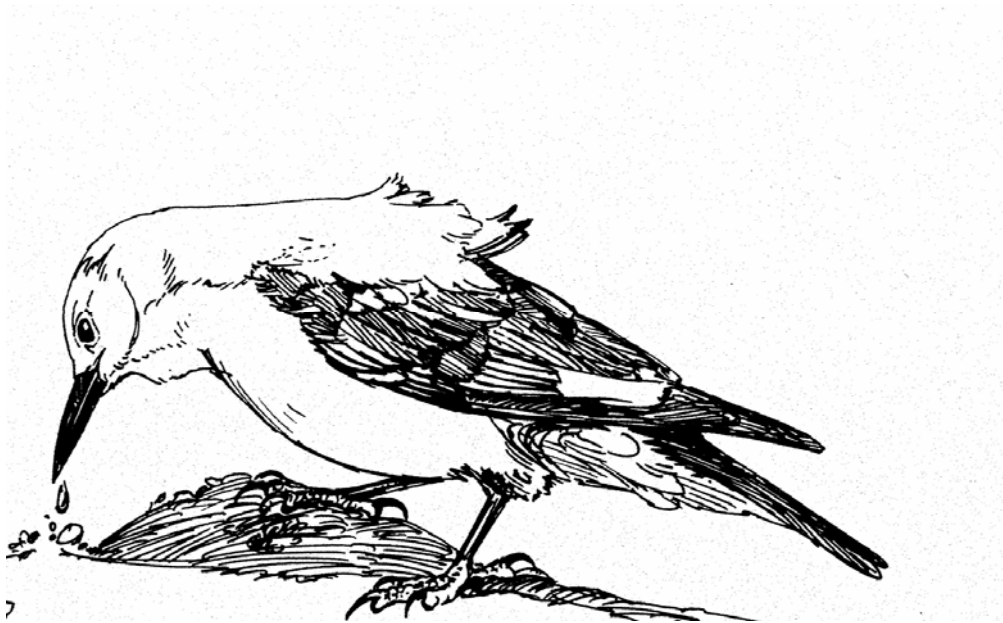


Summary of Bird monitoring at Craters of the Moon National Monument and Preserve 2006



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Executive Summary

Bird surveys were run on 10 point count transects during June of 2006. The surveys were performed on six routes that were established and first surveyed in 1997, with four additional routes in the Preserve added in 2001 and 2002. There were a total of 1815 individuals of 76 species observed on 167 point counts. The most numerous birds were Brewer's Sparrow, Rock Wren, Western Meadowlark, Spotted Towhee, Mourning Dove, Violet-green Swallow, Sage Thrasher, Mountain Bluebird, Brewer's Blackbird, and Western tanager. The Mourning Dove, Rock Wren, Brewer's Sparrow, Spotted Towhee, Common Raven, Lark Sparrow, Violet-green Swallow, Mountain Bluebird, American Robin, Sage Thrasher, Western Tanager, and Green-tailed Towhee and were all recorded on six or more of the transects.

A total of 132 species were recorded at CRMO during 2006. One, the Bushtit, of these had not been previously documented at CRMO. This is a woodland species that was observed during a butterfly survey in June. Fifty-four percent (74 of 131) of the species recorded are listed as sensitive by the state of Idaho, the BLM, the US Fish and Wildlife Service, or are a Partners in Flight priority species (Table 5).

Sage-grouse lek count were continued in 2006 and a total high count of 98 birds were observed on six leks that were visited. Two of these leks were previously undocumented and all 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 2006 count was done on December 18. Seven volunteers and two park staff participated in the count. Over the day 258 birds of 20 species were recorded.

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Craters of the Moon National Monument and Preserve Bird Monitoring 2006

INTRODUCTION AND METHODS

Ten bird survey routes were surveyed during June of 2006. 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. 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.

Additional Monitoring

Starting in 2002 migrant and spot surveys were also performed in habitats of interest. During 2006 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. In 2006 2 visits were made to Barn Creek Reservoir on the Lava Lake Ranch. This site while on private land is significant bird habitat and is within a couple hundred yards of the monument. The hot springs marsh and Barn Creek Reservoir were 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 performed at various times during the day and revisit intervals varied from 6 to 14 days. The number of visits was opportunistic and varied between locations. During 2006 the number of visits was: 2 to the hot springs, 5 to Lava Lake, and 2 to Barn Creek Reservoir.

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. Approximately $\frac{1}{4}$ of known and mapped historic leks are visited. It expected that specific leks will be visited on a 5 year rotation. As additional leks are located additional surveys may be needed to maintain the five year return schedule. During the 2006 season heavy snow prevented access to much of the Preserve during the lek season. Therefore the scheduled leks wer not accessed during 2006. The focus of the lek surveys was on the Golden Chariot complex. Four known leks were visited. Additionally two new locations were documented on or adjacent

to the Blizzard Mountain County Road. A total of six leks were visited. These were Golden Chariot, MP 237, Lower Big Lost, Pressure Ridge, Blizzard Mountain Road, and Brodie Ranch.

In December of 2005 a Christmas Bird Count (CBC) was restarted in headquarters. This count had not been done since 1969. The 2006 count was performed on December 18. The CBC is sponsored by the National Audubon Society. It is a volunteer count and in 2006 eight 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.

RESULTS

Breeding season surveys

In 2006 an annual total of 69,680 meters were surveyed, consisting of 167 survey points, as listed in Table 1. The total number of individuals was 1815. The greatest number (607) on the Sunset Flow and the least (51) on the Caves Trails (Table 1). The mean number of birds per point ranged from 7.7 to 12.8. The number of species recorded per transect ranged from 9 at Carey Kipuka to 34 on Goodale's Cutoff. The total number of species observed on all transects was 76. The mean number of species per point ranged from 3.9 to 6.1 with an average for all sites of 4.5.

The Brewer's Sparrow had the greatest number with 570 individuals recorded in 2006. They accounted for 28% of all individuals recorded. Other species with total counts of 25 or more included Rock Wren (n = 187, percent of total = 10.0), Western Meadowlark (n = 141, % = 6.3), Spotted Towhee (n = 119, % = 6.6), Mourning Dove (n = 101, % = 3.7), Violet-green Swallow (n = 54, % = 3.0), Sage Thrasher (n = 49, % = 2.7), Mountain Bluebird (n = 47, % = 2.3), Brewer's Blackbird (n = 44, % = 3.1), Western Tanager (n = 42, % = 2.3), Blue-gray Gnatcatcher (n = 38, % = 1.0), Lark Sparrow (n = 38, % = 1.0), Mallard (n = 32, % = 1.8), Clark's Nutcracker (n = 25, % = 1.1).

Mourning Dove and Rock Wren were recorded on all ten transects. Brewer's Sparrow were recorded on nine transects. Common Ravens were seen on eight transects. Larks Sparrows and Spotted Towhees were recorded on seven transects. Violet-green Swallows, Mountain Bluebirds, American Robins, Sage Thrasher, Western Tanager, and Green-tailed Towhee, were recorded on six transects.

Nine species were recorded on 25 or more points. These were Brewer's Sparrow at 120 points (72% of total), Rock Wren at 107 points (64% of total), Western Meadowlark at 64 points (38% of total), Spotted Towhee at 63 points (38% of total), Mourning Dove at 59 points (35% of total), Sage Thrasher at 34 points (20% of total), Western Tanager at 34 points (20% of total), Mountain Bluebird at 29 points (17% of total), Lark Sparrow at 29 (17% of total), and the Blue-gray Gnatcatcher at 26 points (16% of the total).

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.

Migrant Surveys and Incidental Observations

The total number of species detected was 134 in 2006 (table 4). Of these, 76 were seen during the regular breeding season surveys and 59 were seen on the migrant surveys at Lava Lake, the Hot Springs area, and Barn Creek Reservoir (table 3). One previously undocumented species (Bushtit) were documented in the Preserve during a butterfly survey. For the spring migrant surveys 13 species were recorded at the hot springs area, 33 species at Lava Lake and 24 species at Barn Creek.

Sage-grouse Lek Survey

Six lek sites were visited and counted two to four times each during the month of April. Two new leks were documented and visited 2 or 4 times depending on the date of initial documentation. Only the MP 237 lek was visited but had no grouse observed on any visit. This lek had a peak 37 birds recorded in 2005. The Lower Big Lost lek had a peak count of 38 grouse on the first visit. This lek is partially in the preserve and about 2/3 on private land. Once cows were observed on the lek in mid-April the maximum count was 8 birds. The Pressure Ridge lek had only one bird observed on April 19. The Golden Chariot lek continued to be the largest count in the area. Counts ranged from a low of 41 on April 13 to a high of 86 on April 19. In addition to these locations sage-grouse were observed displaying at 2 additional sites on the Blizzard Mountain County Road. The first was approximately 100 yards west of the intersection of Hwy 20/26 this location had 4 males observed on April 7 and no birds on subsequent visits. The second site was on private ranch land owned by Les Brodie as well as the county road and was named the Brodie Ranch lek. This site is adjacent to the Preserve and birds were seen retreating to the lava flows toward the end of the morning. This lek had counts ranging from 2 to a peak count of 27 at the time of its initial documentation on April 7. All of these locations are within 4 miles and the peak one day count was 98 grouse.

Christmas Bird Count

Was conducted on 18 December 2006 from 0900 to 1600. Two parties were counting in the morning and a third split off in the afternoon. The number of party hours was 16. Number of participants was 8. Miles driven was 41 miles walked was 10.5. Hours in vehicles was 3.5 hours on foot was 12.5. Three inches of snow on ground at count center with areas accessed snow depth ranged from 2 to 22 inches. Start temperature was 0 and the end temperature was 21. The maximum temperature was 25. Number of species detected was 20 and number of individuals was 258. This annual survey has been conducted 3 times in the past. The 20 species recorded in 2006 exceeds the previous high of 16 that was tallied in 2005 and 1968. For the complete list of birds counted see table 6 on page 18. For a summary of the 4 years see Table 7 on page 18.

Table 1. Craters of the Moon National Monument's 2006 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	2250	10	2, 8, 9, 11, 31	51	10.2	9	4.0
Caves Trail	1000	5	2, 21	81	8.1	16	4.3
Little Cottonwood	3000	13	4, 5, 7, 18, 20, 24, 25, 26, 29	101	7.8	28	5.8
Sunset Flow	5750	24	4, 29, 34	307	12.8	15	3.9
Tree Molds	2250	10	2, 16, 22	120	12.0	17	6.1
Wood Road	3500	15	2, 34, 36, 41	161	10.7	18	5.6
Wilderness Trail	6000	25	1, 2, 6, 7, 16, 21, 22	258	10.3	26	5.8
Driving Route							
Goodale's Cutoff	19715	25	3, 4, 5, 20, 25, 26, 33, 34, 35, 36	296	11.8	33	5.5
Goodale's Cutoff 2	19715	25	2, 3, 25, 29, 33, 34, 36, 37	295	11.8	34	5.0
Loop Drive	7000	15	1, 2, 4, 16, 21, 22, 27	295	11.8	34	5.0
TOTALS	70680	167		1815	10.9	76	4.5

Habitat Codes:

1 = Cinder Gardens
 2 = Low Vegetation Density Lava Flows
 3 = Medium Vegetation Density Lava Flows
 4 = Mountain Big Sagebrush/Bluebunch Wheatgrass
 5 = Mountain Big Sagebrush/Sandberg Bluegrass
 6 = Mountain Big Sagebrush/Needlegrass
 7 = Mountain Big Sagebrush/
 Needle-and-thread/Cheatgrass
 8 = Mountain Big Sagebrush/Idaho Fescue
 9 = Big Sagebrush/Cheatgrass
 11 = Three-tip Sagebrush/Idaho Fescue
 18 = Bluebunch Wheatgrass/Idaho Fescue
 20 = Great Basin Wildrye
 21 = Limber Pine/Bitterbrush (low total cover)

22 = Limber Pine/Bitterbrush
 (high total cover)
 23 = Limber Pine/Bitterbrush (high
 density Limber Pine)
 24 = Douglas-fir/Mountain Snowberry
 25 = Upland Quaking Aspen
 26 = Riparian
 27 = Developed Areas
 29 = Rock outcrops
 31 = Isolated trees
 33 = Misc. Wetlands
 34 = Misc. Big Sagebrush
 41 = Misc. juniper woodland

Table 2. Species recorded during 2006 Breeding Season Surveys

Species	No. of birds	% of total	Rts. detected on	# of stops	% of stops
American Coot	15	0.8	GC2	1	0.6
American Wigeon	2	<0.1	GC2	1	0.6
Gadwall	2	<0.1	GC2	1	0.6
Mallard	32	1.8	GC2	1	0.6
Turkey Vulture	3	<0.1	LP,SF	2	1.2
Northern Harrier	6	<0.1	GC,LC	6	3.6
Sharp-shinned Hawk	1	<0.1	GC	1	0.6
Red-tailed Hawk	1	<0.1	LP	1	0.6
Ferruginous Hawk	2	<0.1	CK,GC2	2	1.2
Prairie Falcon	1	<0.1	GC2	1	0.6
Killdeer	6	<0.1	GC2	3	1.8
Wilson's Snipe	1	<0.1	GC	1	0.6
Ring-necked Pheasant	1	<0.1	WR	1	0.6
Chukar	6	<0.1	LC,GC,GC2,SF	5	3.0
Gray Partridge	6	<0.1	CK	1	0.6
Greater Sage-grouse	1	<0.1	CK	1	0.6
Dusky Grouse	1	<0.1	GC	1	0.6
Mourning Dove	101	3.7	CA,CK,GC,GC2,LC,LP,TM,WT,SF,WR	59	3.5
Common Nighthawk	14	0.1	CK,GC,GC2,LP,SF	7	4.2
Black-chinned Hummingbird	1	<0.1	LP	1	0.6
Rufous Hummingbird	1	<0.1	LC	1	0.6
Unidentified hummingbird	2	<0.1	CA,GC2	2	1.2
Lewis' Woodpecker	2	<0.1	GC	1	0.6
Hairy Woodpecker	1	<0.1	LC	1	0.6
Northern Flicker	14	0.8	CK,GC,LC,WT,WR	11	7.8
Says Phoebe	3	<0.1	GC,LP	3	1.8
Western Wood-Pewee	2	<0.1	GC,LP	2	1.2
Hammond's Flycatcher	2	<0.1	LC,WT	2	1.2
Dusky Flycatcher	9	<0.1	GC,GC2,LC,TM	9	5.4
Western Kingbird	1	<0.1	WR	1	0.6
Eastern Kingbird	1	<0.1	GC2	1	0.6
Loggerhead Shrike	10	<0.1	CKGC2,WT,WR	8	4.8
Warbling Vireo	7	<0.1	LC	5	3.0

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 2006 Breeding Season Surveys

Species	No. of birds	% of total	Rts. detected on	# of stops	% of stops
Clark's Nutcracker	25	1.1	GC,LP,TM,WT	17	10.2
Black-billed Magpie	2	<0.1	GC2,WR	2	1.2
American Crow	3	<0.1	GC	2	1.2
Common Raven	24	1.2	CA,CK,GC,GC2,LP,SF,TM,WR	23	13.8
Horned Lark	5	<0.1	SF	1	0.6
Tree Swallow	1	<0.1	GC	1	0.6
Violet-green Swallow	54	3.0	CA,GC,LP,TM,SF,WT	17	10.2
Rock Wren	187	10.0	CA,CK,GC,GC2,LC,LP,SF,TM,WT,WR	10	64.1
House Wren	5	1.3	LC,GC	3	1.8
Blue-gray Gnatcatcher	38	1.0	LP,TM,WT,WR	26	15.6
Mountain Bluebird	47	2.3	CA,CK,GC,LP,TM,WT	29	17.4
American Robin	15	0.8	CA,GC,GC2,LC,LP,WT	14	8.4
Northern Mockingbird	1	<0.1	WR	1	0.6
Sage Thrasher	49	2.7	CK,SF,GC,GC2,WT	34	20.4
Cedar Waxwing	1	<0.1	LC	1	0.6
Orange-crowned Warbler	2	<0.1	GC,LC	2	1.2
Yellow Warbler	11	0.6	GC2,LC	9	5.4
MacGillivray's Warbler	1	<0.1	GC	1	0.6
Western Tanager	42	2.3	CA,GC,GC2,LC,LP,TM,WT	34	20.4
Green-tailed Towhee	11	0.6	CK,GC,GC2,TM,WT,WR	11	6.6
Spotted Towhee	119	6.6	CK,GC,GC2,LC,LP,TM,WT	63	37.7
Dark-eyed Junco	2	<0.1	LC	1	0.6
Chipping Sparrow	16	0.9	LC,LP,TM,WT	9	5.4
Brewer's Sparrow	570	27.5	CA,CK,GC,GC2,LC,LP,TM,WT,SF	120	71.9
Vesper Sparrow	8	0.4	GC,SF	7	4.2
Lark Sparrow	38	2.8	GC,GC2,LC,LP,SF,WT,WR	29	17.4
Black-throated Sparrow	2	<0.1	LP,WT	2	1.2
Fox Sparrow	4	<0.1	LC	4	2.4
White-crowned Sparrow	1	<0.1	WR	1	0.6
Song Sparrow	3	<0.1	LC	3	3.6
Black-headed Grosbeak	6	0.3	LC,WT,WR	6	3.6

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

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Lazuli Bunting	17	0.9	GC,GC2,LC	17	10.1
Bullock's Oriole	8	0.4	GC,WR	6	3.6
Red-winged Blackbird	22	1.2	GC,GC2	2	1.2
Western Meadowlark	141	6.3	CK,GC,GC2,SF,WR	64	38.3
Yellow-headed Blackbird	18	1.0	GC2	1	0.6
Brewer's Blackbird	44	3.1	CK,LP,GC,GC2,SF	18	10.8
Brown-headed Cowbird	18	2.8	LP,GC2,WR	9	5.4
Pine Siskin	3	<0.1	LP,LC	2	1.2
Cassin's Finch	23	<0.1	LC,LP,TM,WT	16	9.6

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 3. Species observed during migrant surveys during 2006

Species	Survey area			Species	Survey area		
	CHS	LL	BCR		CHS	LL	BCR
Canada Goose		X		Willow Flycatcher			X
Tundra Swan		X		Dusky Flycatcher	X		
Gadwall		X		Eastern Kingbird		X	
American Wigeon			X	Warbling Vireo	X		
Mallard		X		Clark's Nutcracker			
Northern Shoveler		X		Black-billed Magpie	X		X
Cinnamon Teal		X		American Crow			X
Redhead		X	X	Common Raven		X	
Canvasback		X	X	Violet-green swallow		X	
Ring-necked Duck		X		N. Rough-winged Swallow		X	
Lesser Scaup		X	X	Barn Swallow		X	
Bufflehead		X		Rock Wren	X		
Common Goldeneye		X					
Ruddy Duck		X		Marsh Wren	X		
Common Merganser		X					
Gray Partridge		X	X	American Robin			X
Pied-billed Grebe		X		Sage Thrasher			X
Eared Grebe		X		European Starling			X
Great Blue Heron			X	Yellow Warbler			X
Turkey Vulture		X		Common Yellowthroat	X		
Northern Harrier	X			Spotted Towhee			X
Red-tailed Hawk		X		Song Sparrow		X	
American Coot		X	X	Black-headed Grosbeak			X
Virginia Rail				Lazuli Bunting	X		
Killdeer		X		Red-winged Blackbird	X	X	X
Spotted Sandpiper		X		Western Meadowlark	X	X	X
Wilson's Snipe			X	Yellow-headed Blackbird		X	X
Wilson's Phalarope				Brewer's Blackbird		X	X
Mourning Dove	X		X	Brown-headed Cowbird	X	X	
Northern Flicker			X	House Finch		X	
Western Wood-pewee			X				

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

Table 4. List of bird species identified at Craters of the Moon during 2006

Species	Survey detected on			
	Breed	CBC	Migrant	Incident
Snow Goose				X
Canada Goose			X	X
Tundra Swan			X	X
Gadwall	X		X	X
American Wigeon	X		X	
Mallard	X		X	X
Northern Shoveler			X	X
Cinnamon Teal			X	X
Canvasback			X	
Redhead			X	X
Ring-necked Duck			X	X
Lesser Scaup			X	X
Bufflehead			X	X
Common Goldeneye			X	
Common Merganser			X	X
Ruddy Duck			X	X
Chukar	X			X
Gray Partridge	X		X	X
Ring-necked Pheasant	X			X
Dusky Grouse	X			X
Greater Sage-grouse	X			X
Pied-billed Grebe			X	
Eared Grebe			X	X
Double Crested Cormorant				
Great Blue Heron			X	X
Turkey Vulture	X		X	X
Northern Harrier	X		X	X

Sharp-shinned Hawk	X			
Cooper's Hawk				X
Swainson's Hawk				X
Red-tailed Hawk	X		X	X
Ferruginous Hawk	X			
Rough-legged Hawk				X
Unidentified Buteo sp.		X		X
Bald Eagle		X		X
Golden Eagle		X		X
American Kestrel				X
Prairie Falcon	X			X
American Coot	X		X	X
Virginia Rail		X	X	
Sandhill Crane				X
Killdeer	X		X	X
Spotted Sandpiper			X	
Wilson's Snipe	X		X	X
Wilson's Phalarope			X	
Rock Pigeon				X
Mourning Dove	X		X	X
Burrowing Owl				X
Great Horned Owl				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
Rufous Hummingbird	X			X
Unidentified Hummingbird	X			

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

Brown Creeper		X		
Rock Wren	X		X	X
House Wren	X			X
Marsh Wren		X	X	
Ruby-crowned Kinglet		X		X
Blue-gray Gnatcatcher	X			X
Mountain Bluebird	X			X
Townsend's Solitaire				X
American Robin	X		X	X
Hermit Thrush				X
Northern Mockingbird	X			
Sage Thrasher	X		X	X
European Starling			X	
Cedar Waxwing	X			X
Bohemian Waxwing				X
Orange-crowned Warbler	X			X
Yellow Warbler	X		X	X
Yellow-rumped Warbler				X
MacGillivray's Warbler	X			X
Common Yellowthroat			X	X
Wilson's Warbler				X
Western Tanager	X			X
Green-tailed Towhee	X			X
Spotted Towhee	X		X	X
Dark-eyed Junco	X			X
Chipping Sparrow	X			X
Brewer's Sparrow	X			X
Vesper Sparrow	X			X
Lark Sparrow	X			X
Black-throated Sparrow	X			X
Fox Sparrow	X			
Song Sparrow	X		X	X

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

Breed are species detected during the breeding season survey.

CBC are species 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 5. List of special status species recorded during surveys.

Species	USFWS	BLM	Idaho	PIF
Gadwall				P
Cinnamon Teal				P
Canvasback				P
Redhead				P
Bufflehead				P
Common Merganser				P
Ring-necked Duck				P
Ruddy Duck				P
Dusky Grouse		S		P
Greater Sage-grouse	C	S		P
Pie-billed Grebe				P
Northern Harrier				P
Sharp-shinned Hawk				P
Cooper's Hawk				P
Swainson's Hawk				P
Ferruginous Hawk		S		P
Golden Eagle				P
American Kestrel				P
Prairie Falcon		S		P
Sandhill Crane				P
Killdeer				P
Spotted Sandpiper				P
Wilson's Snipe				P
Wilson's Phalarope		S		P
Burrowing Owl		S		P
Northern Saw-whet Owl				P
Short-eared Owl		S		P
Long-eared Owl				P
Common Poorwill				P
Calliope Hummingbird		S		
Rufous Hummingbird				P
Black-chinned Hummingbird				P
Broad-tailed Hummingbird				P
Lewis' Woodpecker		S		P
Red-naped Sapsucker		S		P
Western Wood-pewee		S		P
Hammond's Flycatcher		S		P
Dusky Flycatcher				P
Willow Flycatcher		S		P
Say's Phoebe				P
Western Kingbird				P
Loggerhead Shrike	C	S	C	P
Warbling Vireo				P
Clark's Nutcracker				P
Black-billed Magpie				P
Tree Swallow				P
N. Rough-winged Swallow				P
Red-breasted Nuthatch				P
Mountain Chickadee				P
Rock Wren				P
Marsh Wren				P
Ruby-crowned Kinglet				P
Blue-gray Gnatcatcher				P

Mountain Bluebird				P
Townsend's Solitaire				P
Sage Thrasher		S		P
MacGillivray's Warbler				P
Wilson's Warbler				P
Western Tanager				P
Green-tailed Towhee		S		P
Spotted Towhee				P
Chipping Sparrow				P
Brewer's Sparrow		S		P
Lark Sparrow				P
Sage Sparrow		S		P
Black-throated Sparrow		S		P
Grasshopper Sparrow		S		P
Black-headed Grosbeak				P
Lazuli Bunting				P
Yellow-headed Blackbird				P
Bullock's Oriole				P
Brewer's Blackbird		S		P
Gray-crowned Rosy-finch				P
Black Rosy-finch				P
Cassin's Finch		S		P

USFWS species listed as a species of Concern "C" or as threatened "T" by the US Fish and Wildlife Service

BLM species are listed as sensitive "S"

Idaho species are listed as a species of Special Concern "C" or as endangered "E" by the state of Idaho

PIF species are species listed as Priority species by Partners in Flight "P"

Table 6. Birds recorded on the Craters of the Moon Christmas Bird Count 2006

Species	Number counted
Northern Harrier	CW
Bald Eagle, immature	1
Buteo, unknown	1
Golden Eagle, immature	1
Greater Sage-grouse	CW
Virginia Rail	1
Great Horned Owl	CW
Hairy Woodpecker	1
Northern Flicker	4
Northern Shrike	2
Clark's Nutcracker	11
Black-billed Magpie	8
American Crow	1
Common Raven	14
Horned Lark	38
Mountain Chickadee	3
Red-breasted Nuthatch	7
Brown Creeper	1
Marsh Wren	1
Ruby-crowned Kinglet	1
Gray-crowned Rosy-finch	36
Black Rosy-finch	CW
Red Crossbill	73
Pine Siskin	53

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

Table 7. Summary of Craters of the Moon Christmas Bird Count 1967-2006.

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

CONCLUSION

Breeding Season Survey

The total number of birds observed was 1815. This was a 2% increase over 2005 (n = 1786) (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). The 2006 numbers showed a 163% increase over 2000. 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%. When only those routes that have been monitored for the entire ten years of the program are examined 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 average and above 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 2006.

The number of species recorded showed a somewhat different trend with numbers continuing to increase until 2004 with numbers stable since then (fig 3). For only those six routes surveyed the entire six years the trend has been essentially level since 2001 except for a one year spike in 2004(fig 4).

Seventy-four species (56% of species detected in 2006) have been listed as a priority species by Idaho Partner's in Flight (IDPIF 2002), are listed by the Idaho Department of Fish and Game (IDFG 2003) as species of special concern, as species of concern by the US Fish and Wildlife Service (USFWS 2000), or as sensitive by the Bureau of Land Management (USBLM 2003) (Table 7).

This includes the most numerous species on the monument, the Brewer's Sparrow, which is on two of these sensitive lists. Most of these species have experienced substantial declines in either part or all of their range including the Snake River Plain. The Brewer's Sparrow appears to have been quite stable over the last nine 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 number 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. One species is on all four lists. The Loggerhead Shrike like the Brewer's Sparrow appears to have been quite stable in the period 2001 to 2006(fig 6). Shrikes however are found in much lower numbers and to determine accurate trends for this species would require targeted surveys and productivity data. Sage Thrashers, which are also a sagebrush obligate, are shown in figure 7. They show similar pattern to the Brewer's Sparrow but with a significant dip in 2004. 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 since that time. This species was considered quite rare in the monument prior to this period (NPS 1997). In the west it is generally associated with juniper woodlands (Cornell 2004). The use of

pinos 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 juniper 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 is may also be further indications of there 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).

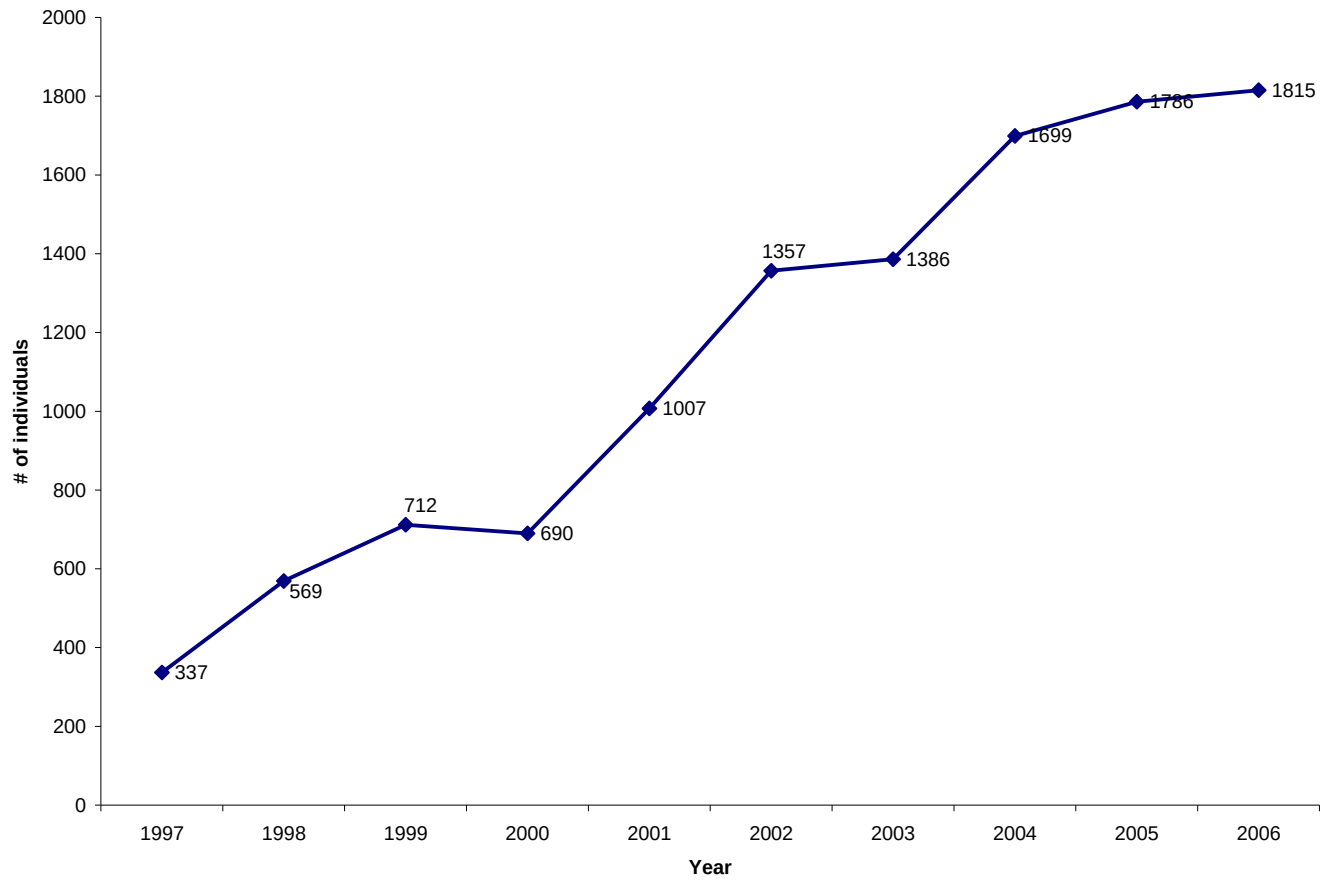


Figure 1. Total numbers of birds recorded during breeding season surveys 1997-2006

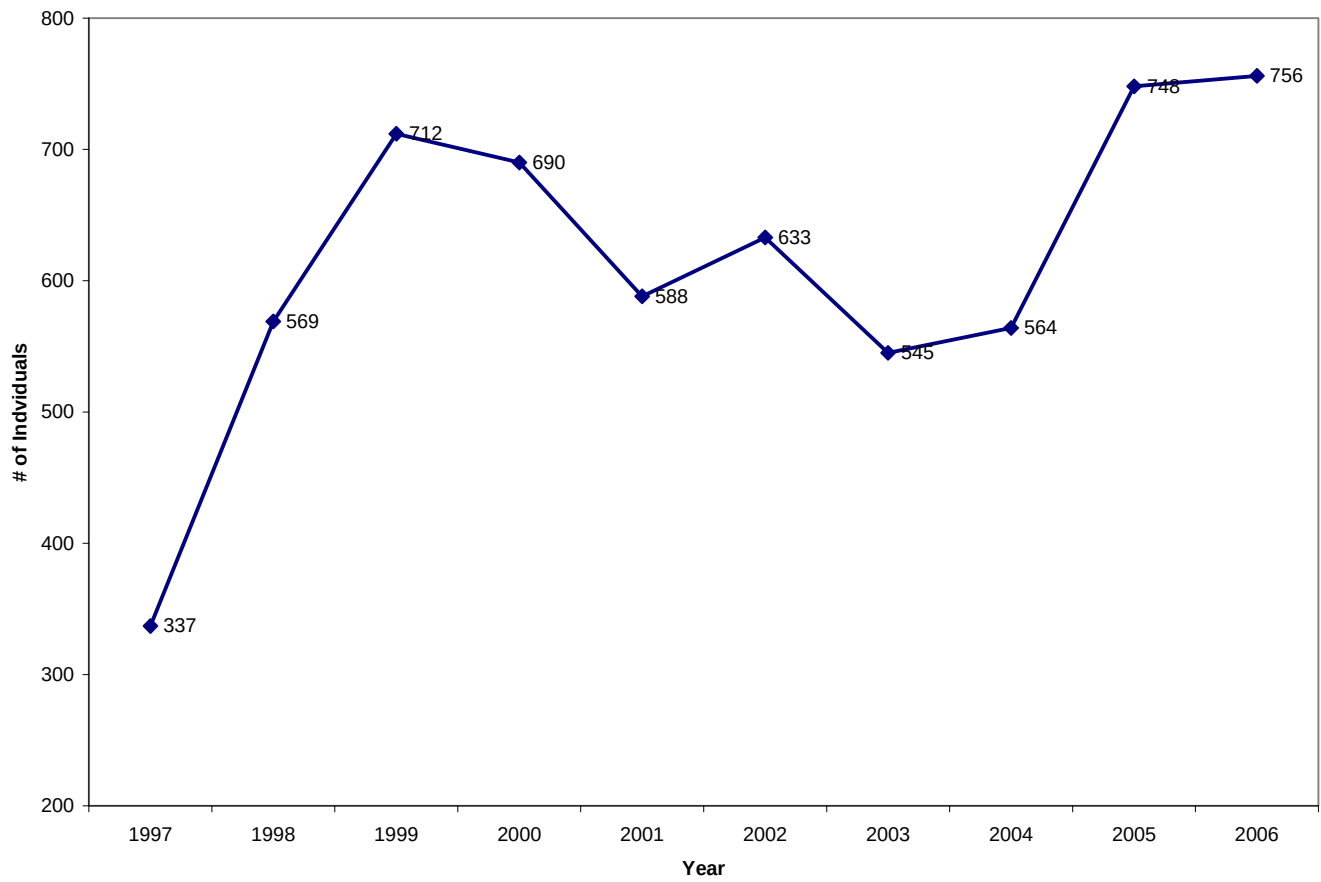


Figure 2. Numbers of birds recorded during breeding season surveys on the six routes surveyed during the years 1997-2006

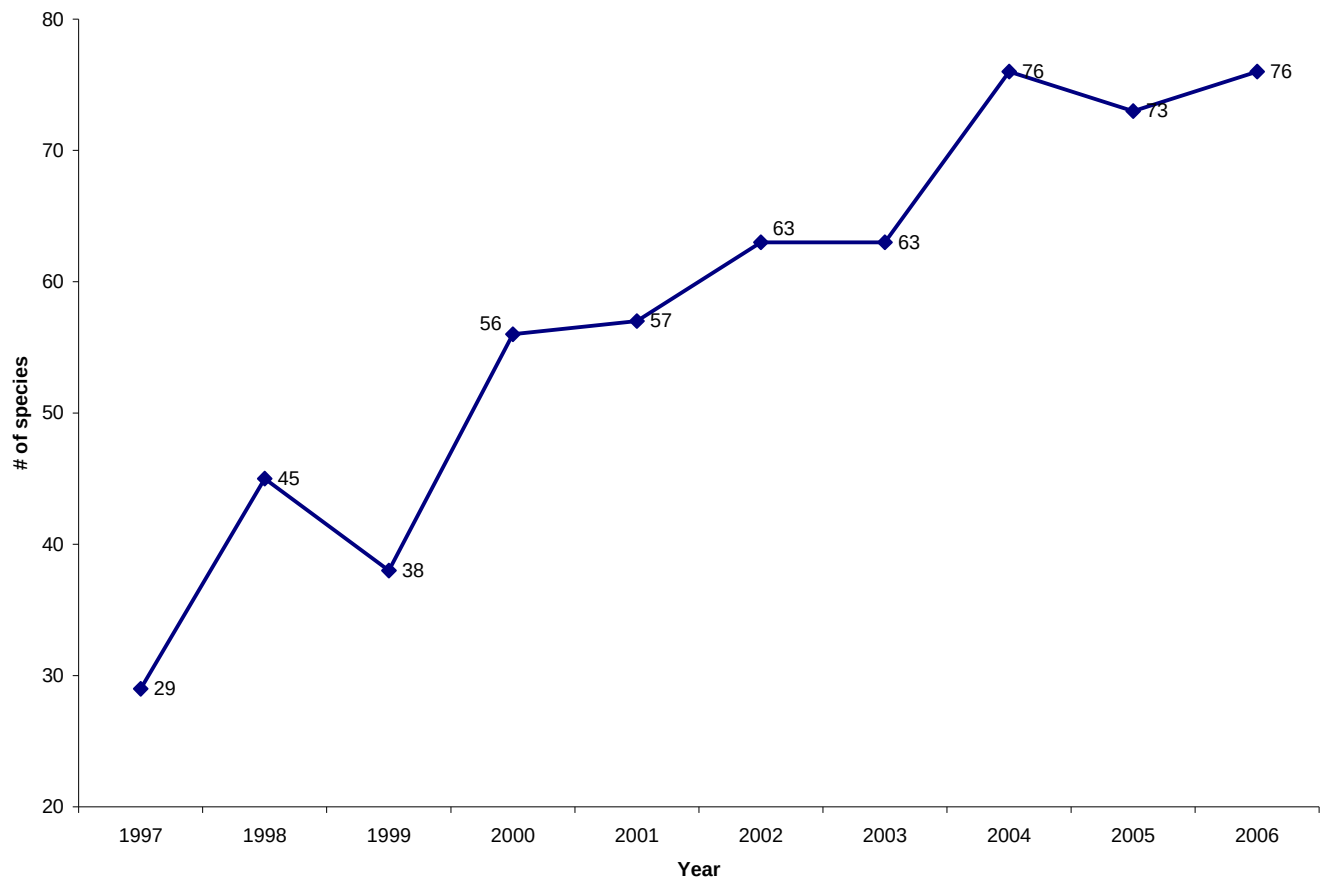


Figure 3. Number of species detected during breeding season surveys 1997-2006

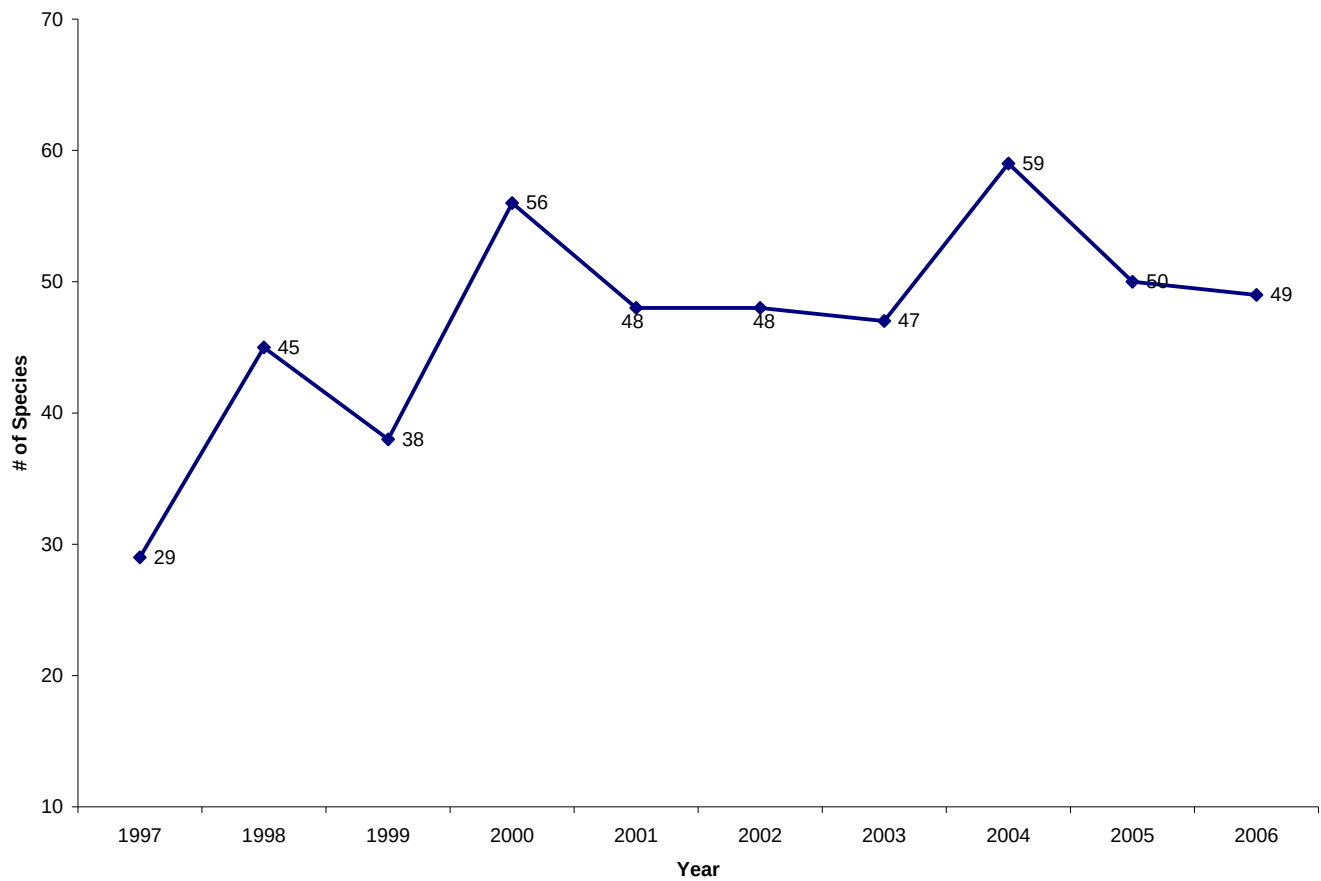


Figure 4. Number of species detected on the six routes surveyed during the years 1997-2006

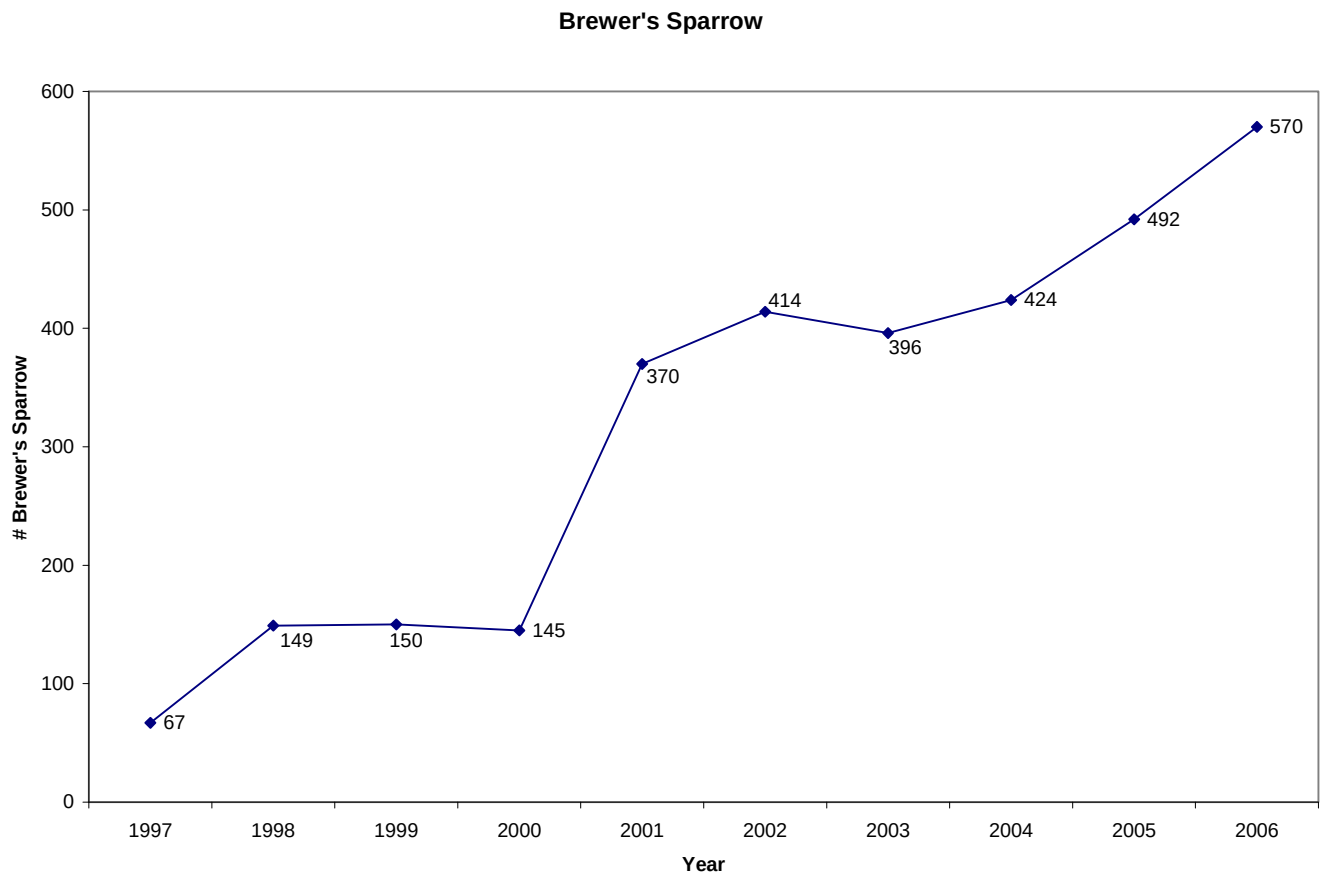


Figure 5. Numbers of Brewer's Sparrows observed in Breeding Season Surveys 1997-2006

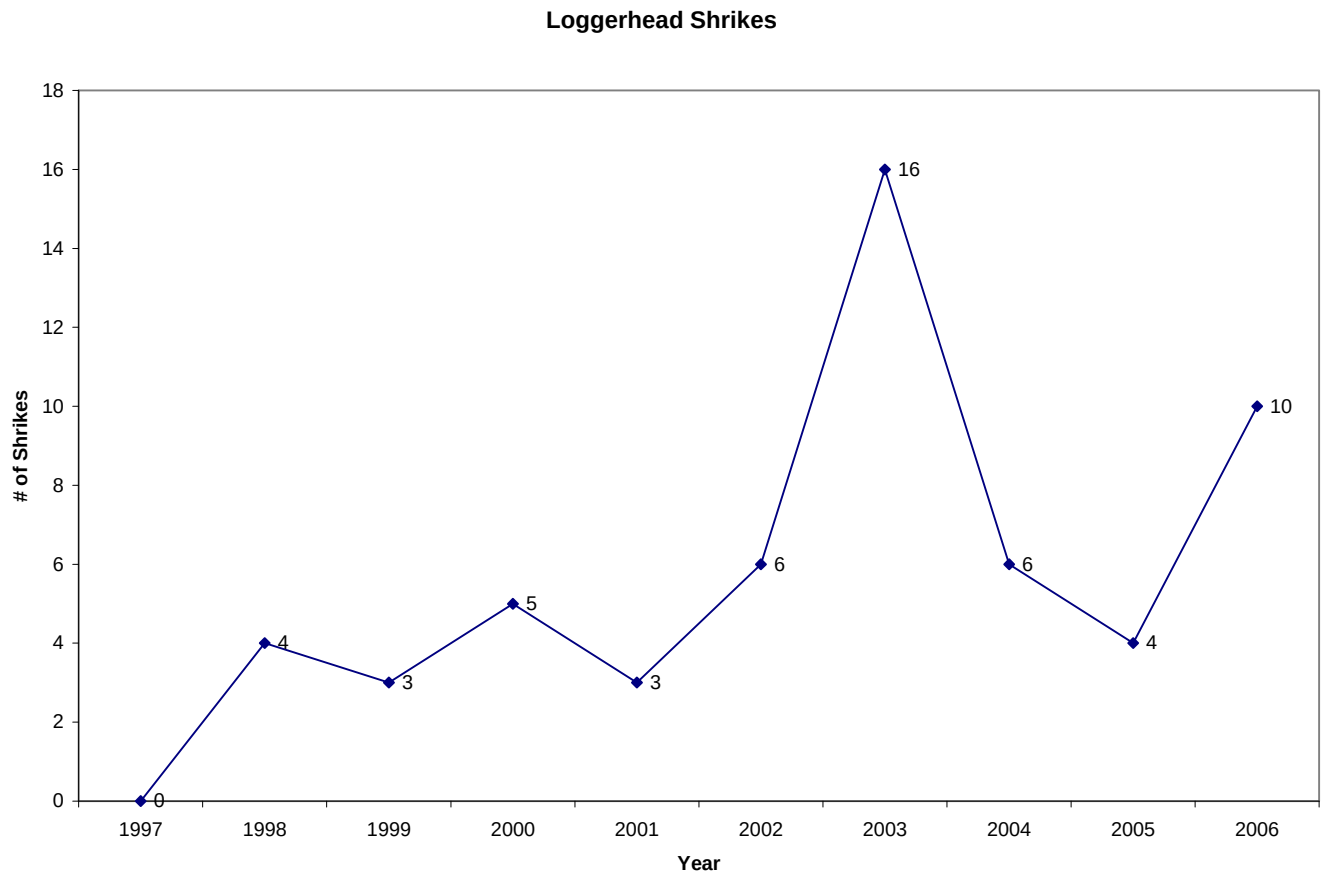


Figure 6. Numbers of Loggerhead Shrikes observed in Breeding Season Surveys 1997-2006



Figure 7. Numbers of Sage Thrashers observed in Breeding Season Surveys 1997-2006

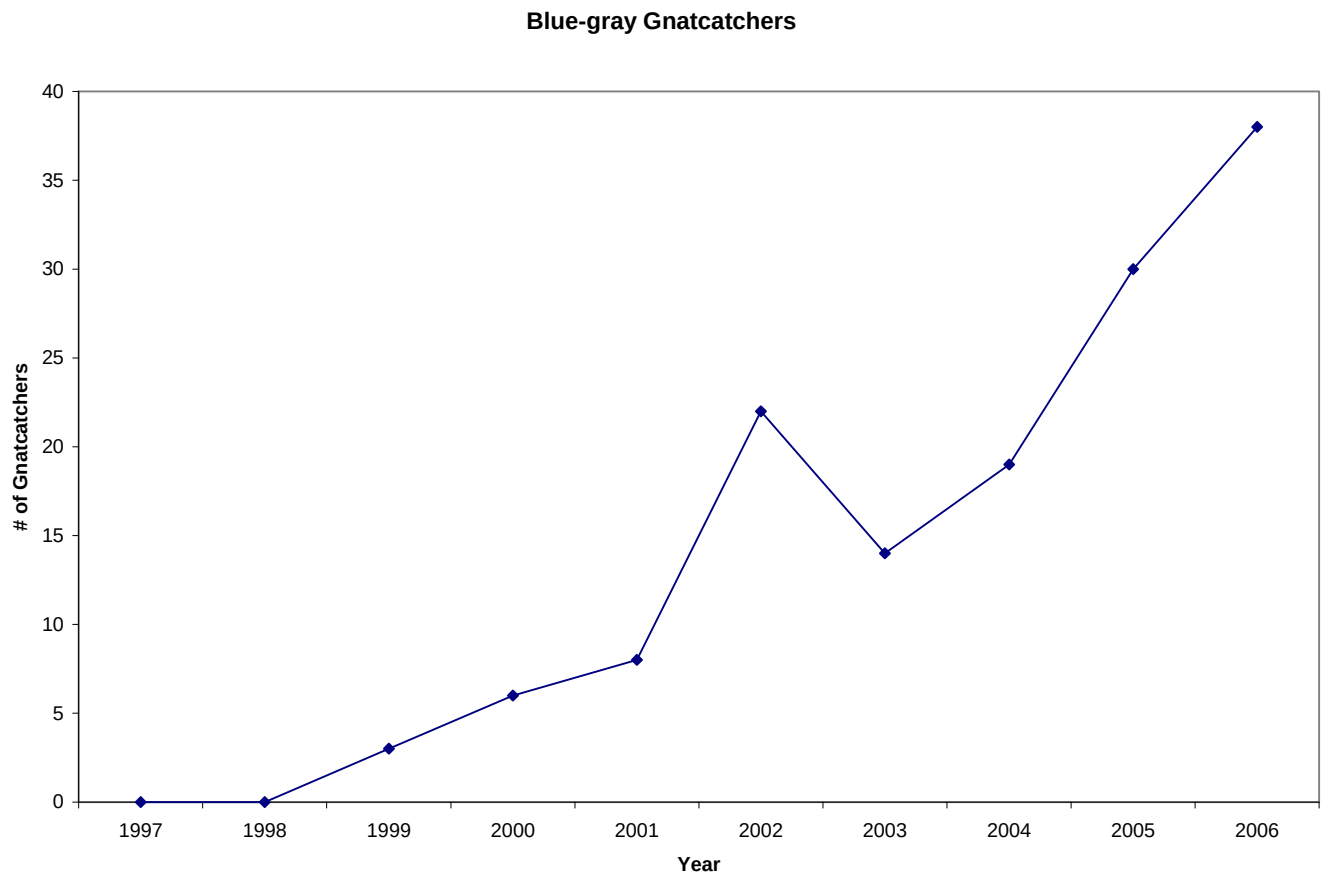


Figure 8. Numbers of Blue-gray Gnatcatchers observed in Breeding Season Surveys 1997-2006

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Appendix 1.

Craters of the Moon National Monument Habitat Types

LAVAS

- 1 Cinder Gardens**
- 2 Low Vegetation Density Lava Flows**
- 3 Medium Vegetation Density Lava Flows**

SHRUB COMMUNITIES

- 4 Mountain Big Sagebrush/Bluebunch Wheatgrass**
- 5 Mountain Big Sagebrush/Sandberg Bluegrass**
- 6 Mountain Big Sagebrush/Needlegrass**
- 7 Mountain Big Sagebrush/Needle-and-thread/Cheatgrass**
- 8 Mountain Big Sagebrush/Idaho Fescue**
- 9 Big Sagebrush/Cheatgrass**
- 10 Complex of 4 and 8
- 11 Three-tip Sagebrush/Idaho Fescue**
- 12 Early Low Sagebrush/Idaho Fescue
- 13 Low Sagebrush/Sandberg Bluegrass
- 14 Low Sagebrush/Idaho Fescue
- 15 Complex of 13 and 14
- 16 Antelope Bitterbrush**
- 17 Antelope Bitterbrush/Great Basin Wildrye
- 34 Misc. Big Sagebrush**
- 35 Misc. Bitterbrush**
- 36 Misc. Shrubsteppe**
- 42 Mixed Rabbitbrush

GRASSLANDS

- 18 Bluebunch Wheatgrass/Idaho Fescue**
- 19 Bluebunch Wheatgrass/Sandberg Bluegrass
- 20 Great Basin Wildrye**
- 37 Misc. Grassland**
- 44 Cheatgrass dominant

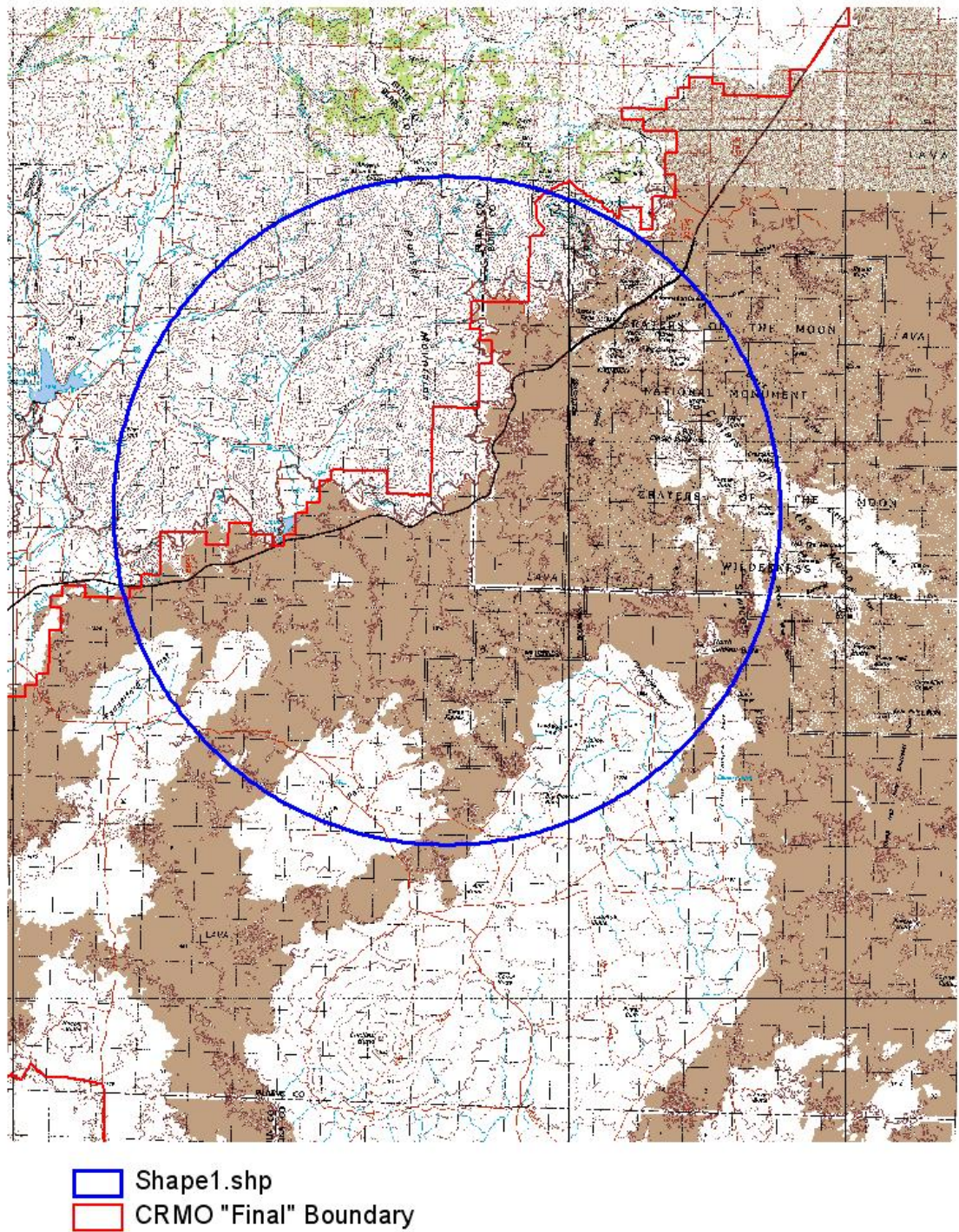
FOREST COMMUNITIES

- 21 Limber Pine/Bitterbrush (low total cover)**
- 22 Limber Pine/Bitterbrush (high total cover)**
- 23 Limber Pine/Bitterbrush (high density Limber Pine)**
- 24 Douglas-fir/Mountain Snowberry**
- 25 Upland Quaking Aspen**
- 26 Riparian**
- 38 Misc limber pine
- 39 Misc Rocky Mountain juniper
- 40 Misc Utah juniper
- 41 Mixed Juniper**

OTHER AREAS

27	Developed Areas
28	Caves
29	Rock outcrops
30	Man-made structures
31	Isolated trees
32	Waterholes
33	Misc. Wetlands
43	Sand Dunes

Bold = Habitat types present in the BBS routes



Appendix 2. Location of the Craters of the Moon Christmas Bird Count