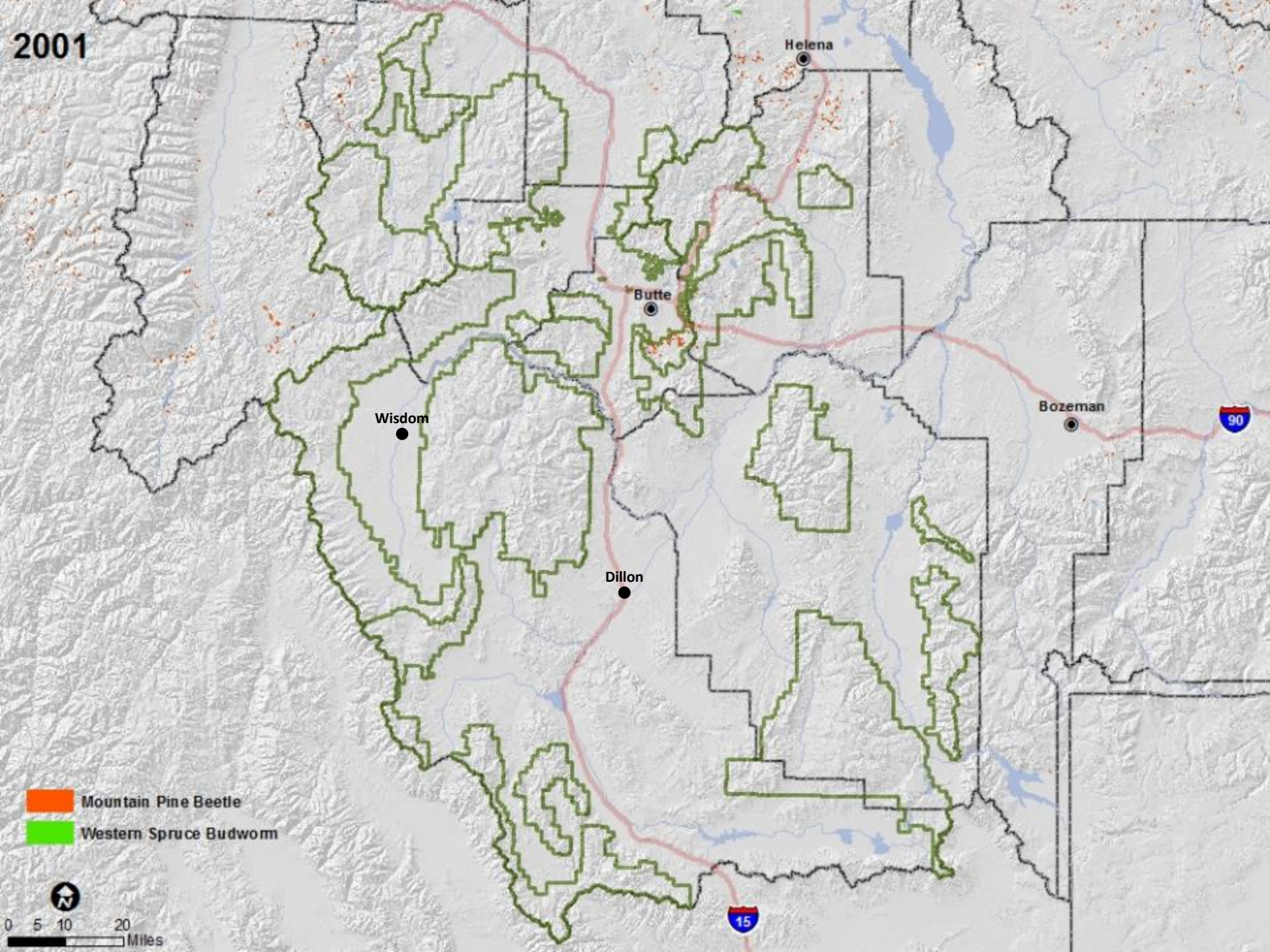


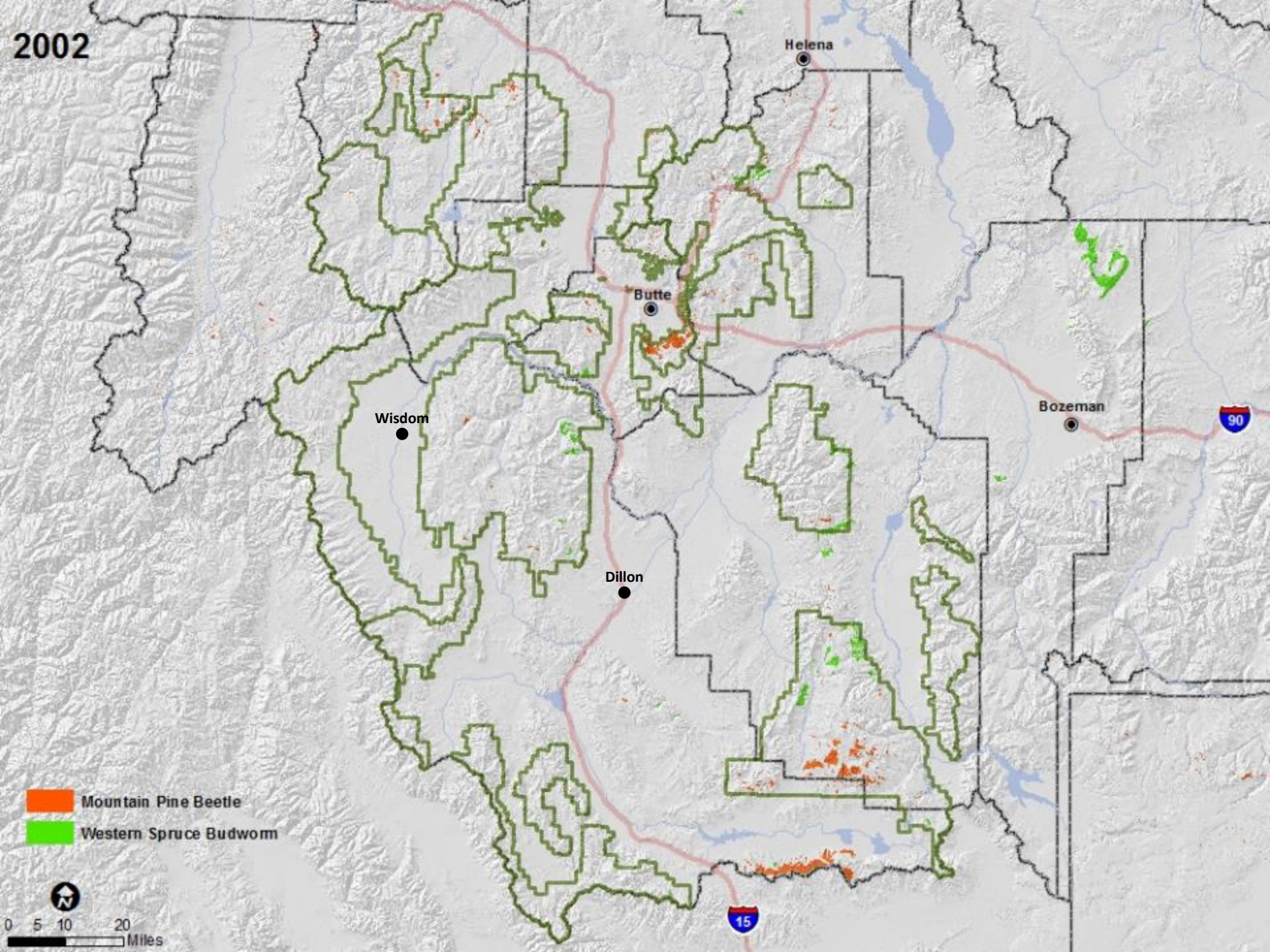
USFS Region 1
Western Spruce Budworm Defoliation Index
1999-2015

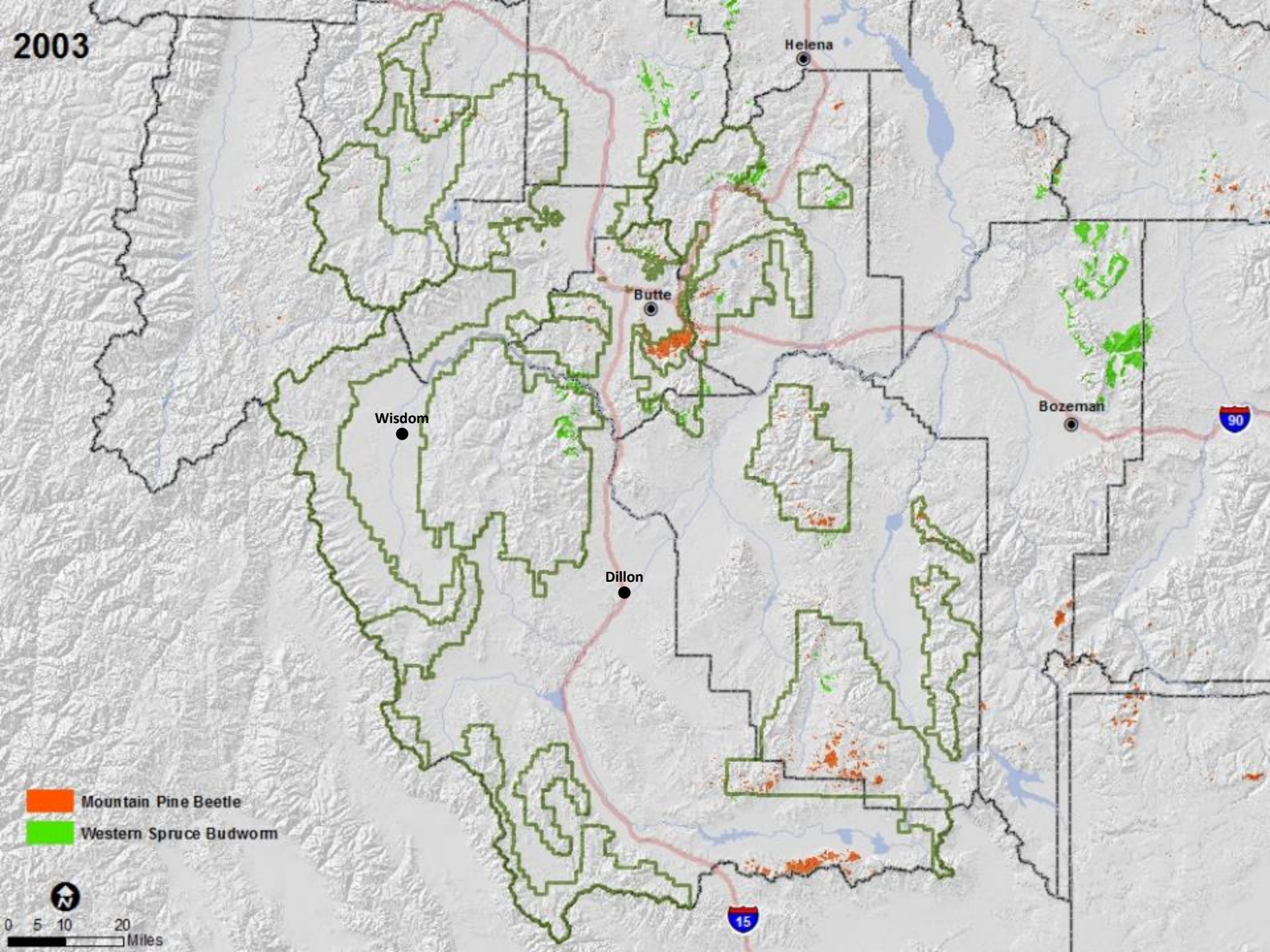


Timeline of the Insect Epidemic


2000
Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2001
Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2002
Helena
Butte
Bozeman
Wisdom
Dillon
90
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles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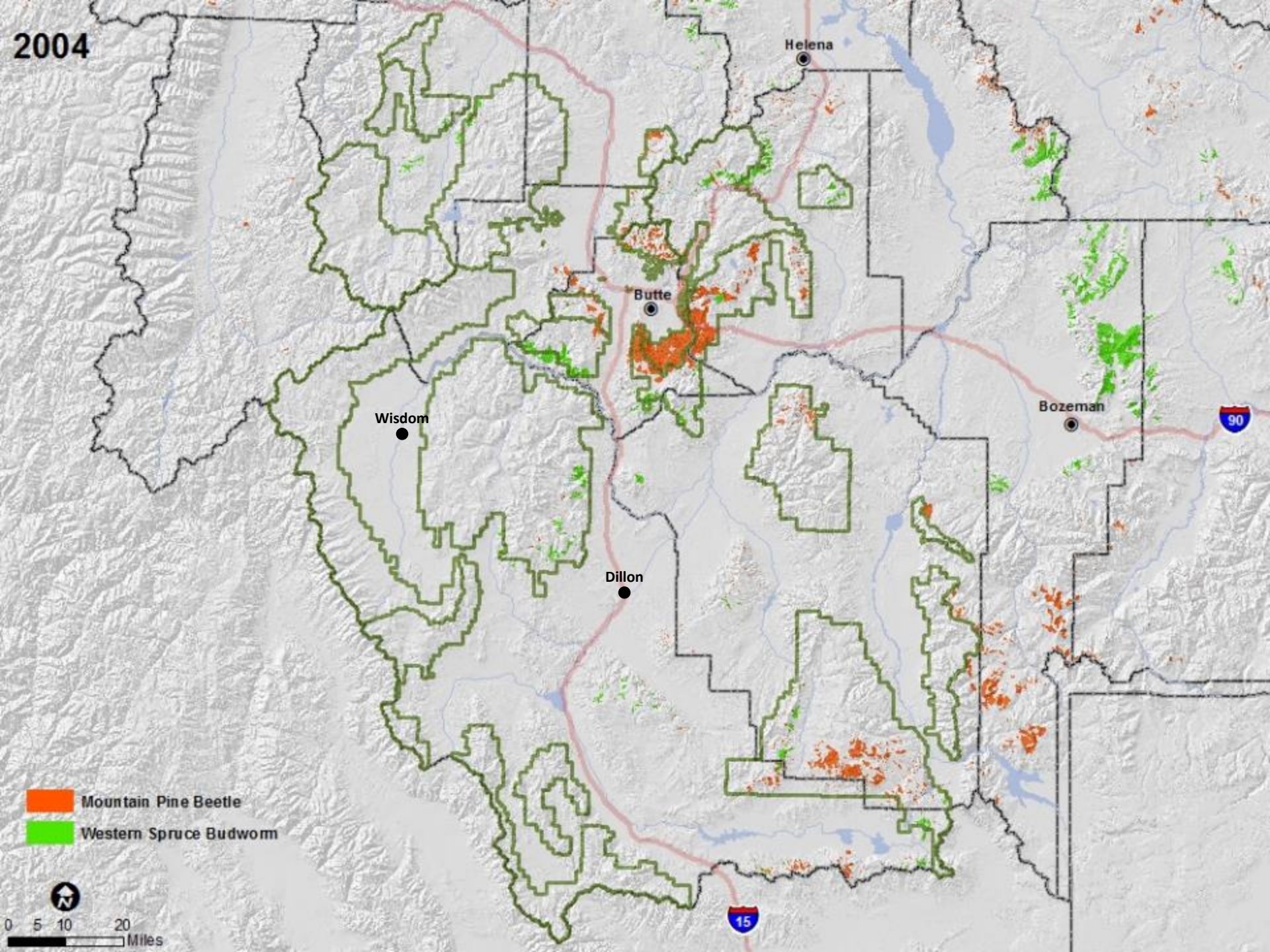
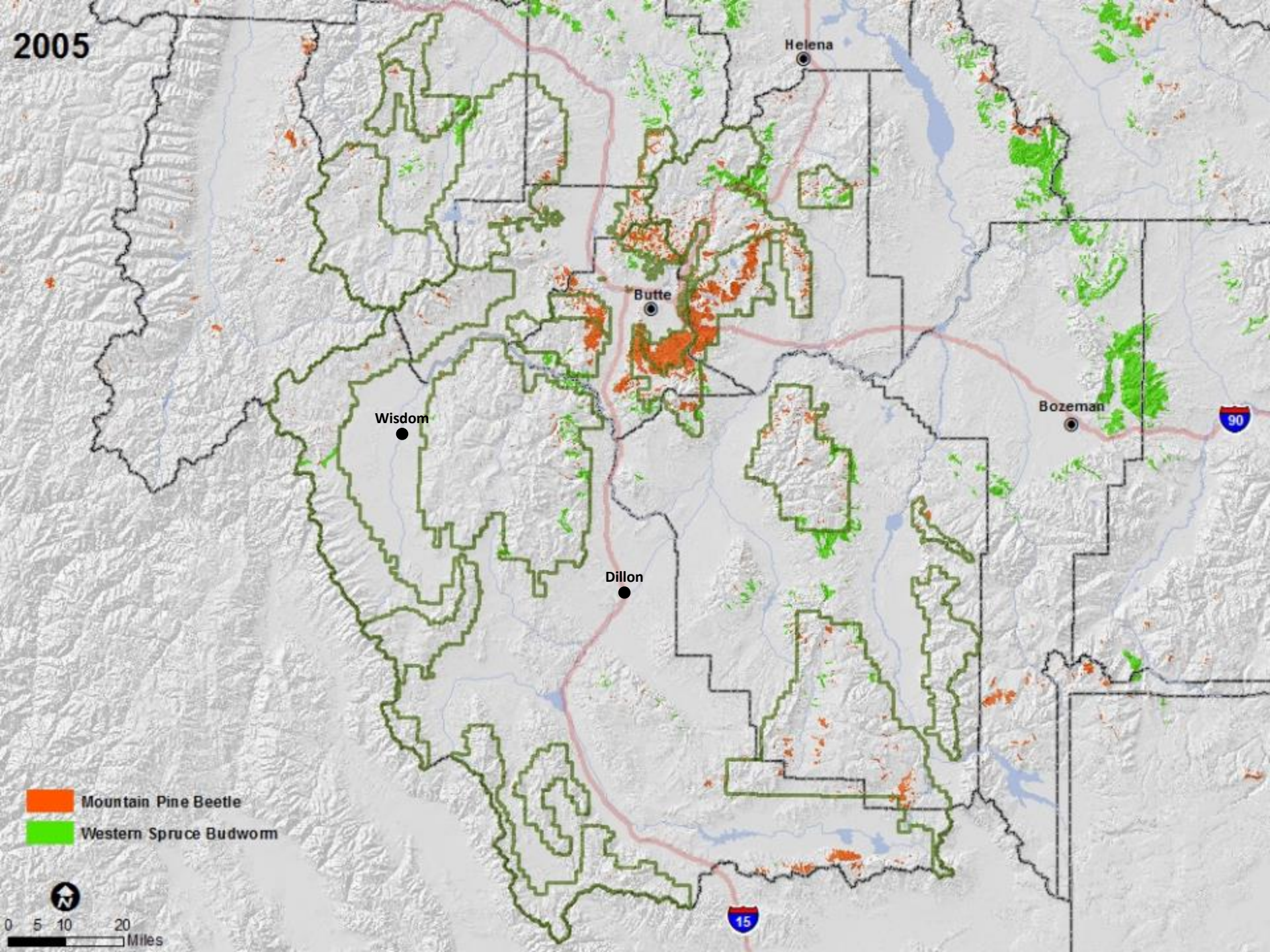
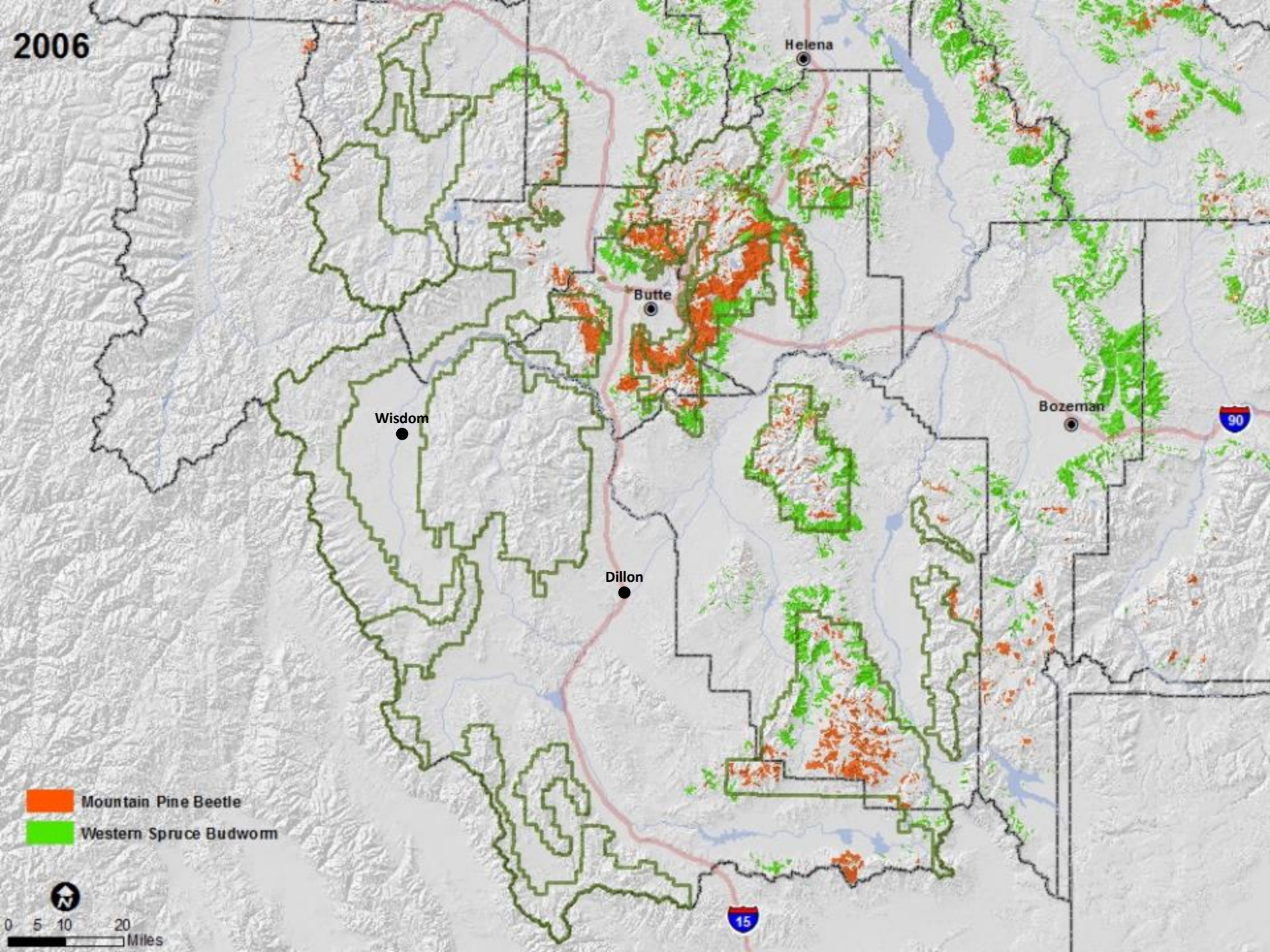
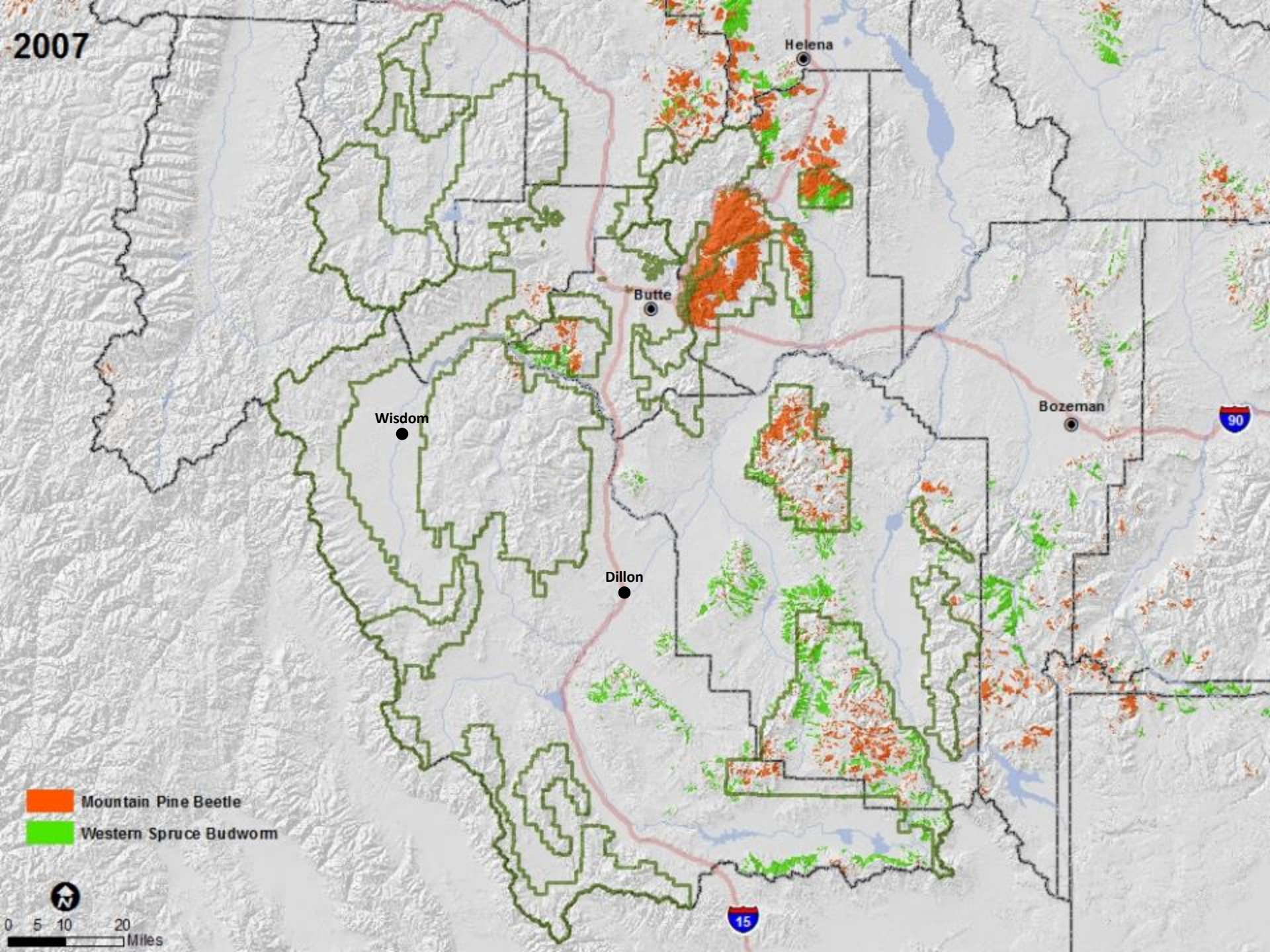
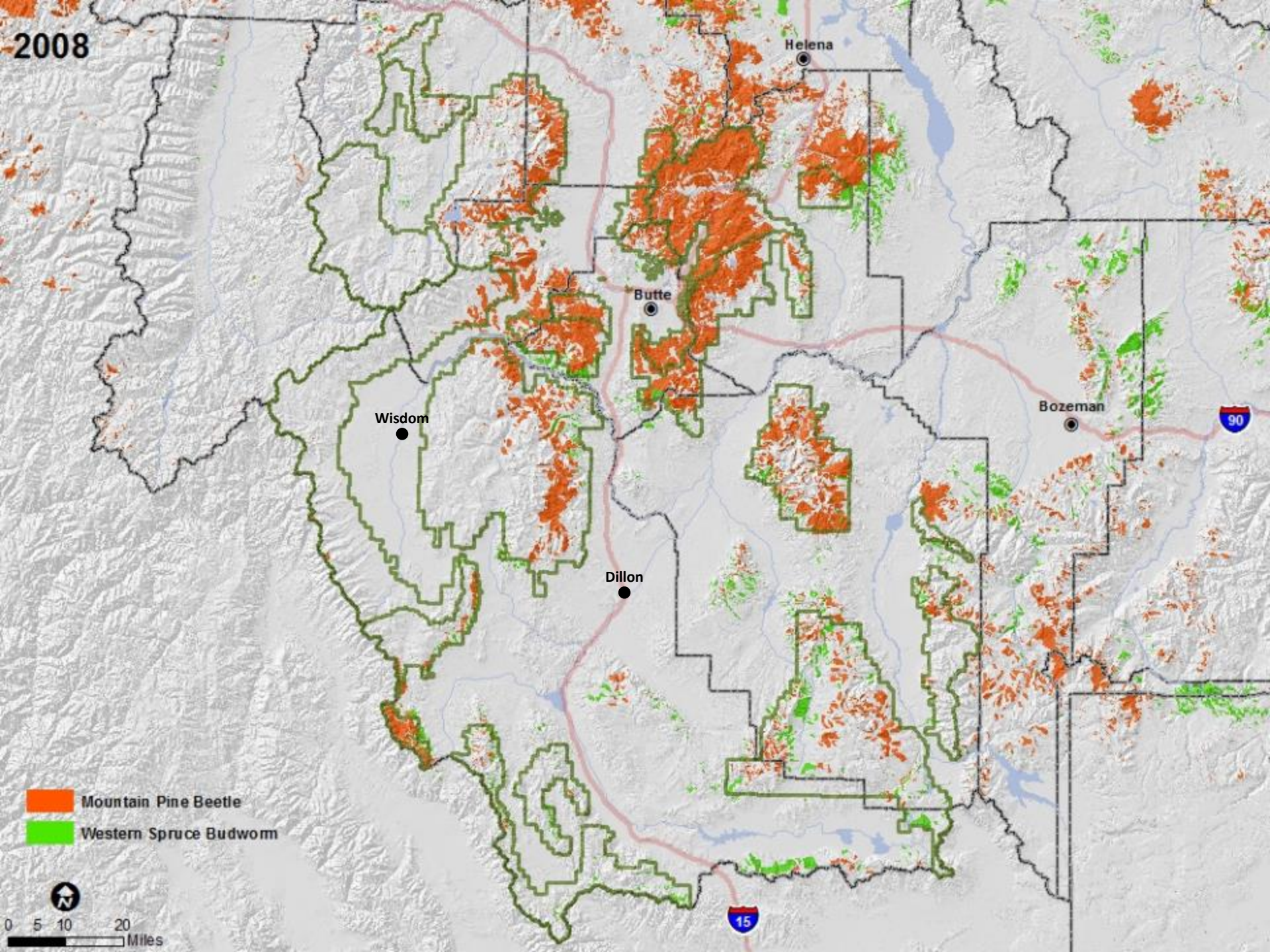
Helena
Butte
Bozeman
Wisdom
Dillon
90
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles

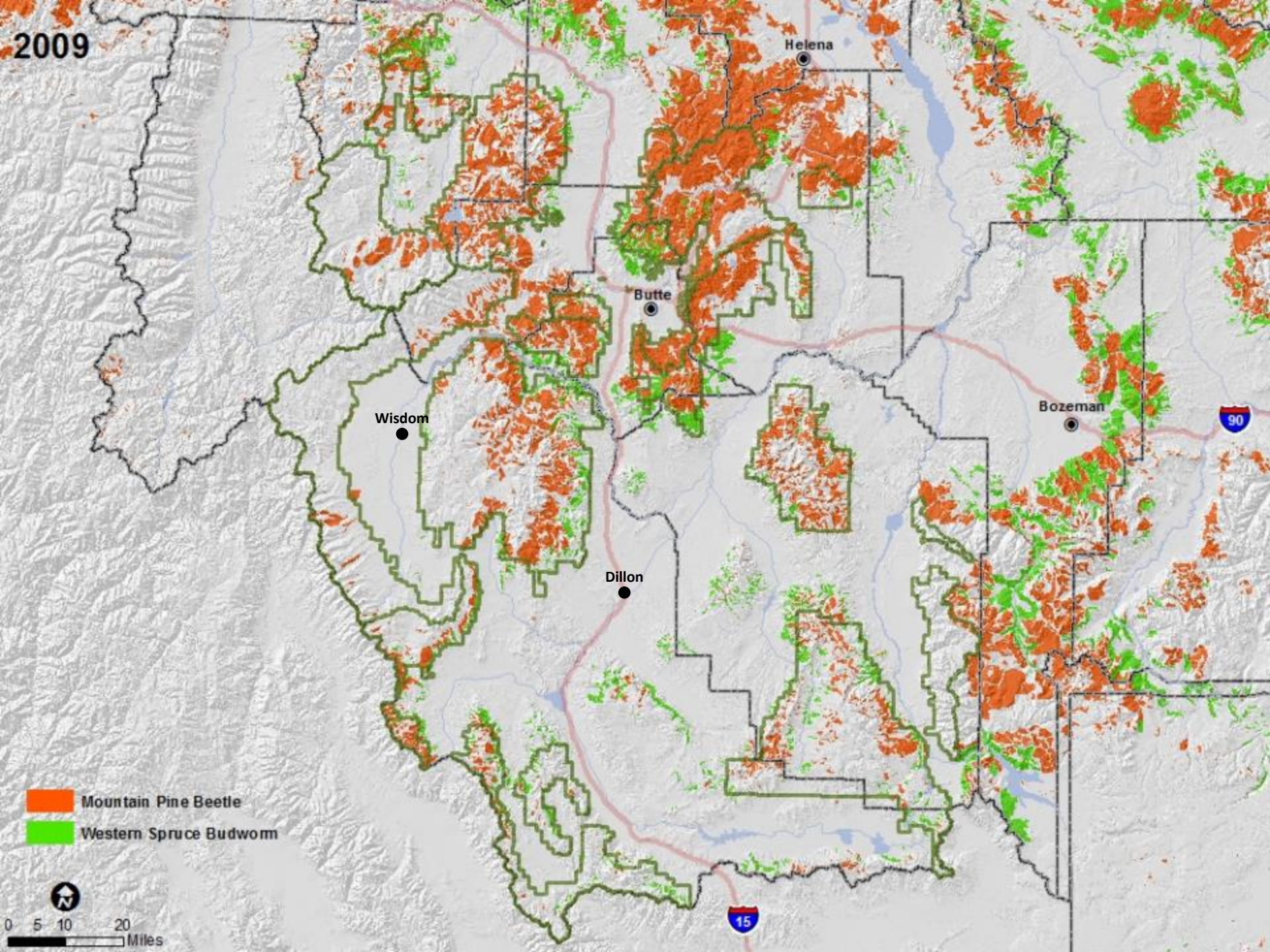

2004
Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles

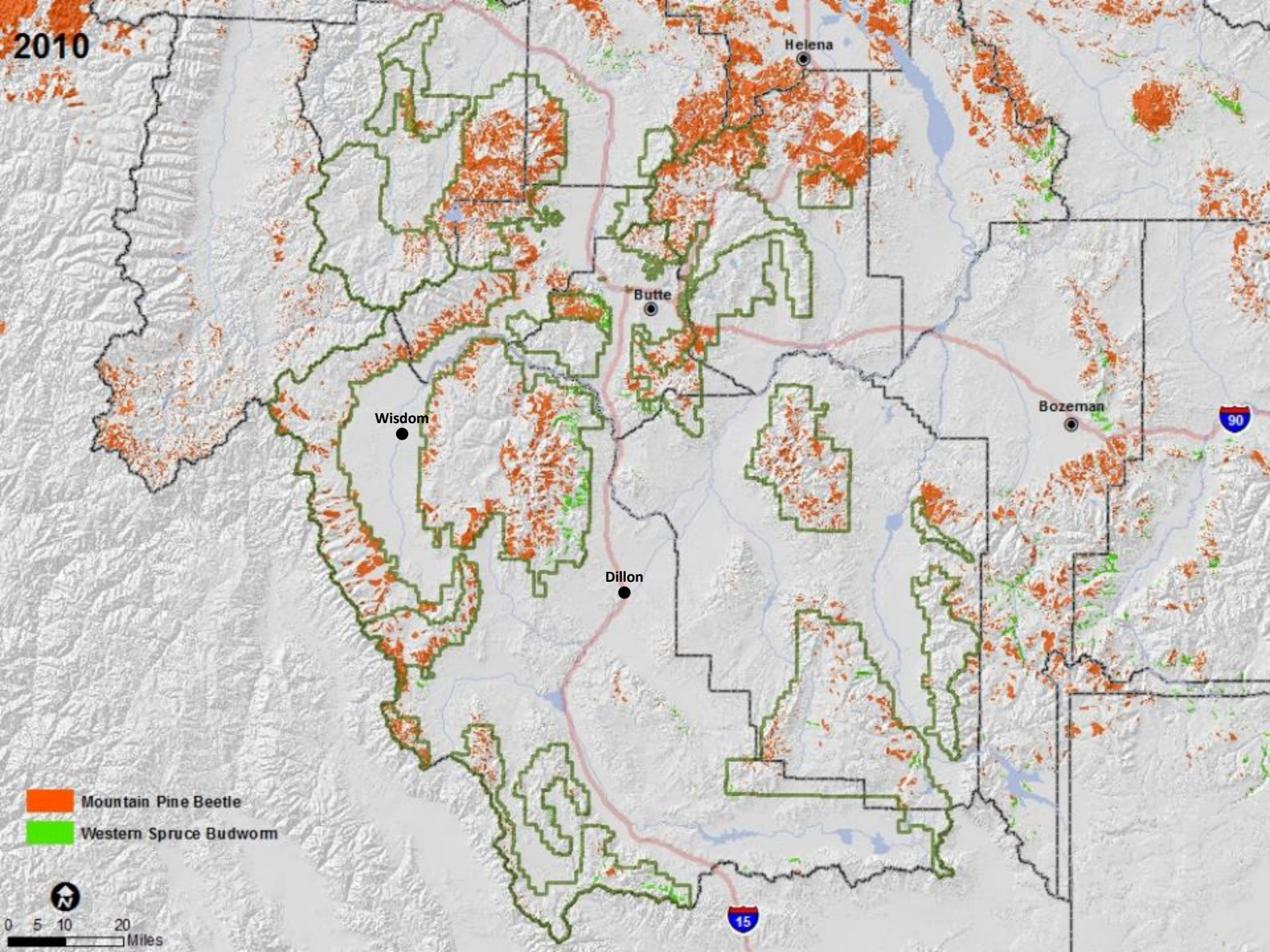

2005
Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles

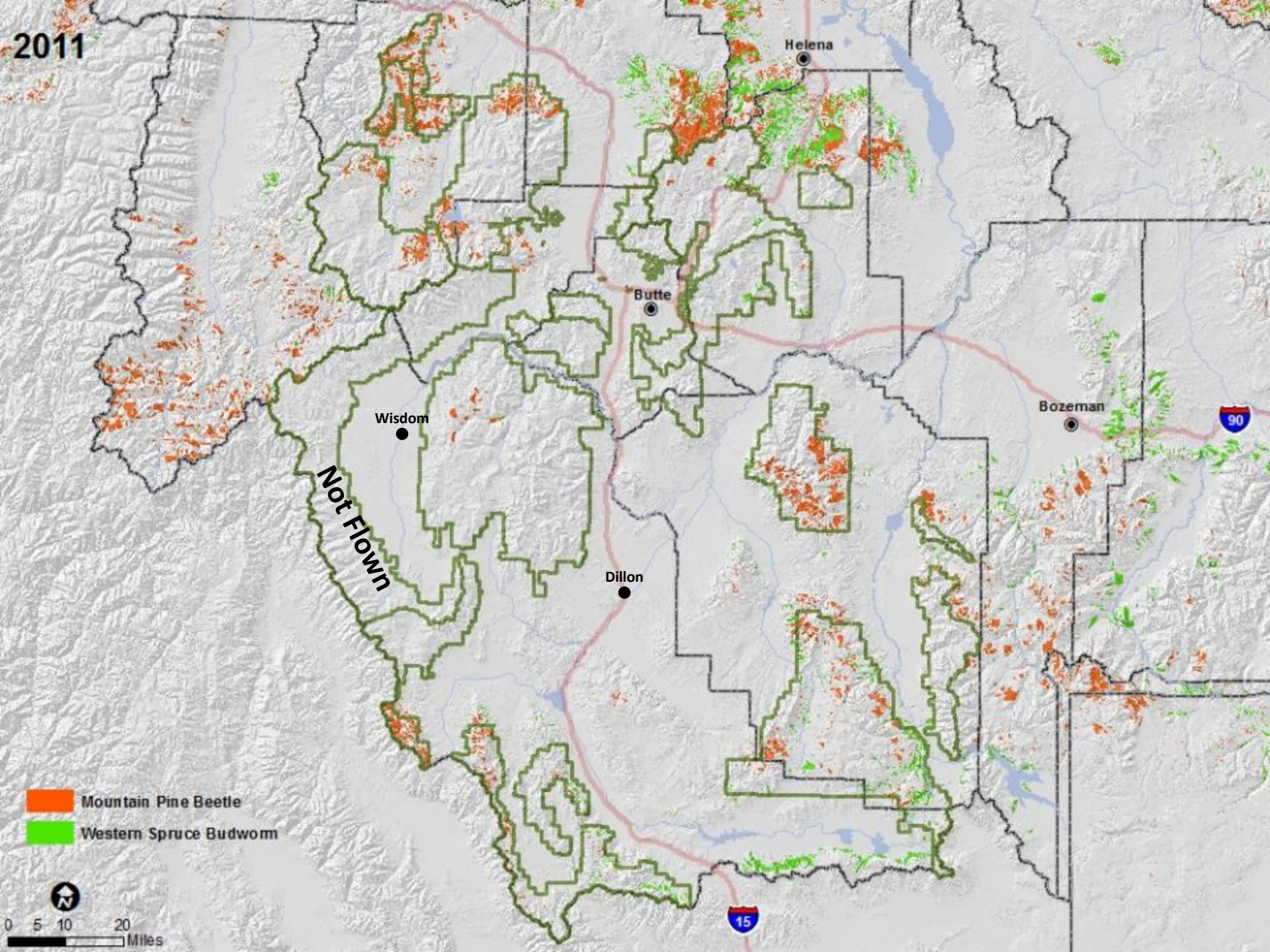

2006
Helena
Butte
Wisdom
Bozeman
Dillon
90
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles

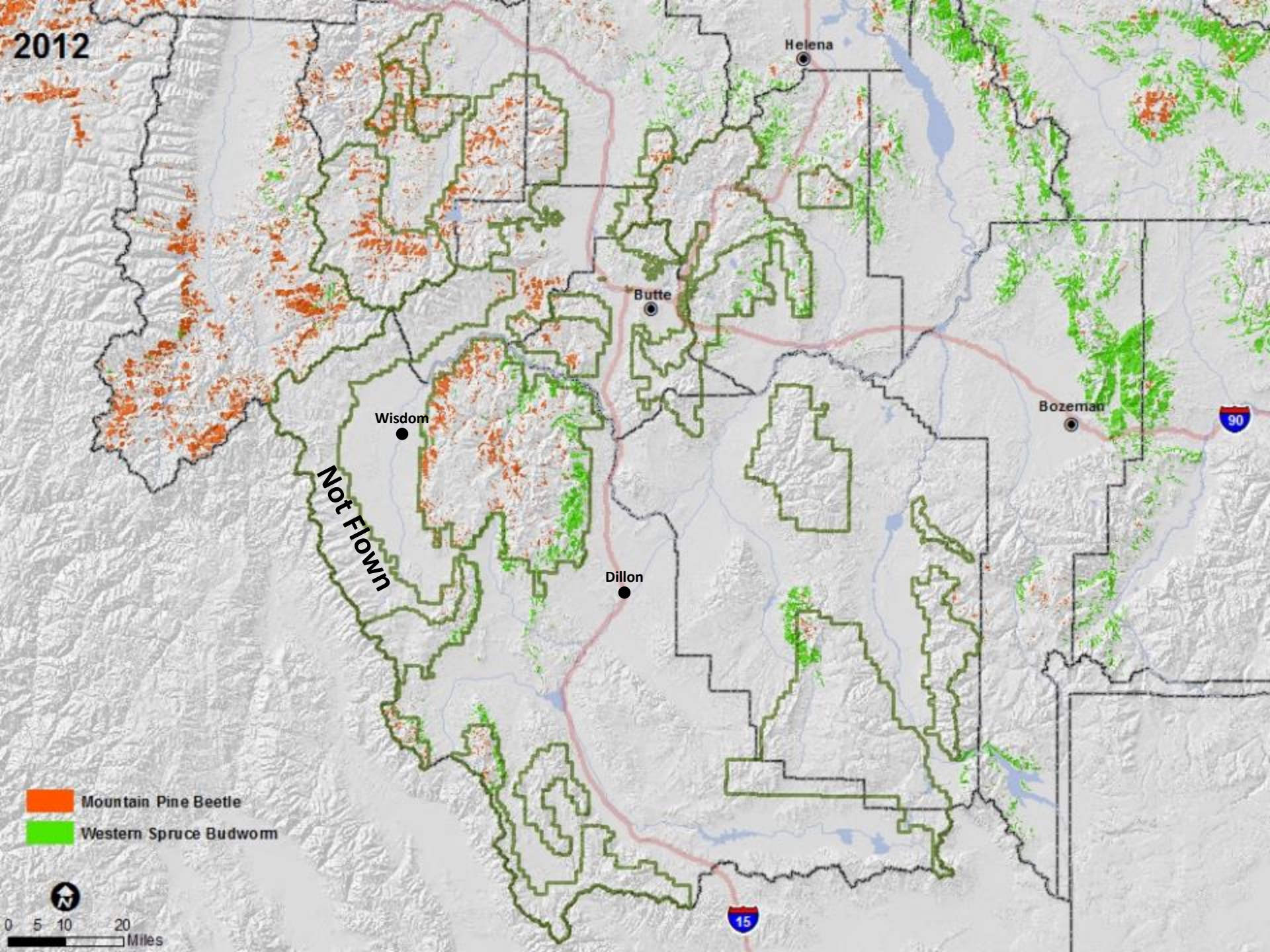

2007
Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles

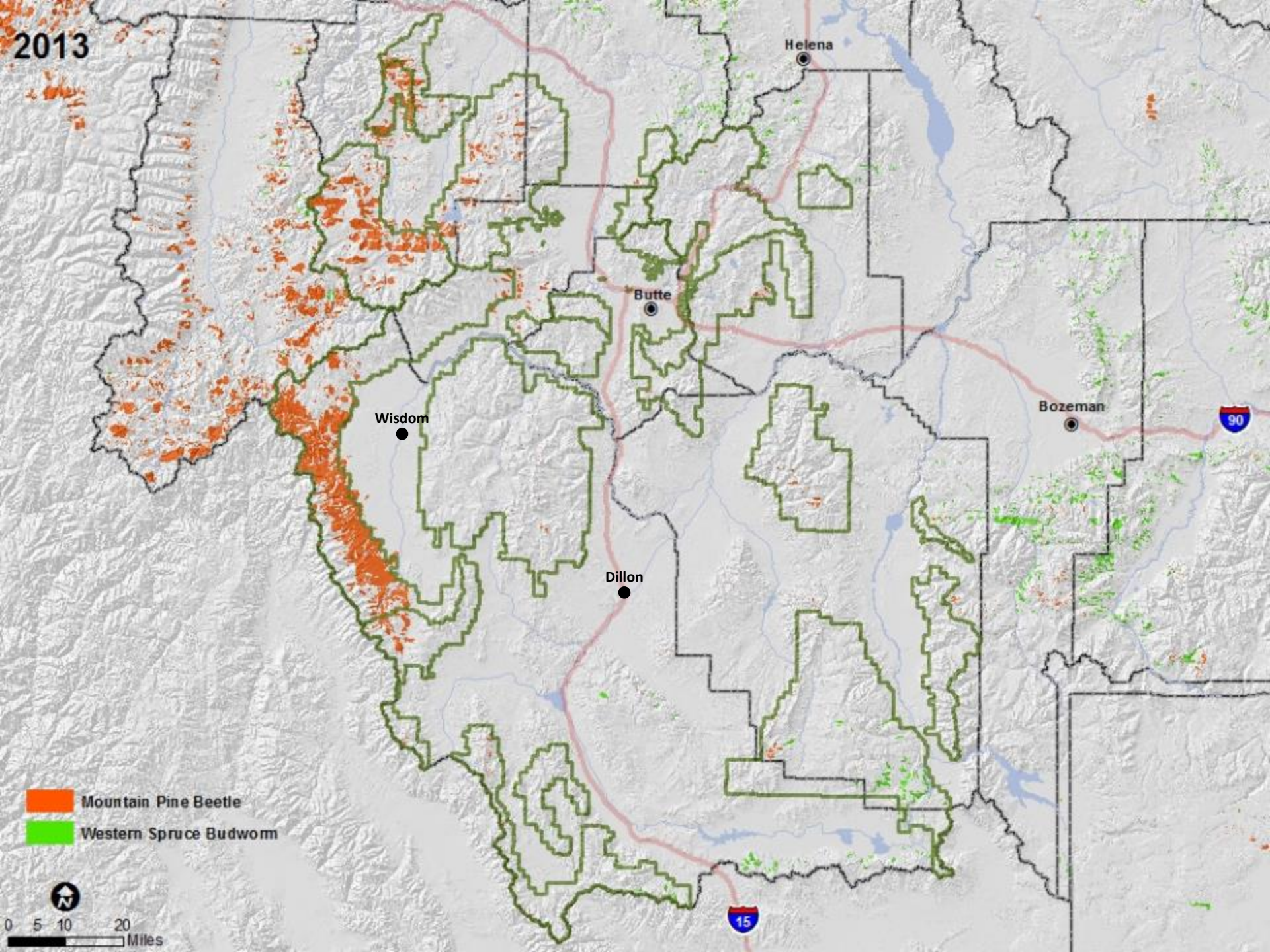

2008
Helena
Butte
Bozeman
Wisdom
Dillon
90
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles

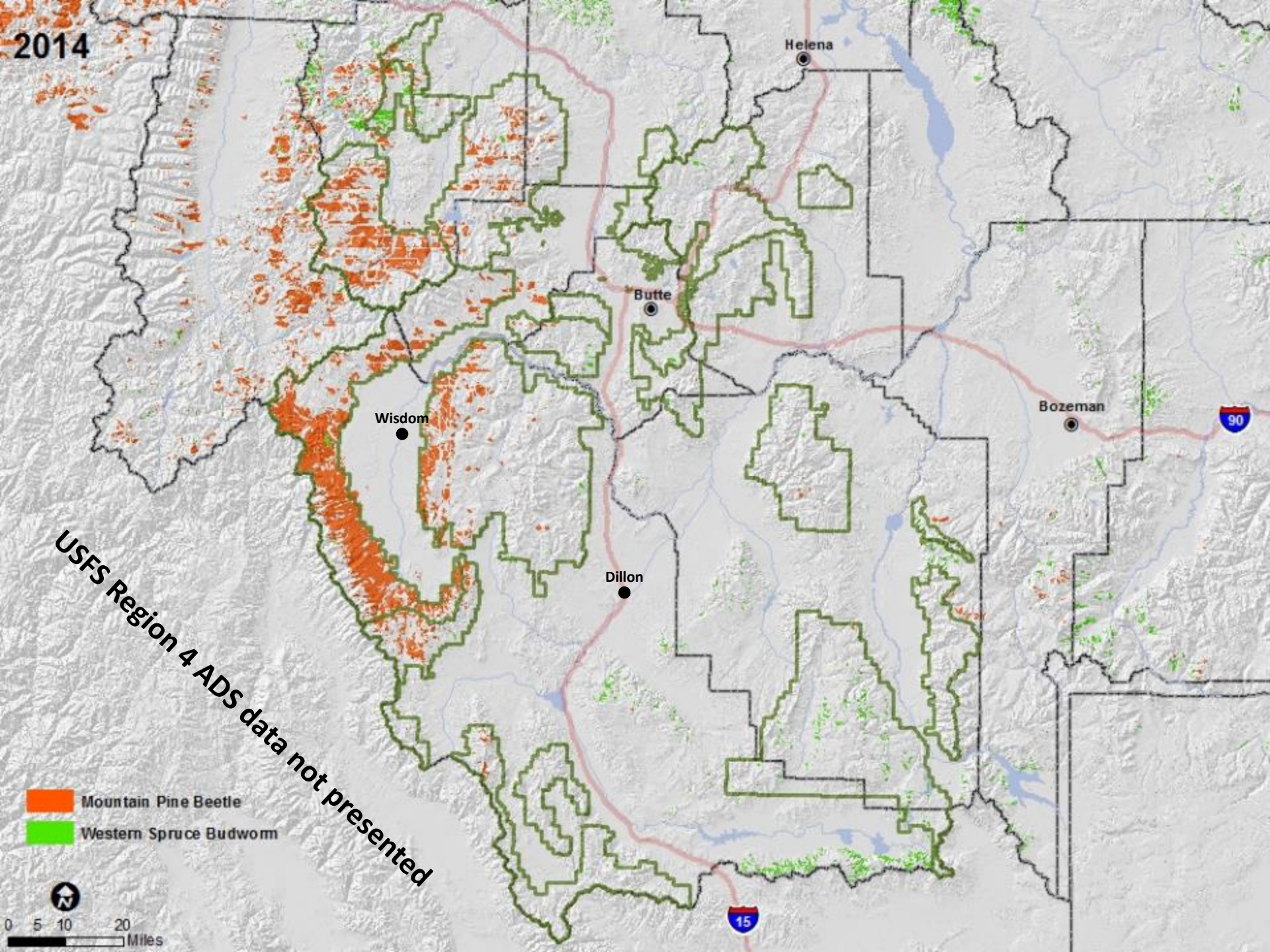

2009
Helena
Butte
Wisdom
Bozeman
Dillon
90
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2010
Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2011
Helena
Butte
Bozeman
Wisdom
Not Flown
Dillon
90
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2012
Helena
Butte
Bozeman
90
Wisdom
Not Flown
Dillon
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2013
Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2014
Helena
Butte
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Bozeman
90
Dillon
15
USFS Region 4 ADS data not presented
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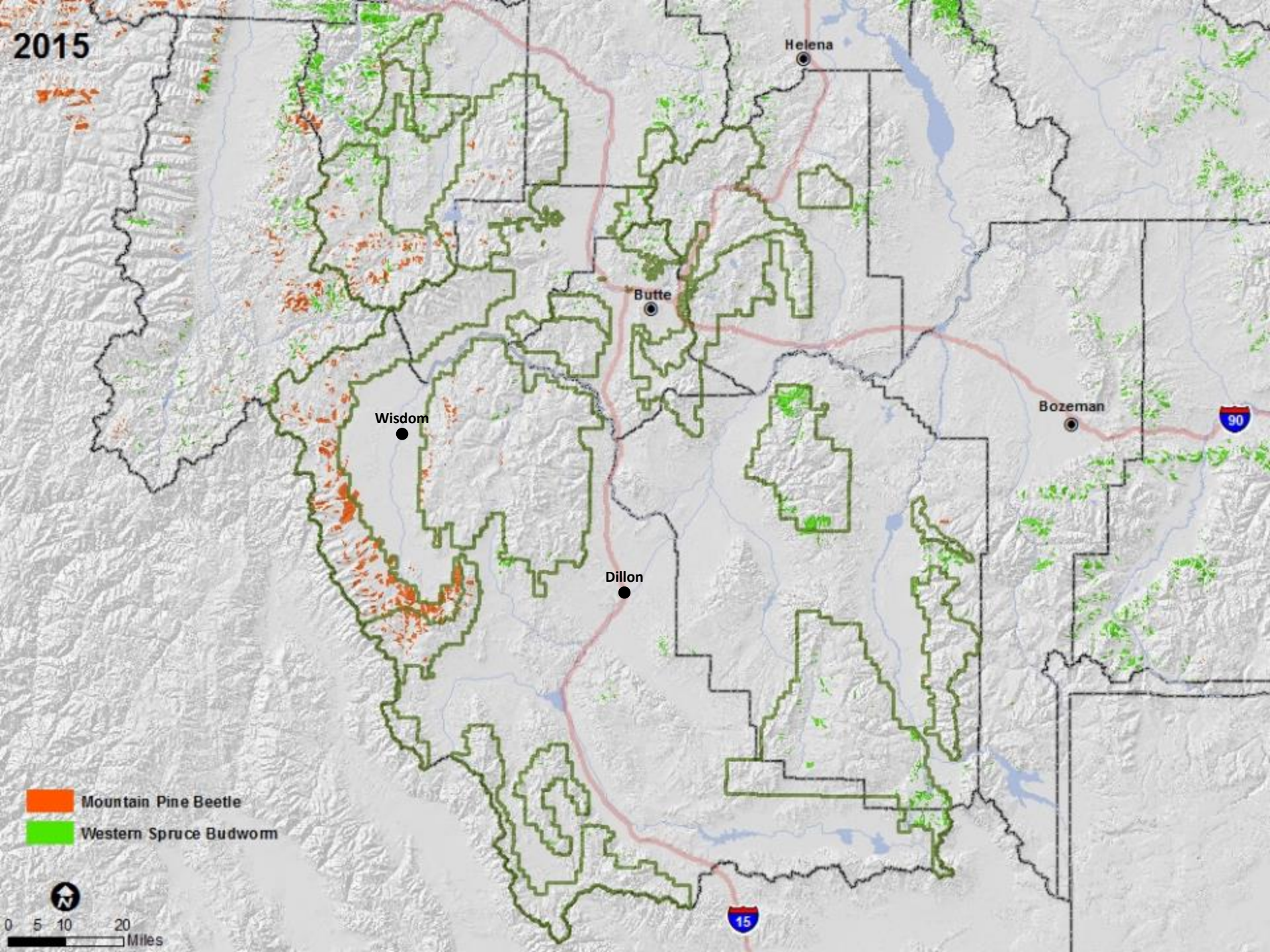
Western Spruce Budworm
0 5 10 20
Miles


2015
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Wisdom
Bozeman
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Dillon
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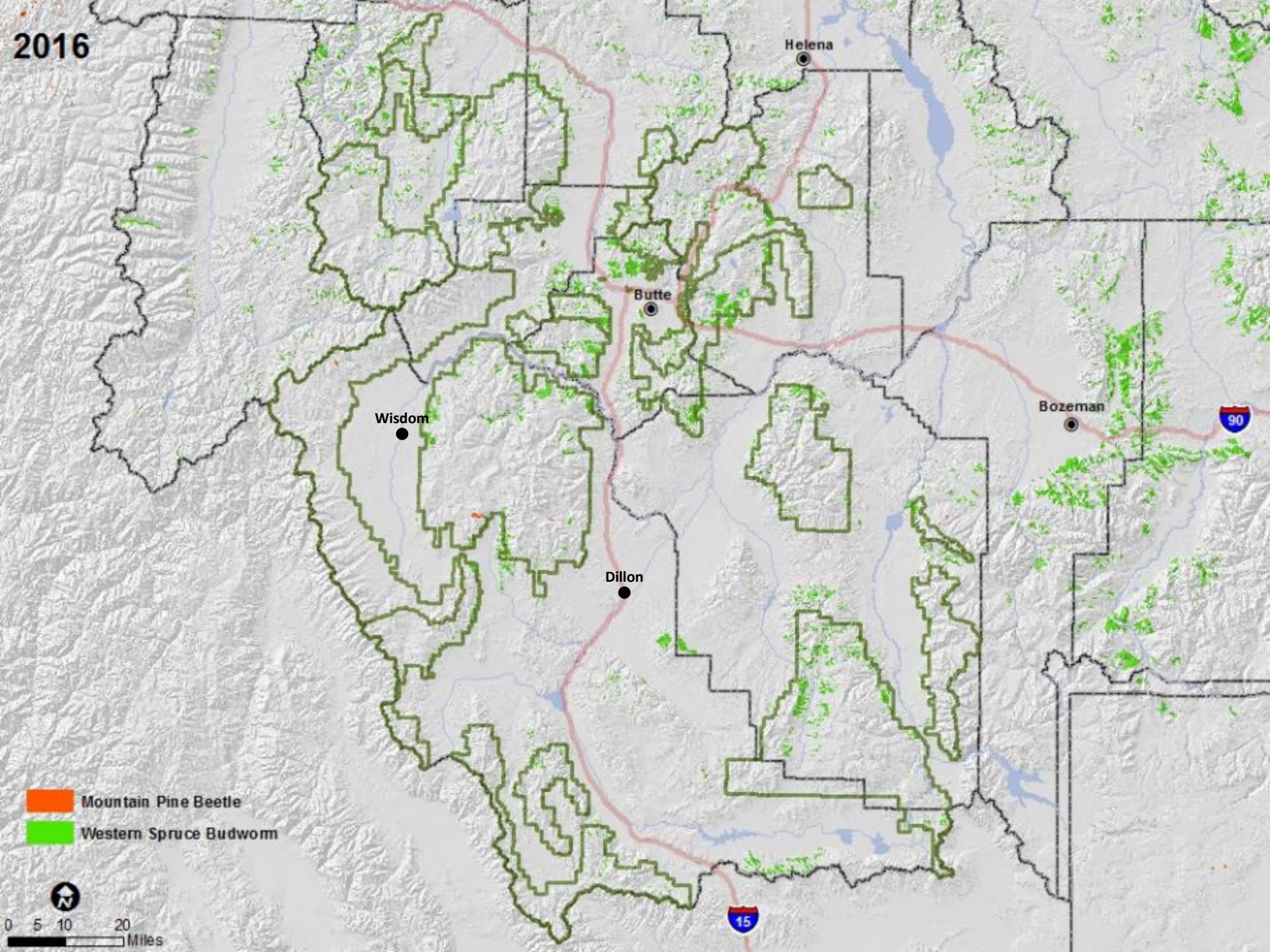
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2016
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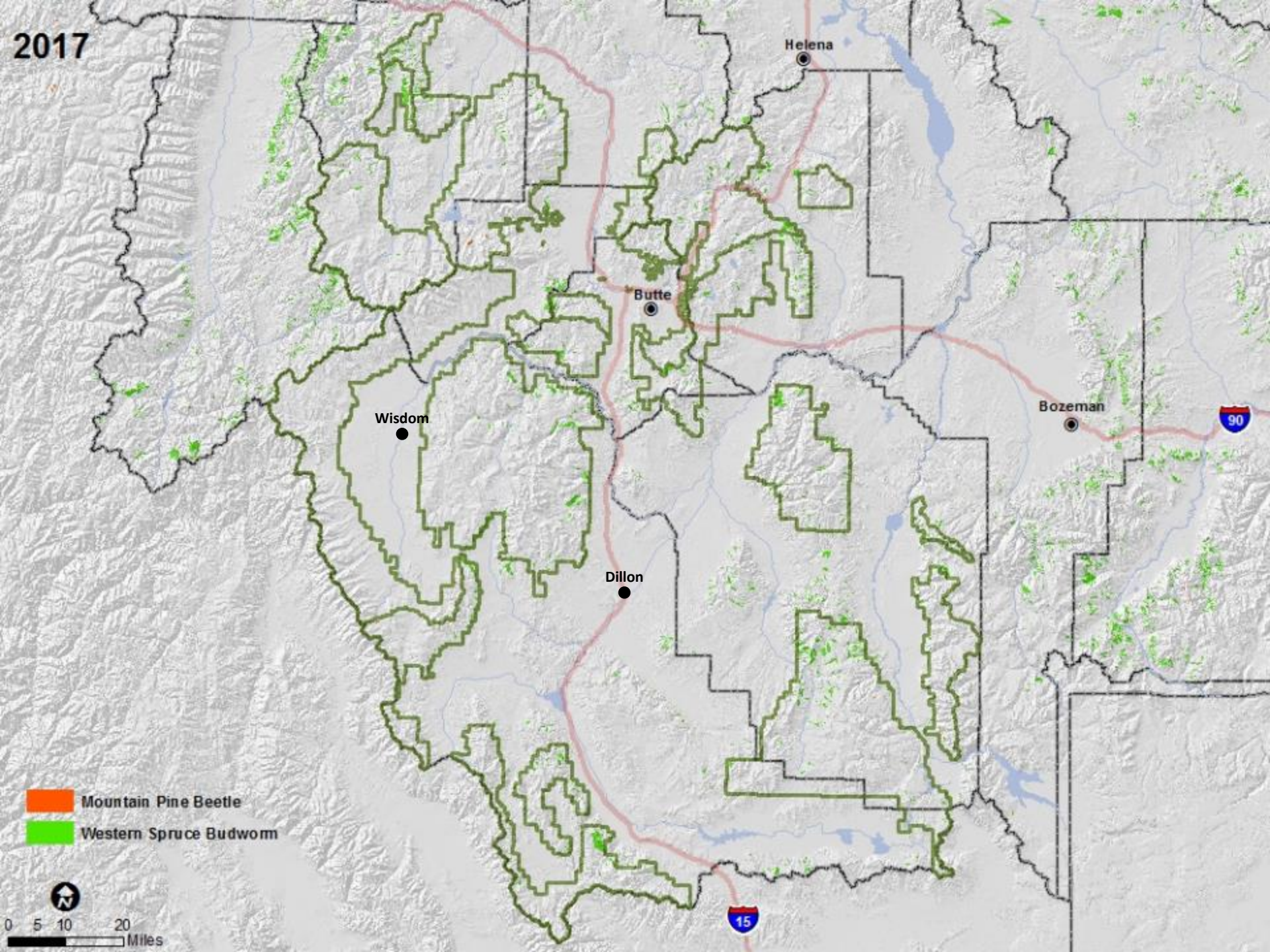
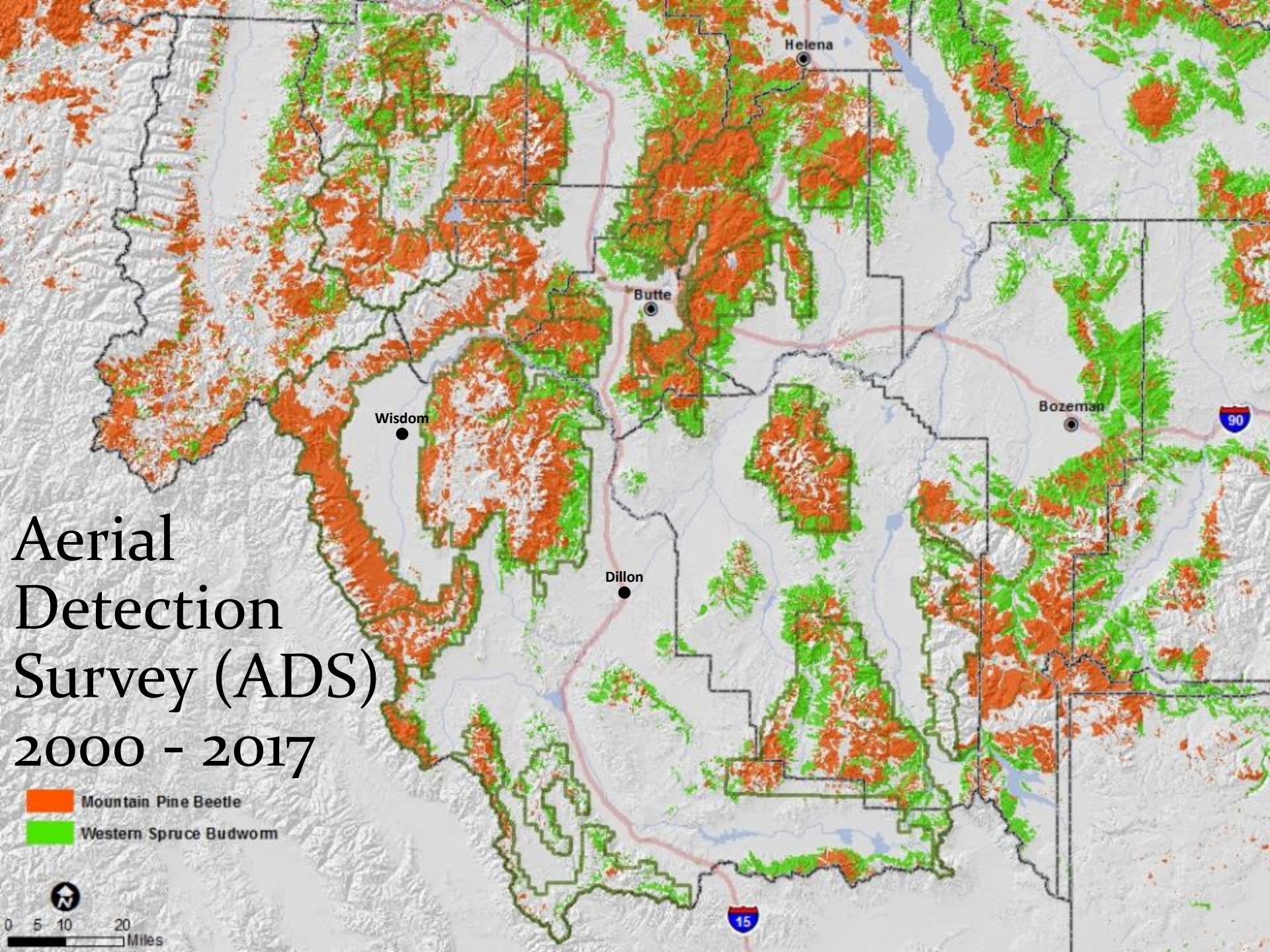
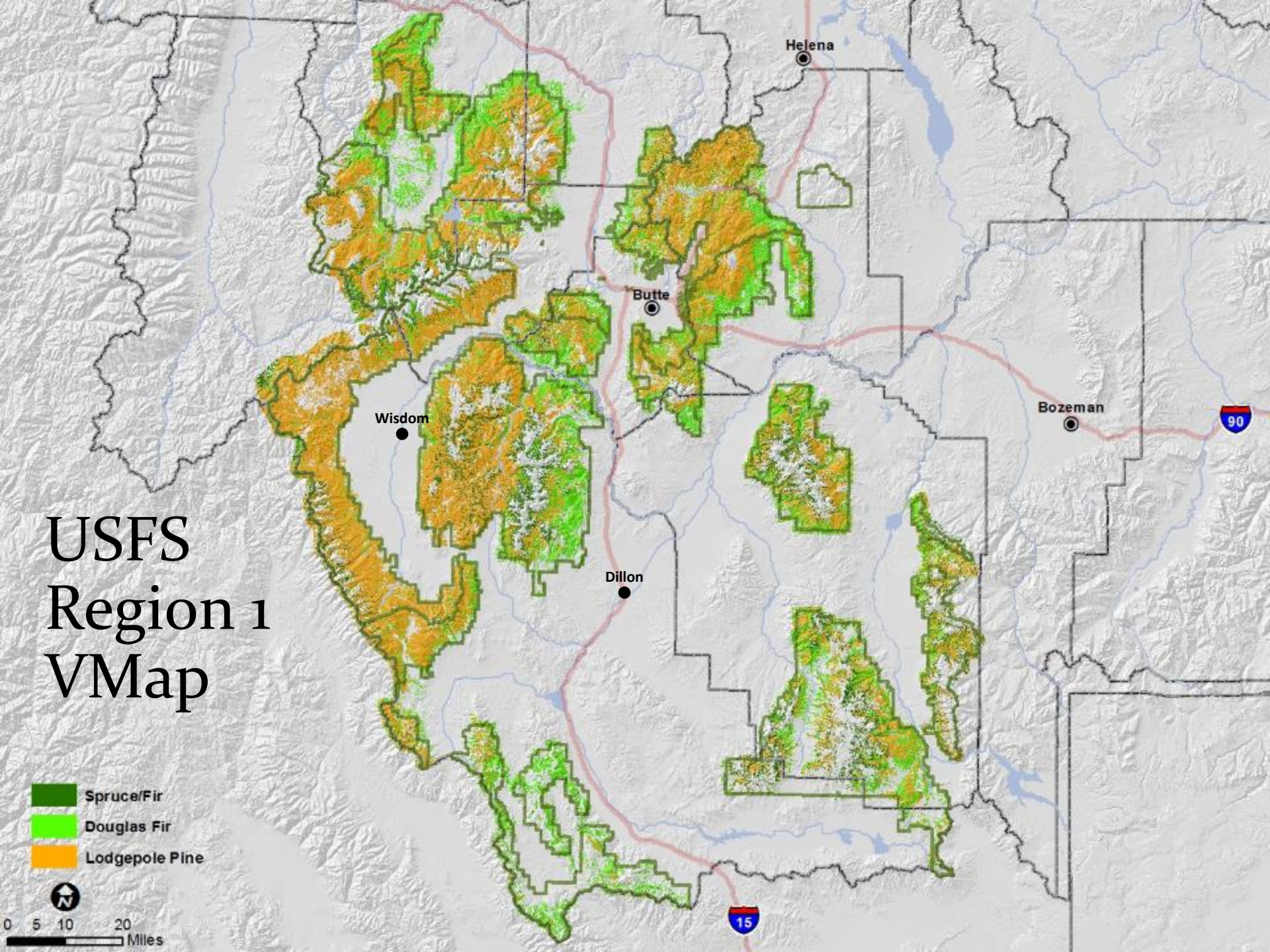
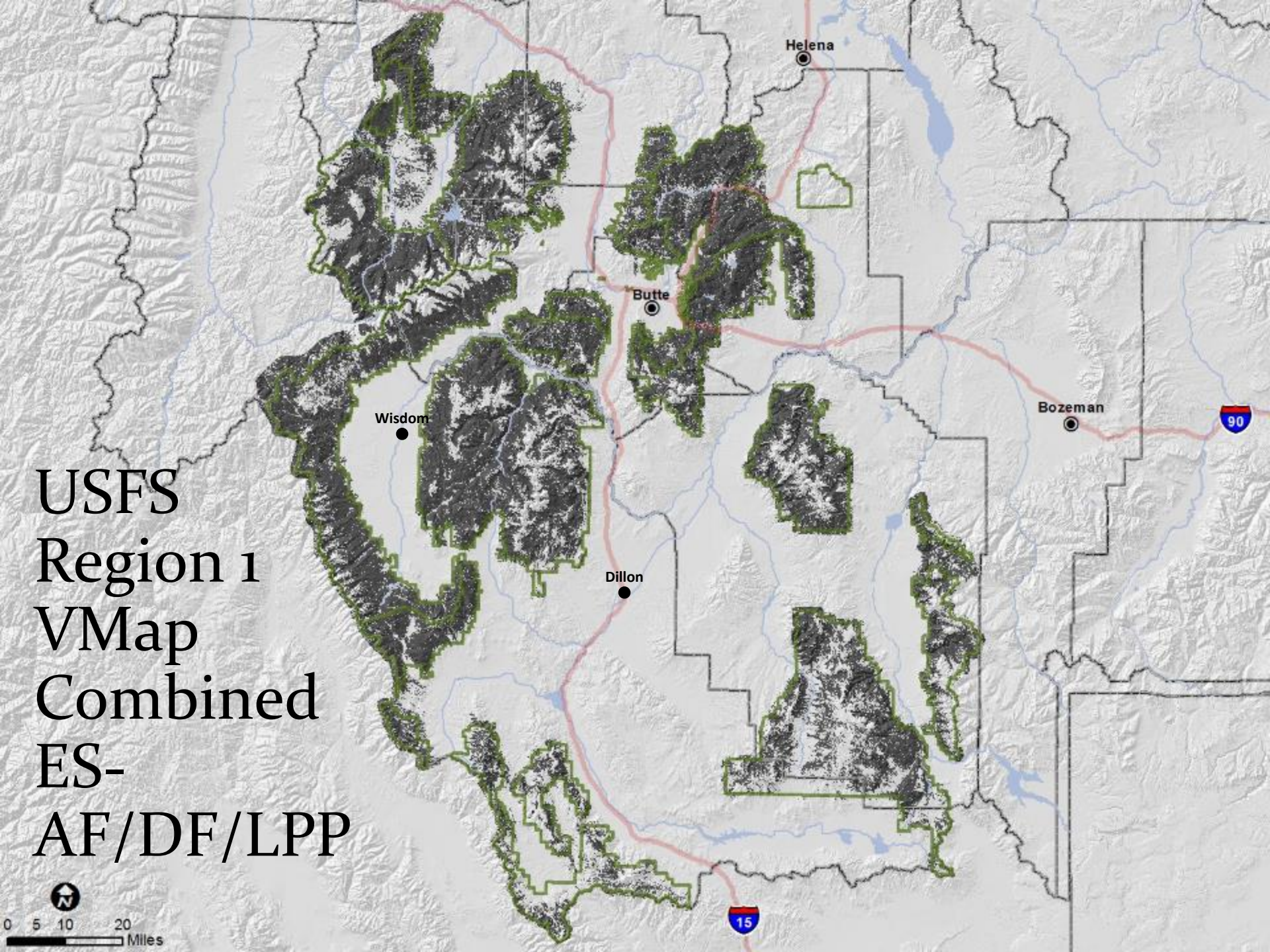
Butte
Bozeman
Wisdom
Dillon
90
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles


2017
Helena
Butte
Bozeman
Wisdom
Dillon
90
15
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles

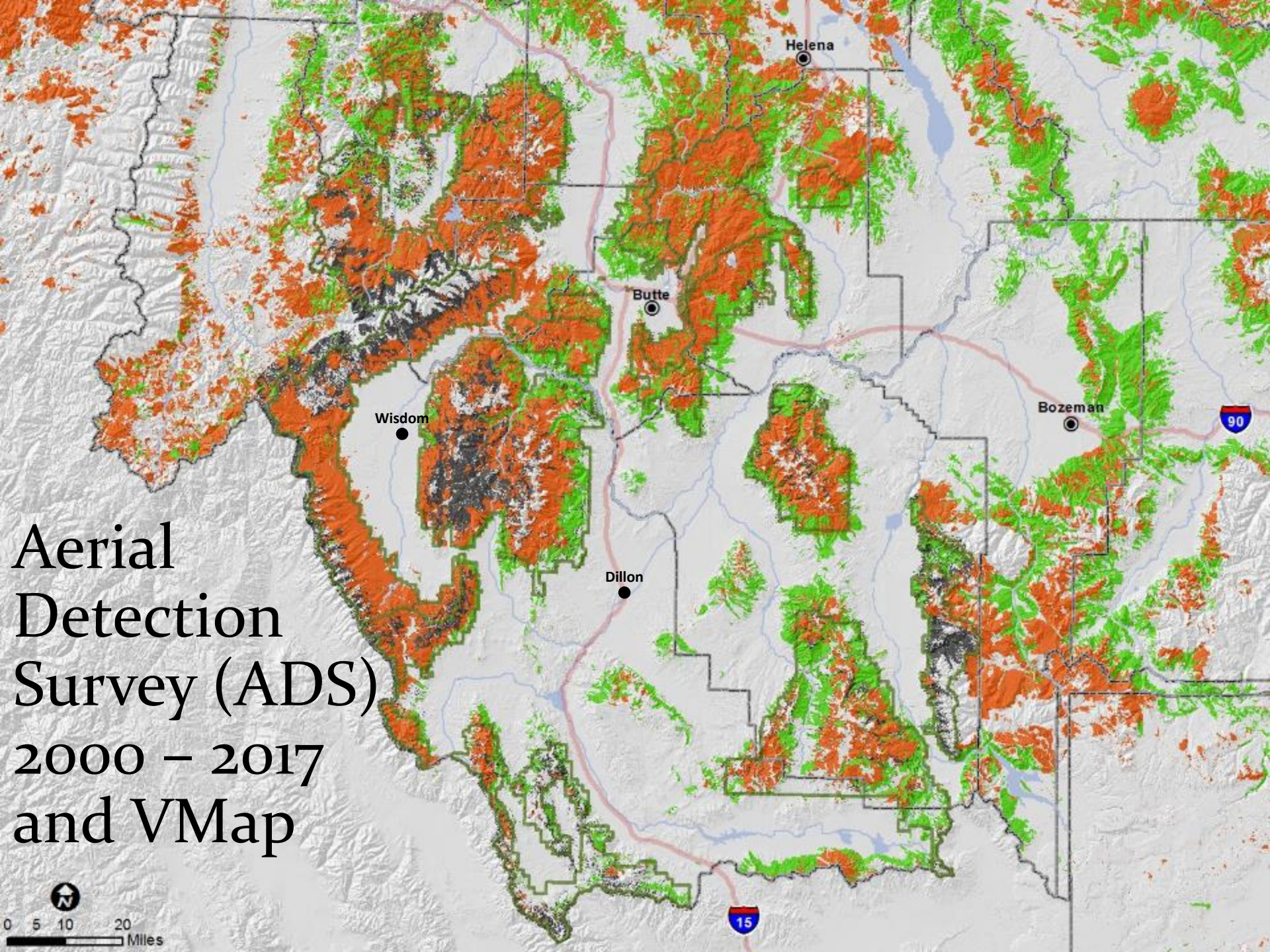

Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Aerial Detection Survey (ADS) 2000 - 2017
Mountain Pine Beetle
Western Spruce Budworm
0 5 10 20
Miles



USFS Region 1 VMap



USFS Region 1 VMap Combined ES-AF/DF/LPP



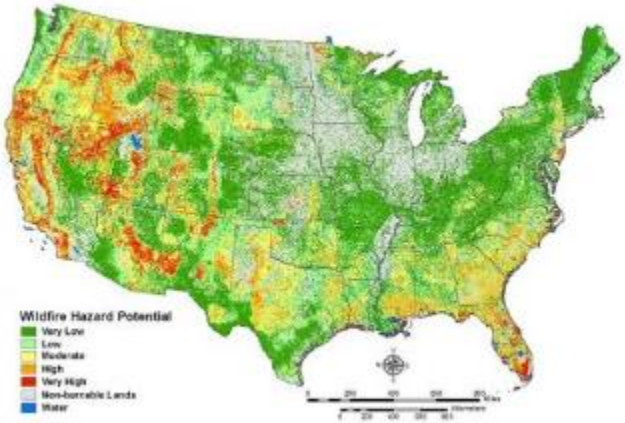
Aerial Detection Survey (ADS) 2000 – 2017 and VMap

How has the Insect Epidemic Affected Fire Hazard?

Wildfire Hazard Potential

Wildfire Hazard Potential* for the conterminous United States

The wildfire hazard potential (WHP) map is a raster geospatial product produced by the USDA Forest Service, Fire Modeling Institute that can help to inform evaluations of wildfire risk or prioritization of fuels management needs across very large landscapes (millions of acres). ***Our specific objective with the WHP map is to depict the relative potential for wildfire that would be difficult for suppression resources to contain.*** To create the 2018 version we built upon spatial datasets of wildfire likelihood and intensity generated for the conterminous U.S. in 2016 with the Large Fire Simulator (FSim), as well as spatial fuels and vegetation data from LANDFIRE 2012 and point locations of past fire occurrence (ca. 1992 - 2013). With these datasets as inputs, we produced an index of WHP for all of the conterminous United States at a 270-meter resolution. We present the WHP map in two forms: 1) continuous integer values, and 2) five WHP classes of very low, low, moderate, high, and very high. ***Areas mapped with higher WHP values represent fuels with a higher probability of experiencing torching, crowning, and other forms of extreme fire behavior under conducive weather conditions, based primarily on landscape conditions at the end of 2012.***



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Dillon, Greg

Contact(s):

- Dillon, Greg

Research Collaborator(s):

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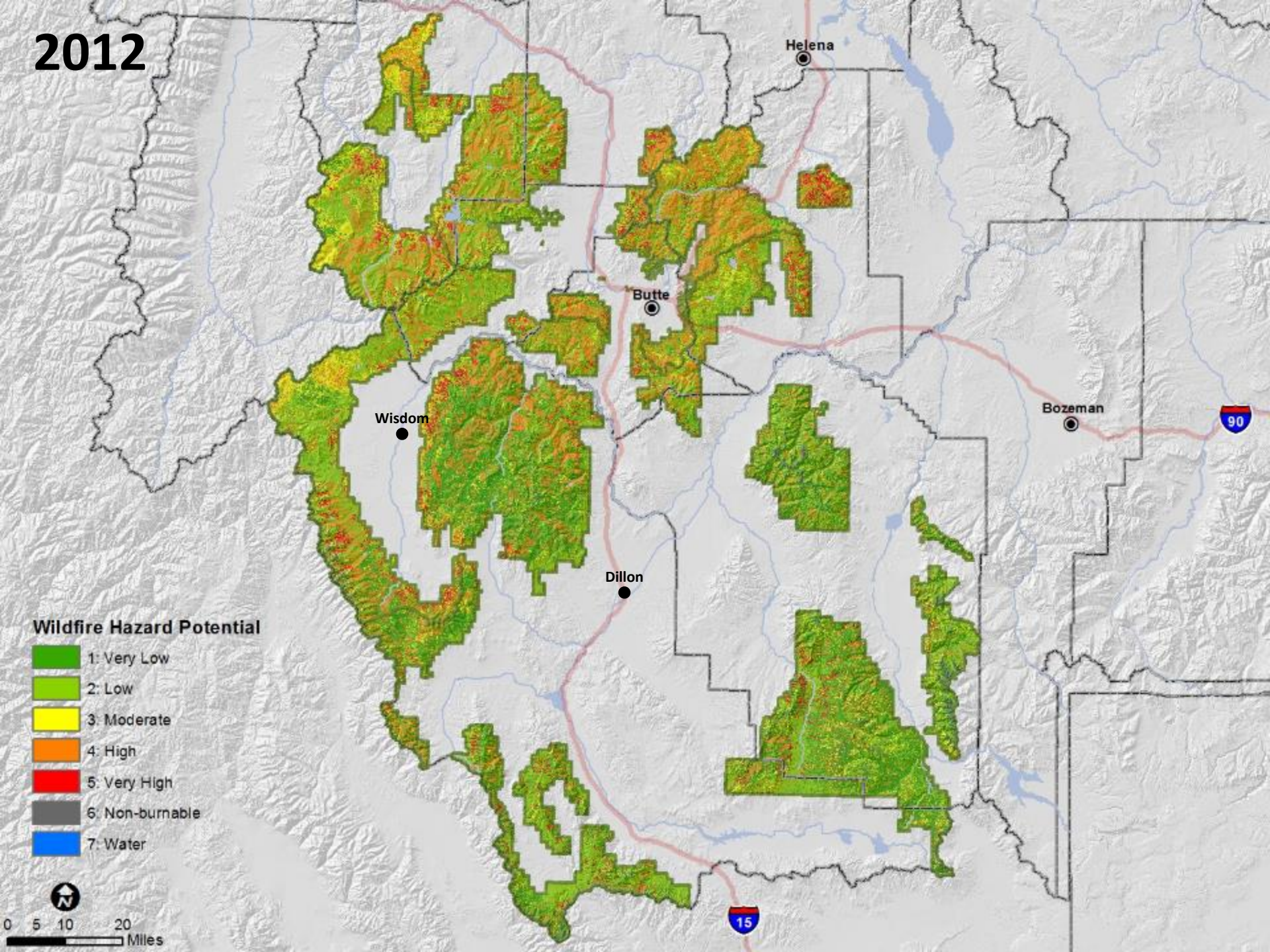
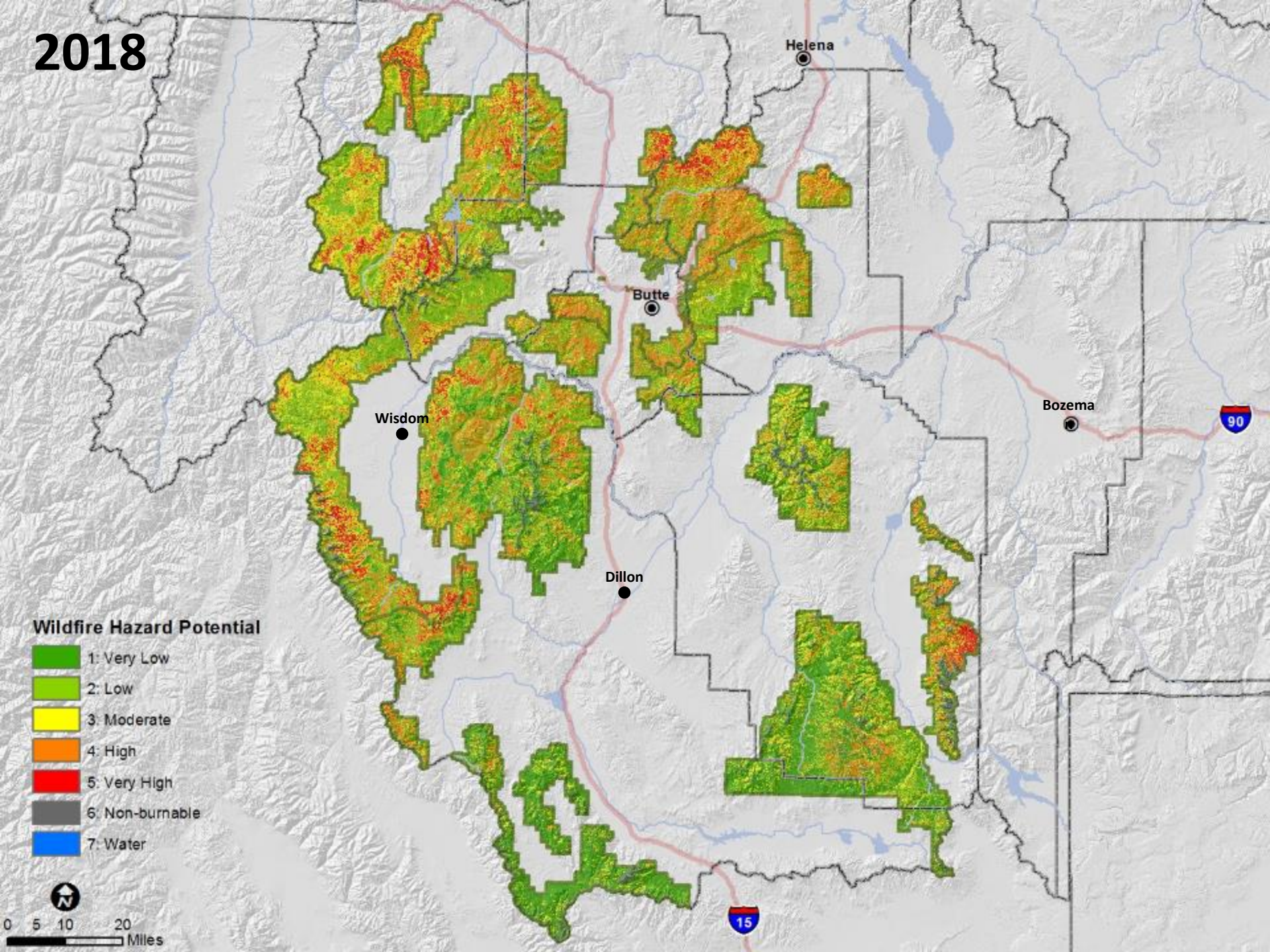
Frank Fay, USDA Forest Service, Fire and Aviation Management, Washington Office

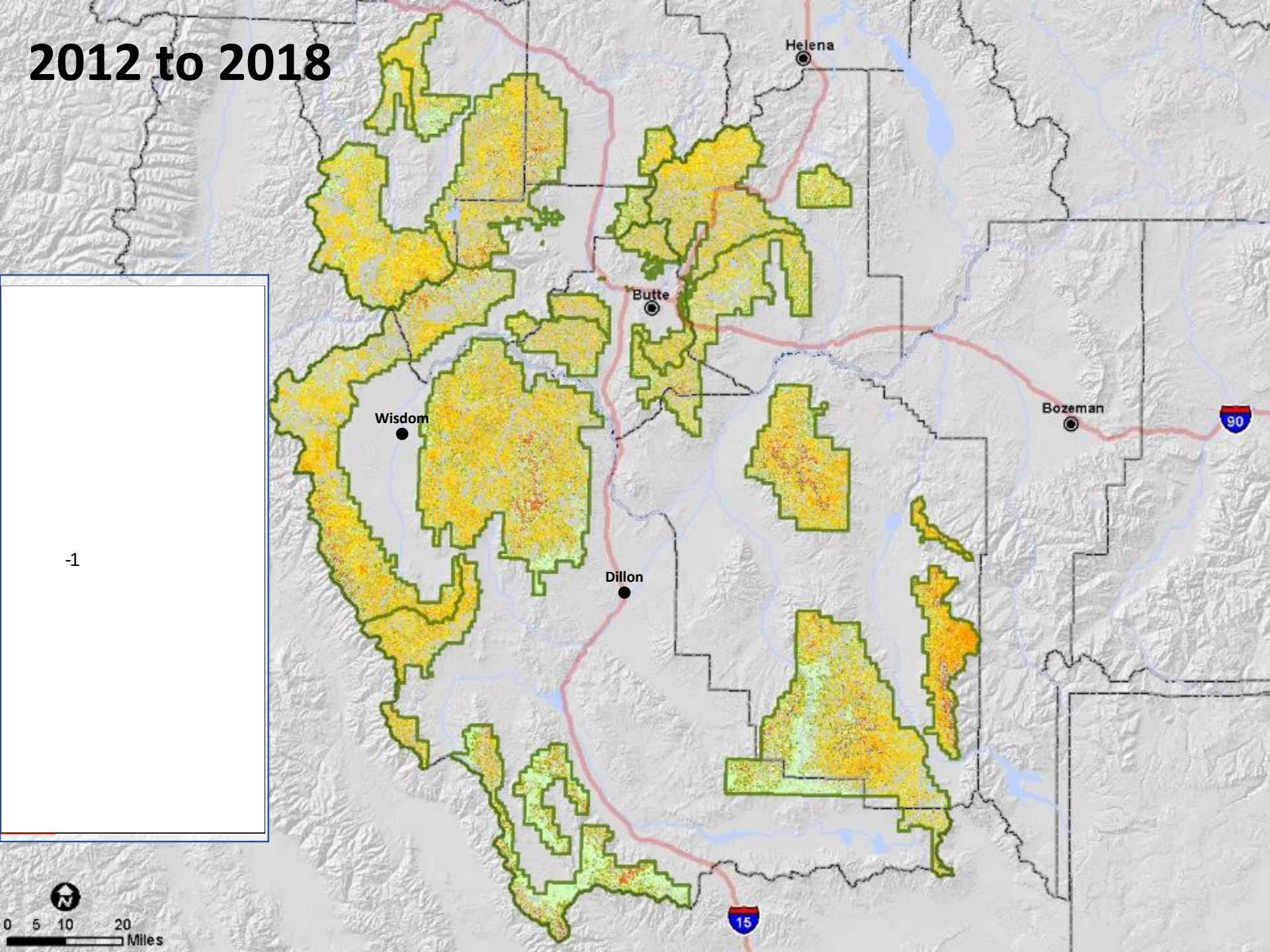
Funding Contributor(s):

USFS Fire and Aviation Management

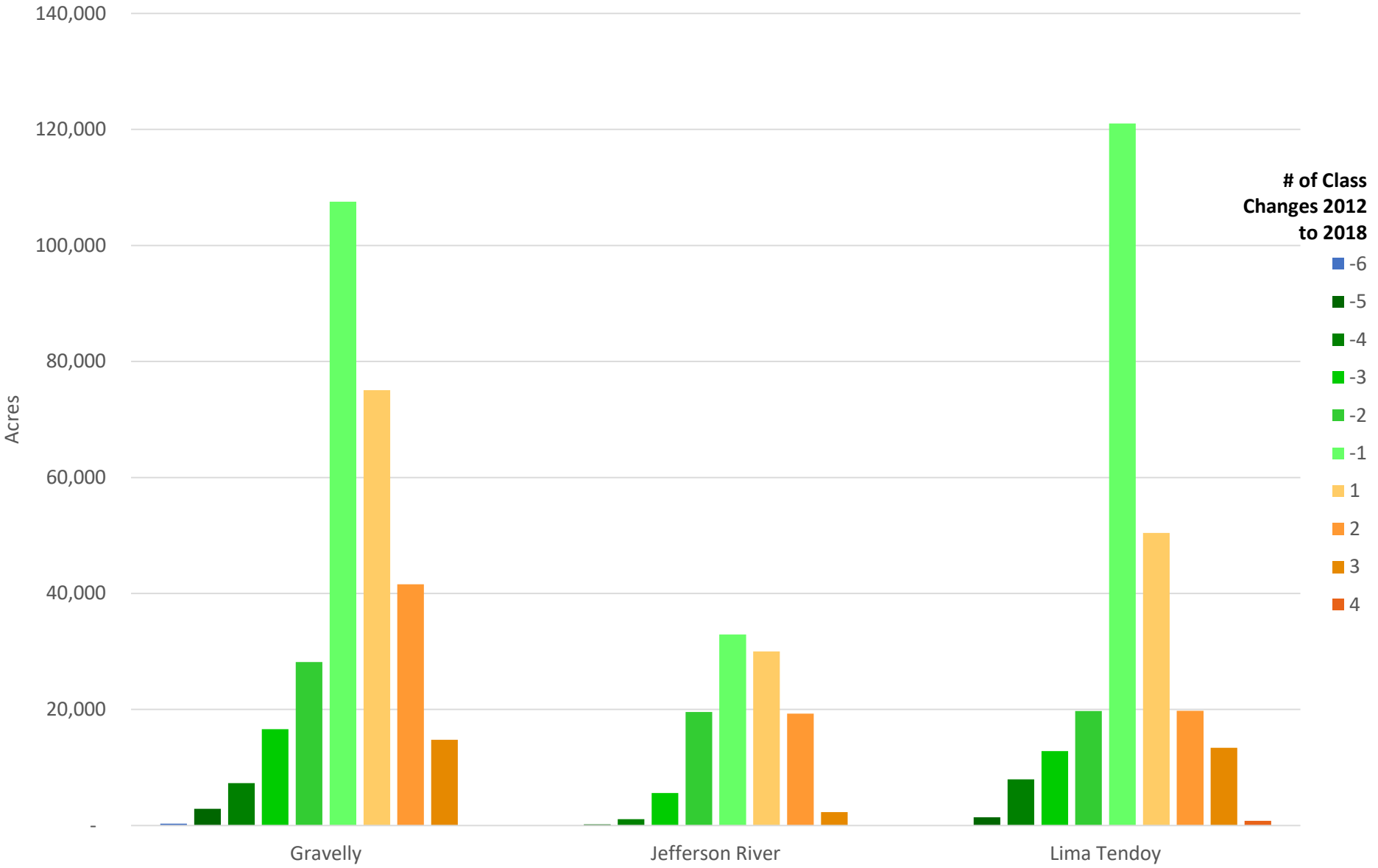

2012
Helena
Butte
Wisdom
Bozeman
90
Dillon
15
Wildfire Hazard Potential
1: Very Low
2: Low
3: Moderate
4: High
5: Very High
6: Non-burnable
7: Water
0 5 10 20
Miles


2018
Helena
Butte
Wisdom
Bozema
90
Dillon
15
Wildfire Hazard Potential
1: Very Low
2: Low
3: Moderate
4: High
5: Very High
6: Non-burnable
7: Water
0 5 10 20
Miles

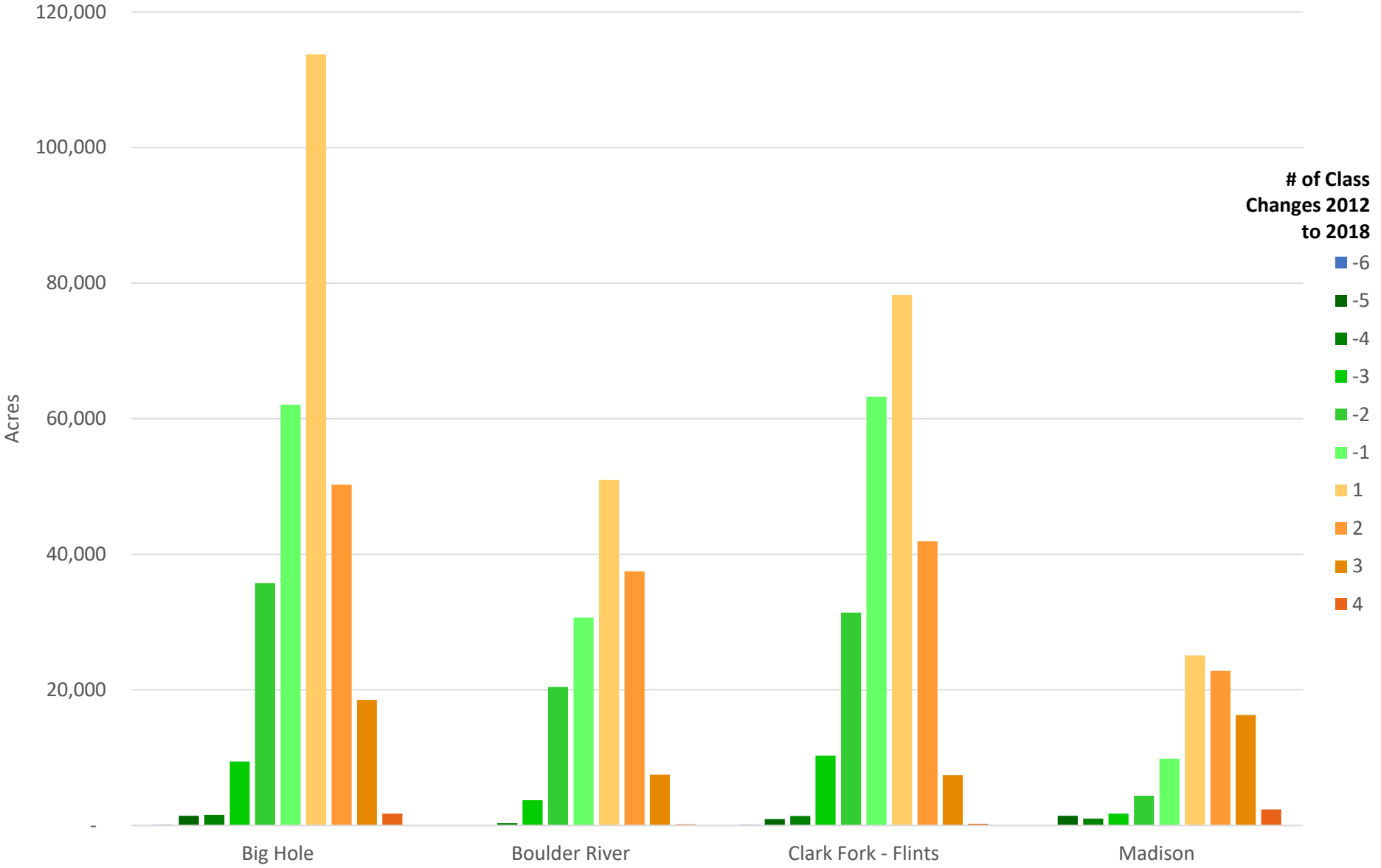
2012 to 2018



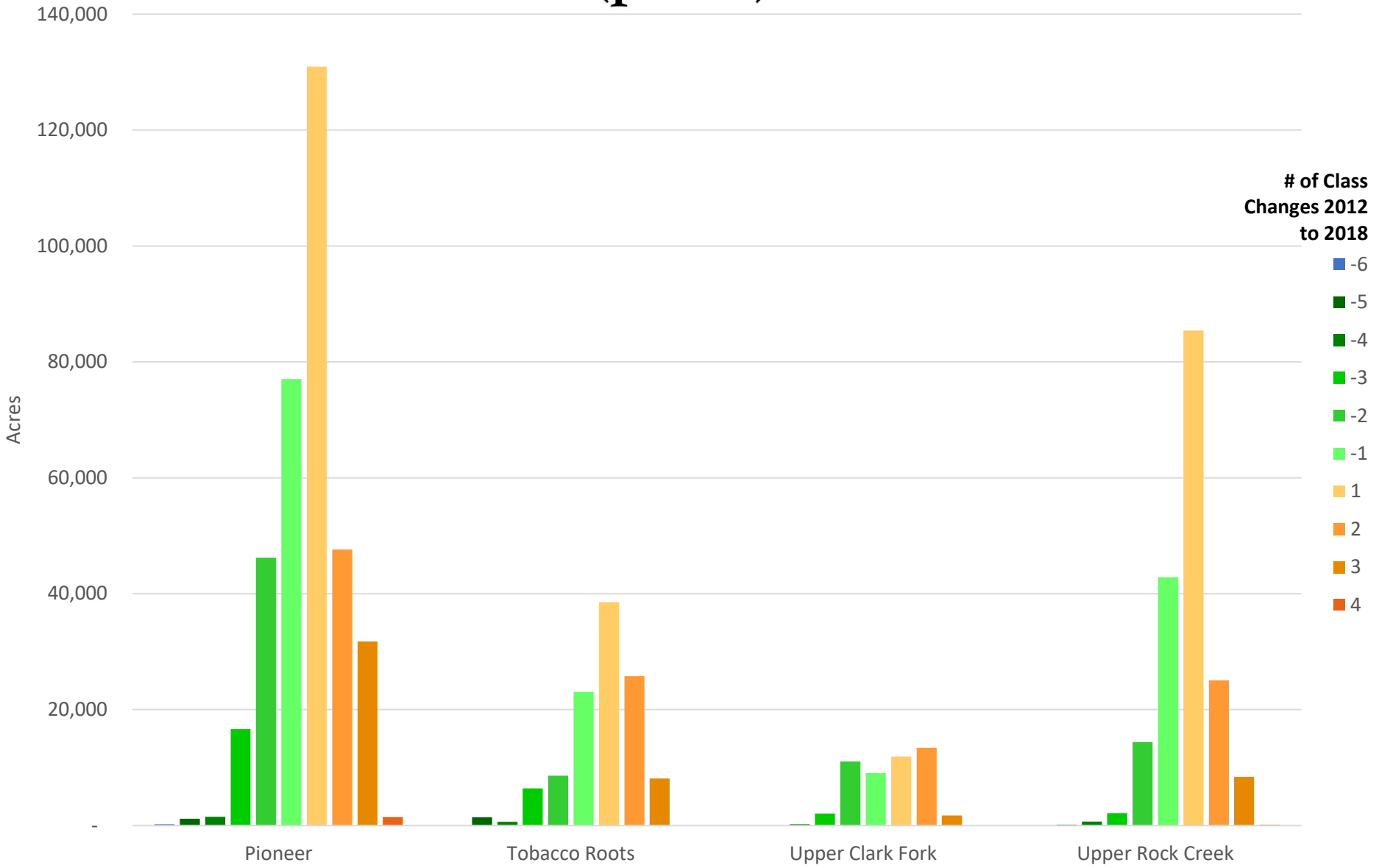
Landscapes that showed a decrease in WHP

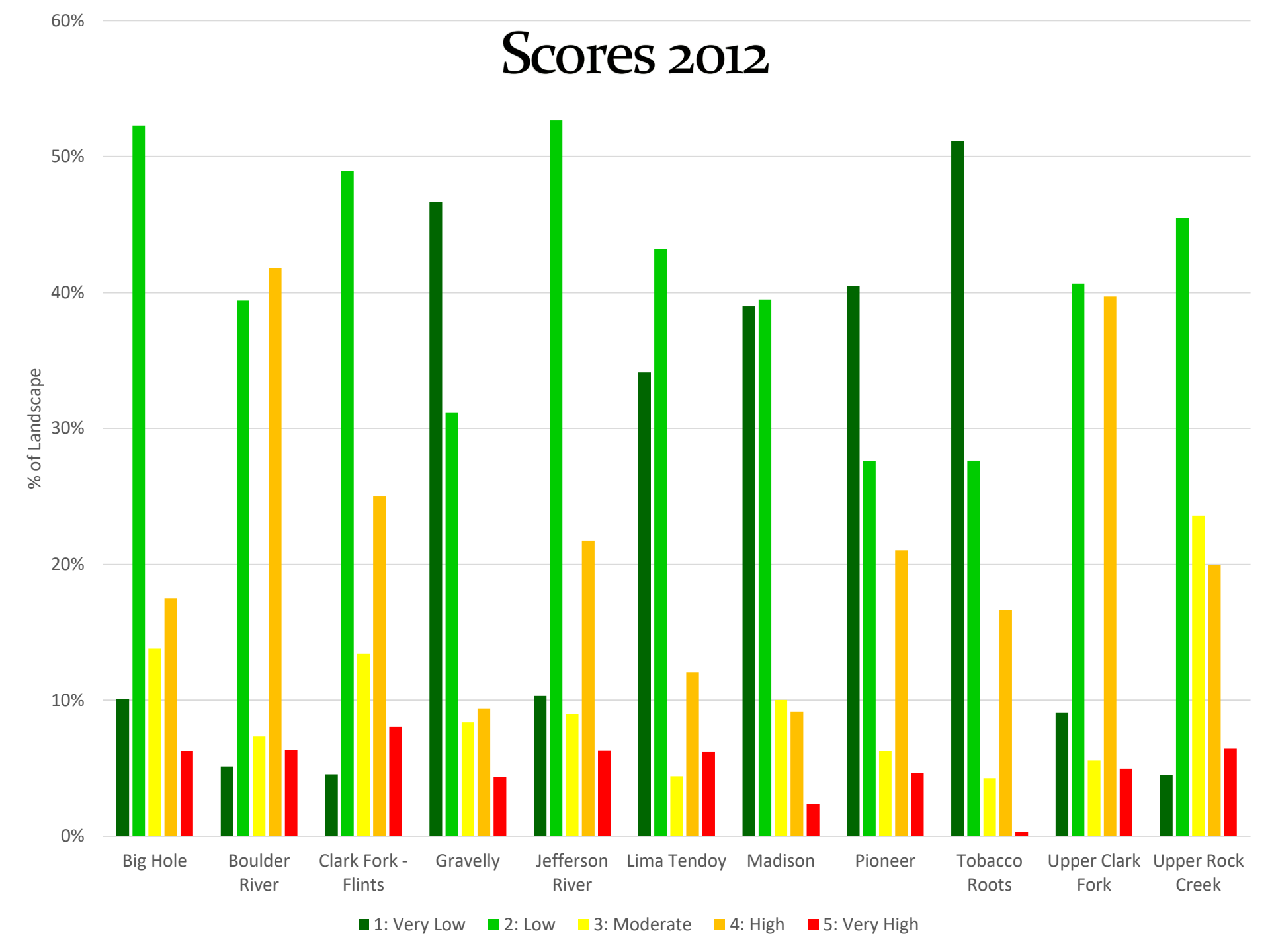


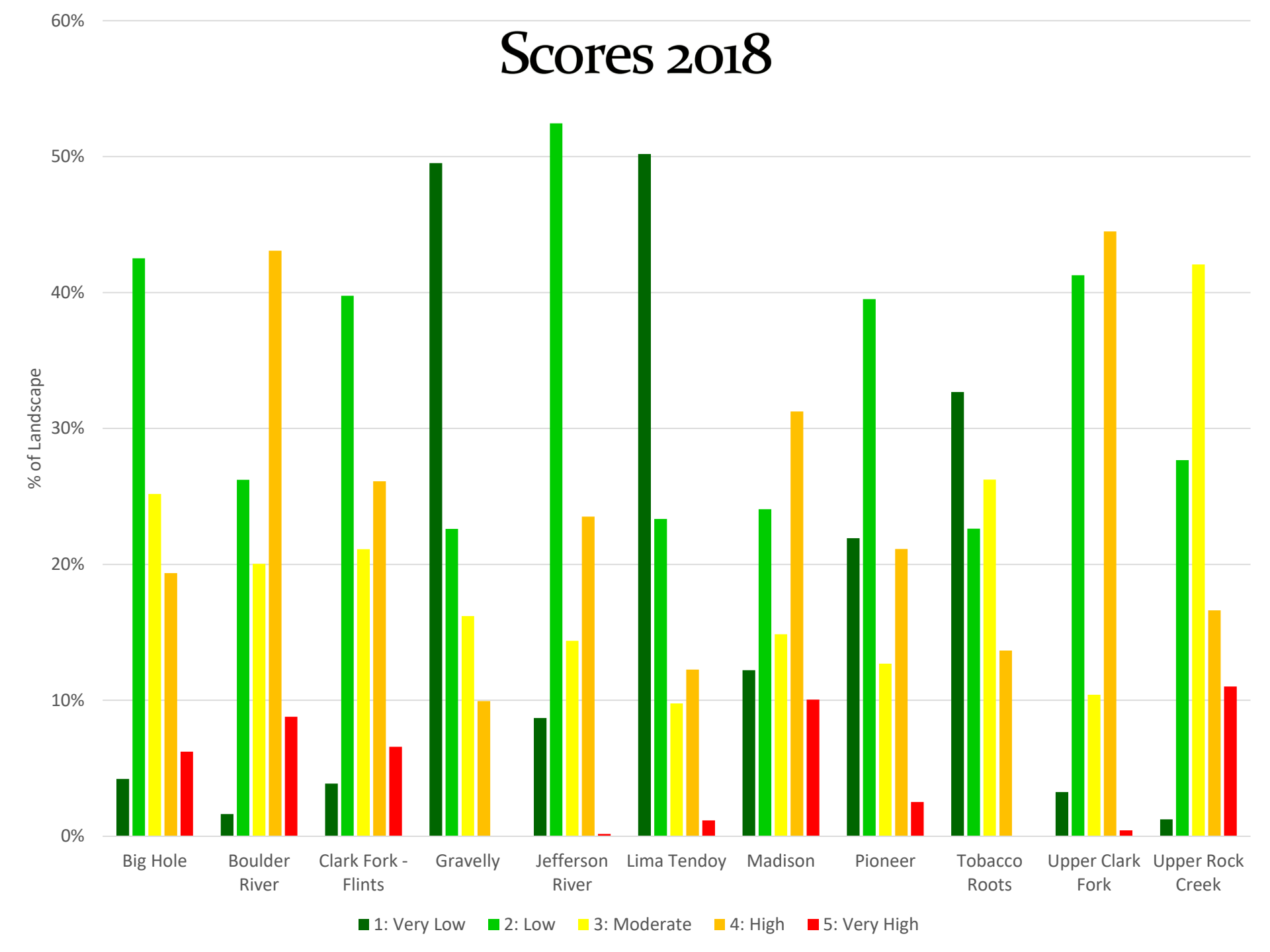
Landscapes that showed an increase in WHP (part 1)



Landscapes that showed an increase in WHP (part 1)



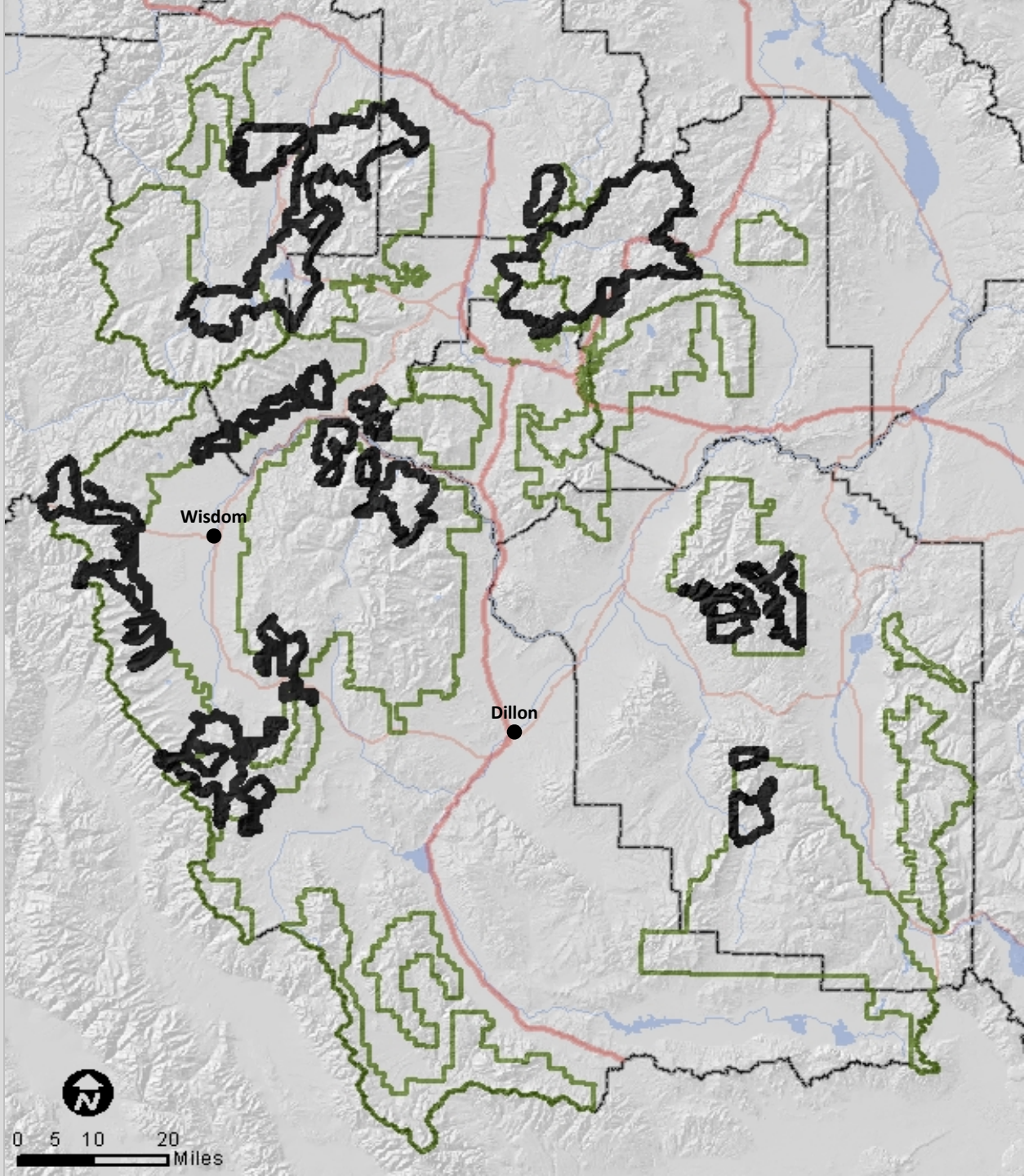

Scores 2012
60%
50%
40%
30%
20%
10%
0%
% of Landscape
Big Hole
Boulder River
Clark Fork - Flints
Gravelly
Jefferson River
Lima Tendoy
Madison
Pioneer
Tobacco Roots
Upper Clark Fork
Upper Rock Creek
1: Very Low
2: Low
3: Moderate
4: High
5: Very High


Scores 2018
60%
50%
40%
30%
20%
10%
0%
% of Landscape
Big Hole
Boulder River
Clark Fork - Flints
Gravelly
Jefferson River
Lima Tendoy
Madison
Pioneer
Tobacco Roots
Upper Clark Fork
Upper Rock Creek
1: Very Low
2: Low
3: Moderate
4: High
5: Very High

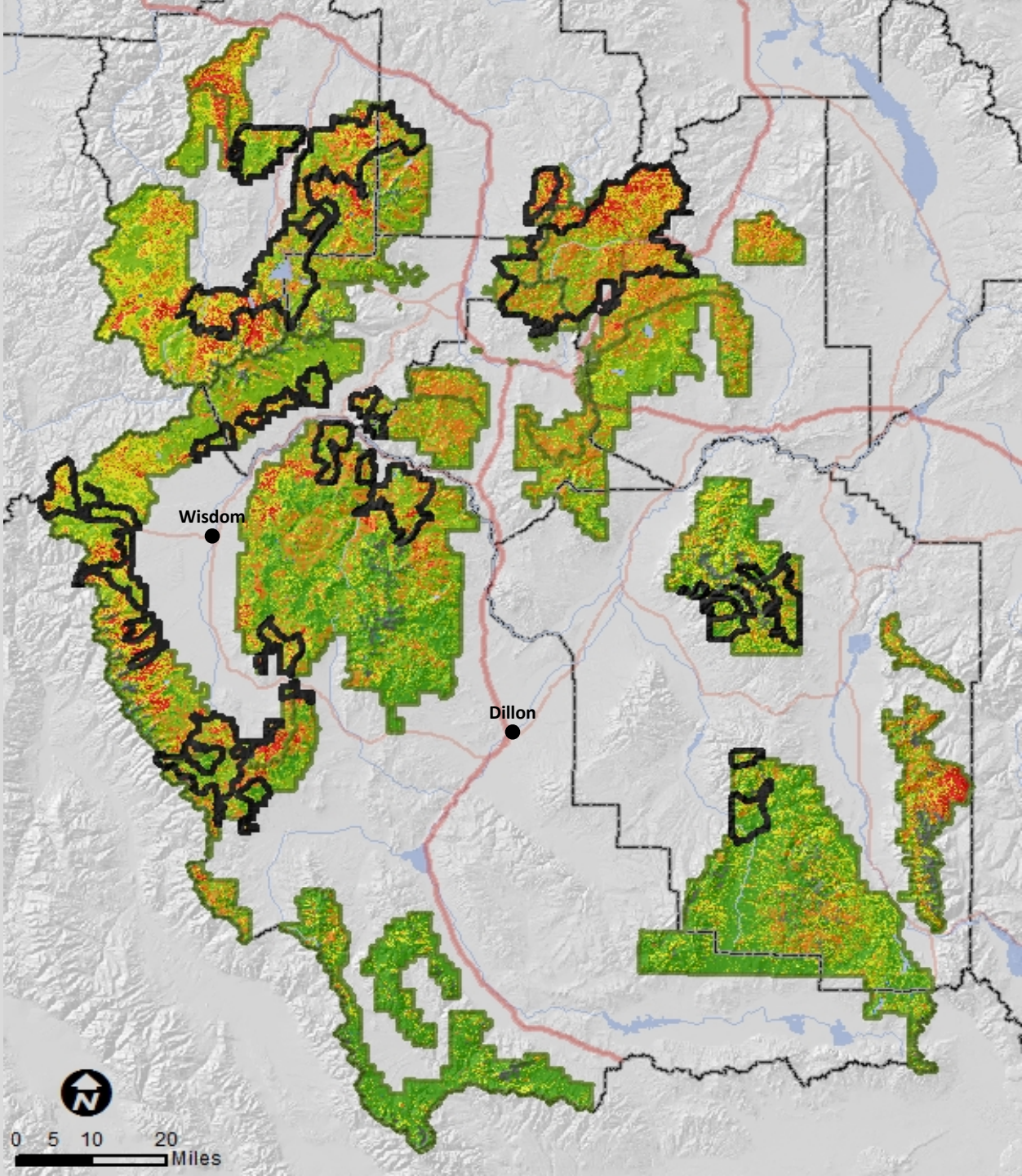
Rethinking the 2014 Priority Landscape Designations

Priority Landscape Designations 2014

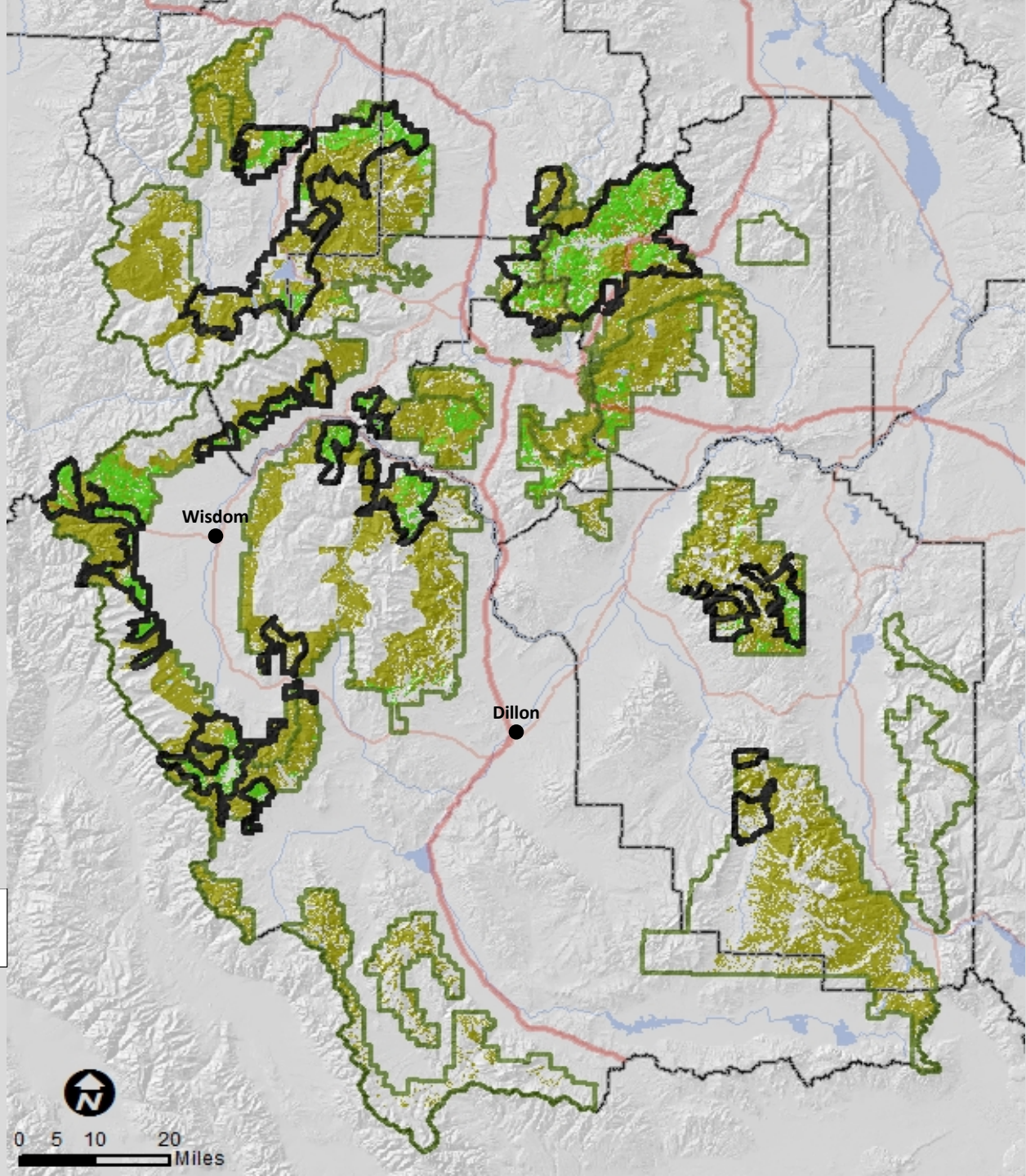
Do we need to review in light of recent disturbances and forest changes?



Priority Landscape Designations Overlaying the 2018 WHP

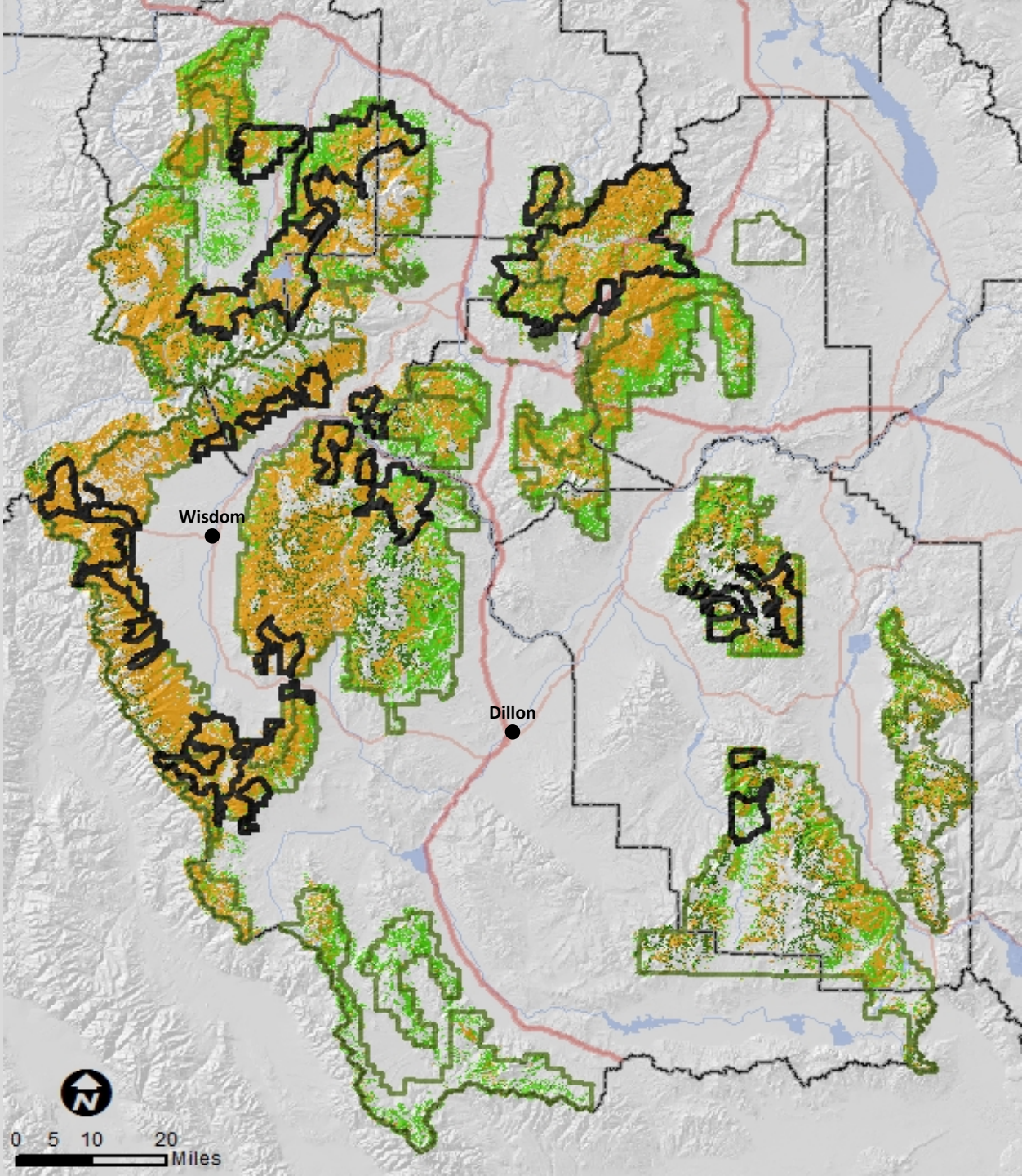


Priority Landscape Designations with Suitable/ Available Timber as Determined in the Forest Plan



Suitable for Timber Production

Priority Landscape Designations with Selected Cover Types



Spruce/Fir

What priorities have shifted as a result of MPB?

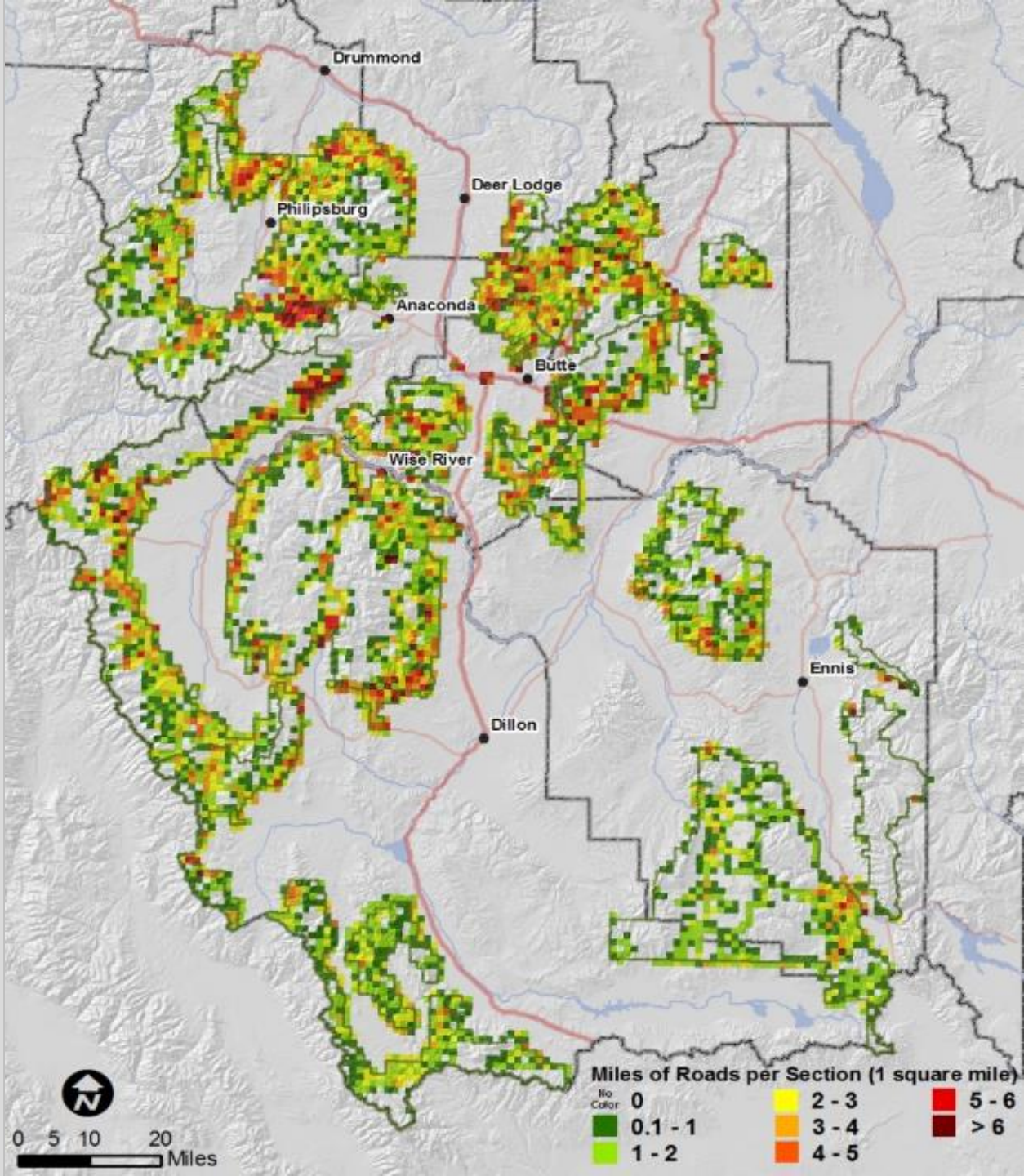
- Improving LPP age class diversity is less of a valid ecological objective
- Now have abundant very young LPP imbedded within massive fuels loads
- Objective has shifted to:
  - Breaking up fuels so that wildfires are more manageable
  - Avoiding "boom and bust" events that set up a repeat of future severe MPB/fire events (keep events within normal patch sizes/age class distribution)
  - Recognizing that the economics have gotten a lot tougher (low/ac volume, extremely high costs to treat fuels)

Other objectives remain the same

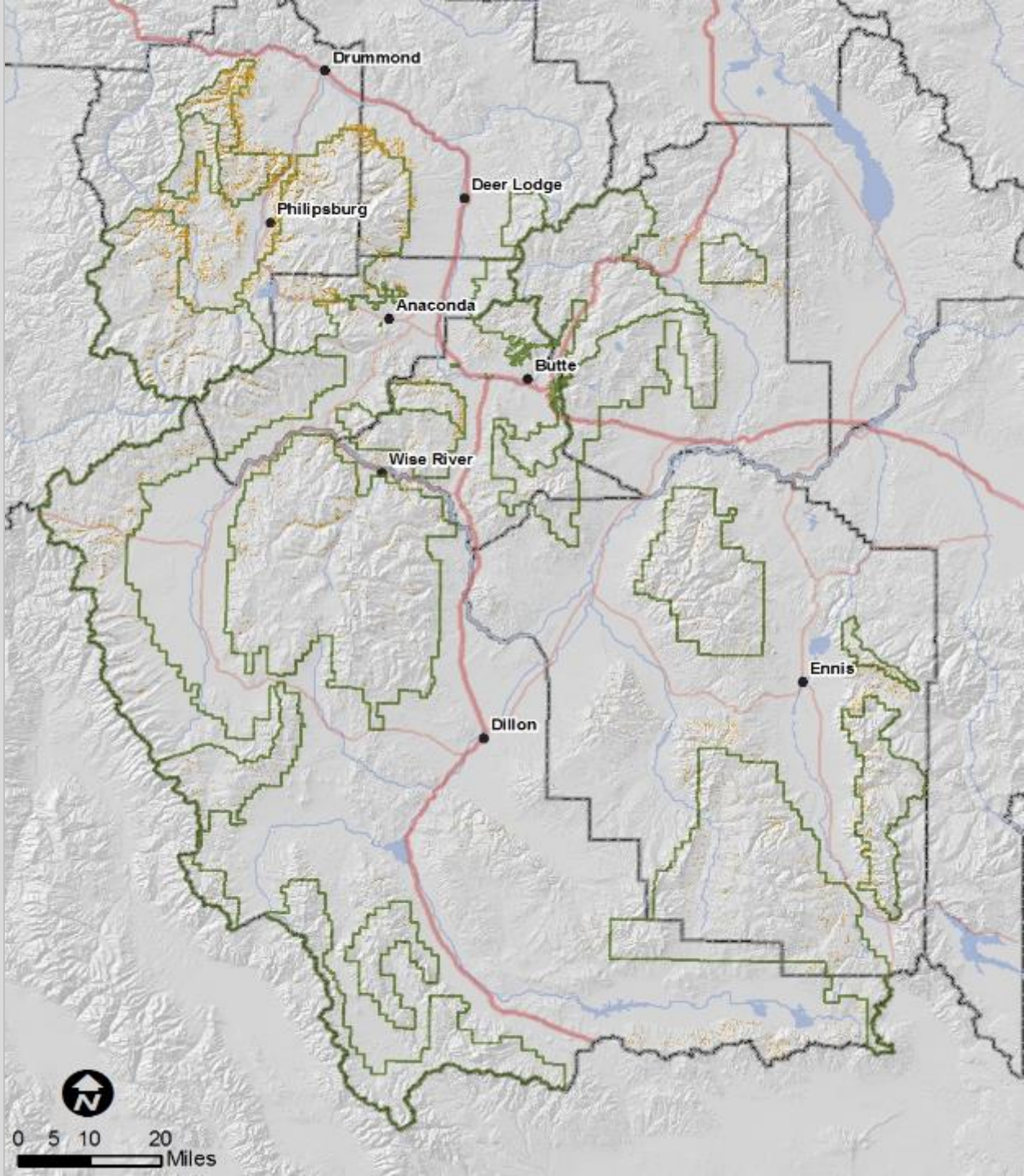
- Reduce permanent road density/improve drainage in bull trout/high value fisheries watersheds
- Improve summer elk forage productivity (minimize private landowner issues
- Restore historic conditions in dry Douglas-fir cover types
- Restore normal patch sizes (where LPP mortality has been recent or less severe)
- Maintain industry infrastructure/jobs/management options for the future
- Sustain/improve water yield

Example Resources that May Benefit From Restoration

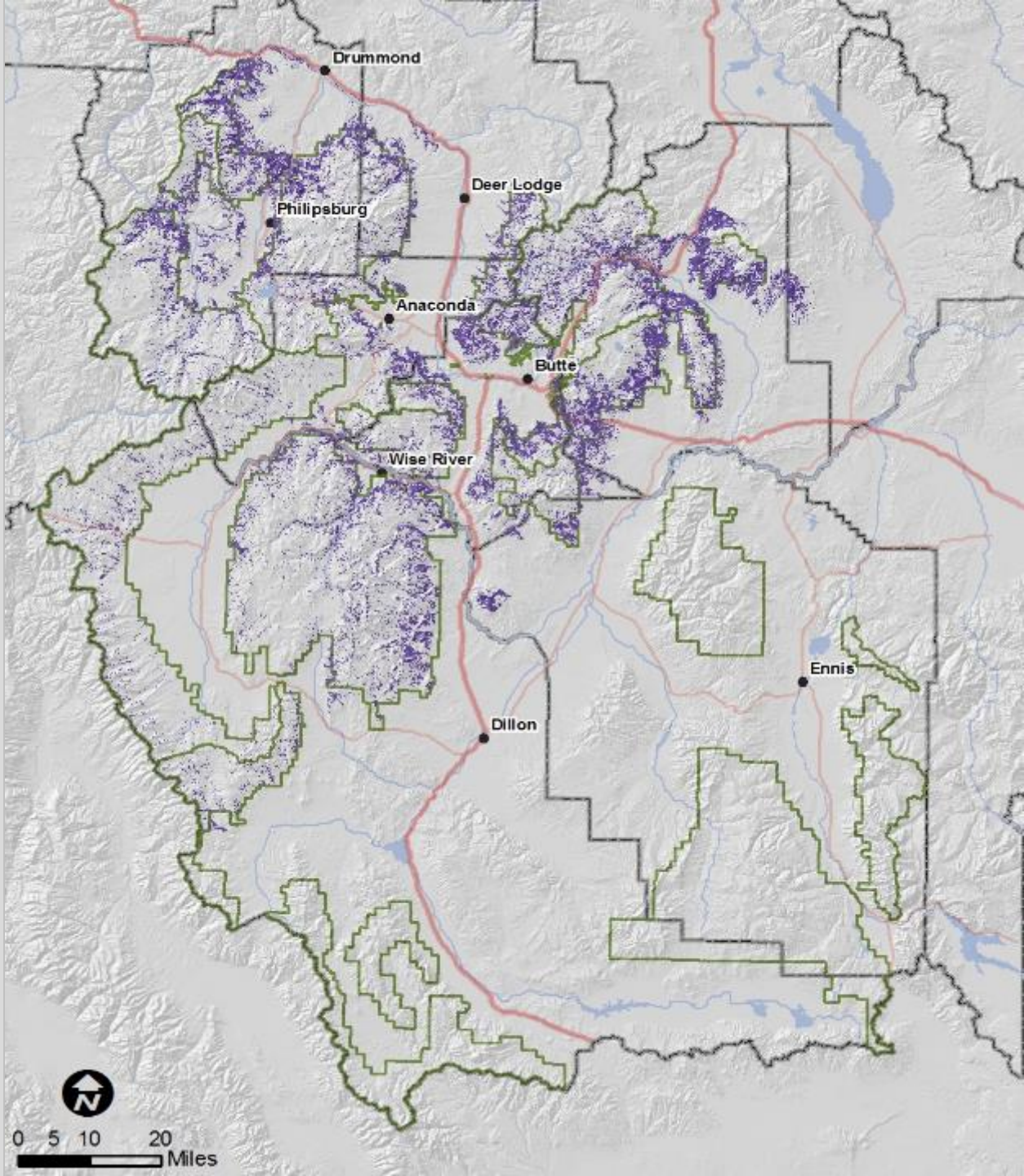
Road Density



Flammulated Owl Habitat



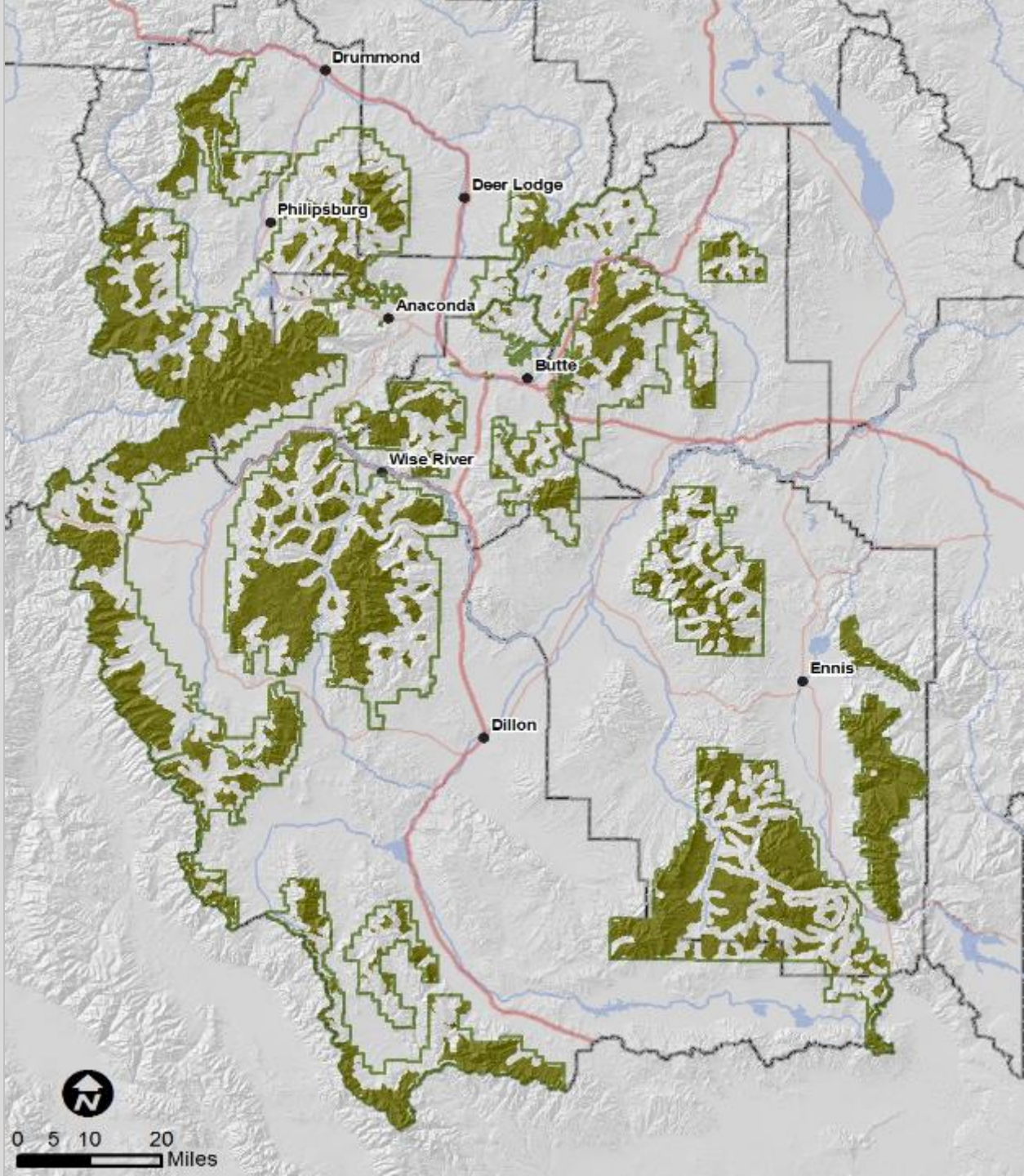
Pileated Woodpecker Habitat



Modeled Pileated Woodpecker Habitat with Proposed Treatment Units

Landscape	2010	2020	2030	2060
Big Hole	33,003	28,165	34,888	50,135
Boulder River	6,556	37,301	57,571	71,155
Clark Fork - Flints	126,115	139,940	157,201	159,819
Elkhorn	26,230	22,569	36,507	41,436
Gravelly	8	---	---	---
Jefferson River	11,682	21,355	38,723	92,310
Lima Tendoy	5,574	4,420	3,912	11,656
Madison		---	---	---
Pioneer	38,577	36,423	63,526	100,621
Tobacco Roots	---	---	---	---
Upper Clark Fork	14,571	35,327	51,324	59,547
Upper Rock Creek	58,999	61,007	63,122	57,355
Total	321,317	386,507	506,773	644,036
Percent of Forested Landscape	7%	9%	12%	15%
Percent of Landscape	4%	5%	6%	8%

Elk Security



Socioeconomic and Landscape Accounting

- Ecological/Economic Benefits
  - Douglas-fir - selective harvest (thin from below)
  - Ponderosa pine - selective harvest (thin)
  - Treat LPP to reduce fuels in strategic locations
  - Thin mixed DF/LPP
  - Sustain/improve patch size/age class distribution in LPP

- Landscape Benefits with Economic Costs
  - Fix/decommission roads in key watersheds
  - Aspen restoration
  - Prescribed burning
  - Restore whitebark pine stands

Opportunity Matrix by Landscape

- High value bull trout, grayling, westslope cutthroat
- Excess roads/inadequate drainage
- Extreme wildfire risk, difficult control due to fuels
- Dysfunctional Douglas-fir/Ponderosa pine structure
- Ongoing WSBW
- WUI
- Declining summer elk forage
- Abnormal LPP patch size (‘70’s harvest/unharvested)

Landscapes	Fish	Roads	Fire Risk	DF/PP	WSBW	WUI	Elk	LPP Patch
Big Hole	X	X	X				X	X
Boulder River		X	X	X	X	X		
Clark Fork Flints		X	X	x		X	X	X
Elkhorn			X	X	X		X	X
Gravelly							X	
Jefferson		x				X		
Lima Tendoy				x	x			x
Madison			x			x		
Pioneers	X	X	X	X	X	X	X	
Tobacco Roots			X	X	X			
Upper Clark Fork		X	X	X	X		X	
Upper Rock Creek	X	X	X	x		X	X	X

Landscapes	Fish	Roads	Fire Risk	DF/PP	WSBW	WUI	Elk	LPP Patch
Big Hole	X	X	X				X	X
Boulder River		X	X	X	X	X		
Clark Fork Flints		X	X	x		X	X	X
Elkhorn			X	X	X		X	X
Gravelly							X	
Jefferson		x				X		
Lima Tendoy				x	x			x
Madison			x			x		
Pioneers	X	X	X	X	X	X	X	
Tobacco Roots			X	X	X			
Upper Clark Fork		X	X	X	X		X	
Upper Rock Creek	X	X	X	x		X	X	X

Strategy for Shared Stewardship

- Working with States to co-manage risk across broad landscapes;
- Using new scenario investment planning tools for targeted investments;
- Focusing work on broad outcomes;
- Capitalizing on the authorizing environment created by recent legislation;
- Changing the Forest Service's own internal processes to get more work done on the ground;
- Using a full suite of active management tools, including the right kind of fire at the right times in the right places; and
- Applying a risk-based response to wildfire.

See Handout

Programs to Build Capacity for Restoration and Hazardous Fuels

- National Cohesive Strategy for Wildland Fire Management
- Ecosystem Restoration Policy (Forest Service Manual 2020)
- Environmental Analysis and Decision Making (EADM)
- Forest Products Modernization Initiative
- Executive Order 13807 (August 2017)
- Executive Order 13855 (December 2018)
- Healthy Forests Restoration Act (HFRA) 2003

See Handout

Programs to Build Capacity for Restoration and Hazardous Fuels

- Good Neighbor Authority (GNA) 2014
- Collaborative Forest Landscape Restoration Program (CFLRP) 2009
- Joint Chief's Landscape Restoration Partnership (JCLRP) 2014
- Stewardship Contracting 2014
- Supplemental Fuels Program
- 2014 Agricultural Act (Farm Bill)
- 2018 Consolidated Appropriations Act (Farm Bill)

See Handout

Further Tasks ERG Could Assist the B-D Working Group With

- Tease out recent ADS from older ADS to identify those infected MPB stands that have value
- Develop rational and priorities with new and updated data
- Assist with accelerated NEPA (consider GNA, Farm Bill, EADM, EOs, Shared Stewardship, and Forest Plan Implementation)
- Support collaborative group with technical assistance and planning
- Use live GIS to identify treatment units for the proposed action

Thanks for Joining Us

Questions/Discussion