Clark County Bird Inventory and Monitoring, 2002 – 2005:

First Results of the Nevada Bird Count Program

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All Bird Monitoring

FINAL PROJECT REVIEW

What measurable goals did you set for this project and what indicators did you use to achieve these goals? To what extent has your project achieved these goals and levels of performance?

The goal of the Nevada Bird Count is to introduce a comprehensive statewide network for standardized inventory and monitoring of small landbirds, with particular applications for habitat management. The program will provide data for analyses at different spatial scales, including state-wide assessments, habitat-wide assessments, as well as comparisons of specific project sites with similar sites in the rest of the state.

The All Bird Monitoring Program surveyed 109 transects in Clark County repeatedly during the main breeding season of small landbirds. The 109 point count transects received 191 surveys in Clark County between 2002 and 2005. A total of 172 species were detected in Clark County during our surveys; of these, 11 species were assumed to be non-breeders in Clark County based on Nevada Breeding Bird Atlas data, resulting in 161 species recorded as possible breeders in the study area, which represents almost two-thirds of the species richness of breeding birds in the state.

We also analyzed the Nevada Bird Count data separately for the Spring Mountain Range, because this area supports several rare species and unique bird habitats. A total of 100 species were detected in the Spring Mountains, with wooded habitats such as montane riparian areas supporting the greatest species richness. These findings do not differ greatly from historic records of Spring Mountain bird communities, however, they reveal that several species, such as mostly nocturnal birds, are poorly represented in standard point count efforts.

Did the project encounter internal or external challenges? How were they addressed?

The greatest challenge the project encountered was obtaining qualified personnel to perform transect surveys. We addressed this challenge, by performing rigorous hiring techniques, and a training program sponsored by the Great Basin Bird Observatory involving active field training, coupled with classroom training using recorded bird songs.

What lessons did you learn from undertaking this project?

We learned that restricted habitat types, such as lowland riparian, mesquite-acacia, and coniferous forests be continually explored for better access, so that more comprehensive sampling can be accomplished; that local research projects and site assessments be actively integrated into the framework of the Nevada Bird Count so as to take advantage of the wealth of regional data that the program provides; that action is taken to expand the integration effort outside of county and state lines in order to better model and monitor the rarest of the species of conservation concern.

The statewide Nevada Bird Count program provides a unique opportunity for all agencies to participate in a bird data network that can provide much more scientifically strong evidence for both habitat requirements and trends in bird populations than could be accomplished by local research or inventory project alone. Because all of the major resource management agencies in the state are already partners of the Nevada Bird Count program, we encourage them to make use of this standard framework for both regional and local objectives that require bird population data.

What impact do you think this project has had to date?
The Nevada Bird Count program's benefits are exemplified in the Mojave Desert region of Nevada. The program is designed to generate density estimates that can be used for evaluation of sites and for monitoring of population trends. When the field habitat assessments are completed, these density estimates can be statistically related to stand condition and other habitat features. The Nevada Bird Count program provides a baseline data set for Clark County and for the Spring Mountains that can be used as a reference point for future monitoring of changes in bird communities in response to land use changes.

Is there additional research or efforts that would complement or add to your project that could be conducted?
We are currently in the process of collecting field habitat assessment data throughout Clark County. The effort is about 30% completed, and we expect to complete the remainder of the project during the next year (2007). The habitat assessments will be invaluable to our continuing goal to gain specific knowledge of the habitat requirements of conservation priority species throughout the Mojave Desert region. In this assessment, we collect data on the floristics of the dominant vegetation, vegetation structure, and the main threats to vegetation and bird occupancy known to occur in this region.
In addition, we are pursuing a different method of bird surveys, the spot-mapping method, in a subset of areas in order to generate correction factors for biases inherent to the widely-used point count method. This double-sampling technique is carried out by our partners at the Lake Mead National Recreation Area in high-priority sites in the Mojave region, where more detailed information on the breeding bird community is needed, such as sites that are slated for habitat restoration. The results of this effort will be presented elsewhere after additional time for analysis.

Featured Project and Type
All Bird Monitoring Program in Clark County, Nevada

Project Description
The long-term objective of the All Bird Monitoring Program is to provide a scientifically sound data base for evaluating status and trends in bird populations for each of Clark County's major habitats. The program will provide data for analyses at different spatial scales, including state-wide assessments, habitat-wide assessments, as well as comparisons of specific project sites with similar sites in the rest of the state.

A GBBO volunteer conducts bird surveys.

Project Status
For the "all-bird monitoring program" in Clark County, 109 transects where surveyed repeatedly during the main breeding season of small landbirds. The 109 point count transects received 191 surveys in Clark County between 2002 and 2005. A total of 172 species were detected in Clark County during our surveys; of these, 11 species were assumed to be non-breeders in Clark County based on Nevada Breeding Bird Atlas data, resulting in 161 species recorded as possible breeders in the study area, which represents almost two-thirds of the species richness of breeding birds in the state. The species richness was highest in lowland riparian areas of Clark County, and all landbirds covered or under evaluation by the Clark County Multiple-Species Habitat Conservation Plan (MSHCP; Clark County 2000) were detected, with the exception of Yellow-billed Cuckoo.

A young flammulated owl encountered during a bird survey.

Within the Spring Mountain Range Nevada Bird Count data was analyzed separately, because this area supports several rare species and unique bird habitats. A total of 100 species were detected in the Spring Mountains, with wooded habitats such as montane riparian areas supporting the greatest species richness. These findings do not differ greatly from historic records of Spring Mountain bird communities; however, they reveal that several species, such as mostly nocturnal birds, are poorly represented in standard point count efforts.

For future bird monitoring and habitat-use assessments, it is recommend continuing the point count and double-sampling effort throughout the county, as well as completing the habitat assessments on all established transects. Together, this information will provide an unprecedented wealth of information on the habitat requirements and responses of bird populations to landscape changes due to a variety of influences, such as wildfires, recreational use, insect outbreaks, fuel reduction practices, and human encroachment.

Partners
U. S. Forest Service, Humboldt-Toiyabe National Forest
Nevada Department of Wildlife
Bureau of Land Management
U. S. Fish and Wildlife Service
National Park Service, Lake Mead National Recreation Area
Bureau of Reclamation
Southern Nevada Water Authority
University of Nevada, Las Vegas
University of Nevada, Reno
Nevada Natural Heritage Program
Nevada Partners in Flight
Nellis Air Force Range

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Funding Awarded	**Funding Spent**
$88,300	$87,930

Completion Date or Status
Project completed November 2006
Final Project Report submitted November 2006

Products Produced from Project
Final Reports
Quarterly Reports
2004 Annual Report
All Bird Monitoring Point Count Survey Protocol
Area Search Protocol
Upland Habitat Assessment Protocol
Project Information Link on Great Basin Observatory Website (www.gbbo.org)

Table of Contents

Executive Summary

We surveyed 109 transects in Clark County repeatedly during the main breeding season of small landbirds. The 109 point count transects received 191 surveys in Clark County between 2002 and 2005. A total of 172 species were detected in Clark County during our surveys; of these, 11 species were assumed to be non-breeders in Clark County based on Nevada Breeding Bird Atlas data, resulting in 161 species recorded as possible breeders in the study area, which represents almost two-thirds of the species richness of breeding birds in the state. The species richness was highest in lowland riparian areas of Clark County, and all landbirds covered or under evaluation by the Clark County Multiple-Species Habitat Conservation Plan (MSHCP; Clark County 2000) were detected, with the exception of Yellow-billed Cuckoo. In this report, we identify the estimated abundances in each major habitat type for all species detected in Clark County. We also briefly discuss their habitat needs based on our observations and previously published materials. We expect that, as the program expands and additional data on habitat use are gathered, this information will be a critical step toward informing land managers about habitat requirements and changes in population size and distribution for conservation priority species.

We also analyzed the Nevada Bird Count data separately for the Spring Mountain Range, because this area supports several rare species and unique bird habitats. A total of 100 species were detected in the Spring Mountains, with wooded habitats such as montane riparian areas supporting the greatest species richness. These finding do not differ greatly from historic records of Spring Mountain bird communities, however, they reveal that several species, such as mostly nocturnal birds, are poorly represented in standard point count efforts.

For future bird monitoring and habitat-use assessments, we recommend continuing the point count and double-sampling effort throughout the county, as well as completing the habitat assessments on all established transects. Together, this information will provide an unprecedented wealth of information on the habitat requirements and responses of bird populations to landscape changes due to a variety of influences, such as wildfires, recreational use, insect outbreaks, fuel reduction practices, and human encroachment.

Acknowledgments

We thank the U.S. Forest Service – Humboldt-Toiyabe District and the Clark County Desert Conservation Program for providing funding for the implementation of the Nevada Bird Count in Clark County. Further, we thank our great many volunteers and agency staff for implementing bird counts throughout the study area in the first four years of implementation of the program. Particularly active surveyors included Joe Barnes, Bill and Beth Clark, Greg Clune, Jerry Coe, Dorothy Crowe, Chris Dodge, Dawn Fletcher, Lara Hartley, Heather Hundt, Joe Kahl, Matt Flores, Neil McDonal, Beth Sabin, Matt Voisine, and Billi Wagner. Without their help and many other volunteers, this program would not be implementable. Finally, we thank Clark County and the University of Nevada, Reno, particularly Bob Elston, Lisa Smith, and Dick Tracy, for their invaluable help in setting up the sampling plan.

Introduction

Description of the Project

During 2002-2005, we established 109 permanent point count transects for standardized inventory and monitoring of landbirds in Clark County. This effort is part of the statewide Nevada Bird Count program that is designed for long-term population trend monitoring and for informing resource managers of population and habitat needs of Nevada's breeding birds. Each of twelve major habitat types that are present in Clark County were sampled with geo-referenced point count transects that were largely randomly placed. Each transect is visited once, or more often, per breeding season, and all surveys are done by trained personnel recruited from the birdwatching community as volunteers, or from staff of GBBO or of the program's partners. The point count survey method requires significant experience with bird identification, but is otherwise easily implemented. Concerns regarding biases that are inherent to the point count method are addressed by the use of spot-mapping as a double-sampling effort on a subset of the sampling sites. Additional work on vegetation assessment at the sampling sites is currently underway in order to reveal quantitative habitat associations of the birds observed. More information on this program can be viewed at the Great Basin Bird Observatory's website www.gbbo.org (select projects/programs: Nevada Bird Count).

Background and Need for the Project

No comprehensive monitoring program for landbirds existed in Clark County prior to the Nevada Bird Count. This program therefore fills a critical need for standardized bird population data that can be used for detecting local and regional bird population declines and for evaluating the effects of mitigation and conservation efforts. While short-term and local research projects have been conducted in Clark County, particularly recently in the context of the Clark County MSHCP, none of these were done with the objective of a long-term, comprehensive effort to track landbirds throughout the county and the region. For effective conservation planning, adaptive management, and population monitoring for the bird species covered under the MSHCP, it is necessary to track the distribution and relative abundances of these species across the landscape and across different habitat types in Clark County and adjoining areas. The Nevada Bird Count program is particularly suited for the assessment of large-scale distribution, abundance, and habitat use information for landbirds, because it not only covers all regions within Clark County, but reaches well beyond the county borders, which allows us to integrate additional data into analyses of rare and sensitive species.

Management Actions Addressed

The following Clark County MSHCP Management Actions were addressed in this project:

USFS(20): Inventory for populations of rare flora and fauna on an annual basis. A Native Species Site Survey Report will be used to record new records of species occurrence, and copies of this form will be provided to the Nevada Natural Heritage Program.
USFS(24): Use the results of monitoring activities to, where feasible and necessary, refine management strategies for protection of the species of concern. Where monitoring has indicated status decline or habitat degradation for the species of concern, develop and implement strategies to avert further decline or degradation, and improve species status and habitat quality.
USFWS(8): Develop and implement long−term surveys to assess population trends, to document breeding and nesting activity in southern Nevada in the spring, and to assess occurrence in southern Nevada during the summer months (phainopepla and summer tanager)
USFWS(11): Monitor populations and population trends of Covered and Evaluation Species on the DNWR as appropriate
BLM(15): BLM will cooperate with the Nevada Division of Wildlife and Clark County I & M Committee to implement surveys to determine the distribution, abundance, and potential threats on the southwestern willow flycatcher, phainopepla, summer tanager, Arizona Bell's vireo, yellow−billed cuckoo, and blue grosbeak and other species as necessary.
BLM(17): BLM will develop and maintain a digital data base for all inventory data collected and cooperate with other participants in establishing and maintaining a repository for digital biological data covering Clark County.
BLM(19): Inventory and monitor mesquite and acacia habitats in Amargosa Valley Area, Stump Springs, Pahrump Valley, Hiko Wash, Piute Wash, Meadow Valley Wash and other areas determined to be important as resting and/or nesting habitat for resident and neo−tropical migrants.
NPS(8): Develop information on the population distribution of summer tanager, Arizona Bell's vireo, yellow−billed cuckoo, and blue grosbeak in the study area. Surveys are needed in the spring to document breeding and nesting activity in southern Nevada. Protect existing riparian habitat.
NPS(9): Inventory and monitor mesquite and acacia habitat that may be important as resting and/or nesting habitat for resident and neo−tropical migrants.
NPS(17): Develop and implement long−term population surveys to assess the trend of southwestern willow flycatcher and phainopepla populations and to develop population goals.
NDOW(14): Coordinate with the Adaptive Management Program in setting species priorities, selecting survey methods, and evaluation of data collected.

Goals and Objectives

The goal of the Nevada Bird Count is to introduce a comprehensive statewide network for standardized inventory and monitoring of small landbirds, with particular applications for habitat management. The program stands out in that it joins all major land managers and trained volunteers from the public in a partnership for monitoring landbird

populations across the state. The data gathered in the program follow standardized data collection protocols, which is critical for its varied applications. By participating at any level in the program through funding the effort and using the same data collection and processing methods, all partners benefit from a wealth of information at no additional cost.

The long-term objective of the program is to provide trend data for most small landbirds for the state, which can be linked to regional data bases. Shorter-term objectives include using the data network to generate habitat management-related information that helps with the maintenance and conservation of critical habitats. Other applications, which have become increasingly prevalent in the program over the past years, include the use of the data network for more efficient and effective project evaluation. For instance, the program's methods have now been adopted by the Bureau of Reclamation for effectiveness monitoring of their major restoration efforts along the lower Colorado River. The advantage of using the Nevada Bird Count network is that, by participating in the program, all partners can make use of the entire data network to generate more powerful data analyses and to compare data from a particular project site to average values of estimated bird densities in similar habitats across the region.

Methods and Materials

Study Sites

The locations of point count transects were largely selected using a random point selection within twelve major habitat types. This was done with the help of University of Nevada Reno researchers, using Geographic Information System (GIS) and the original GAP landcover map (produced in the 1990s). The number of random points per habitat type was based on approximate proportions of each landcover (habitat type) in Clark County. In addition, high-priority sites that were poorly represented in the original random point selection, and those that were known to support a large proportion of MSHCP-covered species, were added to the sampling plan. These included the majority of lowland riparian, Joshua tree, and mesquite-acacia transects, because these habitat types are typically underrepresented in landcover maps based on remote sensing methods.

In addition, most of the CC-MSHCP covered bird species are uncommon or rare riparian-associated species, which led to our decision to cover as much riparian corridor habitat in Clark County as could be accessed. In cases, where transects were added without a GIS-selected random start point, we used a field randomization method. For this, we selected the general area of a habitat stand that needed to be sampled and then used a Global Positioning Systems (GPS) receiver to determine a random start point by randomly altering the last three UTM digits to create a random waypoint within 1000 m. The remainder of the 10-point transect was laid out in even spaces (250 m in woodland habitats, 300 m in open habitats) to retain the random aspect of site selection. A distribution of the point count transects in Clark County can be reviewed in Figure 1.

Sampling Methods

We followed a standardized point count protocol used for the statewide Nevada Bird Count program, which is published on GBBO's website www.gbbo.org. The surveys take place during the peak breeding season of most small landbirds in the region (April 25 – July 1) in order to capture most breeding activity of small landbirds in the covered habitat types.

The surveys are conducted from dawn until 10 a.m. in fair weather, and they are typically completed well before the 10 a.m. ending time. Surveyors consist of trained volunteers from the public, GBBO seasonal staff, and agency staff of program partners. A total of 10 – 20 surveyors cover the Clark County transects annually.

Point counts were done once to three times per breeding season on each transect. The Spring Mountains transects were done three times during 2004 due to an increased effort put forth by the U.S. Forest Service's staff.

In addition, a subset of sampling areas was subject to intensive area searches and spot-mapping. This was done in order to generate true densities for sites that also received visits with our standard point count method. With this double-sampling approach, we are able to generate correction factors for the detectability of each of the species present.

Finally, we are in the process of covering all Clark County transect locations with bird-habitat assessments, which are designed to detect responses of breeding landbirds to habitat structure, floristics, and habitat change. We expect that this effort will be concluded in 2007. Sampling protocols for all methods employed in Clark County can be reviewed in more detail on the Great Basin Bird Observatory's website www.gbbo.org (select programs/projects: Nevada Bird Count).

Results and Discussion

Clark County Landbird Populations

A total of 109 point count transects received 191 surveys in Clark County between 2002 and 2005. The breakdown of transects covered in each habitat type is illustrated in Table 1.

Table 1: Point count survey coverage in Clark County during the first three years of the Nevada Bird Count program (2002 – 2004).

Habitat Type	**Number of Transects**	**Number of Surveys**
Agriculture	4	7
Aspen	1	2
Coniferous Forest	3	8
Joshua Tree	19	38
Lowland Riparian	27	40
Mojave Scrublands	17	27
Mesquite-Acacia	9	17
Montane Riparian	4	12
Montane Shrublands	5	10
Montane Sagebrush	1	2
Pinyon-Juniper	10	16
Salt Desert Scrub	9	12
TOTAL	109	191

A total of 172 species were accepted as records for Clark County during our surveys (Appendix 1). Of these, 11 species were assumed to be non-breeders in Clark County based on Nevada Breeding Bird Atlas data (Floyd et al. *in press*), resulting in 161 species recorded as possible breeders in the study area.

The species richness recorded in Clark County represents almost two-thirds of the estimated number of species that breed in Nevada (257; Floyd et al. *in press*), highlighting the importance of the Mojave Region for bird species conservation in the state.

Overall, the habitat type with the greatest species richness was lowland riparian (117) and the one with the lowest species richness (9) was montane sagebrush, which is at least partly a reflection of the low sampling effort that was possible in this highly restricted habitat type (Appendix 2).

All landbird species covered and under evaluation by the Clark County MSHCP were recorded on the Nevada Bird Count transects, with the exception of Yellow-billed

Cuckoo, and almost all showed specific habitat affinities. Table 2 presents a summary of habitats used by MSHCP covered and evaluation species.

Table 2: Summary of habitats used by the Clark County MSHCP covered and evaluation species. Estimates of <1 bird/ 40 hectares are listed as "x", and estimates of >1 birds/ 40 hectares are listed as "xx". Additional details can be viewed in Appendix 2.

Species	**Agri-culture**	**Coni-ferous Forest**	**Joshua Tree**	**Lowland Riparian**	**Mesquite-Acacia**	**Mojave Scrub**	**Montane Riparian**	**Montane Shrub / Sagebrush**	**Pinyon-Juniper**	**Salt Desert Scrub**
Bell's Vireo	xx		x	xx	xx		x		x	
Bendire's Thrasher			xx			xx				
Blue Grosbeak	x			xx						
Burrowing Owl						xx				
Crissal Thrasher	x		xx	xx	xx		x	xx	xx	
Gray Vireo		xx	x	x			xx	xx	xx	
Le Conte's Thrasher			xx		xx	xx				xx
Loggerhead Shrike			xx	xx	xx	xx		xx		xx
Peregrine Falcon			x	x						
Phainopepla	xx		xx	xx	xx	xx				xx
Summer Tanager				xx	xx			x		
Vermilion Flycatcher	x			xx						
Western Bluebird		xx					xx	xx	xx	
Willow Flycatcher				xx						
TOTAL NUMBER OF SPECIES	5	2	8	10	6	5	4	5	4	3

For the Clark County MSHCP covered and evaluation species, agriculture, coniferous forest, Joshua tree, lowland riparian, mesquite-acacia, Mojave scrub, montane riparian, montane shrub/sagebrush, pinyon-juniper, and salt desert scrub were the most important habitat types based on our data. Lowland riparian and Joshua tree were the habitat types that supported the greatest number of this species group. When interpreting these data, it is important to recognize that, for transects that targeted restricted habitats such as mesquite-acacia or riparian, other, more ubiquitous habitat types such as Mojave scrub or pinyon-juniper were also reflected in the bird population data. However, we feel that the presence of the restricted habitats may be predictors of the presence of at least some of the covered or evaluation species. Therefore, high density estimates in transitional habitats, such as mesquite-acacia, for species that are known to primarily occur in desert uplands, such as Le Conte's Thrasher, may actually indicate a landscape-scale response

of the species to adjacent habitat types. Further information is needed to confirm these preliminary conclusions.

A more specific review of the covered species is provided in the following.

Clark County Covered and Evaluation Species

Willow Flycatcher (Covered): This species was exclusively found in lowland riparian habitats. Based on previous research, Southwestern Willow Flycatchers are almost exclusively found nesting in riparian shrub thickets over, or in the immediate vicinity of, surface water (Sedgwick 2000). The species is found nesting in willow or other riparian shrub thickets, rather than sites that are predominated by tree canopies (Allison et al. 2003).

Peregrine Falcon (Covered): The habitats, in which this species was observed, were likely primarily foraging habitats, rather than nesting habitats. It was observed in lowland riparian and Joshua tree habitats. We know from other studies (NDOW and Lake Mead NRA, pers. comm.) that this species primarily breeds in rock outcroppings and cliffs in southern Nevada, and most known nest sites have been confirmed within the vicinity of the Colorado River.

Blue Gosbeak (Covered): Blue Grosbeaks were primarily found in lowland riparian areas, with a minor presence in agricultural areas. This species is known to occur in low-canopy-cover riparian areas that feature openings, as well as in disturbed riparian areas (Ingold 1993).

Phainopepla (Covered): Phainopeplas were found in their highest numbers in lowland riparian , Joshua tree, mesquite-acacia, and Mojave scrub habitats. Previous studies indicated that breeding Phainopeplas are primarily associated with mistletoe-infected mesquite or acacia stands (Krueger 1998, Chu and Walsberg 1999). For nesting, Phainopeplas have been reported to nest in areas where at least some mistletoe is present, including stands that are predominated by salt cedar (tamarisk); also, they nest in taller than average trees within a stand (Crampton 2004).

Summer Tanager (Covered): Summer Tanagers were uncommon to rare in the study area, and they were primarily found in lowland riparian areas. They inhabit mature riparian gallery forests during the breeding season (Robinson 1996), and examples of this habitat are found along the Virgin and Muddy rivers, as well as in Pahranagat National Wildlife Refuge and Meadow Valley Wash of Lincoln County. This species is a good example for the need for regional integration of population monitoring, as it generally occurs too sparsely in any given site to be effectively monitored locally.

Vemilion Flycatcher (Covered): This species was primarily found in lowland riparian areas of Clark County, but it has also been found breeding in areas that are predominantly agricultural (Floyd et al. *in press*). Vermilion Flycatchers breed in open riparian and

mesquite stands, usually near open water (Wolf and Jones 2000), but they generally avoid densely wooded areas including monotypic salt cedar stands. In Nevada, they appear to be semi-colonial in their nesting habits, so any given breeding location generally has multiple pairs.

Bell's Vireo (Covered): Bell's Vireos were most often found in lowland riparian areas, but they were also recorded in a variety of other habitats (Appendix 2). Historically, this species has been found in riparian shrublands (rather than mature gallery forests), and some evidence suggests that it requires at least some native woodlands where it occurs in salt cedar stands (Braun 1993). This species is a good example of why further habitat modeling in Nevada is necessary in order to provide more specific guidelines for stand management of riparian areas.

Burrowing Owl (Evaluation – High Priority): Point count data, such as those collected during the Nevada Bird Count, are not an ideal method for assessing and monitoring this semi-nocturnal, often colonial-nesting species. The only habitat in which this species was recorded, however, was Mojave scrub, which is consistent with their reported breeding habitats (Haug et al. 1993). They nest in burrows of medium-sized mammals and other natural or artificial ground cavities. The species is reported to be sensitive to frequent disturbance at the nest sites (Paige and Ritter 1999).

Bendire's Thrasher (Evaluation – Medium Priority): Bendire's Thrashers were primarily found in Mojave scrub habitat and in Joshua tree woodlands. The species often nests in medium-sized *Yucca* plants (Dawn Fletcher *pers. comm.*) and forages primarily on the ground in scrublands. The sensitivity of this rare species to human encroachment and disturbance is currently unknown in Nevada, but given that these factors are increasingly common in Clark County, they are worthwhile research subjects to pursue with regard to thrashers.

Le Conte's Thrasher (Evaluation – Medium Priority): Interestingly, this species was most often recorded in mesquite-acacia and in Mojave scrub habitats, but also occurred in Joshua tree woodlands and salt desert scrublands (Appendix 2). Previously, the species was thought to occur almost exclusively in salt desert scrublands in Nevada, but it now appears that, at least during spring and early summer, the species also makes use of open woodlands of the low elevations. Previous studies indicated that this species is somewhat tolerant to edges created by human encroachment (Sheppard 1996), but this presumed tolerance needs further study in Nevada.

Gray Vireo (Evaluation – Medium Priority): Gray Vireos are almost exclusively found in mid- and high-elevation habitats of the Mojave Desert during the breeding season. It was recorded most often in pinyon-juniper, montane riparian, and montane shrublands (Appendix 2), which are primarily found in the Spring Mountains and the Sheep and McCullough ranges in Clark County. The species nests in branches of mature conifers (Barlow et al. 1999), and as most covered and evaluation species of the MSHCP, it is intolerant of heavy habitat degradation or conversion.

Loggerhead Shrike (Evaluation – Low Priority): This fairly common species was found in most lowland habitats of the Mojave Desert (Appendix 2). As we found throughout the state, habitats are extremely difficult to model for this species, as it is found in a great variety of desert shrubland settings. Loggerhead Shrike do, however, avoid densely forested and high-elevation areas (Yosef 1996, Floyd et al. *in press*).
Western Bluebird (Evaluation – Low Priority): This is a fairly rare species in both the Mojave and Great Basin regions of Nevada. It breeds in upper-elevation hardwood habitats, which is reflected in the data from Clark County, where it was recorded primarily in aspen, montane riparian and other high-elevation habitats. Western Bluebirds are tree-cavity nesters that cannot excavate nest cavities, and therefore rely on primary cavity nesters, such as Northern Flickers, for nest sites.

Crissal Thrasher (Evaluation – Low Priority): This is the most common breeding thrasher of southern Nevada, and it was most often recorded on Joshua tree, lowland riparian, and mesquite-acacia transects (Appendix 2). Unlike the other two southern thrasher species, Crissal Thrasher has an affinity to dense woodlands, including closed-canopy riparian forests (Cody 1999). Interestingly, this thrasher was also occasionally recorded in higher-elevation habitat types.

Spring Mountain Landbird Populations

The Spring Mountains, which are the only lands in Clark County managed by the U.S. Forest Service, support a fairly unique bird community in Nevada. Many of the high-elevation habitats, and several bird species, found in the Spring Mountains are found in only few other places in the state. Although the birds of the Spring Mountains have received considerable research compared to most other Nevada mountains (e.g., Austin 1967, Floyd et al. *in press*), much remains to be learned about them. For instance, the influence of Pacific forms of many bird taxa, such as the titmice, "western" flycatchers, and Steller's Jays, is not clearly understood in this region. Also, increased recreational use of the range as the Las Vegas area continues to grow is an important reason to continually evaluate and monitor this important site for many of Nevada's rarer birds.

A total of 100 species were recorded on 18 transects in the Spring Mountains between 2002 and 2005 (Appendix 3). The highest species richness was reported in montane riparian areas (62), and pinyon-juniper and coniferous forest habitats also supported fairly large numbers of species (50 or more; Appendix 4).

In comparison with historic data, the bird community overall appears to have changed little. Austin (1967) reported 134 species from ten transects that were visited year-round. The higher number of species observed by him is largely explained by the addition of wintering birds, transients, accidentals, and largely-nocturnal species that are poorly sampled by standard point count methods (examples include Solitary Sandpiper, Western Screech-Owl, Northern Pygmy-Owl, Flammulated Owl, Hermit Warbler, Bohemian Waxwing, Golden-crowned Sparrow, and White-throated Sparrow).

There are, however, interesting differences in the list of presumed breeding birds, as well. For instance, we did not confirm Band-tailed Pigeon, Williamson's Sapsucker, Orange-crowned Warbler, Nashville Warbler, Lesser Goldfinch, House Wren, Brown Creeper, American Dipper, and American Pipit, all of which were reported in the Spring Mountains by Austin (1967) and by the Nevada Breeding Bird Atlas project in the late 1990s (Floyd et al. *in press*). Presumed breeding birds reported by Austin (1967) that were found neither during the Nevada Bird Count nor during the Nevada Breeding Bird Atlas project include Spotted Sandpiper, Common Nighthawk, Vaux's Swift, Calliope Hummingbird, and American Goldfinch.

Of all the species that were not recorded during the point count effort of the Nevada Bird Count, the Band-tailed Pigeon, Spotted Sandpiper, American Dipper, House Wren, Brown Creeper, and Orange-crowned Warbler are the most intriguing results. All of these species should be reasonably easy to detect during standard point count techniques in riparian areas and montane shrub habitats. Further surveys are needed to determine whether the lack of records during our efforts represents a true reduction in populations, or whether they have not been detected at the expected rate.

Other Ongoing Efforts

We are currently in the process of collecting field habitat assessment data throughout Clark County. The effort is about 30% completed, and we expect to complete the remainder of the project during the next year (2007). The habitat assessments will be invaluable to our continuing goal to gain specific knowledge of the habitat requirements of conservation priority species throughout the Mojave Desert region. In this assessment, we collect data on the floristics of the dominant vegetation, vegetation structure, and the main threats to vegetation and bird occupancy known to occur in this region. The protocols for our habitat assessments can be reviewed on our website www.gbbo.org, select Public Resources/Data.

In addition, we are pursuing a different method of bird surveys, the spot-mapping method, in a subset of areas in order to generate correction factors for biases inherent to the widely-used point count method. This double-sampling technique is carried out by our partners at the Lake Mead National Recreation Area in high-priority sites in the Mojave region, where more detailed information on the breeding bird community is needed, such as sites that are slated for habitat restoration. The results of this effort will be presented elsewhere after additional time for analysis.

Conclusion

The Nevada Bird Count program's benefits are exemplified in the Mojave Desert region of Nevada. The program is designed to generate density estimates that can be used for evaluation of sites and for monitoring of population trends. When the field habitat

assessments are completed, these density estimates can be statistically related to stand condition and other habitat features.

The Nevada Bird Count program provides a baseline data set for Clark County and for the Spring Mountains that can be used as a reference point for future monitoring of changes in bird communities in response to land use changes. A large portion of Nevada's bird diversity is supported by the diverse landscapes of the Mojave region, therefore, we recommend continuing monitoring this area at the level of intensity and the standard protocols set forth by the Nevada Bird Count program.

The program was further designed to be integrated with local bird inventory and monitoring efforts, such as pre- and post-restoration assessments of habitat improvement projects, projects on effects of wildfire and changing land uses, and for habitat conversion. Therefore, the program not only provides an estimated "ambient" bird density for different habitat types in the Mojave region that can be used for evaluating local project sites, but it can also provide guidelines for future habitat management and restoration projects based on the habitat relationships unveiled by statistical analyses from our data.

New objectives of the program should include (1) that restricted habitat types, such as lowland riparian, mesquite-acacia, and coniferous forests be continually explored for better access, so that more comprehensive sampling can be accomplished; (2) that local research projects and site assessments be actively integrated into the framework of the Nevada Bird Count so as to take advantage of the wealth of regional data that the program provides; (3) that action is taken to expand the integration effort outside of county and state lines in order to better model and monitor the rarest of the species of conservation concern. The statewide Nevada Bird Count program provides a unique opportunity for all agencies to participate in a bird data network that can provide much more scientifically strong evidence for both habitat requirements and trends in bird populations than could be accomplished by a local research or inventory project alone. Because all of the major resource management agencies in the state are already partners of the Nevada Bird Count program, we encourage them to make use of this standard framework for both regional and local objectives that require bird population data. The Great Basin Bird Observatory is also in partnership with adjoining areas and major bird monitoring efforts therein to provide for regional integration of Nevada Bird Count data that reaches beyond Nevada's borders.

Recommendations

We recommend that the Nevada Bird Count effort be kept up in Clark County at the level that was established in the first four years of the program. In addition, local research projects that require the collection of landbird data should be integrated into the data collection framework of the program, because then the wealth of data collected county- and region-wide can be used for evaluation of data collected locally.

The Nevada Bird Count effort should be expanded into areas that support very important bird habitats and that have been restricted due to private landownership in the past, for example lowland riparian and agricultural sites along the Virgin and Muddy rivers. Because some of the rarest species in Clark County occupy these habitats, it will be critical to gain access to as much information on their whereabouts and habitat use as possible.

Further, we recommend that the Clark County portion of the Nevada Bird Count effort be integrated into larger regional bird monitoring. The Great Basin Bird Observatory is already collecting data in Nye and Lincoln counties under the Nevada Bird Count program, which can be seamlessly integrated with the Clark County data for a more comprehensive picture of bird habitat requirements and population trends. In addition, we are forming partnerships with agencies who assess and monitor bird populations across the state border to ensure that the data collection protocols are compatible and larger-scale analyses can be conducted.

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Appendix 1: Species list for Clark County based on four years of Nevada Bird Count surveys (2002-2005). Species are listed in alphabetical order. Current scientific names can be reviewed on www.gbbo.org (select: Resources/Data: Public Resources).

Species	Comment*
Abert's Towhee	
American Avocet	
American Coot	
American Kestrel	
American Pipit	
American Robin	
American White Pelican	Migrant
Anna's Hummingbird	
Ash-throated Flycatcher	
Barn Swallow	
Bell's Vireo	
Belted Kingfisher	
Bendire's Thrasher	
Bewick's Wren	
Black Phoebe	
Black-chinned Hummingbird	
Black-chinned Sparrow	
Black-headed Grosbeak	
Black-necked Stilt	
Black-tailed Gnatcatcher	
Black-throated Gray Warbler	
Black-throated Sparrow	
Blue Grosbeak	
Blue Grouse	
Blue-gray Gnatcatcher	
Brewer's Blackbird	
Brewer's Sparrow	
Broad-billed Hummingbird	
Broad-tailed Hummingbird	
Brown-crested Flycatcher	
Brown-headed Cowbird	
Bullock's Oriole	
Burrowing Owl	
Bushtit	
Cactus Wren	
California Quail	
Canada Goose	
Canyon Wren	
Cassin's Finch	
Cassin's Kingbird	
Cedar Waxwing	Migrant

Species	Comment*
Chipping Sparrow	
Chukar	
Cinnamon Teal	
Clark's Nutcracker	
Cliff Swallow	
Common Nighthawk	
Common Poorwill	
Common Raven	
Common Yellowthroat	
Cooper's Hawk	
Cordilleran Flycatcher	needs to be confirmed as Cordilleran vs. Pacific-slope
Costa's Hummingbird	
Crissal Thrasher	
Dark-eyed Junco	
Double-crested Cormorant	
Dusky Flycatcher	
Eurasian Collared-Dove	
European Starling	
Forster's Tern	
Gambel's Quail	
Gilded Flicker	
Golden Eagle	
Golden-crowned Kinglet	
Grace's Warbler	
Gray Flycatcher	
Gray Vireo	
Great Blue Heron	
Great Egret	
Great Horned Owl	
Greater Roadrunner	
Greater Yellowlegs	Migrant
Great-tailed Grackle	
Green-tailed Towhee	
Hairy Woodpecker	
Hammond's Flycatcher	
Hepatic Tanager	Migrant
Hermit Thrush	
Hooded Oriole	
Horned Lark	
House Finch	
House Sparrow	
House Wren	
Indigo Bunting	
Juniper Titmouse	
Killdeer	
Ladder-backed Woodpecker	
Lark Sparrow	

Species	Comment*
Lazuli Bunting	
Le Conte's Thrasher	
Lesser Goldfinch	
Lesser Nighthawk	
Loggerhead Shrike	
Long-billed Dowitcher	Migrant
Long-eared Owl	
Lucy's Warbler	
MacGillivray's Warbler	
Mallard	
Marsh Wren	
Mountain Bluebird	
Mountain Chickadee	
Mourning Dove	
Northern Flicker	
Northern Goshawk	
Northern Harrier	
Northern Mockingbird	
Northern Rough-winged Swallow	
Olive-sided Flycatcher	
Orange-crowned Warbler	
Peregrine Falcon	
Phainopepla	
Pied-billed Grebe	
Pine Grosbeak	
Pine Siskin	
Pinyon Jay	
Plumbeous Vireo	
Prairie Falcon	
Pygmy Nuthatch	
Red Crossbill	
Red-breasted Nuthatch	
Red-naped Sapsucker	
Red-tailed Hawk	
Red-winged Blackbird	
Ring-necked Pheasant	
Rock Pigeon	
Rock Wren	
Rose-breasted Grosbeak	
Ruby-crowned Kinglet	
Sage Sparrow	Probable Migrant
Sage Thrasher	Probable Migrant
Savannah Sparrow	
Say's Phoebe	
Scott's Oriole	
Sharp-shinned Hawk	
Snowy Egret	

Species	Comment*
Song Sparrow	
Spotted Sandpiper	
Spotted Towhee	
Steller's Jay	
Summer Tanager	
Swainson's Hawk	
Swainson's Thrush	
Townsend's Solitaire	
Townsend's Warbler	Migrant
Tree Swallow	
Turkey Vulture	
Veery	Migrant
Verdin	
Vermilion Flycatcher	
Violet-green Swallow	
Virginia Rail	
Virginia's Warbler	
Warbling Vireo	
Western Bluebird	
Western Kingbird	
Western Meadowlark	
Western Scrub-Jay	
Western Tanager	
Western Wood-Pewee	
White-breasted Nuthatch	
White-crowned Sparrow	Probable Migrant
White-faced Ibis	
White-throated Swift	
White-winged Dove	
Wild Turkey	
Willow Flycatcher	
Wilson's Phalarope	
Wilson's Warbler	Migrant
Yellow Warbler	
Yellow-breasted Chat	
Yellow-headed Blackbird	
Yellow-rumped Warbler	

* Presumed non-breeders/species identification based on Nevada Breeding Bird Atlas data.

Appendix 2: Summary of estimated bird densities in each habitat type covered during the Nevada Bird Count surveys in Clark County (2002-2005). Listed are average estimated densities per 40 hectares, with number of records and standard error of the mean in parentheses. Conservation priority species based on bird conservation initiatives (i.e., Partners in Flight, U.S. Shorebird Conservation Plan) are listed in bold, and Clark County MSHCP covered and evaluation species are listed in bold and italics. All species are listed in alphabetical order.

Species	Agriculture	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Mesquite-Catclaw	Mojave Scrub	Montane Riparian	Montane Sagebrush	Montane Shrubs	Pinyon-Juniper	Salt Desert Scrub
Abert's Towhee	**4.46 (2; 3.183)**				**6.21 (13; 0.837)**					**1.27 (1;--)**		
American Avocet					**0.64 (1;--)**							
American Coot					10.2 (1;--)							
American Kestrel	1.27 (1;--)			0.39 (2; 0.248)	0.64 (1;--)		1.59 (2; 0.955)				0.64 (1;--)	
American Pipit	78.9 (1;--)											
American Robin	2.55 (1;--)	2.12 (1;--)	2.26 (1;--)		1.59 (2; 0.318)			0.50 (2; 0.071)		0.57 (1;--)	0.59 (3; 0.047)	
American White Pelican					**1.21 (1;--)**							
Anna's Hummingbird			0.14 (1;--)	0.64 (1;--)	2.55 (1;--)		1.27 (1;--)	0.71 (1;--)			0.34 (3; 0.151)	
Ash-throated Flycatcher	**0.64 (1;--)**		**0.42 (1;--)**	**6.68 (17; 0.855)**	**3.71 (17; 0.582)**	**3.92 (10; 0.862)**	**6.75 (10; 2.084)**	**5.09 (3; 0.853)**	**6.37 (1;--)**	**3.40 (4; 0.671)**	**3.14 (9; 0.845)**	**6.24 (5; 1.429)**
Barn Swallow	5.09 (1;--)											
Bell's Vireo	**2.23 (2; 0.318)**			**0.64 (1;--)**	**3.91 (14; 0.727)**	**1.27 (1;--)**		**0.28 (1;--)**			**0.16 (1;--)**	
Bendire's Thrasher				**1.27 (1;--)**			**3.82 (1;--)**					
Bewick's Wren	2.23 (2; 1.592)			2.71 (14; 0.451)	4.89 (18; 0.988)	9.55 (2; 8.913)		0.99 (4; 0.436)		3.09 (3; 0.946)	1.95 (6; 1.211)	
Black Phoebe	1.27 (1;--)				2.79 (9; 1.269)							
Black-chinned Hummingbird	1.27 (1;--)		0.70 (2; 0.572)	0.64 (2; 0.000)	4.24 (6; 1.557)	1.91 (2; 0.637)						
Black-chinned Sparrow				**0.85 (1;--)**	**5.52 (1;--)**			**1.08 (3; 0.330)**		**2.17 (3; 0.850)**	**2.78 (5; 0.589)**	
Black-crowned Night-Heron	0.64 (1;--)				1.27 (1;--)							
Black-headed Grosbeak		1.17 (1;--)	1.65 (3; 0.998)		3.67 (7; 2.022)	0.64 (3; 0.000)		3.96 (4; 1.759)		3.40 (3; 1.268)	2.28 (5; 0.348)	
Black-necked Stilt	1.27 (1;--)											
Black-tailed Gnatcatcher	**4.46 (1;--)**			**3.83 (5; 1.915)**	**6.20 (12; 1.397)**	**5.23 (6; 1.882)**	**4.01 (10; 0.771)**			**1.27 (2; 0.000)**	**1.06 (3; 0.212)**	**1.27 (1;--)**
Black-throated Gray Warbler			**0.71 (2; 0.566)**	**1.91 (1;--)**				**5.59 (4; 1.941)**		**5.92 (3; 2.694)**	**7.57 (7; 2.307)**	
Black-throated Sparrow				**21.4 (19; 2.35)**	**6.44 (12; 1.804)**	**19.3 (10; 4.85)**	**34.2 (17; 5.37)**	**2.26 (3; 1.841)**	**9.55 (1;--)**	**5.91 (5; 2.337)**	**6.35 (9; 2.031)**	**14.2 (8; 3.18)**

Species	Agriculture	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Mesquite-Catclaw	Mojave Scrub	Montane Riparian	Montane Sagebrush	Montane Shrubs	Pinyon-Juniper	Salt Desert Scrub
Blue Grosbeak	**0.64 (1;--)**				**2.10 (12; 0.319)**							
Blue Grouse											**0.21 (1;--)**	
Blue-gray Gnatcatcher			0.81 (3; 0.425)	2.15 (9; 0.600)	3.64 (15; 0.621)	1.27 (3; 0.368)		7.25 (4; 0.986)		3.80 (4; 1.003)	7.42 (9; 2.637)	1.27 (1;--)
Brewer's Blackbird	51.2 (2; 50.61)				2.55 (2; 1.273)		0.64 (1;--)					
Brewer's Sparrow				**1.40 (12; 0.276)**	**0.21 (1;--)**	**8.28 (1;--)**	**7.32 (6; 1.753)**	**0.21 (2; 0.071)**		**1.27 (2; 0.000)**	**1.06 (3; 0.212)**	**1.27 (1;--)**
Broad-tailed Hummingbird		5.20 (1;--)	4.89 (3; 0.706)	0.14 (1;--)	2.55 (1;--)		1.27 (1;--)	5.80 (4; 2.608)		2.69 (2; 0.000)	1.97 (6; 0.646)	
Brown-headed Cowbird	5.73 (3; 3.837)			0.64 (1;--)	8.73 (20; 1.705)	2.50 (5; 1.149)		1.84 (4; 0.436)		0.99 (2; 0.424)	1.49 (3; 0.849)	
Bullock's Oriole	1.91 (3; 0.637)			0.64 (2; 0.000)	2.08 (6; 0.671)	1.27 (1;--)	0.64 (1;--)				0.21 (1;--)	
Burrowing Owl							**1.27 (1;--)**					
Bushtit			0.32 (1;--)	0.74 (2; 0.531)	7.07 (3; 0.374)	6.37 (1;--)		8.70 (4; 2.382)		5.98 (4; 1.932)	6.25 (7; 1.711)	
Cactus Wren				**5.25 (14; 1.255)**	**0.74 (3; 0.053)**	**3.43 (3; 0.887)**	**2.67 (5; 0.422)**		**5.73 (1;--)**	**1.06 (3; 0.212)**		**2.71 (4; 0.544)**
California Quail						0.64 (1;--)						
Canada Goose	13.1 (2; 6.68)				0.64 (1;--)							
Canyon Wren			0.32 (1;--)	0.85 (2; 0.424)	3.98 (5; 2.599)							
Cassin's Finch		**1.06 (1;--)**	**4.53 (3; 2.011)**					**1.23 (3; 0.741)**		**0.57 (1;--)**	**0.65 (1;--)**	
Cassin's Kingbird											0.64 (1;--)	
Cedar Waxwing					17.2 (2; 4.456)	2.55 (1;--)						
Chipping Sparrow		9.44 (1;--)	6.15 (3; 0.852)	0.85 (3; 0.212)	0.52 (3; 0.155)		1.27 (1;--)	6.22 (3; 3.070)		1.41 (1;--)	2.12 (8; 0.666)	
Chukar				1.49 (2; 0.849)	2.55 (1;--)			3.40 (1;--)				
Cinnamon Teal	7.64 (1;--)											
Clark's Nutcracker			**1.19 (2; 0.084)**									
Cliff Swallow	122.2 (1;--)				4.33 (2; 3.315)							
Common Poorwill							1.27 (1;--)				0.21 (1;--)	
Common Raven	1.59 (2; 0.955)	1.49 (1;--)	0.50 (2; 0.354)	1.36 (4; 0.650)	1.15 (4; 0.176)	0.61 (2; 0.029)	1.75 (4; 0.914)			0.42 (1;--)		1.91 (2; 0.637)
Common Yellowthroat	7.64 (1;--)				5.72 (11; 1.493)							
Cooper's Hawk	**0.64 (1;--)**		**0.14 (1;--)**	**0.64 (1;--)**	**1.27 (1;--)**		**1.27 (1;--)**	**0.14 (1;--)**				
Cordilleran Flycatcher											0.21 (1;--)	
Costa's Hummingbird			**0.14 (1;--)**	**1.36 (5; 0.776)**	**2.86 (2; 0.318)**		**3.18 (2; 1.910)**	**0.14 (2; 0.000)**	**0.64 (1;--)**			

Species	Agriculture	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Mesquite-Catclaw	Mojave Scrub	Montane Riparian	Montane Sagebrush	Montane Shrubs	Pinyon-Juniper	Salt Desert Scrub
Crissal Thrasher	**0.64 (1;--)**			**2.42 (5; 0.312)**	**2.29 (5; 0.742)**	**2.86 (4; 0.801)**		**0.42 (1;--)**		**1.27 (1;--)**	**1.27 (1;--)**	
Dark-eyed Junco		6.79 (1;--)	8.44 (3; 1.221)		1.06 (1;--)			1.37 (3; 1.015)			1.66 (1;--)	
Double-crested Cormorant					1.27 (1;--)							
Dusky Flycatcher		**4.24 (1;--)**	**4.94 (3; 0.529)**	**1.27 (1;--)**	**0.80 (1;--)**	**1.27 (1;--)**		**3.25 (3; 2.761)**		**0.85 (2; 0.424)**	**0.48 (2; 0.159)**	**3.82 (1;--)**
Eurasian Collared-Dove					0.64 (1;--)							
European Starling	2.55 (2; 0.000)				2.97 (3; 1.291)	2.55 (1;--)						
Gambel's Quail	**8.12 (4; 1.083)**			**6.57 (7; 2.641)**	**9.15 (22; 1.282)**	**18.1 (6; 5.00)**	**11.9 (10; 3.59)**	**0.14 (1;--)**	**1.91 (1;--)**	**5.73 (2; 4.456)**	**3.82 (2; 0.000)**	**11.0 (3; 9.13)**
Golden-crowned Kinglet								0.57 (1;--)			0.64 (1;--)	
Grace's Warbler			**1.87 (3; 0.476)**					**1.41 (2; 0.990)**				
Gray Flycatcher			**0.52 (3; 0.119)**	**0.82 (9; 0.241)**	**0.21 (1;--)**	**2.55 (1;--)**	**2.55 (1;--)**	**3.82 (3; 0.963)**	**0.64 (1;--)**	**0.90 (3; 0.309)**	**1.87 (6; 0.415)**	
Gray Vireo			**1.98 (2; 1.839)**	**0.71 (2; 0.566)**	**0.81 (3; 0.347)**			**2.86 (4; 1.177)**		**2.83 (3; 0.788)**	**2.81 (8; 0.677)**	
Great Blue Heron	6.05 (2; 5.411)				1.34 (3; 0.678)							
Great Egret	3.82 (1;--)											
Great Horned Owl				4.46 (1;--)	1.27 (1;--)							
Greater Roadrunner					2.65 (4; 1.677)	0.64 (2; 0.000)	1.91 (1;--)					0.64 (1;--)
Greater Yellowlegs	2.55 (1;--)											
Great-tailed Grackle	7.00 (3; 1.910)				5.58 (8; 2.022)							
Green-tailed Towhee		**2.02 (1;--)**	**2.13 (3; 0.560)**	**1.63 (6; 0.544)**	**1.27 (1;--)**		**8.91 (1;--)**	**2.17 (3; 1.745)**		**1.17 (4; 0.267)**	**1.92 (7; 0.591)**	
Hairy Woodpecker		0.64 (1;--)	0.50 (2; 0.071)		1.27 (1;--)			0.85 (1;--)			0.16 (1;--)	
Hepatic Tanager					1.59 (1;--)							
Hermit Thrush		16.87 (1;--)	2.67 (3; 0.415)					1.70 (1;--)			0.72 (2; 0.557)	
Hooded Oriole				0.64 (1;--)	2.55 (2; 0.000)							
Horned Lark				0.85 (2; 0.424)	5.09 (1;--)	3.82 (2; 1.910)	8.44 (4; 2.755)			0.64 (1;--)		16.4 (4; 7.33)
House Finch	2.55 (4; 0.937)			3.44 (9; 1.185)	4.95 (13; 1.271)	3.54 (8; 1.707)	6.22 (9; 3.019)	2.88 (3; 0.263)		1.89 (3; 0.988)	2.51 (5; 1.061)	
House Sparrow	20.8 (4; 8.55)				6.07 (7; 4.512)	1.27 (1;--)						
House Wren					1.27 (1;--)		2.55 (1;--)					
Indigo Bunting					1.27 (1;--)							
Juniper Titmouse					**1.27 (1;--)**			**7.57 (2; 4.598)**		**2.97 (1;--)**	**2.30 (5; 0.759)**	

Species	Agriculture	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Mesquite-Catclaw	Mojave Scrub	Montane Riparian	Montane Sagebrush	Montane Shrubs	Pinyon-Juniper	Salt Desert Scrub
Killdeer	1.59 (2; 0.318)				3.34 (6; 1.012)							
Ladder-backed Woodpecker	1.27 (1;--)			2.07 (13; 0.330)	3.82 (2; 2.547)		2.23 (2; 1.592)				1.27 (1;--)	
Lark Sparrow				1.91 (1;--)								
Lazuli Bunting					1.27 (1;--)	1.91 (1;--)	1.27 (1;--)	1.70 (2; 0.424)		4.24 (2; 1.698)		
Le Conte's Thrasher				**3.50 (2; 1.592)**		**5.97 (5; 4.579)**	**2.02 (6; 0.645)**					**2.86 (2; 2.228)**
Lesser Goldfinch			1.49 (2; 0.778)		1.75 (4; 0.656)		15.9 (1;--)	0.28 (2; 0.141)		1.27 (1;--)	0.64 (1;--)	
Lesser Nighthawk					5.09 (1;--)	0.64 (1;--)	1.27 (1;--)					
Loggerhead Shrike				**2.70 (16; 0.492)**	**3.11 (7; 1.098)**	**2.62 (7; 1.019)**	**4.14 (10; 0.737)**		**1.27 (1;--)**	**8.91 (1;--)**		**2.97 (3; 1.123)**
Long-billed Dowitcher	3.18 (1;--)											
Lucy's Warbler	**1.27 (1;--)**				**8.04 (20; 1.315)**	**9.07 (4; 5.957)**						
MacGillivray's Warbler				**0.64 (1;--)**	**2.07 (4; 0.706)**	**0.64 (1;--)**						
Mallard	25.8 (2; 23.24)				1.78 (8; 0.480)							
Marsh Wren	3.18 (1;--)				0.64 (1;--)							
Mountain Bluebird				**0.14 (1;--)**						**0.71 (1;--)**	**0.64 (1;--)**	
Mountain Chickadee		4.14 (1;--)	12.4 (3; 4.55)		0.21 (1;--)			5.33 (3; 3.566)		1.98 (3; 1.158)	1.46 (2; 0.451)	
Mourning Dove	16.13 (3; 5.098)	0.21 (1;--)	0.14 (1;--)	4.07 (15; 1.257)	9.79 (26; 1.658)	7.14 (9; 1.993)	6.00 (12; 1.872)	1.46 (3; 0.660)		6.19 (4; 3.688)	3.61 (7; 1.802)	3.95 (5; 1.311)
Northern Flicker		0.95 (1;--)	1.82 (3; 0.504)	0.98 (5; 0.273)	0.85 (3; 0.212)			1.98 (3; 0.910)		0.28 (1;--)	0.40 (2; 0.239)	
Northern Goshawk			**0.42 (1;--)**									
Northern Mockingbird	8.28 (1;--)			3.71 (12; 0.641)	3.39 (12; 1.141)	3.68 (6; 1.472)	3.50 (6; 1.608)	0.85 (1;--)	2.55 (1;--)	2.23 (2; 1.592)	0.95 (2; 0.318)	1.91 (2; 0.637)
Northern Rough-winged Swallow	12.7 (1;--)			0.28 (1;--)	9.64 (12; 3.299)	1.27 (1;--)	0.64 (1;--)				4.46 (1;--)	
Olive-sided Flycatcher				**0.64 (1;--)**	**1.27 (1;--)**	**0.64 (1;--)**					**0.64 (1;--)**	
Orange-crowned Warbler					**2.76 (3; 0.925)**	**0.64 (1;--)**	**1.27 (1;--)**				**1.27 (1;--)**	
Peregrine Falcon				**0.14 (1;--)**	**0.64 (1;--)**							
Phainopepla	**2.55 (1;--)**			**7.00 (2; 3.820)**	**6.42 (10; 3.182)**	**4.00 (6; 1.949)**	**5.09 (1;--)**					**1.91 (2; 0.637)**
Pied-billed Grebe					0.64 (1;--)							
Pine Grosbeak			0.14 (1;--)					0.28 (1;--)				
Pine Siskin			0.91 (2; 0.084)					0.28 (1;--)				
Pinyon Jay				**26.7 (4; 15.25)**	**0.42 (1;--)**			**0.94 (3; 0.660)**		**0.64 (1;--)**	**2.75 (6; 1.018)**	

Species	Agriculture	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Mesquite-Catclaw	Mojave Scrub	Montane Riparian	Montane Sagebrush	Montane Shrubs	Pinyon-Juniper	Salt Desert Scrub
Plumbeous Vireo								0.28 (1;--)				
Prairie Falcon					**0.80 (1;--)**							
Pygmy Nuthatch			3.30 (3; 0.519)					0.72 (1;--)				
Red Crossbill			1.27 (1;--)									
Red-breasted Nuthatch			3.25 (2; 2.694)								0.18 (1;--)	
Red-naped Sapsucker			**0.71 (1;--)**					**0.28 (2; 0.141)**				
Red-tailed Hawk	1.27 (1;--)			0.75 (5; 0.228)	1.27 (4; 0.000)	0.85 (3; 0.212)	1.27 (1;--)			0.85 (2; 0.424)		
Red-winged Blackbird	12.4 (2; 9.87)				11.3 (11; 3.10)							
Ring-necked Pheasant	1.91 (2; 0.637)				0.64 (1;--)							
Rock Pigeon	0.64 (2; 0.000)				0.64 (1;--)							
Rock Wren				2.05 (6; 0.370)	4.05 (6; 1.213)	1.47 (3; 0.576)	8.44 (8; 3.151)	0.42 (1;--)		0.71 (2; 0.566)	3.11 (7; 1.406)	3.18 (4; 1.072)
Ruby-crowned Kinglet		1.70 (1;--)	5.18 (3; 2.114)	2.55 (3; 0.735)	1.49 (1;--)		1.27 (1;--)	0.42 (1;--)			7.22 (3; 5.356)	
Sage Sparrow						**11.78 (2; 5.411)**	**7.64 (1;--)**	**2.12 (1;--)**				
Sage Thrasher												**3.82 (1;--)**
Savannah Sparrow	8.91 (1;--)											2.55 (2; 1.273)
Say's Phoebe	1.11 (4; 0.159)			1.38 (9; 0.429)	2.75 (12; 0.575)	1.09 (4; 0.487)	1.49 (9; 0.281)	0.28 (2; 0.141)			1.27 (1;--)	1.27 (1;--)
Scott's Oriole				**3.95 (15; 0.647)**	**1.91 (1;--)**		**4.14 (2; 3.502)**		**5.09 (1;--)**	**3.86 (4; 1.617)**	**1.97 (7; 0.523)**	**0.95 (2; 0.318)**
Sharp-shinned Hawk							0.64 (1;--)			0.42 (1;--)		
Snowy Egret					1.27 (1;--)							
"Solitary" Vireo				0.64 (1;--)							5.09 (1;--)	
Song Sparrow	7.96 (2; 5.411)				11.8 (13; 2.98)			0.42 (1;--)			3.18 (1;--)	
Spotted Sandpiper					0.95 (2; 0.318)							
Spotted Towhee		0.21 (1;--)	0.71 (3; 0.327)	0.50 (3; 0.178)	8.17 (2; 4.350)		0.95 (2; 0.318)	13.65 (4; 2.865)		9.95 (3; 3.421)	7.39 (8; 2.023)	
Steller's Jay		**0.64 (1;--)**	**0.73 (3; 0.062)**	**0.21 (1;--)**								
Summer Tanager					**1.17 (3; 0.281)**	**1.27 (1;--)**				**0.85 (1;--)**		
Swainson's Thrush			0.14 (1;--)									
Townsend's Solitaire			6.28 (2; 0.656)		0.42 (1;--)		1.27 (1;--)	1.27 (3; 0.920)			0.19 (2; 0.018)	
Townsend's Warbler				0.64 (2; 0.000)		2.55 (1;--)					0.74 (2; 0.531)	

Species	Agriculture	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Mesquite-Catclaw	Mojave Scrub	Montane Riparian	Montane Sagebrush	Montane Shrubs	Pinyon-Juniper	Salt Desert Scrub
Tree Swallow	5.73 (2; 3.820)											
Turkey Vulture	0.85 (3; 0.212)				1.67 (4; 0.542)	0.64 (1;--)	0.64 (1;--)				2.55 (1;--)	
Veery								1.06 (2; 0.637)				
Verdin	**2.71 (4; 1.432)**			**2.86 (4; 1.654)**	**6.34 (18; 0.886)**	**9.04 (8; 2.893)**	**1.75 (4; 0.477)**			**1.27 (1;--)**		**0.95 (2; 0.318)**
Vermilion Flycatcher	**0.64 (1;--)**				**3.90 (3; 1.339)**							
Violet-green Swallow	38.2 (2; 12.73)	1.17 (1;--)	3.41 (3; 1.240)		12.9 (3; 12.31)		1.27 (1;--)	3.40 (1;--)		5.94 (2; 5.518)		
Virginia's Warbler		**3.18 (1;--)**	**0.30 (2; 0.018)**		**2.02 (2; 1.167)**	**1.27 (1;--)**		**3.04 (2; 1.768)**		**2.90 (2; 1.485)**	**0.50 (1;--)**	
Warbling Vireo		9.87 (1;--)	2.65 (1;--)	2.23 (2; 1.592)	0.64 (2; 0.000)	0.95 (2; 0.318)		0.42 (1;--)			0.80 (2; 0.477)	
Western Bluebird			**1.16 (3; 0.130)**					**2.41 (1;--)**		**1.27 (1;--)**	**1.35 (2; 1.194)**	
"Western" Flycatcher			0.42 (2; 0.000)	3.18 (1;--)	2.55 (2; 1.273)	0.64 (1;--)	1.27 (1;--)	2.55 (2; 2.122)			3.82 (1;--)	
Western Kingbird	4.30 (4; 2.036)			0.64 (2; 0.000)	2.45 (9; 0.923)	0.88 (5; 0.258)						
Western Meadowlark	18.0 (4; 8.96)			3.82 (1;--)	6.27 (6; 1.746)						0.88 (4; 0.239)	2.23 (2; 0.955)
Western Scrub-Jay	**0.64 (1;--)**		**2.23 (1;--)**	**1.91 (1;--)**	**3.86 (4; 1.015)**			**5.73 (4; 1.365)**		**5.45 (2; 0.637)**	**4.07 (8; 0.987)**	
Western Tanager		6.58 (1;--)	7.79 (3; 1.516)	0.95 (2; 0.318)	2.14 (5; 0.799)	1.27 (2; 0.637)		3.58 (3; 2.102)		0.64 (3; 0.123)	1.26 (4; 0.438)	
Western Wood-Pewee			0.97 (3; 0.366)		3.20 (7; 0.828)	0.95 (2; 0.318)	1.27 (1;--)	0.71 (1;--)		1.70 (1;--)	1.11 (3; 0.512)	1.27 (1;--)
White-breasted Nuthatch			2.05 (3; 0.739)					1.27 (1;--)			2.55 (1;--)	
White-crowned Sparrow	0.64 (1;--)			5.98 (5; 2.683)	1.31 (4; 0.262)		2.55 (2; 0.000)					
White-faced Ibis					**8.91 (1;--)**							
White-throated Swift		**1.59 (1;--)**			**14.7 (4; 10.54)**	**1.27 (1;--)**					**3.18 (2; 0.637)**	
White-winged Dove					14.4 (3; 1.12)	0.64 (1;--)						
Wild Turkey	1.27 (1;--)											
Willow Flycatcher					**1.06 (3; 0.212)**							
Wilson's Phalarope	**3.82 (1;--)**											
Wilson's Warbler	**0.64 (1;--)**			**0.85 (2; 0.424)**	**2.95 (12; 0.609)**	**4.08 (7; 2.062)**					**2.12 (3; 1.485)**	**2.55 (1;--)**
Yellow Warbler	3.50 (2; 2.865)				6.81 (16; 1.726)	0.95 (2; 0.318)					1.27 (1;--)	
Yellow-breasted Chat	**1.91 (1;--)**				**8.95 (15; 1.831)**							
Yellow-headed Blackbird					**7.00 (2; 1.910)**							

Species	Agriculture	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Mesquite-Catclaw	Mojave Scrub	Montane Riparian	Montane Sagebrush	Montane Shrubs	Pinyon-Juniper	Salt Desert Scrub
Yellow-rumped Warbler	2.23 (2; 1.592)	2.76 (1;--)	7.62 (3; 2.561)		3.50 (4; 0.959)			3.11 (3; 1.676)		1.34 (2; 0.920)	0.82 (2; 0.610)	
TOTAL NUMBER OF SPECIES	64	23	50	66	117	55	50	62	9	50	69	25

Appendix 3: Species list for the Spring Mountains, Clark County, based on four years of Nevada Bird Count surveys (2002-2005). Species are listed in alphabetical order. Current scientific names can be reviewed on www.gbbo.org (select: Resources/Data: Public Resources).

Species	Comment*
American Kestrel	
American Robin	
Anna's Hummingbird	
Ash-throated Flycatcher	
Bell's Vireo	
Bewick's Wren	
Black-chinned Hummingbird	
Black-chinned Sparrow	
Black-headed Grosbeak	
Black-tailed Gnatcatcher	
Black-throated Gray Warbler	
Black-throated Sparrow	
Blue Grouse	
Blue-gray Gnatcatcher	
Brewer's Sparrow	
Broad-billed Hummingbird	
Broad-tailed Hummingbird	
Brown-headed Cowbird	
Bullock's Oriole	
Bushtit	
Cactus Wren	
Canyon Wren	
Cassin's Finch	
Chipping Sparrow	
Chukar	
Clark's Nutcracker	
Common Poorwill	
Common Raven	
Common Yellowthroat	
Cooper's Hawk	
Cordilleran Flycatcher	
Costa's Hummingbird	
Crissal Thrasher	
Dark-eyed Junco	
Dusky Flycatcher	
Gambel's Quail	
Golden-crowned Kinglet	
Grace's Warbler	
Gray Flycatcher	
Gray Vireo	
Great Horned Owl	

Species	Comment*
Green-tailed Towhee	
Hairy Woodpecker	
Hermit Thrush	
Horned Lark	
House Finch	
House Sparrow	
Juniper Titmouse	
Ladder-backed Woodpecker	
Lazuli Bunting	
Lesser Goldfinch	
Loggerhead Shrike	
Lucy's Warbler	
MacGillivray's Warbler	
Mallard	
Mountain Bluebird	
Mountain Chickadee	
Mourning Dove	
Northern Flicker	
Northern Goshawk	
Northern Mockingbird	
Northern Rough-winged Swallow	
Olive-sided Flycatcher	
Peregrine Falcon	
Phainopepla	
Pine Grosbeak	
Pine Siskin	
Pinyon Jay	
Plumbeous Vireo	
Pygmy Nuthatch	
Red Crossbill	
Red-breasted Nuthatch	
Red-headed Woodpecker	
Red-naped Sapsucker	
Red-tailed Hawk	
Rock Wren	
Ruby-crowned Kinglet	
Sage Sparrow	Probable Migrant
Say's Phoebe	
Scott's Oriole	
Sharp-shinned Hawk	
Song Sparrow	
Spotted Towhee	
Steller's Jay	
Summer Tanager	
Swainson's Thrush	
Townsend's Solitaire	
Townsend's Warbler	Migrant

Species	Comment*
Veery	Migrant
Violet-green Swallow	
Virginia's Warbler	
Warbling Vireo	
Western Bluebird	
Western Kingbird	
Western Meadowlark	
Western Scrub-Jay	
Western Tanager	
Western Wood-Pewee	
White-breasted Nuthatch	
White-throated Swift	
Wilson's Warbler	Migrant

* Presumed non-breeders based on Nevada Breeding Bird Atlas data.

Appendix 4: Summary of estimated bird densities in each habitat type covered during the Nevada Bird Count surveys in the Spring Mountains, Clark County (2002-2005). Listed are average estimated densities per 40 hectares, with number of records and standard error of the mean in parentheses. Conservation priority species based on bird conservation initiatives (i.e., Partners in Flight, U.S. Shorebird Conservation Plan) are listed in bold, and Clark County MSHCP covered and evaluation species are listed in bold and italics. All species are listed in alphabetical order.

Species	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Montane Riparian	Montane Shrubland	Pinyon-Juniper
American Kestrel			0.14 (1;--)				
American Robin	2.12 (1;--)	1.27 (1;--)		1.91 (1;--)	0.50 (2; 0.071)	0.57 (1;--)	0.50 (1;--)
Anna's Hummingbird		0.14 (1;--)			0.57 (1;--)		0.34 (3; 0.150)
Ash-throated Flycatcher		**0.42 (1;--)**	**2.88 (3; 0.866)**	**0.74 (2; 0.530)**	**3.82 (3; 0.854)**	**1.56 (1;--)**	**0.60 (3; 0.231)**
Bell's Vireo					**0.14 (1;--)**		**0.16 (1;--)**
Bewick's Wren			1.16 (3; 0.612)	2.76 (1;--)	0.74 (4; 0.255)	1.98 (2; 1.556)	0.48 (3; 0.162)
Black-chinned Hummingbird		0.38 (2; 0.254)		2.55 (1;--)			
Black-chinned Sparrow			**0.64 (1;--)**	**4.67 (1;--)**	**0.94 (3; 0.289)**	**0.71 (2; 0.283)**	**2.97 (2; 0.848)**
Black-headed Grosbeak	0.95 (1;--)	1.40 (1; 0.889)		8.17 (2; 5.621)	2.97 (4; 1.280)	3.96 (2; 0.707)	2.00 (3; 0.202)
Black-tailed Gnatcatcher			**0.57 (1;--)**				
Black-throated Gray Warbler		**0.71 (2; 0.566)**			**4.77 (4; 1.550)**	**5.45 (2; 1.202)**	**3.14 (3; 1.720)**
Black-throated Sparrow			**16.3 (3; 2.823)**	**2.12 (2; 0.424)**	**1.89 (3; 1.466)**	**0.56 (2; 0.424)**	**2.86 (2; 1.591)**
Blue Grouse							**0.21 (1;--)**
Blue-gray Gnatcatcher		0.71 (3; 0.444)	2.12 (1;--)	1.49 (1;--)	6.30 (4; 1.03)	2.90 (2; 0.919)	3.15 (3; 0.502)
Brewer's Sparrow			**0.87 (3; 0.346)**	**0.21 (1;--)**	**0.21 (2; 0.071)**	**1.27 (1;--)**	**0.53 (2; 0.106)**
Broad-tailed Hummingbird	4.77 (1;--)	3.78 (3; 0.566)	0.14 (1;--)	2.55 (1;--)	5.16 (4; 2.390)	1.98 (2; 0.141)	0.80 (3; 0.173)
Brown-headed Cowbird				0.21 (1;--)	1.59 (4; 0.255)	0.99 (2; 0.424)	0.94 (3; 0.381)
Bullock's Oriole				0.42 (1;--)			0.21 (1;--)
Bushtit		0.32 (1;--)	0.21 (1;--)	7.00 (1;--)	8.21 (4; 2.185)	5.09 (2; 1.273)	1.70 (1;--)
Cactus Wren			**0.81 (2; 0.672)**				
Canyon Wren		0.32 (1;--)	0.42 (1;--)	0.21 (1;--)			
Cassin's Finch	**1.06 (1;--)**	**3.32 (3; 1.293)**			**0.90 (3; 0.496)**	**0.57 (1;--)**	**0.50 (1;--)**
Chipping Sparrow	6.90 (1;--)	4.62 (3; 0.450)	0.64 (1;--)	0.21 (1;--)	5.23 (3; 2.731)	1.27 (1;--)	1.19 (3; 0.768)
Chukar			1.91 (1;--)	2.55 (1;--)	3.39 (1;--)		
Clark's Nutcracker		**1.12 (2; 0.148)**					
Common Poorwill							0.21 (1;--)
Common Raven	0.64 (1;--)	0.50 (2; 0.354)	0.50 (2; 0.354)			0.42 (1;--)	
Common Yellowthroat				0.64 (1;--)			
Cooper's Hawk		**0.14 (1;--)**			**0.14 (1;--)**		
Cordilleran Flycatcher							0.21 (1;--)
Costa's Hummingbird		**0.14 (1;--)**	**0.42 (1;--)**		**0.14 (2; 0.000)**		
Crissal Thrasher					**0.42 (1;--)**		

Species	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Montane Riparian	Montane Shrubland	Pinyon-Juniper
Dark-eyed Junco	5.52 (1;--)	7.18 (3; 1.137)		0.85 (1;--)	1.08 (3; 0.733)		1.33 (1;--)
Dusky Flycatcher	**4.24 (1;--)**	**4.52 (3; 0.860)**			**3.07 (3; 2.575)**	**0.42 (1;--)**	**0.48 (2; 0.163)**
Gambel's Quail			**0.14 (1;--)**	**1.59 (2; 0.318)**	**0.14 (1;--)**		
Golden-crowned Kinglet					0.28 (1;--)		
Grace's Warbler		**1.17 (3; 0.266)**			**0.78 (2; 0.353)**		
Gray Flycatcher		**0.48 (3; 0.104)**	**0.18 (2; 0.035)**	**0.21 (1;--)**	**3.44 (3; 0.918)**	**0.35 (2; 0.071)**	**2.04 (2; 0.983)**
Gray Vireo		**1.82 (2; 1.683)**	**0.14 (1;--)**	**0.21 (1;--)**	**2.12 (4; 0.945)**	**1.48 (2; 0.636)**	**1.68 (3; 0.785)**
Green-tailed Towhee	**2.02 (1;--)**	**1.70 (3; 0.294)**	**0.21 (1;--)**		**1.74 (3; 1.322)**	**1.06 (2; 0.636)**	**0.66 (2; 0.452)**
Hairy Woodpecker	0.64 (1;--)	0.50 (2; 0.071)			0.42 (1;--)		0.16 (1;--)
Hermit Thrush	14.01 (1;--)	1.99 (3; 0.468)			1.41 (1;--)		0.16 (1;--)
Horned Lark			0.42 (1;--)				
House Finch			0.85 (2; 0.424)	0.21 (1;--)	2.26 (3; 0.144)	0.57 (1;--)	0.56 (2; 0.078)
Juniper Titmouse					**7.36 (2; 4.384)**	**2.97 (1;--)**	**0.77 (2; 0.346)**
Ladder-backed Woodpecker			0.42 (2; 0.000)				
Lazuli Bunting					1.27 (2; 0.849)	4.67 (1;--)	
Lesser Goldfinch		0.85 (2; 0.141)		0.95 (2; 0.318)	0.28 (2; 0.141)		
Loggerhead Shrike			**1.53 (3; 0.572)**				
Lucy's Warbler				**0.64 (1;--)**			
MacGillivray's Warbler				**1.27 (1;--)**			
Mountain Bluebird			**0.14 (1;--)**			**0.42 (1;--)**	
Mountain Chickadee	3.92 (1;--)	11.4 (3; 4.67)		0.21 (1;--)	4.34 (3; 2.996)	1.49 (2; 1.061)	1.01 (1;--)
Mourning Dove	0.21 (1;--)	0.14 (1;--)	1.65 (3; 1.299)	1.06 (2; 0.212)	1.37 (3; 0.571)	0.57 (1;--)	0.74 (2; 0.106)
Northern Flicker	0.74 (1;--)	1.54 (3; 0.294)	0.42 (1;--)		1.41 (3; 0.566)	0.28 (1;--)	0.40 (2; 0.240)
Northern Goshawk		**0.42 (1;--)**					
Northern Mockingbird			1.91 (1;--)	0.64 (1;--)	0.42 (1;--)		
Northern Rough-winged Swallow			0.28 (1;--)				4.46 (1;--)
Olive-sided Flycatcher				**1.27 (1;--)**			
Peregrine Falcon			**0.14 (1;--)**				
Phainopepla				**18.9 (1;--)**			
Pine Grosbeak		0.14 (1;--)			0.28 (1;--)		
Pine Siskin		0.91 (2; 0.085)			0.14 (1;--)		
Pinyon Jay			**1.45 (2; 0.460)**	**0.21 (1;--)**	**0.90 (3; 0.687)**		**0.62 (3; 0.254)**
Plumbeous Vireo					0.28 (1;--)		
Pygmy Nuthatch		2.84 (3; 0.572)			0.57 (1;--)		
Red Crossbill		1.27 (1;--)					
Red-breasted Nuthatch		2.82 (2; 2.270)					0.18 (1;--)
Red-naped Sapsucker		**0.28 (1;--)**			**0.28 (2; 0.141)**		
Red-tailed Hawk			0.28 (2; 0.141)			0.42 (1;--)	
Rock Wren			1.48 (1;--)		0.28 (1;--)	0.14 (1;--)	0.85 (2; 0.424)
Ruby-crowned Kinglet	1.17 (1;--)	3.43 (3; 1.438)		1.06 (1;--)	0.28 (1;--)		0.64 (1;--)
Sage Sparrow					**2.12 (1;--)**		
Say's Phoebe			0.18 (2; 0.035)	0.64 (1;--)	0.28 (2; 0.141)		

Species	Aspen	Coniferous Forest	Joshua Tree	Lowland Riparian	Montane Riparian	Montane Shrubland	Pinyon-Juniper
Scott's Oriole			**2.37 (2; 0.389)**	**1.70 (1;--)**		**0.14 (1;--)**	**2.12 (2; 1.700)**
Sharp-shinned Hawk						0.42 (1;--)	
Song Sparrow				0.21 (1;--)	0.42 (1;--)		3.18 (1;--)
Spotted Towhee	0.21 (1;--)	0.50 (3; 0.179)	0.45 (3; 0.156)	6.79 (2; 2.970)	10.0 (4; 1.885)	11.0 (2; 4.38)	11.5 (3; 2.633)
Steller's Jay	**0.21 (1;--)**	**0.73 (3; 0.063)**	**0.21 (1;--)**				
Summer Tanager				**0.64 (1;--)**		**0.42 (1;--)**	
Swainson's Thrush		0.14 (1;--)					
Townsend's Solitaire		5.07 (2; 0.163)		0.42 (1;--)	1.23 (3; 0.947)		0.19 (2; 0.021)
Townsend's Warbler							0.21 (1;--)
Veery					0.92 (2; 0.778)		
Violet-green Swallow	1.17 (1;--)	2.85 (3; 1.004)			2.83 (1;--)	0.42 (1;--)	
Virginia's Warbler	**1.59 (1;--)**	**0.23 (2; 0.092)**		**0.42 (1;--)**	**2.55 (2; 2.121)**	**2.55 (2; 1.273)**	**0.34 (1;--)**
Warbling Vireo	8.59 (1;--)	2.65 (1;--)			0.42 (1;--)		0.32 (1;--)
Western Bluebird		**0.97 (3; 0.242)**			**1.98 (1;--)**	**0.85 (1;--)**	**0.16 (1;--)**
"Western" Flycatcher		0.42 (2; 0.000)			2.12 (2; 1.697)		
Western Kingbird				1.27 (1;--)			
Western Meadowlark							0.64 (1;--)
Western Scrub-Jay		**1.27 (1;--)**		**3.08 (2; 1.803)**	**4.77 (4; 1.050)**	**3.96 (2; 0.707)**	**1.77 (3; 0.606)**
Western Tanager	4.14 (1;--)	5.61 (3; 1.235)		0.42 (1;--)	2.83 (3; 1.414)	0.64 (2; 0.212)	0.82 (2; 0.028)
Western Wood-Pewee		0.67 (3; 0.300)			0.71 (1;--)	0.99 (1;--)	0.40 (2; 0.240)
White-breasted Nuthatch		1.77 (3; 0.497)			0.85 (1;--)		1.91 (1;--)
White-throated Swift	**1.59 (1;--)**						**1.91 (1;--)**
Wilson's Warbler			**0.21 (1;--)**				**0.64 (1;--)**
Yellow-rumped Warbler	1.17 (1;--)	6.20 (3;1.986)		1.80 (2; 0.530)	2.22 (3; 1.189)	1.20 (2; 1.46)	0.66 (2; 0.452)
TOTAL NUMBER OF SPECIES	23	50	38	43	62	39	53

Nevada Bird Count Transect Locations Within Clark County, Nevada