

CRATERS OF THE MOON NATIONAL MONUMENT 1992 BIRD CENSUS

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INTRODUCTION

Bird censuses at Craters of the Moon NM (CRMO) began in 1988 as part of an ongoing study in assessing the biological value, richness, uniqueness and health of the area. The 1992 census is the fourth in the series of censuses conducted since 1988, excluding 1989 when a lack of qualified personnel prohibited any censusing.

Censuses are scheduled to begin in early May and run to the 15th of June. Due to the late arrival date of the new Resource Management staff, the 1992 census was conducted during the months of June and July. Conducting the census later in the season was approved by Gerry Wright of the University of Idaho, Moscow who is overseeing the study. Censusing in 1992 began 6/23 and ended 7/25, compared to previous surveys conducted by D.L. Miller, from 5/90 - 6/16 in 1990, and J.E. Sneed, from 4/29 - 6/7 in 1991. Dates for the 1988 census conducted by R. Hoffman are unavailable at this time.

METHODS

There are 17 vegetation types identified in the park. Census locations consist of two sites per vegetation type, totalling 34 sites. Since time and staffing are limited, it is probable that all sites will not be visited during the census season. To accommodate this short-coming, four priority sites (Appendix I) have been selected that are to be censused each year while visits to the remaining sites are rotated over a 5-10 year period (Appendix II).

A late start limited the number of VT's that could be censused this season resulting in coverage of only the top four priority sites including:

- 26 - Riparian
- 25 - Upland Quaking Aspen
- 23 - Limber Pine/Antelope Bitterbrush - high overall cover
- 22 - Limber Pine/Antelope Bitterbrush - high limber pine

Standard Operating Procedures (SOP's) for the bird census requires that censusing be conducted during the first two hours after sunrise. Observers are to wait ten minutes after arrival to the site before beginning the 30 minute censusing period. During the censusing period observers identify all species by sight and by call/song and record each individual observed.

Data is compiled and species diversity is calculated through the application of the Shannon-Weaver Estimate of Diversity formula.

RESULTS

During the 1992 census, 248 **individual** birds were counted with an average of 62 individuals per VT; the range consisting of 42 in VT25 to 70 in VT26. The actual number of individuals per VT was up this season by 3% (8 individuals) compared to 1991 data while, down by 24% (79 individuals) compared to 1990 data, (Table I).

The number of species identified in the 1992 census was 34, with an average **species richness** of 19.5 per VT; the range consisting of 17 in VT25 to 21 in VT22, (Table II). These figures are up from the 1990 and 1991 censuses but are slightly down from the 1988 census, (Table III).

A total of 6 species were found in VTs where they had not previously been recorded. Twelve species were found in only one VT while, seven species were found in all four VTs censused, (Table IV).

New birds not previously recorded at the Monument include the Blue-gray Gnatcatcher and the Field Sparrow, both found in VT22.

Species **diversity** (H') for the four priority VTs averaged 2.849, (Table V). The greatest diversity was $H' 3.001$ occurring in VT 22 while, the lowest was $H' 2.691$ in VT 25. Vegetation Type 22, with an H' factor of 3.001, and 23, with H' factor 2.898, exceeded the highest diversity thus far, which occurred in 1988 with $H' 2.4757$ and $H' 2.8074$, by 21% and 9% respectively, (Table VI).

CONCLUSION

In spite of the later census dates, the average species richness for the four priority vegetation types was greater in the 1992 census than the censuses conducted by D.L. Miller in 1990 and J.E. Sneed in 1991. The average species diversity for the four priority vegetation types in 1992 exceeded both the 1990 and 1991 census figures and the 1988 census conducted by R. Hoffman.

One explanation for the increase in figures in 1992, other than that they may actually have gone up, may be that although R. Hoffman was an expert with avian identification and very familiar and comfortable with the local bird species, the student interns that conducted the bird census in succeeding censuses were not as skilled. The lower average species diversity and richness figures in 1990 and 1991, following R. Hoffman's 1988 census suggest that this theory may be true. In an effort to eliminate this problem in the future, a system for rating the observer's skills in the identification of bird species, both visually and by their songs, will be developed and included as a part of each year's census report.

It is also possible that, although the later census dates in 1992 did not seem to effect the actual number of individuals counted or the number of species, it did effect **what** individuals were counted - population composition. Censusing conducted earlier in the season when the young of most species are still in the nest resulting in individual counts consisting, almost exclusively, of the adults in the population. During the 1992 census however, fledglings were also observed, especially rufus-sided towhees, possibly altering the outcome of both the number of individuals within a species and the population count composition.

In addition, if the population composition was altered, thereby effecting the true individual count for each species and, since the Shannon-Weaver formula used in this study for estimating diversity incorporates the total number of individuals within a species, it is possible that the diversity figures may also be affected.

It was also observed, as the season progressed, that birds began singing later after sunrise than they did earlier in the season. To accommodate this change, censuses were started an hour after sunrise; still within the designated censusing period of two hours after sunrise. In addition, we found that fewer birds were singing and, in some cases, an entire species would no longer be vocalizing - such as the warbling vireo and the green-tailed towhee.

This certainly resulted in the those species not being represented in the census unless the observer could obtain a visual confirmation of it's presence.

Although the Field Sparrow was not visually identified, a positive audio-identification was made and a report filed with the Idaho Department of Fish and Game. The Field Sparrow has not yet been positively sighted in Idaho although, there have been a few unverified reports. Whereas, the normal western extent of the Field Sparrows range is eastern Montana and Wyoming, sightings have been reported around the Salt Lake area and western Montana, making it possible for the species to also appear in eastern Idaho.

On the other hand, although the 1992 census reported the first recorded sighting of the blue-gray gnatcatcher in the Monument in VT22, it is not unusual for this species to be here. The western extend of this species is in the Pocatello area of southeastern Idaho. It is very likely that this gnatcatcher has expanded it's range and now resides at least as far west as the Monument. It is also possible that this species may have been missed in previous censuses.

Table IV. Birds detected during the 1992 census in the four priority vegetation types.

Family Species	Vegetation Types			
	26	25	23	22
Accipitridae				
Northern Harrier	26			
Red-tailed Hawk			23	
Falconidae				
American Kestrel	26		23	
Phasianidae				
Blue Grouse	26			
Columbidae				
Morning Dove		25	23	22
Caprimulgidae				
Common Nighthawk*			23*	
Picidae				
Northern Flicker	26	25	23	22
Tyrannidae				
Olive-sided Flycatcher*				22*
Dusky Flycatcher	26	25	23	
Hiruninidae				
Violet-green Swallow			23	22
Corvidae				
Clark's Nutcracker	26	25	23	22
American Crow	26			
Paridae				
Black-capped Chickadee	26			
Mountain Chickadee			23	22
Sittidae				
Red-breasted Nuthatch*	26*	25	23	22
Troglodytidae				
Rock Wren*		25*	23*	22
House Wren	26			
Musciapidae				
Blue-gray Gnatcatcher**				22*
Mountain Bluebird		25	23	22
American Robin	26	25	23	22
Vireonidae				
Warbling Vireo*		25*		
Emberizidae				
MacGillivray's Warbler	26			
Western Tanager	26	25	23	22
Lazuli Bunting	26			
Green-tailed Towhee*		25*	23	22
Rufus-sided Towhee	26	25	23	22
Vesper Sparrow*	26*	25		
Chipping Sparrow		25	23	22
Brewer's Sparrow				22
Field Sparrow**				22*
Fox Sparrow	26			
Brewer's Blackbird*		25		22*
Brown Headed Cowbird	26		23	22
Fringillidae				
Pine Sisken*	26*	25*	23	22*

* = first time noted in particular vegetation type

** = first time noted at Craters of the Moon National Monument

Table I. Comparative total number of INDIVIDUALS in each of the four priority vegetation types for each of the census years, (1988, 1990, 1991, 1992).

Vegetation Type		26	25	23	22	total
Y	1988	MD*	MD*	MD*	MD*	MD*
E	1990	60	71	86	110	327
A	1991	64	49	67	60	240
R	1992	70	42	69	67	248

* = MD, missing data

Table II. Total number of SPECIES found at each of the stations within each of the four priority vegetation types in the 1992 census.

Vegetation type	Station 1	Station 2	Species richness
26	13	17	20
25	13	5	17
23	18	14	20
22	10	19	21
TOTAL			34
AVERAGE			19.5

Table III. Comparative SPECIES RICHNESS for the four priority vegetation types for each of the census years, (1988, 1990, 1991, 1992).

Vegetation Type		26	25	23	22	average
Y	1988	26	25	26	20	24.25
E	1990	17	20	18	19	18.5
A	1991	18	16	16	16	16.5
R	1992	20	17	20	21	19.5

Table V. Species RICHNESS and DIVERSITY (H') for each of the four priority vegetation types in the 1992 census.

Vegetation type	Richness	Diversity
26	20	2.807
25	17	2.691
23	20	2.898
22	21	<u>3.001</u>
	AVERAGE	2.849

Table VI. Comparative species DIVERSITY (H') for the four priority vegetation types for each of the census years (1988, 1990, 1991, 1992).

Vegetation Type		26	25	23	22	average
Y	1988	2.9993	2.8439	2.8074	2.4757	2.782
E	1990	2.654	2.726	2.735	2.725	2.710
A	1991	2.759	2.678	2.552	2.497	2.622
R	1992	2.807	2.691	2.898*	3.001*	2.849

* = Highest rating to date for each vegetation type.

Appendix I.

The four priority vegetation types and the eight individual site locations.

Site Number	Vegetation Type	Location
22.1	Limber pine/Ant. bitterbrush-hi gr cover	Inferno cone-E. side
22.2	" " -hi pine	Big Cinders-W. side
23.1	Limber pine/Antelope bitterbrush	Silent Cone-E. side
23.2	" "	Half Cone-E. side
25.1	Upland Quaking Aspen	Big Cinders-E. side
25.2	"	Research Camp
26.1	Riparian	Below Martin mine
26.2	"	Above Martin mine

Appendix II.

Checklist of vegetation types that have/have not been censused to date.

Priority	Veg.Type	'88	'90	'91	'92	Do in '93
1	26	x	x	x	x	1
2	25	x	x	x	x	1
3	23	x	x	x	x	1
4	22	x	x	x	x	<u>1</u>
5	21	x	x	x		
6	24	x	x	x		
7	5	x	x	x		
8	4	x	x	x		
9	16	x	x	x		
10	6	x	x	x		
11	13	x		x		3
12	8	x		x		3
13	17	x		x		3
14	11	x		x		3
15	3	x				2
16	2	x				2
17	1	x				2

1=priority, 2=second priority, 3=third priority