

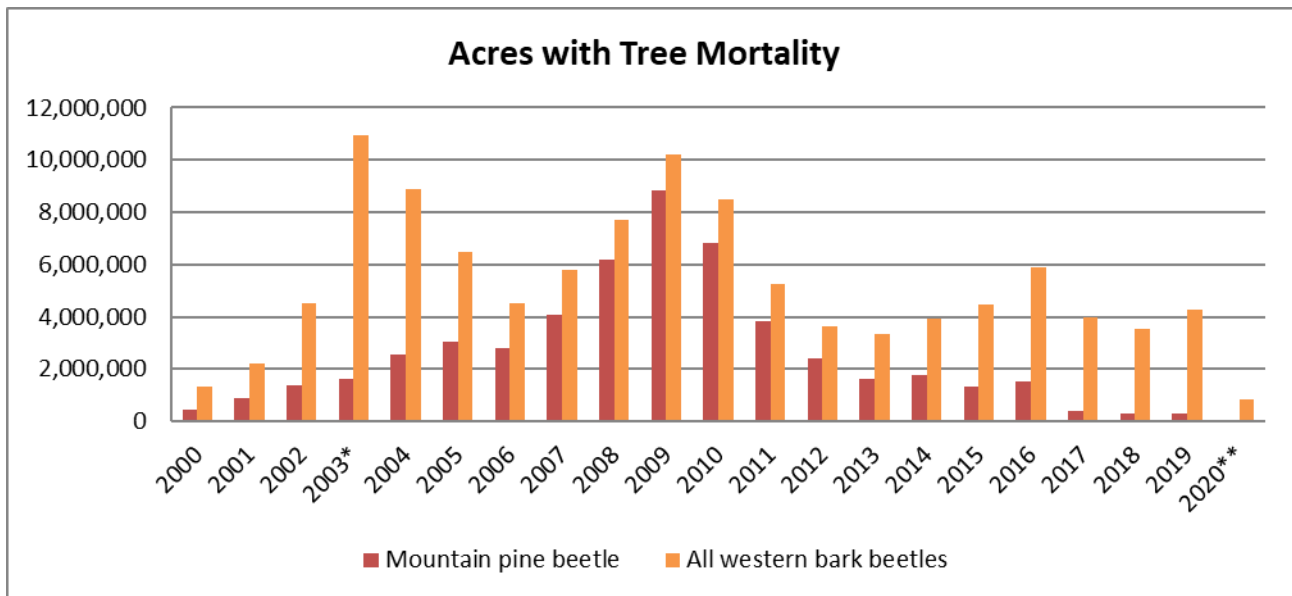
AREAS WITH TREE MORTALITY FROM BARK BEETLES

SUMMARY FOR 2000 – 2020** WESTERN US

21 YEAR FOOTPRINT FOR MOUNTAIN PINE BEETLE = 26.7M ACRES

21 YEAR FOOTPRINT FOR ALL WESTERN BARK BEETLES = 59.2M ACRES

Many areas of pest activity overlap from year to year. The footprint area is the cumulative area covered by pest activity with no double counting of acres between years.



*Spike in all western bark beetle acres in 2003 due to increased survey of pinyon pine mortality in the Southwest.

** Insect and disease surveys for 2020 were impacted by COVID-19 and some regions and states had reduced coverage or were unable to conduct aerial surveys. In place of aerial surveys, regions and states may have used a "scan and sketch" method to derive damage areas from high resolution imagery. This method was not a full replacement for aerial surveys and in several areas, we saw a reduction in surveyed acres in 2020. These summaries include all data sources.

BARK BEETLE SPECIES INCLUDED:

- | | | |
|------------------------------|--------------------------|----------------------------|
| California fivespined ips | lodgepole pine beetle | spruce beetle |
| cedar & cypress bark beetles | mountain pine beetle | tip beetles |
| Douglas-fir beetle | northern spruce engraver | true fir bark beetles |
| Douglas-fir engraver | pine engraver | twig beetles |
| Douglas-fir pole beetle | pinyon ips | western balsam bark beetle |
| fir engraver | red turpentine beetle | western cedar bark beetle |
| flatheaded borer | roundheaded pine beetle | western pine beetle |
| ips engraver beetles | silver fir beetle | |
| Jeffrey pine beetle | southern pine beetle | |

Complexes, insect/disease and other multi damage phenomena that contain a bark beetle component like five-needle pine decline, subalpine fir mortality, true fir pest complex and pinyon pine mortality are also included.

ACRES SUMMARY BY YEAR 2000 – 2020**

MOUNTAIN PINE BEETLE

	Arizona	California	Colorado	Idaho	Montana	Nebraska	Nevada	New Mexico	Oregon	South Dakota	Utah	Washington	Wyoming	Grand Total
2000		5,603	139,513	118,027	41,168		1,007	822	42,943	13,553	2,163	62,314	9,427	436,541
2001	55	71,330	151,476	170,283	112,413		1,645	2,301	68,994	102,699	17,664	118,836	55,239	872,934
2002	174	16,087	209,757	336,156	247,217		3,081	3,786	167,931	102,840	26,867	150,343	101,606	1,365,846
2003	132	25,739	236,095	343,564	286,033		2,358		173,296	189,803	53,653	204,884	90,383	1,605,940
2004	6	51,039	437,003	549,662	450,104		3,920		219,060	57,638	144,490	277,426	383,879	2,574,228
2005	0	40,659	500,652	512,195	749,141		2,758	5	256,163	19,328	111,987	472,207	383,400	3,048,496
2006		60,568	668,418	298,663	795,121		3,912		351,042	40,013	83,223	190,055	320,664	2,811,679
2007	127	56,982	987,389	391,448	732,886	1	8,772		500,641	25,700	273,585	220,845	862,157	4,060,534
2008	3	52,492	1,155,996	1,008,119	1,766,629		25,680		498,313	25,179	274,949	262,873	1,106,503	6,176,737
2009		91,901	1,047,517	1,923,854	3,490,829		40,277		394,531	22,451	227,171	404,256	1,199,904	8,842,693
2010		90,278	879,117	1,940,651	2,055,314	5	19,657		418,037	44,177	225,148	237,391	932,956	6,842,729
2011	4	89,917	754,465	783,240	971,314	303	16,574		236,844	66,213	67,628	108,504	717,731	3,812,735
2012	2	187,348	264,727	708,573	631,118	9	3,603		224,890	30,431	27,667	154,244	161,337	2,393,950
2013	10,243	136,442	96,637	298,317	522,805	143	1,111	10	300,179	33,351	31,671	103,636	81,713	1,616,258
2014	3,949	224,086	15,365	295,825	590,541		3,509		339,046	15,621	12,742	135,255	112,346	1,748,283
2015	367	595,124	3,950	159,583	172,604		2,525		269,870	15,065	7,928	59,605	33,234	1,319,855
2016	18	1,086,057	937	96,657	10,787		3,357		227,802	2,105	1,507	112,350	5,827	1,547,404
2017	1	113,197	878	28,124	7,979	8	2,560		82,358	2,920	610	165,992	4,235	408,862
2018	1	52,272	472	75,527	11,722		2,559		62,885	209	1,796	99,110	462	307,016
2019	179	57,998	722	71,094	24,562		12,823		40,847	8	3,856	88,136	1,010	301,236
2020**	3	3,596	293	7,304	12,636		3,532		12,461	1	2	37,480	192	77,499

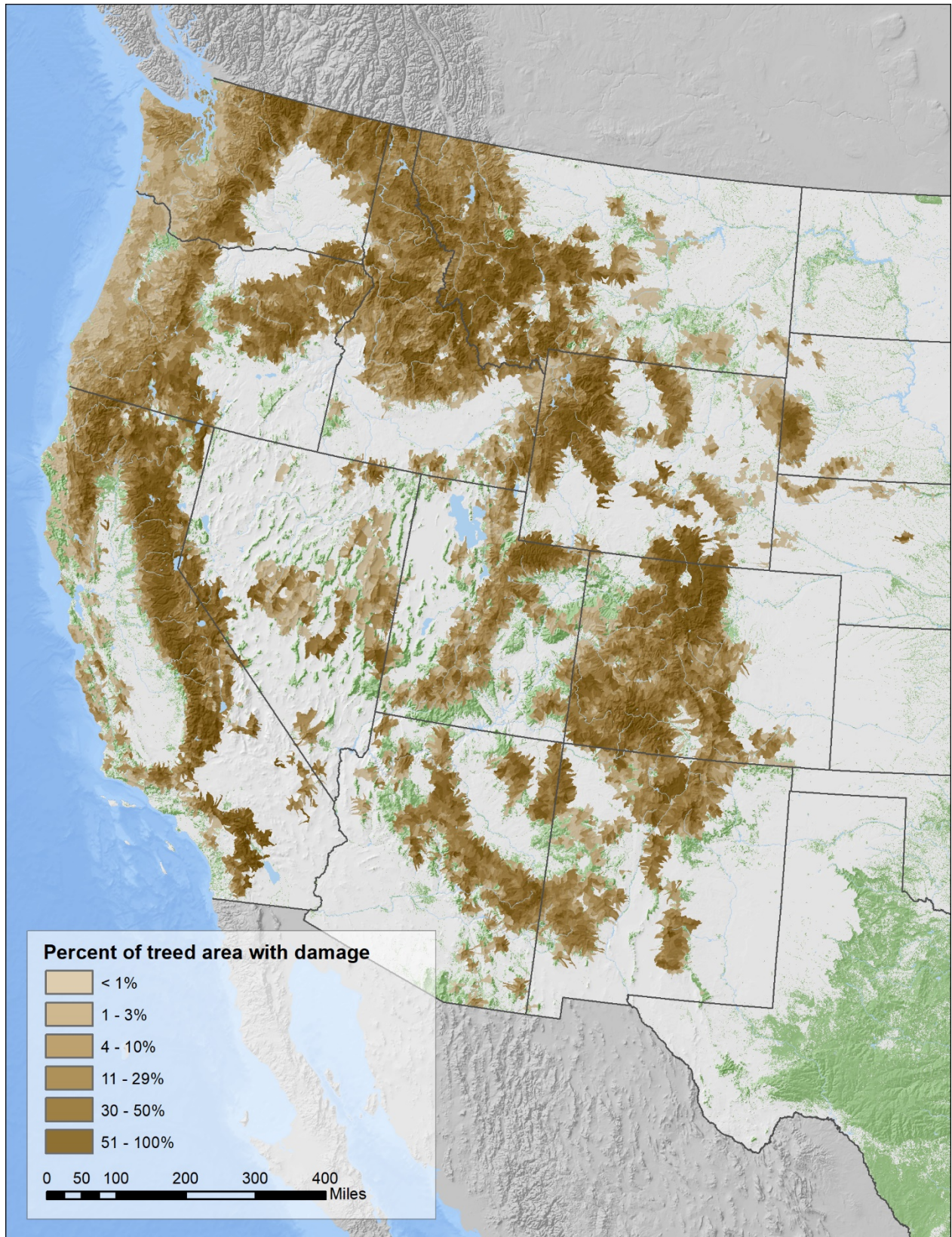
ALL WESTERN BARK BEETLES

	Arizona	California	Colorado	Idaho	Montana	Nebraska	Nevada	New Mexico	Nort Dakota	Oregon	South Dakota	Utah	Washington	Wyoming	Grand Total
2000	16,400	55,048	364,039	313,897	104,489		2,411	46,750		107,836	13,598	57,957	149,801	89,214	1,321,439
2001	88,318	78,263	427,892	396,023	224,724		9,773	72,002		118,187	140,064	140,164	289,287	210,740	2,195,437
2002	517,620	911,818	669,735	588,357	395,997		73,886	177,279		339,046	117,576	105,441	329,942	272,549	4,499,246
2003*	1,694,985	2,902,483	1,836,753	650,865	440,515	10,320	402,198	909,671		550,683	238,196	363,830	630,829	290,766	10,922,095
2004	139,255	1,706,069	1,448,787	1,089,003	669,578	12,080	806,038	293,502		670,863	101,482	565,237	719,644	668,717	8,890,255
2005	39,050	850,393	1,191,419	683,766	1,081,897	1,525	53,792	168,314		467,786	23,861	325,398	850,307	742,074	6,479,582
2006	31,117	309,745	1,149,107	366,556	923,413	3,242	24,571	180,177		453,670	41,246	122,790	419,423	494,458	4,519,514
2007	21,910	196,803	1,471,832	439,626	836,790	789	14,521	123,955		593,374	27,388	434,801	541,106	1,070,496	5,773,390
2008	10,617	171,082	1,575,775	1,292,156	1,831,838	7,232	32,057	99,976		614,447	26,472	358,634	493,782	1,189,505	7,703,573
2009	2,047	367,549	1,367,813	2,084,867	3,563,819	169	128,803	36,682		448,317	23,292	271,315	664,584	1,256,846	10,216,102
2010	21,084	684,893	1,370,155	2,049,117	2,089,476	92	28,560	20,946		536,969	44,636	279,134	361,599	1,015,098	8,501,760
2011	5,502	508,658	1,212,201	887,604	992,239	380	21,064	166,700		301,418	66,240	98,129	180,693	800,405	5,241,232
2012	34,518	399,051	817,981	772,749	636,947	9	7,710	172,159		258,877	30,431	56,951	263,290	204,848	3,655,520
2013	166,996	378,432	762,019	355,976	546,116	321	3,786	339,896		344,271	33,463	100,326	160,184	144,622	3,336,410
2014	137,296	799,080	741,514	377,695	618,714	8,332	29,091	200,028	36	410,250	15,716	147,372	217,217	246,430	3,948,773
2015	37,019	2,444,496	567,987	231,957	191,457	1,042	7,735	120,628		468,781	15,162	145,878	115,155	129,742	4,477,039
2016	111,831	3,968,421	503,602	188,820	49,977	53	11,684	104,198	4	533,363	2,272	146,487	222,988	64,253	5,907,953
2017	44,882	2,409,527	287,557	150,977	37,758	30	26,982	83,646		479,107	3,672	130,122	283,029	48,361	3,985,650
2018	275,873	1,700,429	245,936	231,823	61,190	17	20,152	118,089	7	469,045	391	162,094	221,946	34,396	3,541,387
2019	428,988	2,094,370	168,353	189,436	75,743	6	23,898	202,501		626,434	35	59,416	372,946	29,831	4,271,956
2020**	80,613	27,152	76,472	30,756	63,054		5,295	60,762		256,533	19	446	252,076	1,257	854,433

Note: Numbers are for each year's "current" damage and are not cumulative from year to year. Numbers should not be added across years because there may be significant overlap from year to year. Numbers are from the National Insect & Disease Survey database.

AREA WITH TREE MORTALITY FROM ALL WESTERN BARK BEETLES 2000 – 2020**

PERCENT OF TREED AREA WITH DAMAGE BY SUBWATERSHEDS (6TH LEVEL HUCS)



AREA WITH TREE MORTALITY FROM MOUNTAIN PINE BEETLE 2000 – 2020**

PERCENT OF TREED AREA WITH DAMAGE BY SUBWATERSHEDS (6TH LEVEL HUCS)

