

CSFS TALKING POINTS 2008 AERIAL SURVEY RESULTS



JANUARY 16, 2009

SUMMARY OF FINDINGS

The annual aerial survey provides images and data that help our land managers identify and address forest health concerns.

- Each year, observers with the Colorado State Forest Service and US Forest Service conduct an aerial survey to map recent insect and disease activity in forest areas.
- Survey results provide a snapshot of landscape-level conditions that may be monitored and addressed more closely by on-the-ground foresters.
- Aerial survey results provide *estimates* of the number of acres affected by recent insect and disease activity.

The 2008 aerial survey results identify three conditions of concern:

1. The spread of the mountain pine beetle has impacted 400,000 new acres. That brings the total number of acres impacted to nearly 2 million since the outbreak was first detected in 1996.
2. Spruce beetle infestations were detected on 64,000 acres in southern Colorado.
3. The decline of large aspen groves has been a concern for a few years. The 2008 survey adjusted its methods to focus on tree mortality and severity of damage; 542,000 acres were detected throughout the state.

Mountain Pine Beetle

- The aerial survey results for northern Colorado and southern Wyoming reveal that approximately 400,000 new acres were infested in 2008; these are acres not previously affected by the bark beetle epidemic (represented as “Currently Red” in *Table 1* below).
- Dead and dying trees that were isolated to five northern Colorado counties in previous years now can be seen in some Front Range counties, as well as southern Wyoming.
- Observed areas of high-elevation lodgepole pine infested by mountain pine beetle on the Front Range have increased in size.
- CSFS and the USFS are working with partners to treat key areas and protect communities and values at risk from the impacts of the beetle.

Spruce Beetle

- Spruce beetle is killing extensive forests of high elevation old Englemann spruce. The most active and current infestations are occurring in southern Colorado.
- The aerial survey revealed that 64,000 acres of spruce were killed by spruce beetle in 2008 (*see Table 2 below*); 97,726 acres in 2007; and 68,136 acres in 2006.
- The spruce beetle infestation is widespread throughout the state and is most severe in southern and central Colorado.

- The largest outbreak is spreading from the Weminuche Wilderness on the San Juan National Forest; Hinsdale and Mineral counties have been the most dramatically impacted.
- More than 100,000 acres on the San Juan National Forest in Archuleta County and the Rio Grande National Forest in Conejos County have been impacted by spruce beetle in recent years.
- A large spruce beetle epidemic on the Routt National Forest in Routt and Jackson counties killed much of the older spruce in this area from 2001-2004.
- Active spruce beetle populations have been detected by ground surveys on the Arapaho and Roosevelt National Forests in Larimer County.
- The spruce beetle epidemic is changing the face of Colorado's old spruce forests and may be the next large insect epidemic to transform our forests. Recent wind-throw events in southern Colorado have set the stage for increasing spruce beetle populations, which USFS and CSFS forest health specialists will continue to monitor.
- The spruce beetle is an endemic species that typically builds up in old spruce forests, especially where downed trees are present. Wind-thrown trees on the Grand Mesa in Mesa and Delta counties, and more recently in the Wet Mountains near Custer County, have provided habitat for outbreak populations to develop.
- Much of this area is in wilderness, and dead trees are being salvaged in areas where management occurs.

Aspen Decline

- Aspen decline continues to be a forest health concern throughout the region; monitoring and research have begun to describe and explain these events.
- Many of Colorado's aspen forests are composed of mature trees that are more susceptible to natural stresses and dying due to multiple damage agents – for example drought, defoliation and aspen diseases.
- Aspen decline is not easily determined through aerial surveying. Ground surveys are necessary to determine the extent of aspen decline with any degree of accuracy. The 2008 aerial survey adjusted its methods to focus more on aspen tree mortality and severity of damage, and revealed a range of low, moderate to high mortality on more than 540,000 acres (*see Table 3 below*).
- In 2007, 334,168 acres were recorded; 138,605 acres were recorded in 2006.
- Many areas, especially in western Colorado, are experiencing poor aspen regeneration beneath the declining trees.
- Colorado has more aspen than any other western state. In recent years, several aspen landscapes have experienced rapid changes including the sudden death of aspen trees.
- Aspen decline is troubling because Colorado's aspens bring millions of tourist dollars into the state and provide invaluable wildlife habitat.
- The most significant question about aspen decline is whether the root systems will survive. Because new aspen sprouts develop from the root systems, dead root systems mean that some of the state's aspen forests will be lost. Scientists are conducting research to determine how best to address the problem. Early results show that some aspen stands with SAD symptoms sprout well if aspens are cut before the root system dies.

Table 1 — Aerial survey results of estimated acres affected by **mountain pine beetle**. The time period reported in this table includes both the current MPB outbreak, as well as an outbreak that occurred in Chaffee, Lake and Park counties in the Arkansas River Valley from 1998-2004.

Colorado County	Host Tree	2008 Acres Impacted (Currently Red)	1996-2008 Cumulative Acres Impacted
Alamosa	Lodgepole Pine	0	0
	Ponderosa Pine	0	430
	5-needle pines*	0	10
Archuleta	Lodgepole Pine	1	1
	Ponderosa Pine	30	16,000
	5-needle pines*	0	0
Boulder	Lodgepole Pine	42,000	50,000
	Ponderosa Pine	1,600	20,000
	5-needle pines*	2,500	8100
Chaffee	Lodgepole Pine	1,100	5,000
	Ponderosa Pine	40	77,000
	5-needle pines*	20	1700
Clear Creek	Lodgepole Pine	17,000	38,000
	Ponderosa Pine	110	4,000
	5-needle pines*	230	8,200
Conejos	Lodgepole Pine	0	0
	Ponderosa Pine	0	4,800
	5-needle pines*	0	0
Costilla	Lodgepole Pine	0	0
	Ponderosa Pine	0	4,600
	5-needle pines*	0	7
Custer	Lodgepole Pine	1	160
	Ponderosa Pine	10	34,000
	5-needle pines*	30	780
Delta	Lodgepole Pine	0	2
	Ponderosa Pine	0	6
	5-needle pines*	0	0
Dolores	Lodgepole Pine	0	0
	Ponderosa Pine	40	550
	5-needle pines*	0	0
Douglas	Lodgepole Pine	260	270
	Ponderosa Pine	110	33,000
	5-needle pines*	0	0
Eagle	Lodgepole Pine	75,000	156,000
	Ponderosa Pine	650	3,700
	5-needle pines*	30	160

Colorado County	Host Tree	2008 Acres Impacted (Currently Red)	1996-2008 Cumulative Acres Impacted
El Paso	Lodgepole Pine	0	2
	Ponderosa Pine	90	13,000
	5-needle pines*	0	0
Elbert	Lodgepole Pine	0	0
	Ponderosa Pine	0	390
	5-needle pines*	0	0
Fremont	Lodgepole Pine	4	170
	Ponderosa Pine	130	31,000
	5-needle pines*	500	1,800
Garfield	Lodgepole Pine	5,200	6,700
	Ponderosa Pine	0	60
	5-needle pines*	10	400
Gilpin	Lodgepole Pine	12,000	23,000
	Ponderosa Pine	90	2,500
	5-needle pines*	1,100	14,000
Grand	Lodgepole Pine	208,000	549,000
	Ponderosa Pine	0	470
	5-needle pines*	210	3,100
Gunnison	Lodgepole Pine	0	2,500
	Ponderosa Pine	70	1,300
	5-needle pines*	0	0
Hinsdale	Lodgepole Pine	0	3
	Ponderosa Pine	10	3,200
	5-needle pines*	0	0
Huerfano	Lodgepole Pine	0	50
	Ponderosa Pine	2	26,000
	5-needle pines*	0	220
Jackson	Lodgepole Pine	233,000	347,000
	Ponderosa Pine	400	740
	5-needle pines*	1,200	6,400
Jefferson	Lodgepole Pine	80	1,700
	Ponderosa Pine	250	27,000
	5-needle pines*	0	5
La Plata	Lodgepole Pine	0	0
	Ponderosa Pine	2	12,000
	5-needle pines*	0	0
Lake	Lodgepole Pine	3,800	8,900
	Ponderosa Pine	1	300
	5-needle pines*	30	560
Larimer	Lodgepole Pine	187,000	209,000
	Ponderosa Pine	1,900	50,000
	5-needle pines*	6,600	27,000

Colorado County	Host Tree	2008 Acres Impacted (Currently Red)	1996-2008 Cumulative Acres Impacted
Las Animas	Lodgepole Pine	0	10
	Ponderosa Pine	0	12,000
	5-needle pines*	0	6
Mesa	Lodgepole Pine	0	0
	Ponderosa Pine	60	5,200
	5-needle pines*	0	0
Mineral	Lodgepole Pine	0	0
	Ponderosa Pine	0	710
	5-needle pines*	0	0
Moffat	Lodgepole Pine	9,700	11,000
	Ponderosa Pine	0	0
	5-needle pines*	90	100
Montezuma	Lodgepole Pine	0	0
	Ponderosa Pine	40	660
	5-needle pines*	0	0
Montrose	Lodgepole Pine	0	0
	Ponderosa Pine	160	1,900
	5-needle pines*	0	0
Ouray	Lodgepole Pine	0	5
	Ponderosa Pine	50	180
	5-needle pines*	0	0
Park	Lodgepole Pine	9,400	12,000
	Ponderosa Pine	260	89,000
	5-needle pines*	30	270
Pitkin	Lodgepole Pine	5,200	11,000
	Ponderosa Pine	20	80
	5-needle pines*	0	0
Pueblo	Lodgepole Pine	0	0
	Ponderosa Pine	10	21,000
	5-needle pines*	0	0
Rio Blanco	Lodgepole Pine	18,000	25,000
	Ponderosa Pine	0	30
	5-needle pines*	0	100
Rio Grande	Lodgepole Pine	0	0
	Ponderosa Pine	0	3,300
	5-needle pines*	0	0
Routt	Lodgepole Pine	245,000	310,000
	Ponderosa Pine	80	100
	5-needle pines*	210	420
Saguache	Lodgepole Pine	3	780
	Ponderosa Pine	2,300	38,000
	5-needle pines*	30	330

Colorado County	Host Tree	2008 Acres Impacted (Currently Red)	1996-2008 Cumulative Acres Impacted
San Miguel	Lodgepole Pine	0	10
	Ponderosa Pine	40	2,700
	5-needle pines*	0	10
Summit	Lodgepole Pine	65,000	125,000
	Ponderosa Pine	0	20
	5-needle pines*	260	440
Teller	Lodgepole Pine	0	10
	Ponderosa Pine	90	9,600
	5-needle pines*	0	20

*Acres reported for 5-needle pine include limber pine or bristlecone pine, and may reflect damage by insect or disease agents other than MPB.

Table 2 — Estimated acres affected by **spruce beetle** detected by the aerial survey

Colorado County	2008 Acres Impacted	1996-2008 Cumulative Acres Impacted
Archuleta	1,200	4,500
Boulder	40	40
Chaffee	3	10
Clear Creek	1	30
Conejos	1,300	11,000
Costilla	2	1,400
Custer	30	820
Delta	430	3,000
Dolores	20	1,800
Douglas	1	20
Eagle	2,200	4,100
El Paso	0	10
Fremont	2	40
Garfield	510	4,100
Gilpin	2	7
Grand	780	2,100
Gunnison	160	4,900
Hinsdale	12,000	52,000
Huerfano	0	900
Jackson	1,600	63,000
Jefferson	3	6
La Plata	140	4,400
Lake	3	40
Larimer	1,300	11,000
Las Animas	0	650
Mesa	400	9,800
Mineral	34,000	79,000
Moffat	0	600
Montezuma	0	290
Montrose	0	500
Ouray	40	1,400
Park	8	10
Pitkin	1,200	7,300
Pueblo	110	2,100
Rio Blanco	0	3,600
Rio Grande	5,200	11,000
Routt	1,100	81,000
Saguache	70	2,800
San Juan	4	1,600
San Miguel	20	890
Summit	300	330

Table 3 — Estimated acres affected by **aspen decline** detected by the aerial survey.

Colorado County	2008 Acres Impacted Low	2008 Acres Impacted Moderate	2008 Acres Impacted High	2008 Acres Impacted Total
Archuleta	0	900	2,600	3,500
Boulder	0	80	30	110
Chaffee	50	3,600	850	4,500
Clear Creek	0	7	80	87
Conejos	0	150	2,000	2,150
Costilla	0	0	180	180
Custer	80	540	3,900	4,520
Delta	0	6,300	12,000	18,300
Dolores	0	3,000	8,800	11,800
Douglas	0	20	0	20
Eagle	0	18,000	2,700	20,700
El Paso	0	0	10	10
Fremont	10	700	1,900	2,610
Garfield	0	31,000	7,700	38,700
Gilpin	0	40	0	40
Grand	0	3,100	4,800	7,900
Gunnison	130	41,000	33,000	74,130
Hinsdale	40	5,100	920	6,060
Huerfano	0	130	1,900	2,030
Jackson	90	7,000	4,400	11,490
Jefferson	0	40	3	43
La Plata	0	730	3,900	4,630
Lake	0	590	120	710
Larimer	0	1,200	3,800	5,000
Las Animas	0	50	590	640
Mesa	0	16,000	22,000	38,000
Mineral	0	7,500	770	8,270
Moffat	0	14,000	11,000	25,000
Montezuma	0	7,800	11,000	18,800
Montrose	0	11,000	15,000	26,000
Ouray	0	6,400	8,500	14,900
Park	20	4,200	17,000	21,220
Pitkin	0	13,000	730	13,730
Pueblo	0	220	590	810
Rio Blanco	0	22,000	7,700	29,700
Rio Grande	0	1,400	1,700	3,100
Routt	150	58,000	41,000	99,150
Saguache	20	12,000	1,800	13,820
San Juan	0	7	200	207
San Miguel	0	1,900	7,100	9,000
Teller	0	230	100	330