

## ENVIRONMENT

### Community Vision – Promote stewardship of the land, protect open space, and keep our air and water clean.

Preserving our environment is not just an issue for conservationists or environmentalists, but can be tied directly to **community** social and economic goals and objectives. The indicators selected for this section are a reflection of what our community values: open space, recreational opportunities, clean air and water, and healthy fish, bird, and animal populations.

### Open Space

The amount of open space available in our region is due primarily to the high percentage of publicly owned land (about 66 percent of total lands). Public lands are managed by a variety of entities whose policies include extractive uses of resources such as mining and timber, as well as non-extractive uses such as wildlife habitat,

Land Ownership - Number of Acres					
	Archuleta	Dolores	La Plata	Montezuma	San Juan
Private	296,806	257,966	461,185	397,404	28,000
San Juan National Forest	450,447	343,443	396,050	256,801	172,000
Bureau of Land Management	-	68,456	21,823	179,641	49,000
State of Colorado	-	11,000	23,287	11,357	1,880
Southern Ute Tribe	125,706	-	179,055	-	-
Ute Mtn. Ute Tribe	-	-	1,685	439,996	-
National Park Service	-	-	-	48,689	-
Total	872,959	680,865	1,083,085	1,333,888	250,880

Source: County Assessor Offices 2000

scenic beauty, and recreational opportunities. With such a significant presence in the region, public land policies affect the daily lives of all who live here.

# of Acres of Open Space Saved						
Year	Archuleta	Dolores	La Plata	Montezuma	San Juan	Total
1993	1,480	n/a	0	n/a	n/a	1,480
1994	0	n/a	368	n/a	n/a	368
1995	0	n/a	738	n/a	n/a	738
1996	372	n/a	432	n/a	n/a	804
1997	1,921	n/a	244	n/a	n/a	2,165
1998	127	**	1,080	**	n/a	1,207
1999	160	150	626	284	n/a	1,220
2000	0	0	891	2,648	0	3,539
2001	720	240	2,922	320	0	4,202
2002	41	560	948	116	0	1,665
2003	468	0	1,736	720	0	2,924
2004	2,182	0	1,105	394	0	3,681
2005	1,144	535	1,704	1074	40	4,497
2006	704	0	1,291	2707	4	4,706
2007	965	40	2,393	1327	0	4,725

\*\*Included in La Plata

Sources: Southwest Land Alliance, La Plata County Open Space Conservancy, the Montezuma Land Conservancy, and the Colorado Cattlemans Land Trust.

Open space increases when acreage is added to public land or when private land is protected under voluntary agreements with qualified land trusts, as happens with long-term conservation easements. While no public lands have been added, a number of acres have been protected through land trusts across the region. The number of acres fluctuates from year to year, but appears to be on the rise. The cumulative total since 1993 is 37,921 acres. Cities in the region, notably Durango, are also interested in acquiring land for open space. In 2005, voters approved a ballot measure providing for a one-half of 1 percent increase in the city's sales and use tax, with 50 percent of revenues to be used for parks, open space and trails.

**Recreation**

Southwestern Colorado continues to offer many recreational activities that cater to a wide range of interests. Since we began looking at this indicator, Durango, Ignacio, and Cortez have all built community recreation centers. The SunUte Community Center in Ignacio opened in November 2001; the Durango Community Recreation Center opened in January 2002; and the Cortez Recreation Center opened in February 2004. Each county offers soccer and baseball/softball fields for public use, and we used the numbers of these facilities as recreation indicators from 1995 to 2004. However, recreation programs have evolved and now include open space and trails as wells as other forms of recreation such as tennis courts and skate parks. Thus, the number of “turf parks” is no longer an adequate measurement of the issue.

Recreation on Public Lands		
Indicator	Year	USFS & BLM
Estimated # of recreation visits to public lands	1997	860,000
	1998	760,000
	1999	820,000
	2000-2001	2,640,000
	2002-2004	2,550,000
	2007	2,560,000
Miles of recreation trails on public lands	1998-2001	1,600
	2002-2004	1,753
	2007	1,663
# of developed campsites on public lands	2000-2001	949
	2002-2004	958
	USFS and BLM 2007	880
Miles of USFS road passable by passenger car	2000-2004	752
	2007	735
Miles of USFS road requiring high clearance vehicles	2000-2004	1,035
	2007	1,337

Source: Public Lands Center (Durango)

Recreation management on public lands continues to evolve. The old method had an activity focus that looked at numbers of participants, facilities, miles of trail, and roads. The new method focuses on producing recreation opportunities, facilitating their attainment as beneficial outcomes, and sustaining the character of recreation settings.

Although measurement processes changed in 2001, Forest Service (San Juan Public Lands or U.S. Forest Service and Bureau of Land Management) officials continue to estimate the number of annual visits to public lands, numbers of trails, and campsites. In the old system, only visitor days – which measured an average length of stay per visit to a 12-hour day – were counted. Now, all visits are counted regardless of the length of stay. Under this new process the estimated number of visits increased dramatically in 2001.

Recreation Activities 2007		
Facility	US Forest Service	BLM
Campgrounds	40	3
Group Campgrounds	1	1
Picnic Sites	5	6
Annual Visitor days	1.9 million	660,000
Commercial outfitters / guides	129	80
Recreation Events and Group Permits	18	13
Recreation Residences	24	0
Boating Sites	6	3
Fishing Sites	7	4
Fire Lookout / Cabin Rentals	3	0
Interpretive Sites	9	13
Observation Sites	3	2
Winter Sports Sites	5	2
Trailheads	49	14

Source: Public Lands Center (Durango)

### Air Quality

The Colorado Department of Public Health and Environment (Air Pollution Control Division) and San Juan Basin Health Department continue to monitor levels of particulate matter in the air. Particulate matter describes minute particles in the atmosphere. Particulate matter is classified as PM2.5 – particulates smaller than 2.5 microns, and PM10 – particulates less than 10 microns in size. To put that in perspective, a human hair is approximately 100 microns. This air-quality indicator is monitored because, unlike larger matter, it can enter the bronchiolar and alveolar regions of the lung and cause adverse health effects.

Air Quality					
Location		High Month Average	Low Month Average	Max. 24-Hr. High	Annual Average
La Plata County Courthouse site 1060 E. 2nd Ave	1997	29.7	12.6	54	17.8
	1998	24.1	13.3	94	17.5
	1999	28.5	12.2	168**	16.5
	2000	19.9	8.1	51	12.5
	2001	19	10.8	65	15
	2002	35.2	15.3	102	22.2
	2003	25.5	10.6	90	19
	2004	21.2	11.7	40	16.9
	2005	23.6	12.6	66	17.1
2006	19.3	11.2	46	15.2	
La Plata County River City Hall 1235 Camino Del Rio	2004	26.6	16	46	20
	2005	32	15.3	85	20.9
	2006	23.2	12.7	47	18.8
	2007	26.6	14.4	40	18.6
Archuleta County	1997*	52	18	120	29
	1998*	35	21	66	27
	1999*	43	18	138	27
	2000*	38.8	20.3	165	27.9
	2001	40.4	18.1	123	21
	2002	39	12.6	107	24.1
	2003	32.1	15.6	123	24.5
	2004	30.9	19	79	23.4
	2005	26.5	19.7	82	23.9
	2006	24.5	13.4	122	19.8
2007	31.7	11	102	22.6	

Air quality in La Plata and Archuleta counties continues to be good generally as defined by National Ambient Air Quality Standards. The trend for 24-hour maximums and annual averages are decreasing in Archuleta and La Plata counties. The La Plata County Courthouse air monitoring site closed at the end of 2006, and the current site in Durango commenced measurements in 2004, so some data overlap occurs. The new site generally has shown higher concentrations of particulates.

There are also efforts to fund another air monitoring system in South Durango to monitor emissions from the Durango & Silverton Narrow Gauge Railroad. This effort is spearheaded by the Train Smoke Mitigation Task Force with the D&SNG Railroad’s support.

National Ambient Air Quality Standards for PM10:

24-hour standard = 150 micrograms/cubic meter

Former annual average standard = 50 micrograms/cubic meter

\*Measurements in these years were taken at the courthouse in Pagosa Springs.

\*\*Occurred during a dust storm and is not factored into the monthly or annual average.

Sources: San Juan Basin Health Dept.

Colorado Department of Public Health and Environment

Dolores and San Juan Counties do not have air quality monitoring for particulates at this time. In Montezuma County, particulate monitoring is conducted through the Federal IMPROVE network at Mesa Verde National Park.

## Water Quality

### Impaired Water Bodies

Section 303(d) of the Clean Water Act requires states to submit a list of those waters that do not meet water quality standards. In 1998, Southwest Colorado reported 11 impaired river sections totaling 226 miles, and two reservoirs totaling more than 5,000 surface acres of water. Once a water body is included on the state’s 303(d) list, the development of Total Maximum Daily Loads (TMDLs) is then required to address the pollutants in these impaired waters. The TMDL is the amount of a specific pollutant that a water body can receive without exceeding an attainable water quality standard.

Once Environmental Protection Agency (EPA) approves the TMDL, that portion of water is removed from the list and becomes known as “an impaired water body with an approved TMDL.” Between 1998 and 2004, eight TMDLs were written for this portion of the state and subsequently approved by the EPA. This type of analysis and review is still under way for Narraguinnep Reservoir in Montezuma County and McPhee Reservoir in Dolores County.

<b>Impaired River Portions and Reservoirs of the San Juan River Basin</b>			
<b>River / # of sections impaired</b>	<b>River Section / Length</b>	<b>Impairment Reason</b>	<b>Source of Pollution</b>
Silver Creek / 2	From Rico DW diversion to Dolores River 1.33 miles	Cadmium, Zinc	Mining
Mancos / 1	River and tributaries above Hwy 160 / 109 mi.	Zinc	Mining
*East Fork Mancos River	10 miles	Zinc, Copper	Unknown
*La Plata River Tributaries	98.5 miles	Iron	Mining
Narraguinnep Reservoir	578 surface acres	Mercury	Unknown
McPhee Reservoir	4,470 surface acres	Mercury	Unknown
*Vallecito Reservoir	2,654 acres	Mercury	Unknown
*Navajo Reservoir	2,600 acres	Mercury	Unknown

Source: Colorado Water Quality Control Division - April 2008

\*Water body added to this list since 2004

The addition of four water bodies to this list since 2004 may be a result of more extensive data collection rather than more pollution. The detection of mercury sources is difficult to pin down because mercury is primarily an airborne pollutant. It could be coming from as far away as China, or it may originate in the Four Corners area.

### Fish Populations

Trout are a sensitive species that react quickly to changes in their habitat; thus the species continues to be a good indicator of water quality and river health. The Colorado Division of Wildlife (DOW) monitors trout populations on two sections of the Animas River and below the dam at McPhee Reservoir. The gold medal section (quality fishing waters) of the Animas extends from the confluence with Lightner Creek to the purple cliffs south of Durango. The other monitored portion of the Animas begins at the 32<sup>nd</sup> Street Bridge and ends at the 9<sup>th</sup> Street Bridge.

The fish reacted dramatically to the area drought with numbers dropping between 2000 and 2002. The 2002 Missionary Ridge fire deposited a lot of heavy silt in the Animas, and the DOW reported a significant fish kill from the North Animas Valley to the 32<sup>nd</sup> Street Bridge in Durango.

In 2006, the numbers of fish on the Gold Medal stretch of the Animas increased, but were of smaller size (>14”) per acre. The opposite was true of the Animas through Durango from 32<sup>nd</sup> to 9<sup>th</sup> Streets in 2006. The number of trout below McPhee Reservoir also dropped dramatically in 2002 as officials severely restricted water flow, responding to the drought. In 2004, trout populations were beginning to increase again, and in 2006 their numbers had doubled on the Dolores.

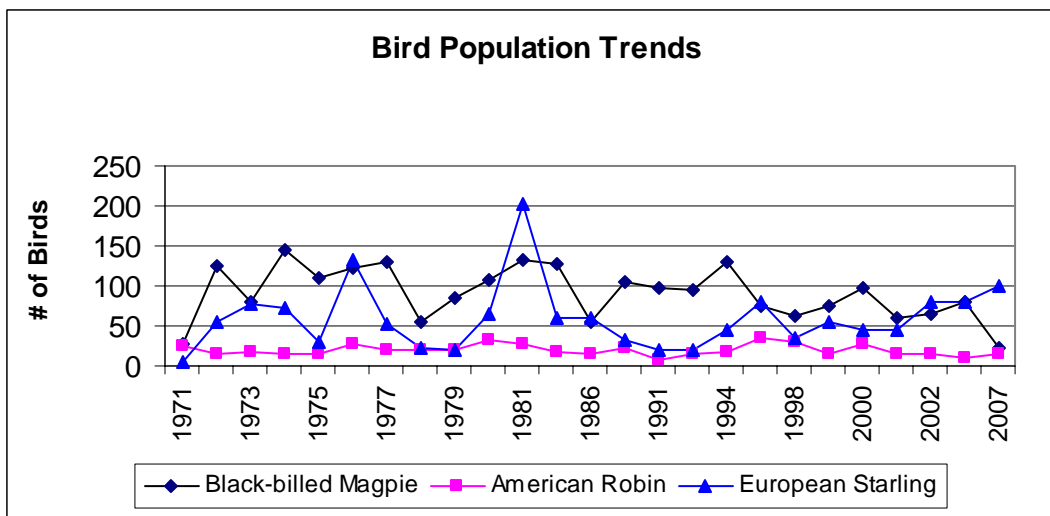
Trout Populations				
Indicator - River Section	Year	Biomass (lb/acre)	Total # of trout/acre	Trout > 14"/acre
Dolores below McPhee Reservoir	2000	22	20	19
	2002	8	10	n/a
	2004	10	11	n/a
	2006	9	22	4
Animas Gold Medal	2000	144	141	69
	2002	120	51	49
	2004	96	90	44
	2006	93	141	31
Animas through Durango	2000	42	57	16
	2002	99	130	38
	2004	104	115	17
	2006	115	84	34

Source: Colorado Division of Wildlife

Biomass is defined as the total weight of trout per surface acre and is expressed as lbs/acre.

### Bird Populations

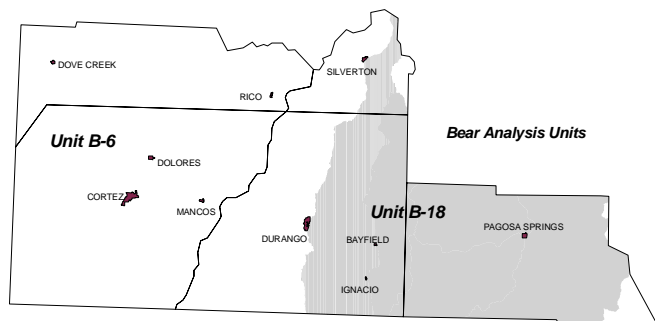
Because they do not migrate and are impacted only by local events, the Black-billed Magpie, American Robin, and European Starling continue to be the indicator species for environmental monitoring. In La Plata County, the U.S. Geological Survey (USGS) continues its annual Breeding Bird Survey on the Falga route on Florida Mesa in La Plata County. The route begins east of the junction at County Road 222 and U.S. Highway 172 and continues southeast toward Ignacio for 24 miles. Robins have seen slight declines along the Falga route, but the numbers of magpies and starlings have increased. The 30-year state-wide trend for robins and starlings is down slightly, but numbers of magpies are up. However, it is important to remember that these data represent a very small sampling of the region. Overall, it appears that bird counts are subject to a great deal of variation from year to year, and it might be worthwhile to consider another type of indicator in the future.



Source: USGS Patuxent Wildlife Research Center. 2008. North American Breeding Bird Survey Internet data set, 02 May 2008 (<http://www.pwrc.usgs.gov/bbs/retrieval/>).

### Bears and Mountain Lions

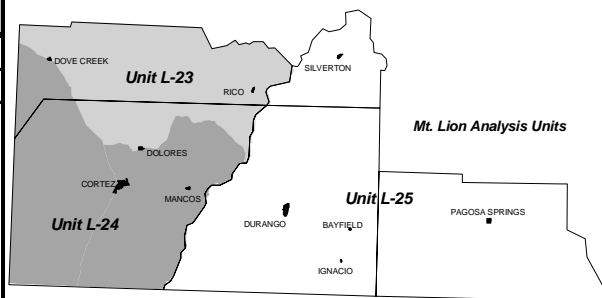
Previous *Index* reports tracked human conflicts with bears and mountain lions, but Division of Wildlife (DOW) officials no longer track these incidents because the reports tended to be biased, limited in number, and difficult to analyze. The DOW continues to collect data concerning the number and amount of damage claims caused by bears and mountain lions to livestock and other property. A 10-year trend of the number and amount of claims paid as a result of damage caused by bears is up, while trends for mountain lions are mixed. However, the number of claims and the dollar amounts has gone up between 1998 and 2001 – likely caused by a number of factors, including drought, which drastically limited the food supply of these predators, and human encroachment, which limits their range. Unfortunately, the DOW was not able to supply more current information for this edition of the *Index*.



# of Claims and \$ Amounts for Damage Done by Bears				
	Unit B-6		Unit B-18	
Year	# claims	\$ paid	# claims	\$ paid
1991	3	\$752	5	\$3,389
1992	12	\$3,334	7	\$8,848
1993	0	\$0	0	\$0
1994	0	\$0	0	\$0
1995	29	\$12,175	24	\$15,742
1996	10	\$2,917	7	\$1,575
1997	6	\$2,233	1	\$4,050
1998	6	\$2,734	8	\$14,903
1999	32	\$13,682	30	\$50,792
2000	16	\$9,251	11	\$19,069
2001	5	\$3,640	10	\$25,053

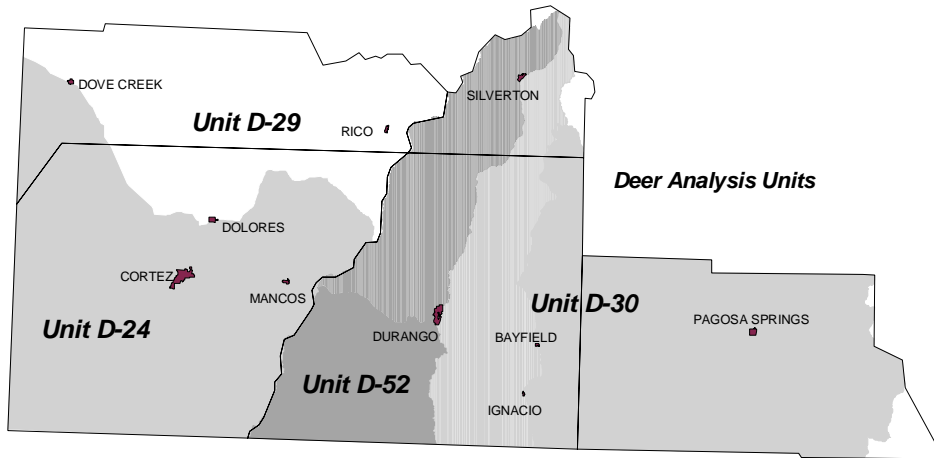
Source: Division of Wildlife

# of Claims and \$ Amounts for Damage Done by Mountain Lions						
	Unit L-23		Unit L-24		Unit L-25	
Year	# claims	\$ paid	# claims	\$ paid	# claims	\$ paid
1991	1	\$97	5	\$3,164	9	\$3,774
1992	2	\$1,000	14	\$3,544	9	\$16,558
1993	3	\$971	10	\$8,566	3	\$400
1994	0	\$0	0	\$0	0	\$0
1995	0	\$0	11	\$4,198	4	\$2,945
1996	2	\$5,546	3	\$2,277	8	\$15,963
1997	0	\$0	3	\$775	5	\$1,621
1998	1	\$800	2	\$3,600	10	\$4,005
1999	0	\$0	14	\$16,699	11	\$7,033
2000	1	\$640	11	\$2,620	18	\$115,801
2001	0	\$0	2	\$868	8	\$4,642



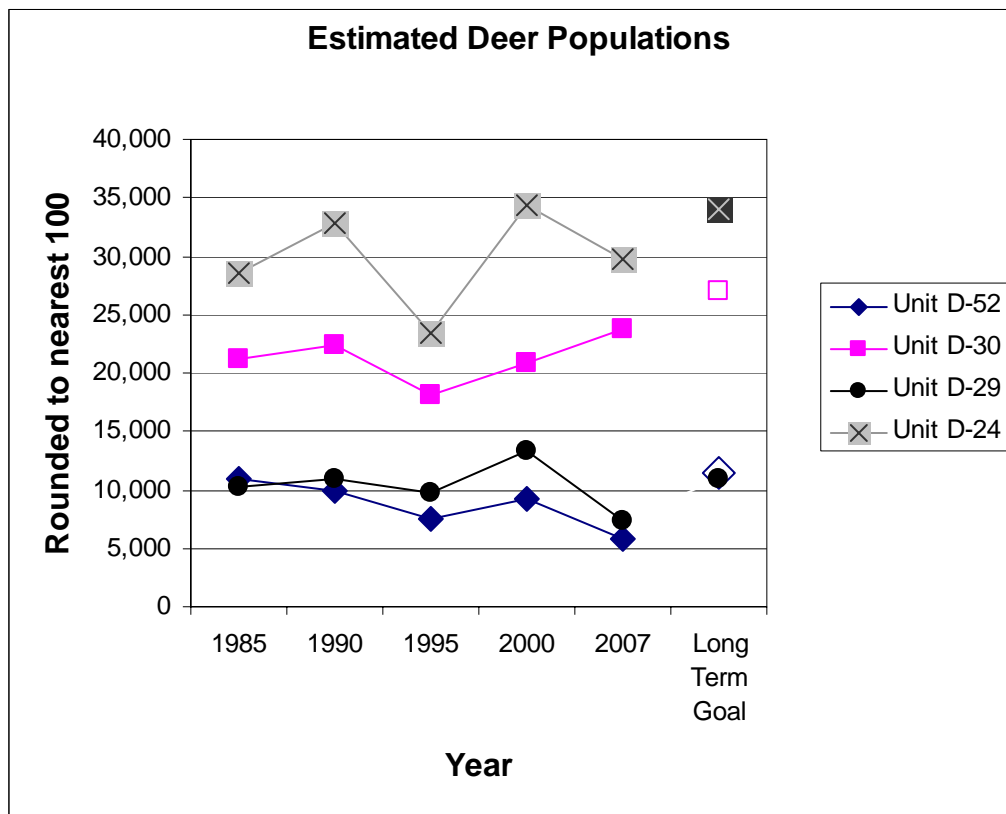
Source: Division of Wildlife

## Deer and Elk

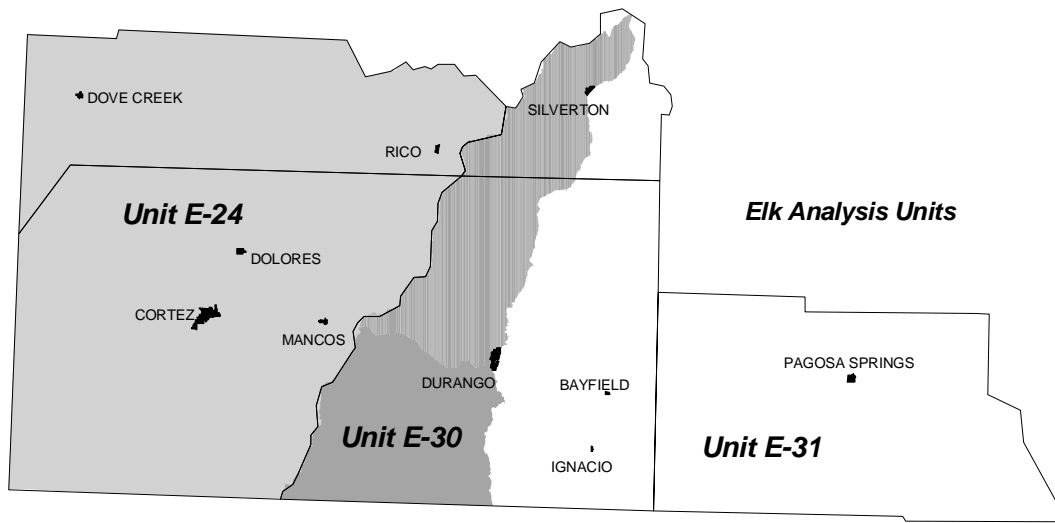


Deer and elk populations continue to be actively managed by the DOW. Annual counts are conducted during the first part of April when populations are at their lowest level of the year. Local herds are categorized into Data Analysis Units (DAU). A DAU is an area where a herd is known to spend a majority of its time. Each DAU has a long-range population goal that DOW officials manage and strive toward.

Though deer populations see ups and downs, the region’s herds overall are slowly trending toward DOW goals.







After a 1993 study showed that elk have a much higher survival rate than deer, DOW officials adjusted elk population numbers, resulting in overpopulation in most units. Elk counts in 2007 show that each elk unit has exceeded long-term goals; but the severity of the winter of 2007 – 08 may have reduced the herds.

