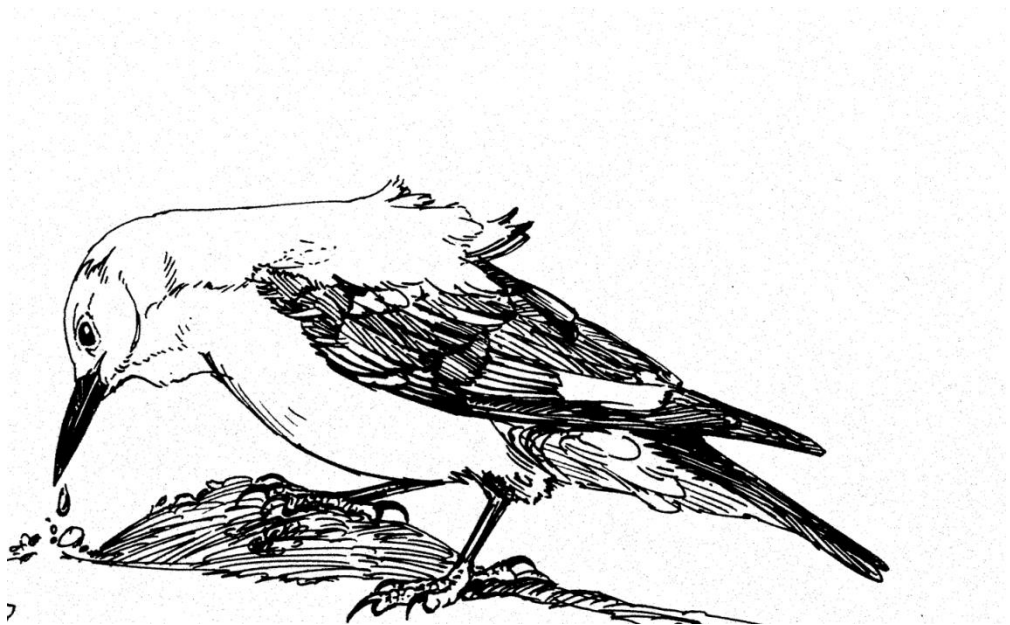


**Summary of Bird Monitoring at Craters of the Moon National
Monument and Preserve 2008**



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Executive Summary

Bird surveys were run on 10 point count transects during June of 2008. The surveys were performed on ten routes in both the Monument and the Preserve. There were a total of 1824 individuals of 81 species observed on 167 point counts. The 10 most numerous birds were Brewer's Sparrow, Rock Wren, Western Meadowlark, Western Tanager, American Coot, Mourning Dove, Spotted Towhee, Mallard, Sage Thrasher, Brewer's Blackbird. The Brewer's Sparrow, Mourning Dove, Rock Wren, Western Tanager, Violet-green Swallows, Brown-headed Cowbirds, Common Ravens, Chipping Sparrows, Spotted Towhees, and Vesper Sparrows were all recorded on six or more of the transects.

A total of 146 species were recorded at CRMO during 2008. Three of these (Eurasian Collared-dove, Barn Owl, and American Tree Sparrow) had not been previously documented at CRMO. Forty-nine percent (71 of 143) of the species recorded are listed as sensitive by the state of Idaho, the BLM, or are a Partners in Flight priority species (Table 5).

Sage-grouse lek counts were continued in 2008 and a total high count of 142 birds were observed on six leks that were visited. The leks surveyed were part of the Golden Chariot lek complex in the northwest portion of the preserve.

The Christmas Bird Count was restarted at Craters of the Moon in 2005. The 2008 count was done on December 15. Seven volunteers and three members of the park staff participated in the count. Over the day 128 birds of 21 species were recorded.

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Craters of the Moon National Monument and Preserve Bird Monitoring 2008

BREEDING BIRD MONITORING

Introduction and Methods

Ten bird survey routes were surveyed during June of 2008. Methods were based on the North American Breeding Bird Survey and modified to be usable as trail based survey instead of a road based one. The methods used are described in the document Standard Operating Procedures for Breeding Season Bird Surveys at Craters of the Moon National Monument and Preserve. The Standard Operating Procedures also contains descriptions and maps of the individual survey routes.

Results

In 2008 an annual total of 71,370 meters were surveyed, consisting of 175 survey points, as listed in Table 1. The total number of individuals was 1524. The greatest number (410) on Goodale's Cutoff 2 and the least (39) on the Caves Trails (Table 1). The mean number of birds per point ranged from 7.1 to 16.4. The number of species recorded per transect ranged from 7 on the Caves Trail to 39 on Little Cottonwood . The total number of species observed on all transects was 81. The mean number of species per point ranged from 2.4 to 7.5 with an average for all sites of 4.2.

The Brewer's Sparrow had the greatest number with 493 individuals recorded in 2008. They accounted for 28% of all individuals recorded. A record 16 species had total counts of 25 or more (table 2). In addition the Brewer's Sparrow these were Rock Wren (n = 184), Western Meadowlark (n = 107), Western Tanager (n = 85), American Coot (n = 85), Mourning Dove (n = 83), Spotted Towhee (n = 78), Mallard (n = 50), Sage Thrasher (n = 44), Brewer's Blackbird (n = 38), Violet-green Swallow (n = 36), Chipping Sparrow (n = 34), Blue-gray Gnatcatcher (n = 33), Lark Sparrow (n = 27), Vesper Sparrow (n = 27), Brown-headed Cowbird (n = 26), Mountain Bluebird (n = 26).

Brewer's Sparrows, Mourning Doves, and Rock Wrens, were recorded on all ten transects. Western Tanagers were recorded on nine transects. Violet-green Swallows were recorded on eight transects. No species was recorded on only seven transects. Brown-headed Cowbirds, Common Ravens, Chipping Sparrows, Spotted Towhees, and Vesper Sparrows were recorded on six transects. Dusky Flycatchers, Mountain Bluebirds, Sage Thrasher, and Western Meadowlarks were recorded on five transects.

Seven species were recorded on 25 or more points. These were Brewer's Sparrow at 118 points (67% of total), Rock Wren at 117 points (67% of total), Mourning Dove at 63 points (36% of total), Spotted Towhee at 54 points (31% of total), Western Meadowlark at 52 points (30% of total), Western Tanager at 51 points (29% of total), Sage Thrasher at 35 points (20% of total). Three species which had been

previously recorded only as rare incidental sightings were recorded on the formal spring surveys for the first time. These were Wilson's Phalarope, Willow Flycatcher, and Grasshopper Sparrow.

The aspen groves and riparian areas around Little Cottonwood Creek and Goodale's Cutoff not only had the highest number of species but also had several species that were not found elsewhere in the monument. These include Dusky Flycatcher, House Wrens, Song Sparrow, Fox Sparrow, Warbling Vireo, and several warblers.

Table 1. Craters of the Moon National Monument's 2008 Breeding Season Survey route summary

ROUTE	LENGTH (m)	# of stops	habitat types	# of indv. (N)	avg. birds per point	# of species on transect	avg.# species per point
Walking Routes							
Carey Kipuka	4250	18	2, 8, 9, 11, 31	127	7.1	20	4.2
Caves Trail	1000	5	2, 21	39	7.8	7	2.4
Little Cottonwood	3000	13	4, 5, 7, 18, 20, 2 4, 25, 26, 29	150	11.5	39	7.5
Sunset Flow	5750	24	4, 29, 34	251	10.5	13	3.3
Tree Molds	2250	10	2, 16, 22	106	10.6	18	6.5
Wood Road	3500	15	2, 34, 36, 41	123	8.2	17	4.8
Wilderness Trail	6000	25	1, 2, 6, 7, 16, 21, 22	217	8.7	17	4.6
Driving Route							
Goodale's Cutoff	19310	25	3, 4, 5, 20, 25, 26, 33, 34, 35, 36	239	9.6	35	4.9
Goodale's Cutoff 2	19310	25	2, 3, 25, 29, 33, 34, 36, 37	410	16.4	36	6.1
Loop Drive	7000	15	1, 2, 4, 16, 21, 22, 27	156	10.4	21	3.6
TOTALS	71370	175		1824	10.4	83	4.2

Habitat Codes:

- | | |
|---|--|
| 1 = Cinder Gardens | 22 = Limber Pine/Bitterbrush
(high total cover) |
| 2 = Low Vegetation Density Lava Flows | 23 = Limber Pine/Bitterbrush (high
density Limber Pine) |
| 3 = Medium Vegetation Density Lava Flows | 24 = Douglas-fir/Mountain Snowberry |
| 4 = Mountain Big Sagebrush/Bluebunch Wheatgrass | 25 = Upland Quaking Aspen |
| 5 = Mountain Big Sagebrush/Sandberg Bluegrass | 26 = Riparian |
| 6 = Mountain Big Sagebrush/Needlegrass | 27 = Developed Areas |
| 7 = Mountain Big Sagebrush/
Needle-and-thread/Cheatgrass | 29 = Rock outcrops |
| 8 = Mountain Big Sagebrush/Idaho Fescue | 31 = Isolated trees |
| 9 = Big Sagebrush/Cheatgrass | 33 = Misc. Wetlands |
| 11 = Three-tip Sagebrush/Idaho Fescue | 34 = Misc. Big Sagebrush |
| 18 = Bluebunch Wheatgrass/Idaho Fescue | 41 = Misc. juniper woodland |
| 20 = Great Basin Wildrye | |
| 21 = Limber Pine/Bitterbrush (low total cover) | |

Table 2. Species recorded during 2008 Breeding Season Surveys

Species	No. of birds	% of total	Rts. detected on	# of stops	% of stops
Canada Goose	9	0.5	GC2	1	0.6
Gadwall	1	<0.1	GC2	1	0.6
Mallard	50	2.7	GC2	1	0.6
Redhead	6	0.3	GC2	1	0.6
Ring-necked Duck	1	<0.1	GC2	1	0.6
Ruddy Duck	3	0.2	GC2	1	0.6
Chukar	1	<0.1	GC	1	0.6
Gray Partridge	1	<0.1	GC	1	0.6
Greater Sage-grouse	4	0.2	GC,SF	3	1.7
Turkey Vulture	21	1.2	LP	1	0.6
Northern Harrier	1	<0.1	GC	1	0.6
Red-tailed Hawk	3	0.2	GC,GC2	3	1.7
Golden Eagle	1	<0.1	GC	1	0.6
American Kestrel	3	0.2	CK,SF,TM	3	1.7
American Coot	85	4.7	GC2	1	0.6
Killdeer	4	0.2	GC2,WR	3	1.7
Wilson's Phalarope	1	<0.1	GC2	1	0.6
Rock Pigeon	23	1.3	CA	1	0.6
Mourning Dove	83	4.6	CA,CK,GC,GC2,LC,LP,TM,WT,SF,WR	63	36.0
Great Horned Owl	1	<0.1	SF	1	0.6
Common Nighthawk	3	0.2	GC,GC2	3	1.7
Black-chinned Hummingbird	1	<0.1	LC	1	0.6
Unidentified hummingbird	3	0.2	LC	2	1.1
Lewis' Woodpecker	6	0.3	GC,LC,TM	4	2.3
Red-naped Sapsucker	1	0.1	GC	1	0.6
Northern Flicker	4	0.2	CK,GC,GC2,LC	3	1.7
Western Wood-Pewee	5	0.3	GC2,LC,LP	3	1.7
Willow Flycatcher	1	<0.1	LC	1	0.6
Hammond's Flycatcher	6	0.3	LC,TM	5	2.9
Dusky Flycatcher	17	0.9	CK,GC,GC2,LC,TM	14	8.0
<i>Emmpidonax</i> sp.	2	0.1	LP,TM	2	1.1
Say's Phoebe	1	<0.1	CK	1	0.6

Route codes: CA = Caves Trail, CK = Carey Kipuka, GC = Goodale's Cutoff, GC2 = Goodale's Cutoff 2, LC = Little Cottonwood Road, LP = Loop Road, SF = Sunset Flow, TM = Tree Molds Trail, WT = Wilderness Trail, WR = Wood Road Trail

Table 2 (cont.) Species recorded during 2008 Breeding Season Surveys

Species	No. of birds	% of total	Rts. detected on	# of stops	% of stops
Eastern Kingbird	1	<0.1	GC2	1	0.6
Loggerhead Shrike	4	0.2	CK,SF,WR	4	2.3
Plumbeous Vireo	4	0.2	LC	2	1.1
Cassin's Vireo	3	0.2	GC,LC	3	1.7
Warbling Vireo	20	1.1	GC,GC2,LC	13	7.4
Clark's Nutcracker	17	0.9	LP,TM,WT	12	6.9
Black-billed Magpie	5	0.3	GC,GC2,LC	3	1.7
American Crow	5	<0.1	GC,LC	2	1.1
Common Raven	18	1.0	CK,GC2,LP,SF,WT,WR	16	9.1
Horned Lark	4	0.2	CK,SF	3	1.7
Barn Swallow	2	0.1	GC2	1	0.6
Tree Swallow	1	<0.1	LC	1	0.6
Violet-green Swallow	36	2.0	CA,CK,GC,GC2,LP,SF,TM,WT	18	10.3
Red-breasted Nuthatch	6	0.3	LC,LP,WT	5	2.9
White-breasted Nuthatch	1	<0.1	LC	1	0.6
Rock Wren	184	10.1	CA,CK,GC,GC2,LC,LP,SF,TM,WT,WR	117	66.9
House Wren	19	1.0	GC,GC2,LC,LP	13	7.4
Ruby-crowned Kinglet	5	0.3	LC	2	1.1
Blue-gray Gnatcatcher	33	1.8	LP,TM,WT,WR	17	9.7
Mountain Bluebird	26	1.4	CA,CK,LC,LP,WT	20	11.4
American Robin	5	0.3	LC,LP,WR	3	1.7
Sage Thrasher	44	2.4	CK, GC,GC2,SF,WT	35	20.0
European Starling	1	<0.1	GC	1	0.6
Orange-crowned Warbler	8	0.4	GC2,LC	6	3.4
Yellow Warbler	6	0.3	GC,LC	5	2.9
Yellow-rumped Warbler	1	<0.1	LC	1	0.6
Wilson's Warbler	6	0.3	GC,LC,TM	5	2.9
Western Tanager	85	4.6	CA,CK,GC,GC2,LC,LP,TM,WT,WR	51	29.1
Green-tailed Towhee	16	0.9	CK,GC,GC2,LC	13	7.4
Spotted Towhee	78	4.3	GC,GC2,LC,LP,TM,WT	54	30.9
Chipping Sparrow	34	1.9	CK,LC,LP,TM,WT,WR	19	10.9
Brewer's Sparrow	493	27.	CA,CK,GC,GC2,LC,LP,SF,TM,WR,WT	118	67.4

Route codes: CA = Caves Trail, CK = Carey Kipuka, GC = Goodale's Cutoff, GC2 = Goodale's Cutoff 2, LC = Little Cottonwood Road, LP = Loop Road, SF = Sunset Flow, TM = Tree Molds Trail, WT = Wilderness Trail, WR = Wood Road Trail

Table 2 (cont.) Species recorded during 2008 Breeding Season Surveys

Species	No. of birds	% of total	Rts. detected on	# of stops	% of stops
Vesper Sparrow	27	1.5	CK,GC,GC2,LC,SF,WR	22	12.6
Lark Sparrow	27	1.5	CK,GC,GC2,LC	15	8.6
Grasshopper Sparrow	1	<0.1	WR	1	0.6
Fox Sparrow	1	<0.1	LC	1	0.6
Song Sparrow	3	0.2	LC	2	1.1
Black-headed Grosbeak	1	<0.1	LP	1	0.6
Lazuli Bunting	21	1.2	GC,GC2,LC	15	8.6
Bullock's Oriole	13	0.7	GC,LC,WR	8	4.6
Red-winged Blackbird	7	0.4	GC,GC2	4	2.3
Western Meadowlark	107	5.9	CK,GC,GC2,SF,WR	52	29.7
Yellow-headed Blackbird	10	0.6	GC2	2	1.1
Brewer's Blackbird	38	2.1	CK,GC2,TM	14	8.0
Brown-headed Cowbird	26	1.4	CK,GC2,LC,LP,WT,WR	18	10.3
Cassin's Finch	8	0.4	LP,TM,WT	7	4.0
Red Crossbill	2	0.1	TM,WT	2	1.1
Pine Siskin	2	0.1	LC	2	1.1
American Goldfinch	2	<0.1	GC	1	0.6

Route codes: CA = Caves Trail, CK = Carey Kipuka, GC = Goodale's Cutoff, GC2 = Goodale's Cutoff 2, LC = Little Cottonwood Road, LP = Loop Road, SF = Sunset Flow, TM = Tree Molds Trail, WT = Wilderness Trail, WR = Wood Road Trail

CONCLUSION

The total number of birds observed was 1824. This was a 3% increase over 2006 ($n = 1775$) (fig 1). It was also a 34% increase over 2002 ($n = 1357$) which was the first year the full compliment of surveys was done (fig 1). In November 2000 the lands of the Preserve came under NPS management. In 2001 and 2002 four additional survey routes were added in the Preserve. This resulted in an increase in the number of points surveyed by 235%. The total number of birds continued to increase until 2004. Since that time the numbers have remained relatively stable (fig 1).

When only those routes that have been monitored for the entire ten years of the program are examined a somewhat different pattern is seen. A declining pattern is seen starting in 2000 (fig 2). For example the total count in 2004 was 564 this is a 21% drop from 1999 ($n = 712$). This pair of years was used because 1999 was the last year that the precipitation from January thru June was at or above average. With the return to near average rainfall in the period from March thru June of 2005 and 2006 overall numbers again increased with the highest number of birds yet counted recorded in 2008.

The number of species recorded showed a similar pattern to the overall numbers increasing until 2004 with numbers stable since then (fig 3). For only those six routes surveyed the entire six years the trend was again similar to the overall numbers for the same routes. The exception is that the number of species remained essentially level since 2001 when the total individuals dropped from 2001 to 2004. One additional observation of note was that four species which have been recorded in at least low numbers every year the surveys have been done were not observed in 2008. These were Black-capped Chickadee, Mountain Chickadee, MacGillivray's Warbler, and the Dark-eyed Junco. Each of these species was observed through incidental observations during the survey period but none were recorded during the actual surveys.

The breeding surveys show that CRMO still provides habitat for many sensitive species. This includes the most numerous species on the monument, the Brewer's Sparrow, which is on both the BLM and IDFG sensitive lists (Table 5). Most of these species have experienced substantial declines in either part or all of their range including the Snake River Plain. Although it showed a modest drop in 2008, the Brewer's Sparrow appears to have been stable or increasing at CRMO over the last ten years. The major changes in figure 5 coincide with increases in the monitoring effort in the Preserve in 2001 and 2002. The continued increases in numbers since 2004 coincide with a return to average or higher precipitation in the April to June period which has likely resulted in improved forage and cover. Patterns can also be seen in some other sagebrush associated species. The Loggerhead Shrike like the Brewer's Sparrow appears to have been quite stable in the period 2001 to 2008 (fig 6). Shrikes however are found in much lower numbers and to determine accurate trends for this species would require additional effort through targeted surveys and collection of productivity data. Sage Thrashers, which are also a sagebrush obligate, are shown in figure 7. They show a generally similar pattern to the Brewer's Sparrow but with a significant dip in 2004. They are also beginning to show decreasing pattern although slight as of this year. Thrasher are insectivorous and are more likely to respond to short term conditions than are the sparrows which will feed on seeds as well as insects.

One species for which a trend can be seen after 10 years of surveys is the Blue-gray Gnatcatcher. They were not detected in 1997 or 1998. Three birds were then observed in 1999 with numbers steadily increasing until 2008. This species was considered quite rare in the monument prior to this period (NPS 1997). In the west it is generally associated with pinyon/juniper woodlands (Cornell 2004). The use of

other pines is not well documented in this species. The limber pine stands where gnatcatchers occur at Craters of the Moon are unique and in many ways resemble pinyon stands in their structure and function. Other pinyon/juniper woodlands species also occur in these stands including Bushtit and Pinyon Jays. The colonization of the northern portions of Craters of the Moon by gnatcatchers may also be further indications of their continued northward expansion over the 20th century (Cornell 2004, Ellison 1992). This range expansion is thought to have been influenced by both fire suppression during the 1900s and climate change (Ellison 1992).

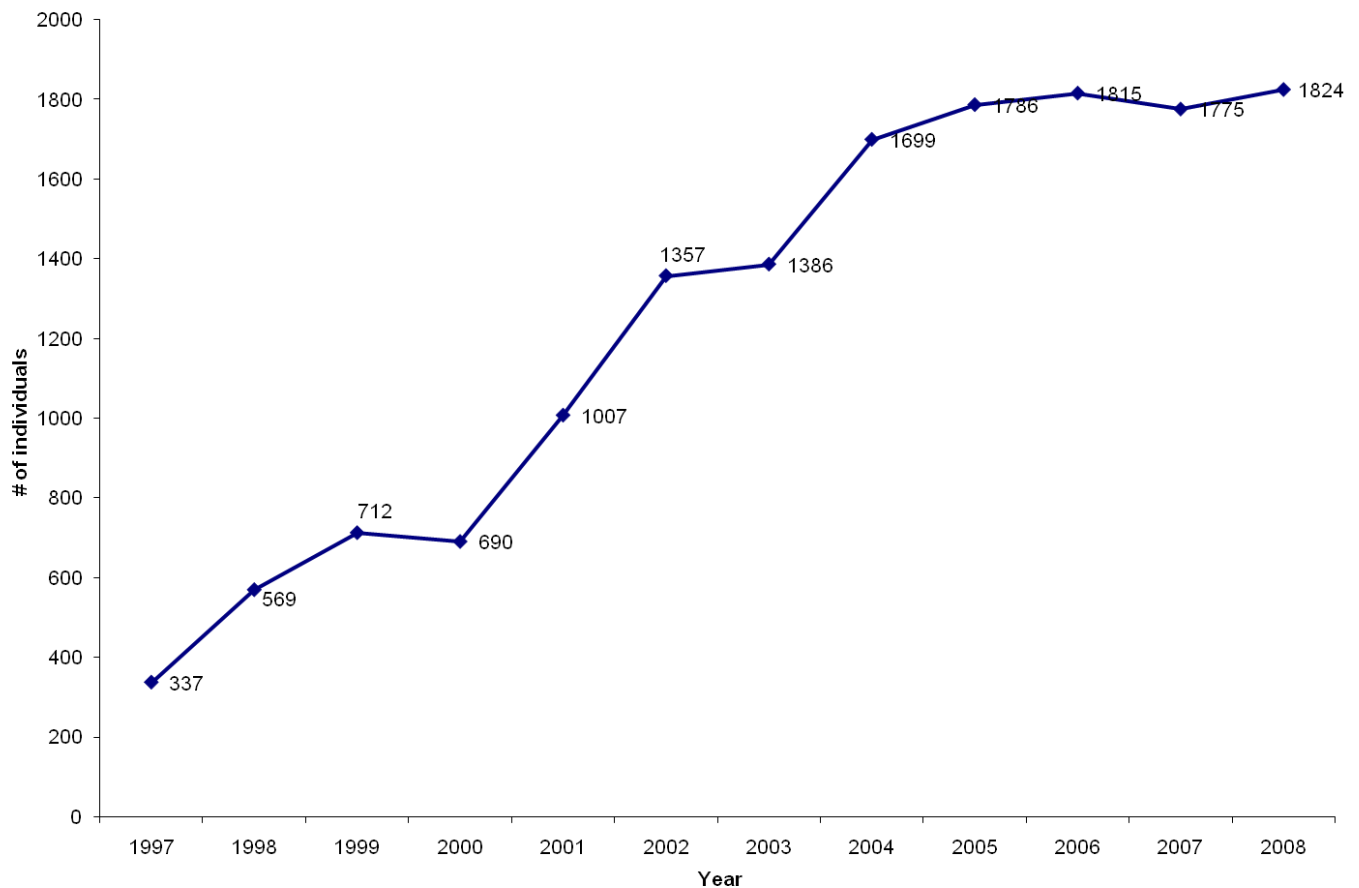


Figure 1. Total numbers of birds recorded during breeding season surveys 1997–2008

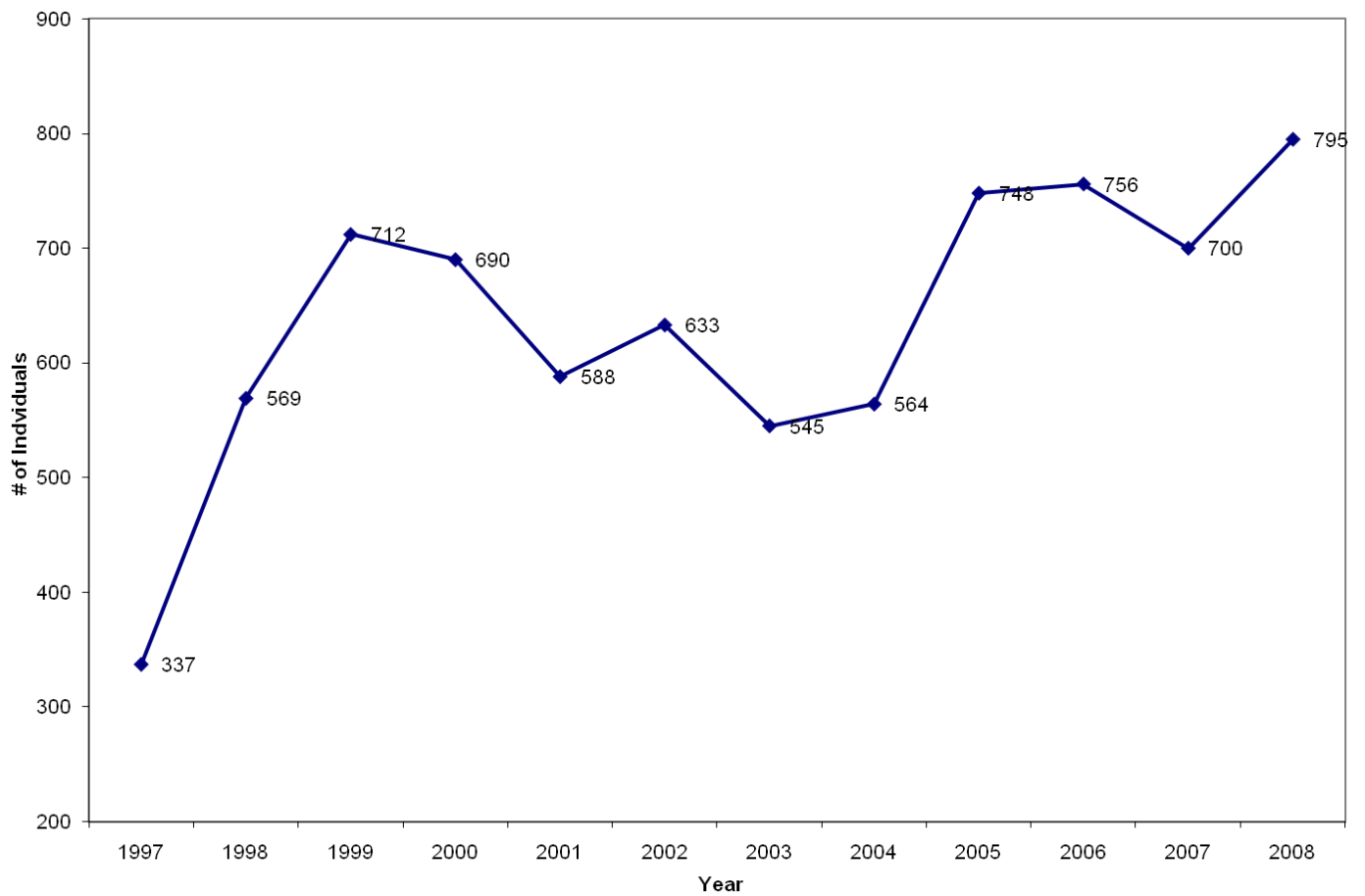


Figure 2. Numbers of birds recorded during breeding season surveys on the six routes surveyed during the years 1997-2008

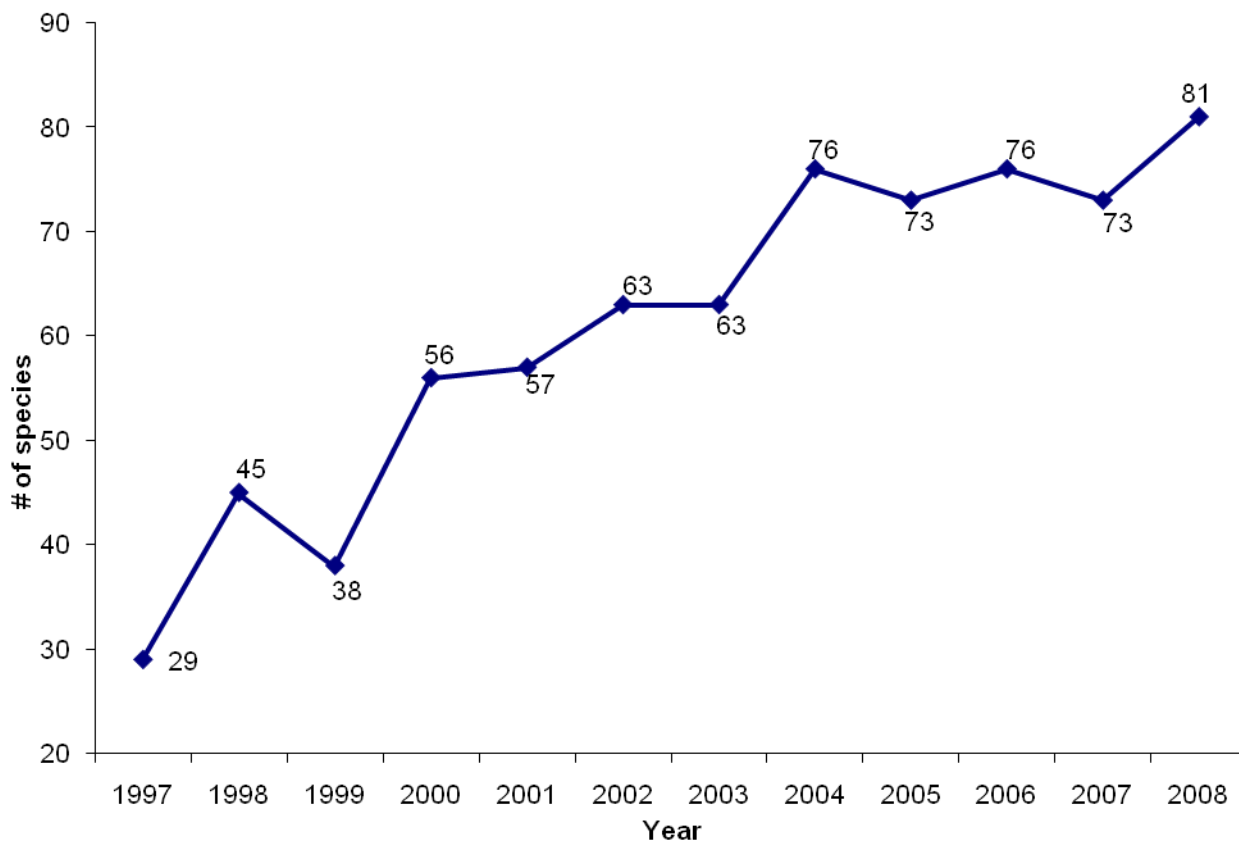


Figure 3. Number of species detected during breeding season surveys 1997-2008

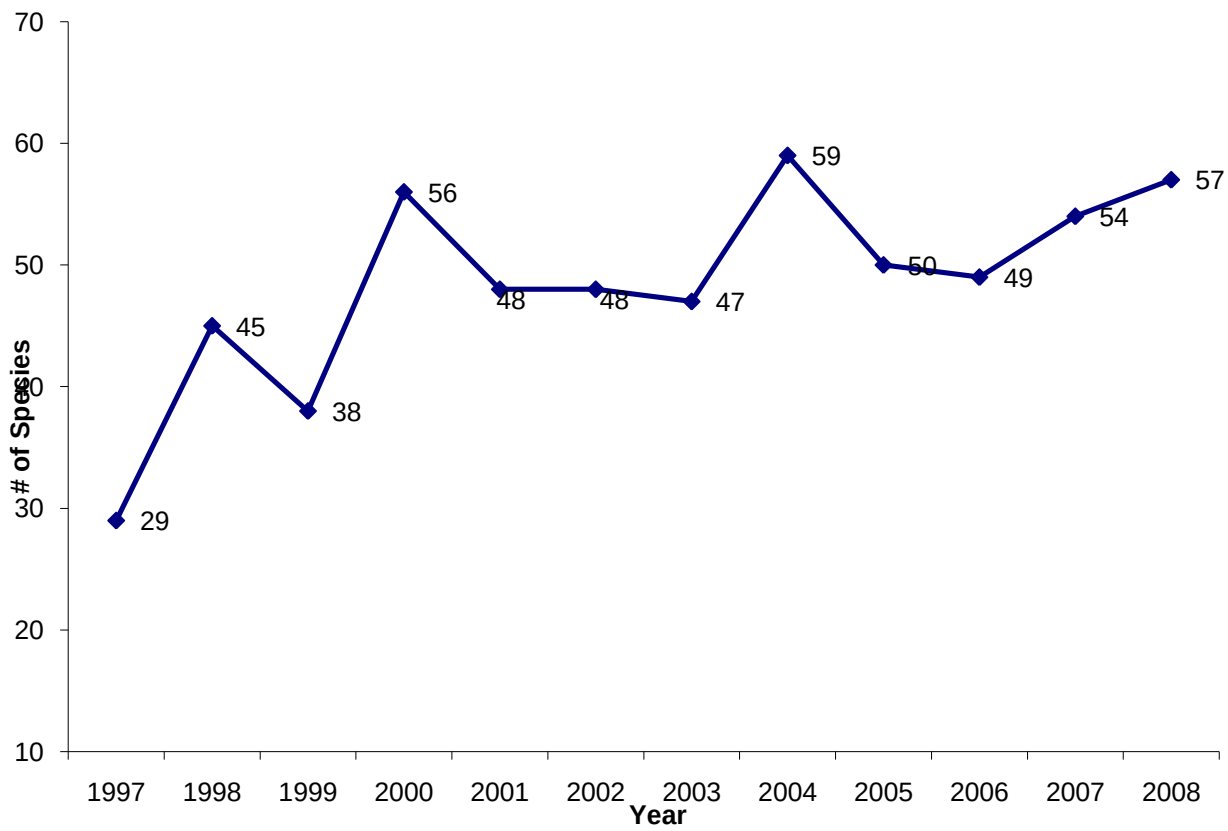


Figure 4. Number of species detected on the six routes surveyed during the years 1997-2008

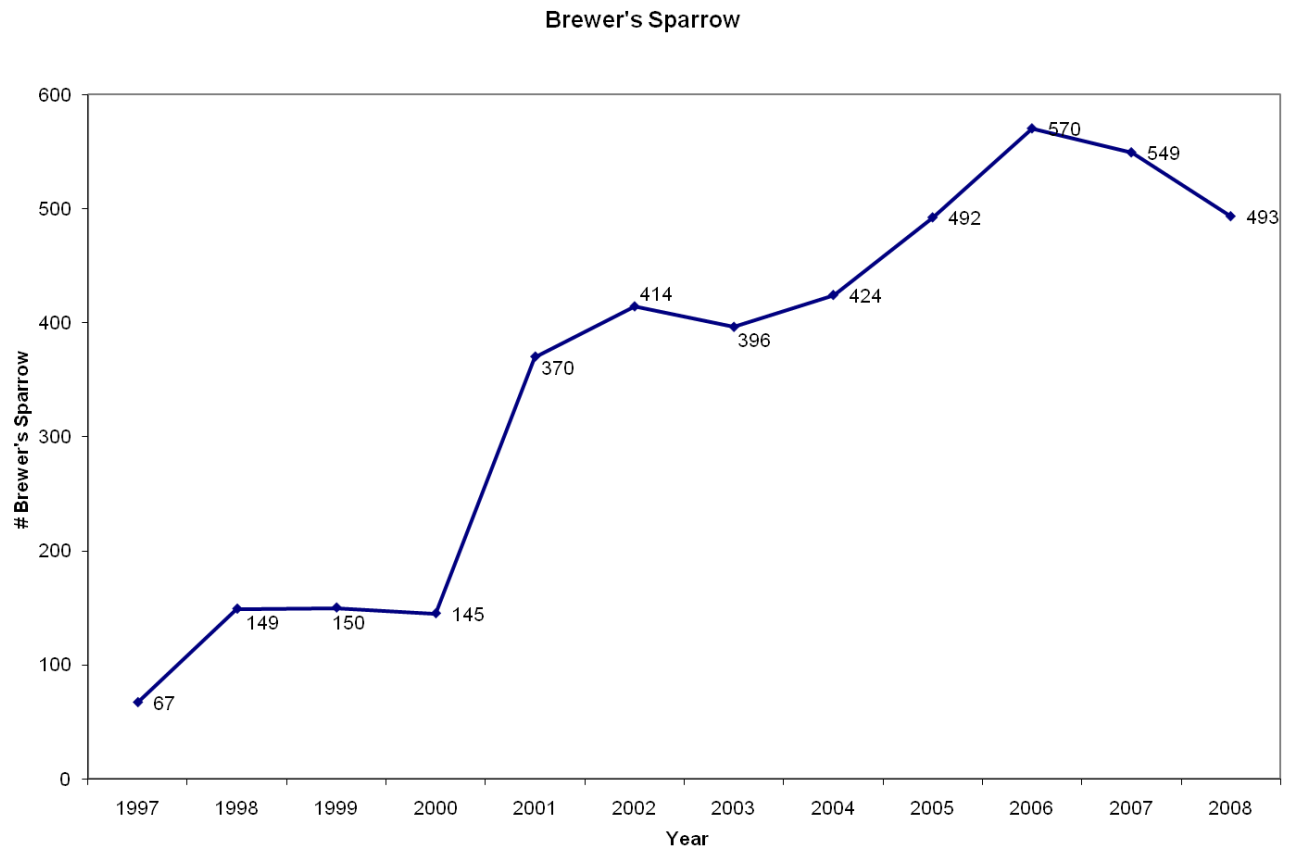


Figure 5. Numbers of Brewer's Sparrows observed in Breeding Season Surveys 1997-2008

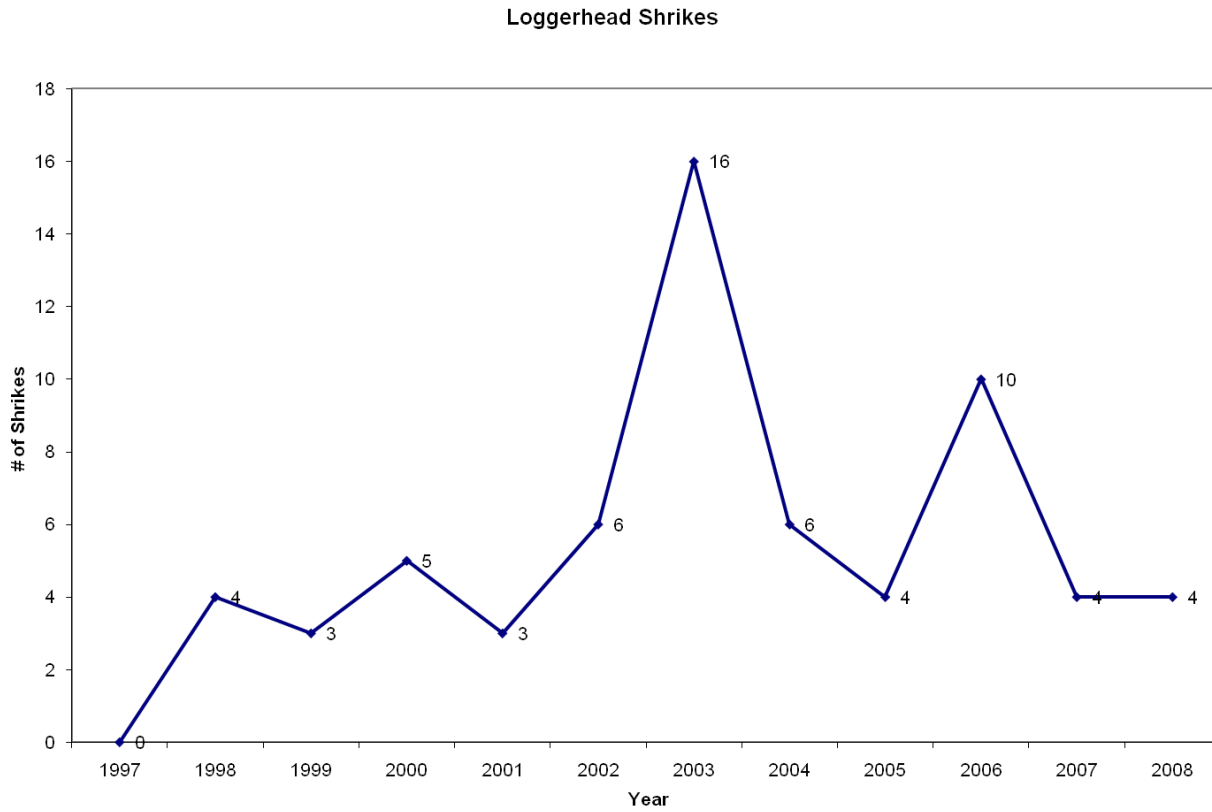


Figure 6. Numbers of Loggerhead Shrikes observed in Breeding Season Surveys 1997-2008

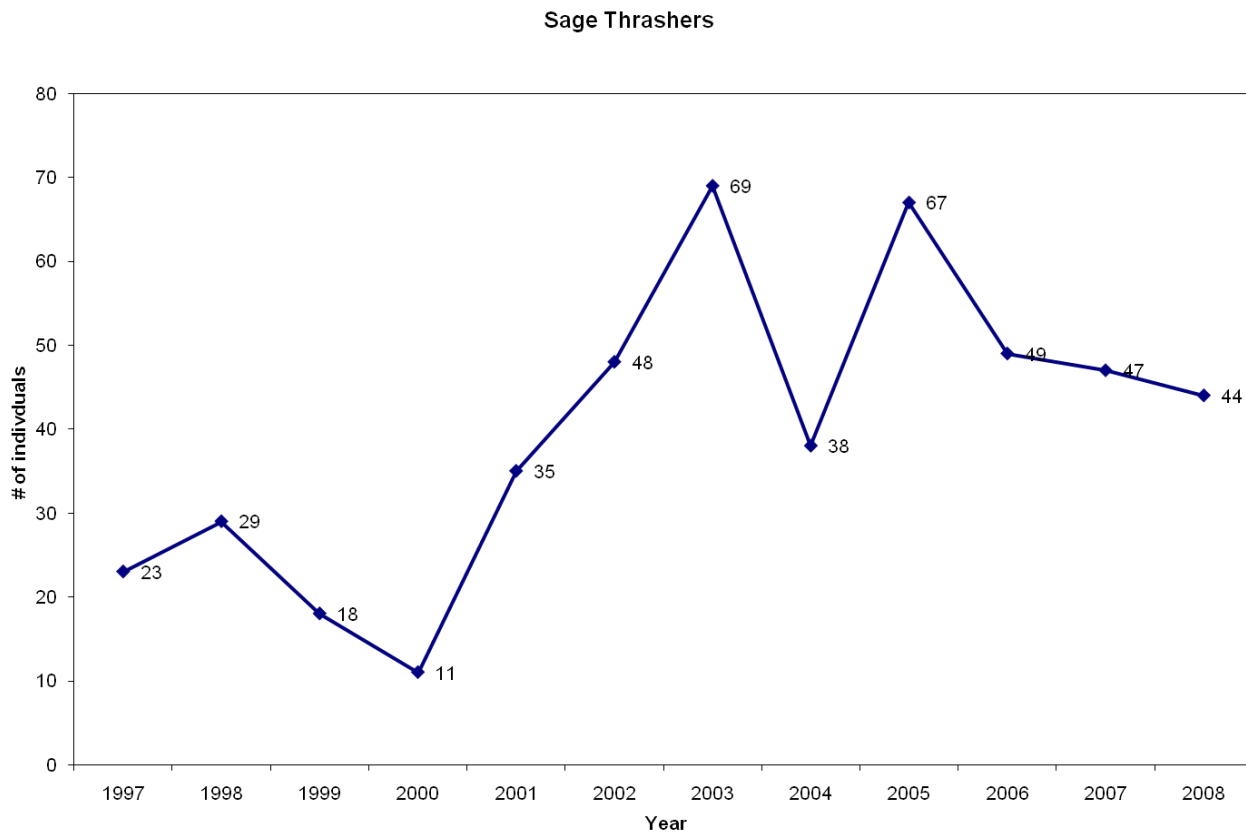


Figure 7. Numbers of Sage Thrashers observed in Breeding Season Surveys 1997-2008

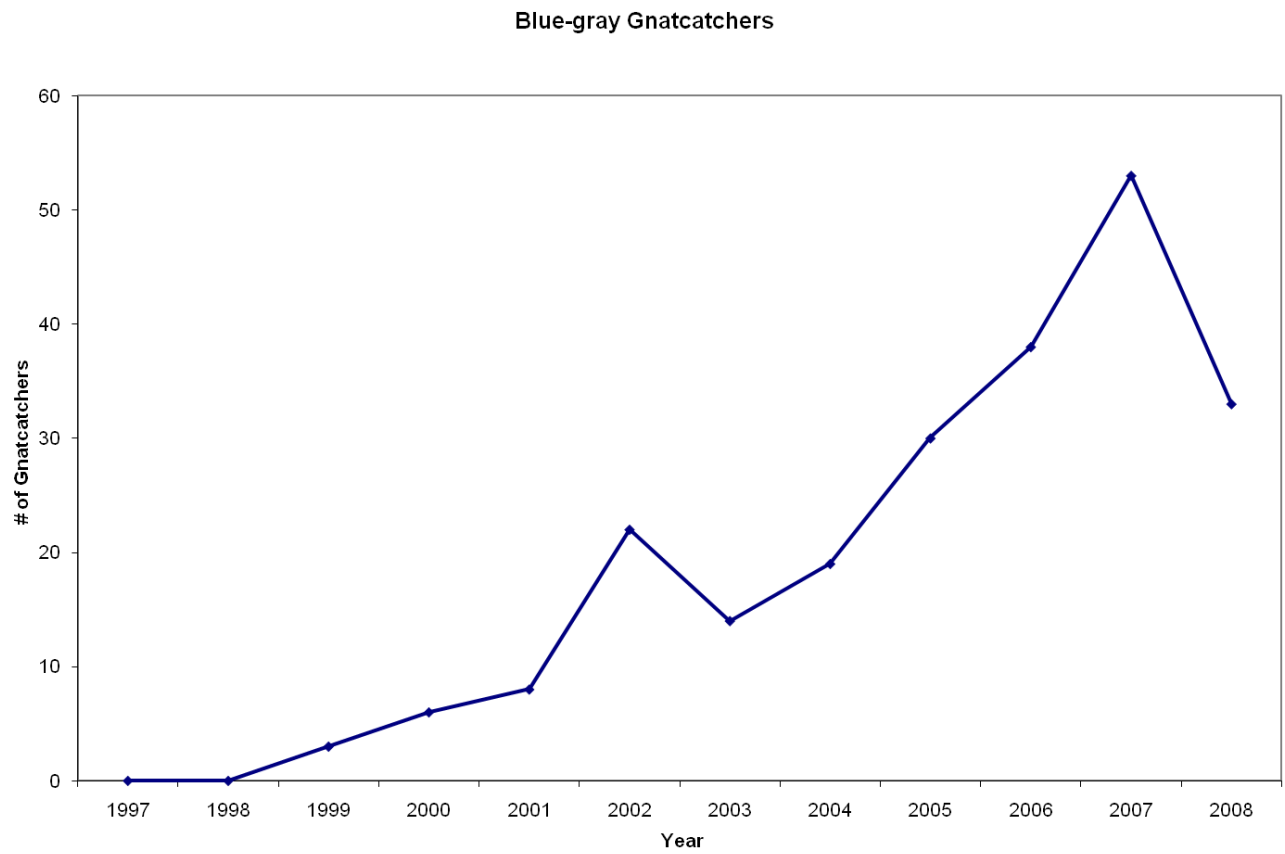


Figure 8. Numbers of Blue-gray Gnatcatchers observed in Breeding Season Surveys 1997-2008

GREATER SAGE-GROUSE MONITORING

Introduction and Methods

In April of 2004 monument staff initiated monitoring of Greater Sage-grouse leks on NPS managed lands. Lek surveys were performed using established methods used by the ID Department of Fish and Game (IDFG) and the BLM. These surveys consisted of three or four visits to designated leks within the Preserve during the month of April. Counting started as soon as light conditions allowed in the morning. Do to access conditions counts were done on foot and from an observation point near but outside the leks. When close enough together multiple leks were counted in a single morning but all counts were completed within 1.5 hours of sunrise. The standard lek forms in use by IDFG were used and copies were sent to IDFG for inclusion in the statewide database. A compilation of NPS and IDFG datasets shows 21 leks have been identified on NPS managed lands. From those 21 IDFG has classified 16 as inactive. This criteria is based on at least 10 years of surveys with no detections. No leks with status unknown are found on NPS managed lands at CRMO. During the period from 2004 to 2006 half of inactive historic leks were visited and no sage-grouse were detected on any visit. The remaining eight were not accessible without extended backpacking or aircraft. With over ten years of no observations these sites were then dropped from routine monitoring. One lek (New Lava #3 on the Grassy Flow near the edge of Little Park) is surveyed every other year and was last surveyed in 2007. The remaining six leks are all on the Sunset Flow and are in close proximity to each other. These leks are counted every year as a lek route which is used by the Idaho department of Fish and Game to determine trend data for the region. The group is called the Golden Chariot Complex for the largest of the leks. The Golden Chariot complex includes the Golden Chariot, MP 237, Lower Big Lost-Circular Water tank, Pressure Ridge, Blizzard Mountain Road, and Brodie Ranch leks. In 2008 theses leks were visited during the period from April 3-24. Each lek was visited four times during this period.

Results

The six lek sites of the Golden Chariot Complex were visited and counted four times each during the month of April. For the second year in a row the MP 237 and Pressure Ridge leks were visited but had no grouse observed on any visit. Since each of these is within ½ mile of either the Golden Chariot or the Brodie Ranch lek is assumed that these birds may have moved to the higher quality sites as each of these was associated with a road and disturbance by vehicles was high. The Brodie Ranch lek was discovered in 2006 while moving between two other leks on the route. In 2008 this lek had a peak count of 53 birds on the first visit on 16 March. This lek had a peak 27 birds recorded in 2006. The Lower Big Lost-Circular Water Tank lek had a peak count of 22 grouse this is lowest count in the last 10 years for this specific lek. This lek is partially in the preserve and about 2/3 on private land and is subject to heavy grazing of the private lands during the last half of the normal leking season. The Golden Chariot lek continued to be the largest count in the area. Counts ranged from a low of 29 on 3 April to a high of 63 on April 17. The peak count was 142 birds were seen on four of the six leks of the Golden Chariot complex.

Conclusions

For the first time since 2003 the high count for grouse in the Golden Chariot complex showed a decrease. The peak count in 2008 was 142 grouse on the leks. This was a 28% decrease from the 2007 high count of

196. The 2007 count was current record high count (figure 9). What may be most important for sage-grouse is that they are continuing to decline in most of the state. Lek routes run by the Idaho Department of Fish and Game in the north half of the Magic Valley region showed a 65% decline in numbers from 2006 to 2007. While only a one year snap shot, this is also a 55% decline from the five year average. By contrast the lek surveys in the Preserve showed 242% increase during the last five years. The 2008 count was only a 27% decrease over 2007. This is a relatively small change for a gallinaceous bird. This change may likely have been influenced by winter conditions and survival. The rolling five year average continues to rise with only a slight drop in the rate increase (fig 10).

The importance of CRMO to sage-grouse can be seen in these surveys. Not only is the Golden Chariot the largest count in the region but few lek routes in Idaho and no other route in the region showed an increase. None showed percentage increases of this size. The number of Greater-sage Grouse and other sagebrush obligates was cited as a primary factor in Craters of the Moon meeting the criteria and being recommended for designation as an Important Bird Area of global significance.

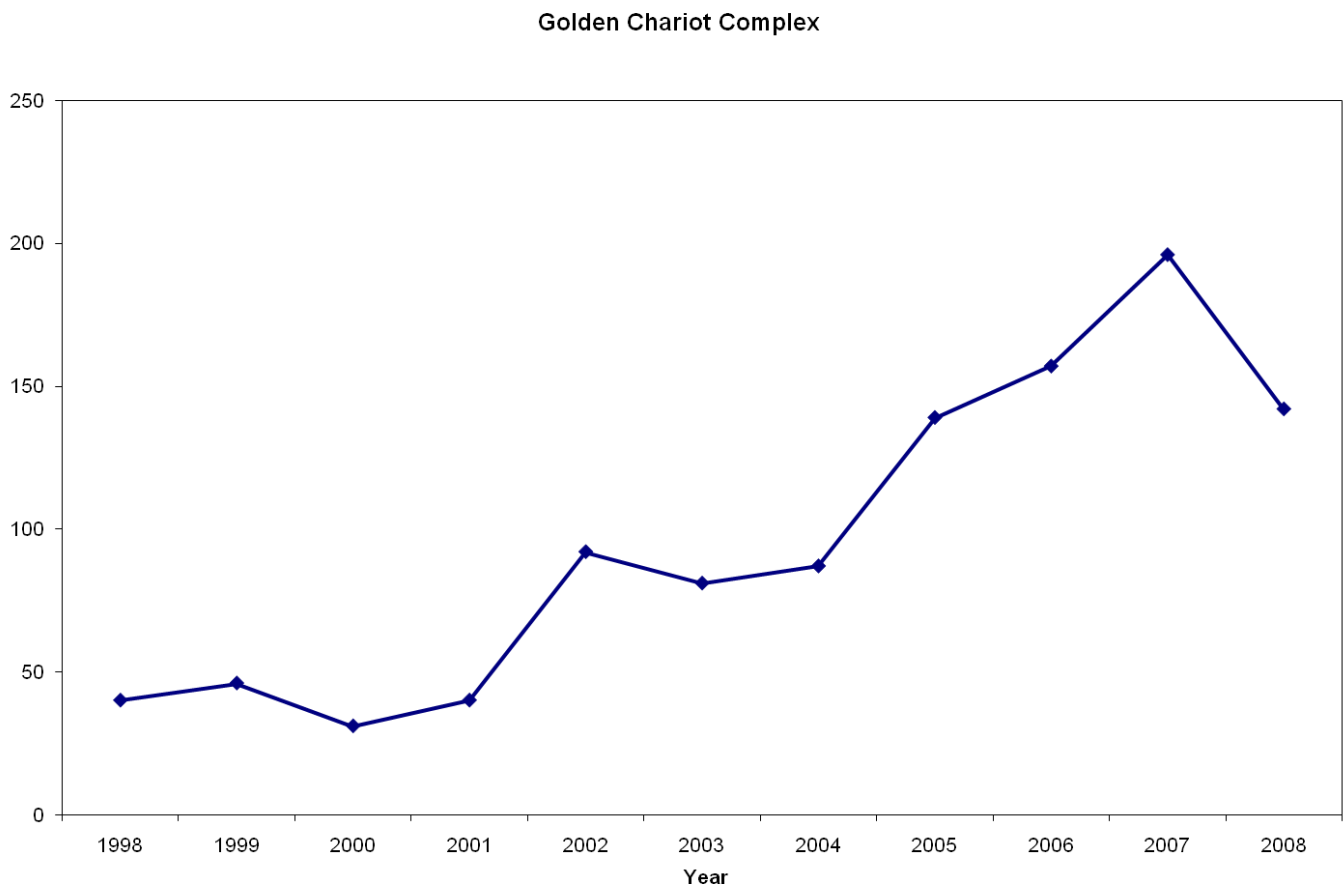


Figure 9. Numbers of Greater Sage-grouse on the Golden Chariot Lek Complex 2001-2008.

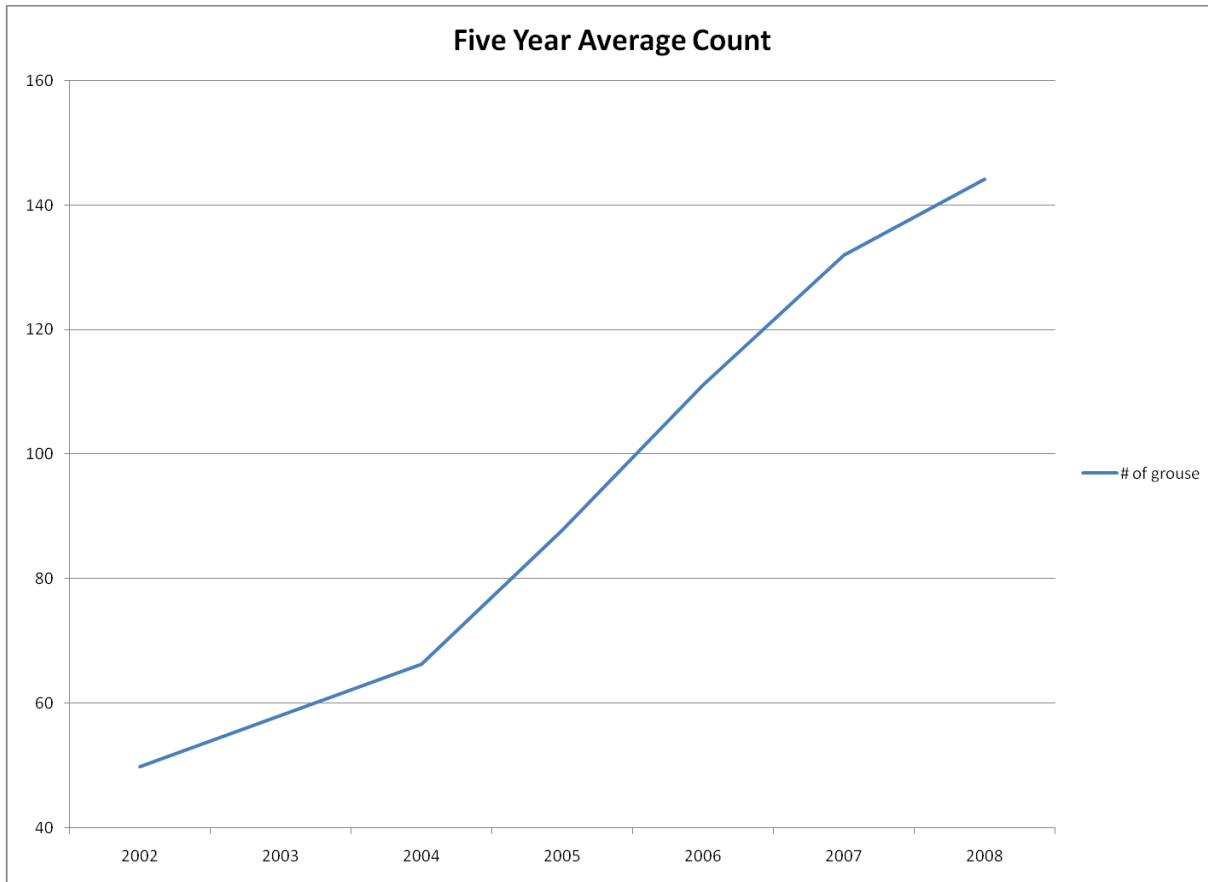


Figure 10. Rolling Five Year Average Count on the Golden Chariot Lek Complex.

Migrant Surveys

Introduction and Methods

Starting in 2002 migrant and spot surveys were also performed in habitats of interest. During 2008 these were Lava Lake and the adjacent lava flow, including the Preserve and all of Lava Lake; the hot springs cluster and the associated wetland, the survey included that portion of the marsh inside the livestock exclusion fence. The hot springs marsh was conducted as a walking transect. Lava Lake was performed as a long point count. Counts were generally performed until the observer felt all birds in the area were recorded. Counts were generally performed in the morning and the number of visits was opportunistic and varied between locations. During 2008 the number of visits was: 1 to the hot springs and 3 to Lava Lake.

Results and Conclusions

As in previous years the migrant surveys focused on water resources adjacent to the highway. A total of 49 species were seen on the migrant surveys at Lava Lake and the Hot Springs area (table 3). For the migrant surveys 16 species were recorded at the hot springs area and 32 species at Lava Lake. The number of species was reduced this year. This is likely due to a greatly reduced survey effort in 2008. These surveys are conducted sporadically as time allows and only 4 surveys were done in 2008.

Table 3. Species observed during migrant surveys during 2008

Species	Survey area			Species	Survey area		
	CHS	LL			CHS	LL	
Canada Goose		X		Killdeer		X	
Tundra Swan		X		Mourning Dove		X	
Gadwall		X		Northern Shrike	X		
American Wigeon		X		Black-billed Magpie		X	
Mallard		X		American Crow			
Northern Shoveler		X		Common Raven	X	X	
Cinnamon Teal		X		Violet-green swallow		X	
Green-winged Teal		X		Barn Swallow		X	
Redhead		X		Rock Wren		X	
Ring-necked Duck		X		Marsh Wren	X		
Lesser Scaup		X		Ruby-crowned Kinglet	X		
Bufflehead		X		Spotted Towhee		X	
Ruddy Duck		X		Song Sparrow	X		
Pied-billed Grebe		X		Fox Sparrow	X		
Eared Grebe		X		Dark-eyed Junco	X		
Western Grebe		X		White-crowned Sparrow	X	X	
Double-crested Cormorant		X		Lazuli Bunting	X		
Turkey Vulture		X		Red-winged Blackbird	X		
Northern Harrier	X	X		Yellow-headed Blackbird		X	
Golden Eagle		X		Brewer's Blackbird	X	X	
Chukar		X		American Goldfinch	X		
American Coot		X		Pine Siskin	X		
Virginia Rail	X			House Finch	X		
Sandhill Crane	X						

Area codes: CHS = The marsh and area adjacent to the hot springs near Carey Hot Springs, LL = Lava Lake

WINTER MONITORING

Introduction and Methods

In December of 2005 a Christmas Bird Count (CBC) was restarted in the area around the park headquarters. This count had not been done since 1969. The 2008 count was performed on December 15. The CBC is sponsored by the National Audubon Society. It is a volunteer count and 10 people including the public and park staff participated in the Craters of the Moon count. A map of the count circle is in appendix 2. Each group had at least one person experienced in bird identification. The count was conducted on 15 December 2008 from 0820 to 1600. The group was split into three parties. The number of party hours was 17. Number of participants was 10.

The other winter project is the Craters/Big Lost route of the Mid-winter Eagle Count. Although a US Fish and Wildlife Service (USFWS) administered program this route has been counted by NPS personnel since its inception. In 2008 this count was conducted on January 10 using standard procedures published by the USFWS. In addition to eagles other birds of prey and raven and shrikes are also recorded

Results and Conclusions

Christmas Bird Count

Number of species detected was 21 and number of individuals was 128. This annual survey has been conducted 6 times in the past. The 21 species recorded in 2008 is the second highest species count yet recorded (table 5). For the complete list of birds counted see table 4. For a summary of the 6 years see Table 5. Five of these species are either wintering birds or most common in winter so were not detected on other surveys at CRMO in 2008. One of these the American Tree Sparrow has not been previously recorded at CRMO. The individuals detected were on private ranch land several hundred yards outside of CRMO. However, this is a boreal species that regularly winters in the area. It frequently winters in riparian woodlands in Butte and Blaine Counties. It likely winters in the Pioneer Mountains area of CRMO but is difficult to observe due to the difficulty in access.

Mid-winter Eagle Count

The count was performed on January 10, 2008. Only one eagle was observed during the count. Several additional raptors were observed. These included 8 Rough-legged Hawks, 2 Red-tailed Hawks, 41 Common Raven, and one Northern Shrike. This was the first time since 2002 that no falcons were observed. Following the all time high count in 2007 no Northern Harriers were recorded in 2008. Ravens had the highest count since 2001 and the second highest count since the count was initiated in 1993.

Table 4. Birds recorded on the Craters of the Moon Christmas Bird Count 2008

Species	Number counted
Mallard	45
Green-winged Teal	3
Chukar	5
Greater Sage-grouse	5
Northern Harrier	1
Rough-legged Hawk	2
Unidentified Buteo	1
Golden Eagle, adult	1
Golden Eagle, immature	1
Virginia Rail	5
Rock Pigeon	2
Great Horned Owl	CW
Clark's Nutcracker	CW
Black-billed Magpie	13
Common Raven	5
Horned Lark	10
Mountain Chickadee	1
Marsh Wren	4
European Starling	1
Bohemian Waxwing	CW
American Tree Sparrow	3
Song Sparrow	6
Dark-eyed Junco	6
Snow Bunting	7
Gray-crowned Rosy-finch	CW
Common Redpoll	1

CW = species was recorded during the count week but not on the count day

Species in bold names are species not recorded on other surveys at CRMO

Table 5. Summary of Craters of the Moon Christmas Bird Count 1967-2008.

Year	Number of Species	Number of Individuals	Party Hours	Participants
1967	16	111	16	4
1969	9	49	10	1
2005	16	80	18	11
2006	20	258	15	8
2007	26	203	25	9
2008	21	128	17	10

General Conclusion and Summary

In all a total of 145 species were detected in 2008 (table 6). Of these, 81 were seen during the regular breeding season surveys and 49 were seen on the migrant surveys at Lava Lake and the Hot Springs area, (table 3). Although 3 species not previously recorded on spring surveys were detected on the counts; all of these had previously been recorded one or more times by incidental observations. No previously undocumented species during formal surveys.

Some of the incidental observations were of particular note. That was the observation of Eurasian Collared-dove at the visitor center. This sighting is the first documentation of this species at CRMO. This species was accidentally introduced in the Bahamas in 1975. It was able to reach Florida in 1982. As recently as 1996 the species was limited to the coastal region within 200 miles of the Gulf of Mexico. Since that time it has spread over all of North America from central Mexico to the southern 1/3 of Canada (Cornell 2008b). It is the fastest spread of any introduced vertebrate in North America. It is considered common in many areas of Southern Idaho (IBRC 2008). It is larger and may be very aggressive toward the native Mourning Dove. Observations of collared-doves driving Mourning Doves from food sources are becoming more common. The long term impacts of this exotic species on natives are unknown by are potentially significant. It is therefore important to determine whether birds migrating through CRMO become established and if so what impact they have on the native Mourning Dove.

In addition to the dove Barn Owl was documented in the Preserve for the first time. This was based on a record from inside King's Bowl. In June a single dead Barn Owl was identified in the rocks next to pond at the bottom of the crater. Barn Owls are well known along the Snake River near CRMO and were expected to occur in the southern areas of the Preserve. This species is a strict nocturnal forager and will be difficult to locate without nocturnal surveys.

Another observation of note was an Olive-sided Flycatcher seen in the Douglas-fir stand on Grassy Cone in June. This species is a mature conifer associate. The North American Breeding Bird Surveys has seen a 60% decline in this species throughout North America since the year 2000. As a result the Canadian Wildlife Service listed the species as endangered in the fall of 2007. The US Fish and Wildlife Service has been petitioned to list the species as threatened and will be doing a status review. The singing male observed was the first record at CRMO since 2000. Additional survey work targeting coniferous forest at CRMO may be necessary to determine if this species still breeds in the park.

Seventy-one species (49% of species detected in 2008) have been listed as a priority species by Idaho Partner's in Flight (IDPIF 2002), are identified by the Idaho Department of Fish and Game (IDFG 2005) as species of with the greatest conservation need, or as sensitive by the Bureau of Land Management (USBLM 2003) (Table 5).

Table 6. List of bird species identified at Craters of the Moon during 2008

Species	Survey detected on			
	Breed	CBC	Migrant	Incident
Canada Goose	X		X	
Snow Goose				X
Tundra Swan			X	
Gadwall	X		X	X
American Wigeon			X	
Mallard	X	X	X	X
Green-winged Teal		X	X	
Northern Shoveler			X	
Cinnamon Teal			X	X
Redhead	X		X	
Ring-necked Duck	X		X	X
Lesser Scaup			X	X
Bufflehead			X	
Ruddy Duck	X		X	X
Double-crested Cormorant			X	X
Great Blue Heron				X
Turkey Vulture	X			X
Northern Harrier	X	X	X	X
Cooper's Hawk				X
Swainson's Hawk				X
Red-tailed Hawk	X		X	X
Ferruginous Hawk				X
Rough-legged Hawk		X		X
Unidentified Buteo sp.				X
Bald Eagle				X
Golden Eagle	X	X	X	X
American Kestrel	X			X
Merlin				X

Prairie Falcon				X
Chukar	X	X		X
Gray Partridge	X			X
Dusky Grouse				X
Greater Sage-grouse		X		X
Pied-billed Grebe			X	X
Eared Grebe			X	X
Western Grebe			X	
American Coot	X		X	X
Virginia Rail		X	X	X
Sandhill Crane				X
Killdeer	X		X	X
Long-billed Curlew				X
Wilson's Phalarope	X			
Rock Pigeon	X	X		
Mourning Dove	X		X	X
Eurasian Collared-dove				X
Barn Owl				X
Burrowing Owl				
Great Horned Owl	X	X		X
Long-eared Owl				X
Short-eared Owl				X
Northern Saw-whet Owl				X
Common Nighthawk	X			X
Common Poorwill				X
Black-chinned Hummingbird	X			X
Broad-tailed Hummingbird				X
Rufous Hummingbird				X
Unidentified Hummingbird	X			
Lewis' Woodpecker	X			X
Hairy Woodpecker				X
Downy Woodpecker				X

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Red-naped Sapsucker	X			X
Northern Flicker	X			X
Olive-sided Flycatcher				X
Western Wood-pewee	X			
Unidentified <u>Empidonax</u> sp.	X			
Willow Flycatcher	X			X
Hammond's Flycatcher	X			X
Gray Flycatcher				X
Dusky Flycatcher	X			X
Cordilleran Flycatcher				X
Say's Phoebe	X			X
Western Kingbird				X
Eastern Kingbird	X			X
Northern Shrike			X	X
Loggerhead Shrike	X			X
Warbling Vireo	X			X
Plumbeous Vireo	X			X
Cassin's Vireo	X			X
Steller's Jay				X
Clark's Nutcracker	X	X		X
Black-billed Magpie	X	X	X	X
American Crow	X		X	X
Common Raven	X	X	X	X
Horned Lark	X	X		X
Violet-green swallow	X		X	X
N. Rough-winged Swallow				X
Tree Swallow	X			X
Cliff Swallow				X
Barn Swallow			X	X
Black-caped Chickadee				X
Mountain Chickadee		X	X	X
Red-breasted Nuthatch	X			X
White-breasted Nuthatch	X			X

Rock Wren	X		X	X
House Wren	X			X
Marsh Wren		X	X	X
Golden-crowned Kinglet	X			X
Ruby-crowned Kinglet	X		X	X
Blue-gray Gnatcatcher	X			X
Mountain Bluebird	X			X
Townsend's Solitaire				X
American Robin	X		X	X
Hermit Thrush				X
Swainson's Thrush				X
Gray Catbird				X
Sage Thrasher	X			X
European Starling	X	X		X
Cedar Waxwing				X
Bohemian Waxwing		X		X
Orange-crowned Warbler	X			X
Yellow Warbler	X			X
Yellow-rumped Warbler	X			X
MacGillivray's Warbler				X
Wilson's Warbler	X			X
Yellow-breasted Chat				X
Western Tanager	X			X
Green-tailed Towhee	X			X
Spotted Towhee	X		X	X
Dark-eyed Junco		X	X	X
Chipping Sparrow	X			X
American Tree Sparrow		X		
Brewer's Sparrow	X			X
Vesper Sparrow	X			X
Lark Sparrow	X			X
Savannah Sparrow				X
Grasshopper Sparrow	X			X

Fox Sparrow	X		X	X
Song Sparrow	X	X	X	X
White-crowned Sparrow			X	X
Black-headed Grosbeak	X			X
Snow Bunting		X		X
Lazuli Bunting	X		X	X
Red-winged Blackbird	X		X	X
Western Meadowlark	X			X
Yellow-headed Blackbird	X		X	X
Brewer's Blackbird	X		X	X
Brown-headed Cowbird	X			X
Bullock's Oriole	X			X
Gray-crowned Rosy-finch		X		X
Cassin's Finch	X			X
House Finch			X	X
Red Crossbill	X			X
Common Redpoll		X		X
American Goldfinch	X		X	X
Pine Siskin	X		X	X
Evening Grosbeak				X

Breed are species detected during the breeding season survey.

CBC are species detected during the Christmas Bird Count

Migrant are species detected during the migrant survey.

Incident are species from incidental observations during the year.

Species in Bold are species not previously recorded at CRMO

Table 7. List of special status species recorded during surveys.

Species	BLM	Idaho	PIF
Trumpeter Swan	S	C	P
Cinnamon Teal			P
Northern Pintail		C	
Redhead			P
Lesser Scaup		C	
Northern Harrier			P
Sharp-shinned Hawk			P
Northern Goshawk	S		P
Swainson's Hawk	W	C	P
Ferruginous Hawk	S	C	P
Bald Eagle	S	C	
Golden Eagle			P
Merlin		C	
Peregrine Falcon	S	C	P
Prairie Falcon	S		P
Dusky Grouse	W		P
Greater Sage-grouse	S	C	P
Sandhill Crane		C	P
Killdeer			P
Wilson's Phalarope	S	C	P
Burrowing Owl	S	C	P
Short-eared Owl	S	C	P
Black-chinned Hummingbird			P
Rufous Hummingbird			P
Lewis' Woodpecker	S	C	P
Red-naped Sapsucker	W		P
Hammond's Flycatcher	S		P
Gray Flycatcher			P
Dusky Flycatcher			P
Cordilleran Flycatcher	W		P
Olive-sided Flycatcher		C	P
Loggerhead Shrike	S		P
Plumbeous Vireo			P
Black-billed Magpie			P
Brown Creeper			P
Rock Wren			P
Sage Thrasher	W		P
MacGillivray's Warbler			P
Western Tanager			P
Green-tailed Towhee	W		P
Brewer's Sparrow	S	C	P
Lark Sparrow			P
Sage Sparrow	S		P
Grasshopper Sparrow	W	C	P
Lazuli Bunting			P
Tree Swallow			P
N. Rough-winged Swallow			P
Red-breasted Nuthatch			P
Mountain Chickadee			P

Marsh Wren			P
Ruby-crowned Kinglet			P
Blue-gray Gnatcatcher			P
Mountain Bluebird			P
Townsend's Solitaire			P
Say's Phoebe			P
Western Kingbird			P
Wilson's Warbler			P
Warbling Vireo			P
Clark's Nutcracker			P
Spotted Towhee			P
Chipping Sparrow			P
Black-throated Sparrow	S		P
Grasshopper Sparrow	S		P
Black-headed Grosbeak			P
Yellow-headed Blackbird			P
Bullock's Oriole			P
Western Meadowlark			P
Brewer's Blackbird	W		P
Black Rosy-finch			P
Cassin's Finch	S		P
Gray-crowned Rosy-finch			P

BLM species are listed as sensitive "S" or Watch "W"

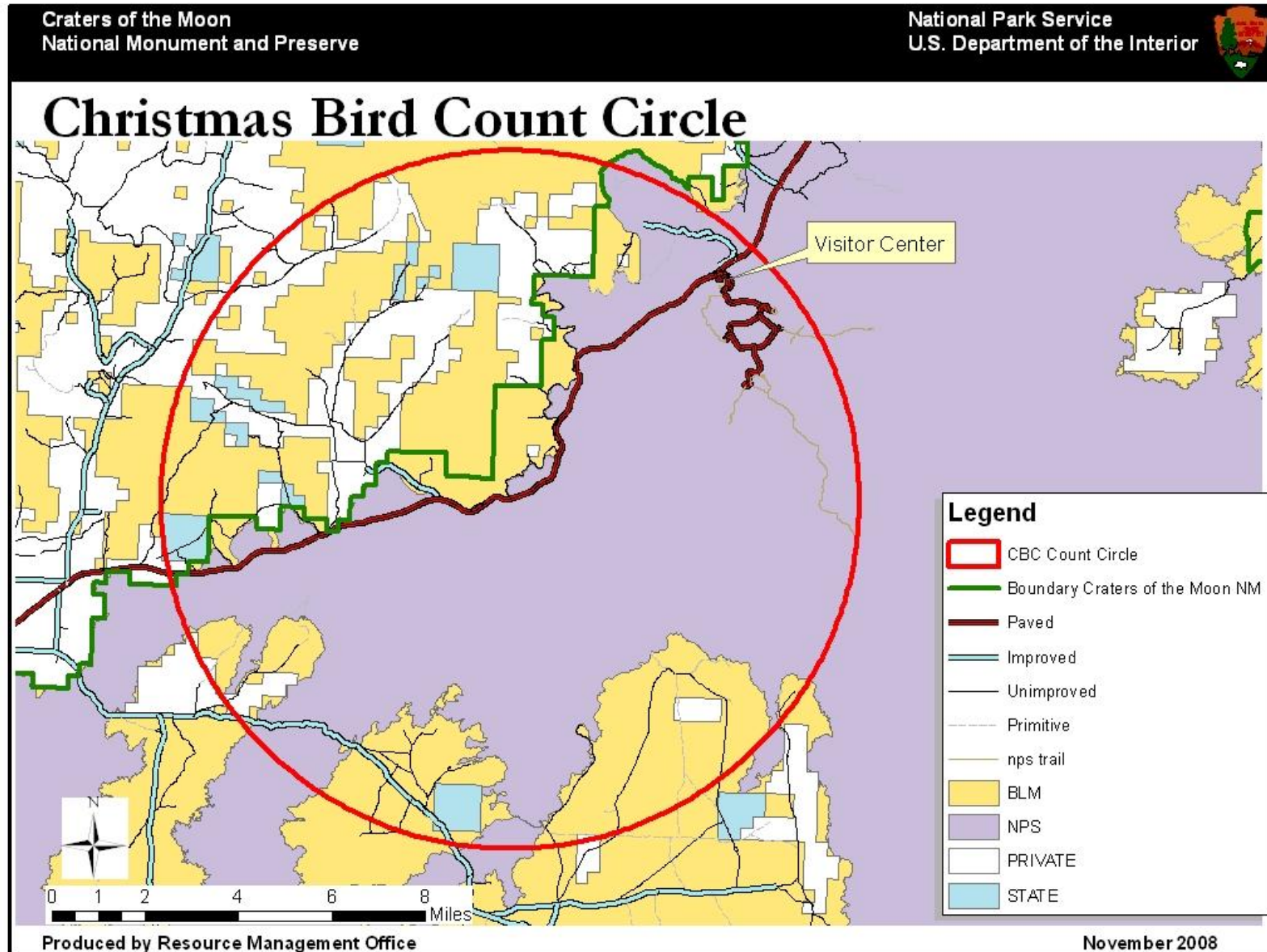
Idaho species are listed as a species of Greatest Conservation Need "C" or as threatened "T" by the state of Idaho

PIF species are species listed as Priority species in the Idaho Partners in Flight Idaho Bird Conservation Plan "P"

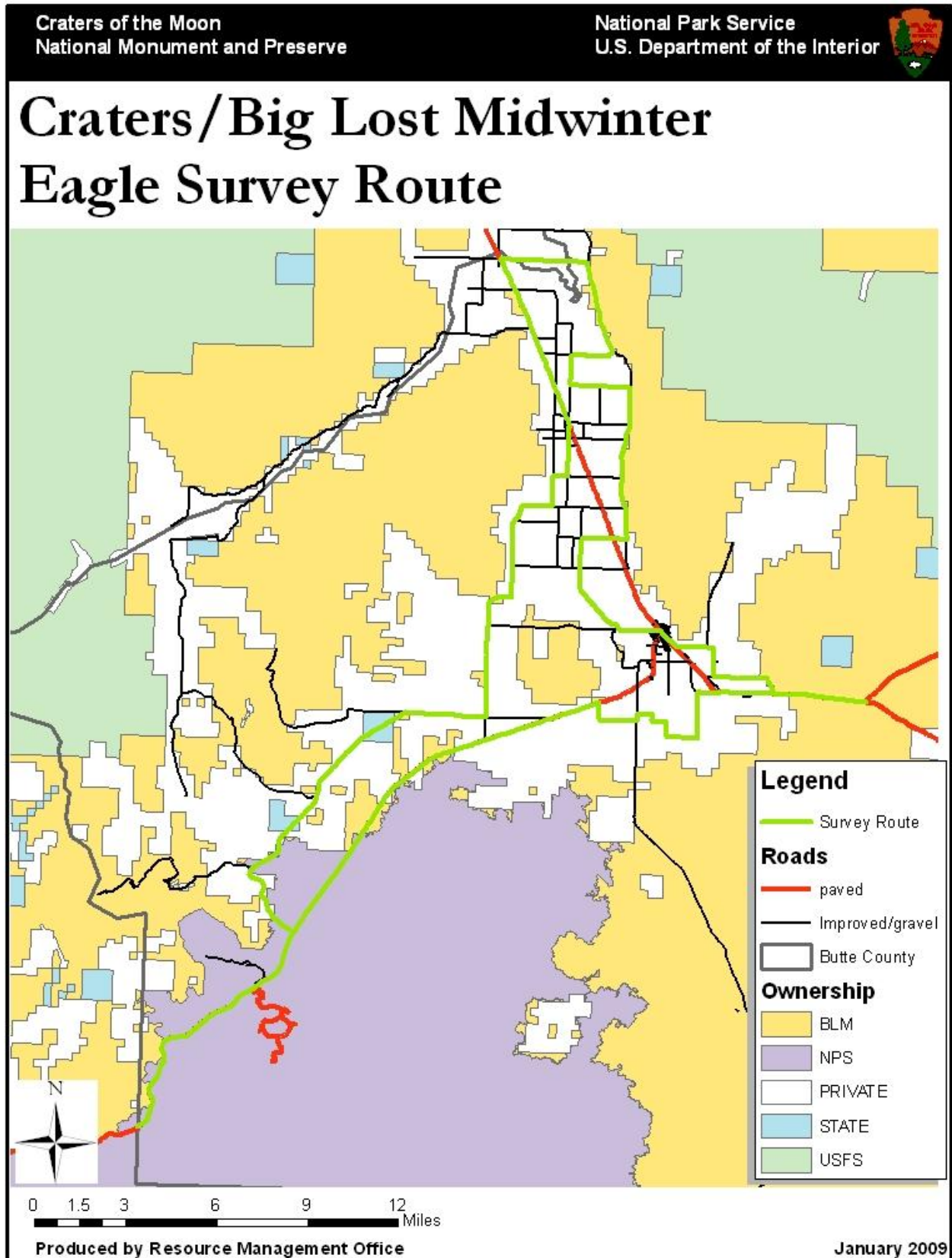
USFWS species listed as Birds of Conservation Concern by the US Fish and Wildlife Service

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Appendix 1. Location of the Craters of the Moon Christmas Bird Count



Appendix 2. Location of Midwinter eagle Count Survey Route.